

Scottish and Southern Electricity Networks Transmission

Lairg II Wind Farm Grid Connection Appendix 4.2 - UKHab Survey Report

November 2022





QUALITY MANAGEMENT

Issue/Revision	1	2	3	4
Date	November 2022			
Remarks	First Issue			
Prepared by	A Gow			
Signature				
Checked by	N Murray			
Signature				
Authorised by	A Hogan			
Signature				
Project number	70091396			
Report number	V1			
File reference	\\uk.wspgroup.co m\central data\Projects\700 91xxx\70091396 - Lairg II Wind Farm Connection\03 WIP\02 Ecology\UKHab and PS Baseline Reports			

Scottish and Southern Electricity Networks Transmission Inveralmond House 200 Dunkeld Road Perth PH1 3AQ Tel: +44 (0)1738 456 000 www.ssen.co.uk



TRANSMISSION CONTENTS

G	LOSSARY	
E)	XECUTIVE SUMMARY	5
1	INTRODUCTION	6
	1.1 Background	6
	1.2 Scope of Survey	6
2	METHODS	7
	2.2 Habitat Condition Assessment	8
	2.3 Notes and Limitations	8
3	RESULTS	9
	3.2 Habitat Summary	14
	3.3 Invasive Non-Native Species	14
A	PPENDIX A – FIGURES	15
	Figure 1: UKHab Survey Results	15
A	PPENDIX B - METADATA	16
AI	PPENDIX C – TARGET NOTES	17
A	PPENDIX D – SPECIES LIST	19



Glossary

Term	Definition
ECU	Energy Consents Unit
FEP	Farm Environment Plan
GIS	Geographical Information System
НСА	Habitat Condition Assessment
Highland Nature BAP	Highland Nature Biodiversity Action Plan
INNS	Invasive Non-Native Species
kV	kilovolt
LOD	Limit of Deviation
NE	Natural England
OHL	Overhead Line
OS	Ordnance Survey
SBL	Scottish Biodiversity List
UGC	Underground Cable
UKHab	UK Habitat

Scottish & Southern Electricity Networks

Executive Summary

Scottish and Southern Electricity Networks Transmission (hereafter referred to as 'SSEN Transmission') is proposing to construct a new 132 kilovolt (kv) underground cable between the consented Lairg II Wind Farm substation and a cable sealing end compound adjacent to the Lairg to Loch Buidhe 132 kV Overhead Line (hereafter referred to as 'the Proposed Development'). The Proposed Development is located approximately 2 km to the south-west of the village of Lairg (hereafter referred to as 'the Site'). WSP UK Ltd. was commissioned by SSEN Transmission to undertake a UK Habitat Classification and Habitat Condition Assessment survey in relation to the Proposed Development.

The Alignment Options comprise the following habitats:

- Alignment Option 1 The alignment is located within f1a blanket bog, f1a6 degraded blanket bog, h1b6 - wet heathland with cross-leaved heath, upland (H4010) and u1c - artificial unvegetated unsealed surface.
- Alignment Option 2 The alignment is located within f1a blanket bog, f1a6 degraded blanket bog, h1b6 - wet heathland with cross-leaved heath, upland (H4010) and u1c - artificial unvegetated unsealed surface.
- Alignment Option 3 The alignment is located within f1a blanket bog, f1a5 blanket bog (H7130), f1a6 - degraded blanket bog, h1b6 - wet heathland with cross-leaved heath, upland (H4010) and u1c - artificial unvegetated unsealed surface.

Of these, f1a5 blanket bog and h1b6 - wet heathland are listed in Annex I of the Habitat Directive with the remaining habitats (except for u1c - artificial unvegetated unsealed surface) Scottish Biodiversity List priority habitats or fall within a broad habitat action plan within the Highland Nature Biodiversity Action Plan.



1 Introduction

1.1 Background

- 1.1.1 Scottish and Southern Electricity Networks Transmission (hereafter referred to as 'SSEN Transmission') is operating under licence held by Scottish Hydro Electric Transmission plc, who owns, operates and develops the high voltage electricity transmission system in the north of Scotland. SSEN Transmission holds a licence under the Electricity Act 1989 to 'develop and maintain an efficient, co-ordinated and economical electrical transmission system in its licensed area'. It is obliged to offer non-discriminatory terms for connection to the transmission system both for new generation and for new sources of electricity demand.
- 1.1.2 Lairg II Wind Farm is being developed by Energyfarm UK Lairg II LLP and was consented by the Scottish Government Energy Consents Unit (ECU) in October 2021. There is a need to connect the consented Lairg II Wind Farm to the transmission grid. SSEN Transmission is obliged to provide a connection as the wind farm lies within the area covered by their license. Therefore, SSEN Transmission is proposing to construct a new 132 kilovolt (kV) underground cable between the consented Lairg II Wind Farm substation and a cable sealing end compound adjacent to the Lairg to Loch Buidhe 132 kV Overhead Line (OHL) (hereafter referred to as 'the Proposed Development').
- 1.1.3 The Proposed Development is located approximately 2 km to the south-west of the village of Lairg, approximate central Ordnance Survey (OS) Grid Reference: NC 59989 03300 (hereafter referred to as 'the Site'). The Proposed Development comprises three alignment options as shown in Figure 1 (Appendix A).
- 1.1.4 The Proposed Development includes a 100 m buffer around the three Alignment Options as a Limit of Deviation (LOD).

1.2 Scope of Survey

- 1.2.1 As part of the optioneering, a UK Habitat Classification (UKHab) and Habitat Condition Assessment (HCA) was undertaken of the Proposed Development (Alignment Options and 100 m LOD) and an additional 250 m buffer (hereafter the 'Survey Area').
- 1.2.2 These surveys were undertaken to inform the ecological baseline and inform the Environmental Alignment Selection Study Report¹ in relation to the Proposed Development. This report presents the methodology and findings of the above surveys.

¹ WSP (2022). Lairg II Wind Farm Grid Connection, Environmental Alignment Selection Study Report. Prepared for Scottish and Southern Electricity Networks. November 2022. WSP, Glasgow.



2 Methods

- 2.1.1 The habitat surveys were carried out between the 30th May and 2nd June 2022 and then updated between the 25th and 26th October 2022 following a design change by WSP Consultant Ecologists, who are capable² in surveying sites containing similar habitat types and species.
- 2.1.2 Habitats were described and mapped following the Professional Version 1.1 of UKHab using the following documents:
 - UKHab User Manual³;
 - UKHab Field Key⁴; and
 - UKHab Habitat Descriptions Version 1.1⁵.
- 2.1.3 The UKHab Working Group describes UKHab as "...a unified and comprehensive approach to classifying habitats, designed to provide a robust technique for classifying and mapping British habitats". The dominant plant species are recorded, and habitats are classified according to their vegetation types. UKHab system comprises of a principal hierarchy (the Primary Habitats) and non-hierarchical Secondary Codes. Primary Habitats include ecosystems (level 1), broad habitat types (level 2 and 3); more defined habitats, including Priority Habitats⁶ (level 4) and further defined habitats, including Annex I Habitats⁷ (level 5).
- 2.1.4 Secondary Codes can then be used to provide more information on a habitat from the following categories:
 - Mosaic habitats;
 - Habitat complexities;
 - Origin of habitat;
 - Management;
 - Land use;
 - Environmental qualifiers;
 - Hydrological regime; and
 - Green infrastructure.

² CIEEM (2021). Competency Framework. Available at: https://cieem.net/wp-content/uploads/2022/01/Competency-Framework-2022-Web.pdf

³ Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020). The UK Habitat Classification User Manual Version 1.1 at http://www.ukhab.org/

⁴ Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020). The UK Habitat Classification – Field Key V1.1 at http://www.ukhab.org/

⁵ Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020). The UK Habitat Classification – Habitat Definitions V1.1 at http://www.ukhab.org/

⁶ UK Biodiversity Action Plan (2011). UK Biodiversity Action Plan (UK BAP) priority habitats. BRIG (ed. Ant Maddock). [online] Available at: https://data.jncc.gov.uk/data/2728792c-c8c6-4b8c-9ccd-a908cb0f1432/UKBAP-PriorityHabitatDescriptions-Rev-2011.pdf

⁷ European Union Habitats Directive 92/43/EEC Annex I.

Electricity Networks

Scottish & Southern

TRANSMISSION

- 2.1.5 A single Primary Habitat is assigned to each polygon, line or point feature with generally a maximum of six Secondary Codes used. Lowercase letters are used, with the levels 2 to 5 shown by the alphanumeric code and no commas are used between secondary codes as per the UKHab User Manual.
- 2.1.6 Point features were used for Primary Habitats of conservation interest and too small to map as an area. For this survey, where possible, level 5 Primary Habitat codes were used for habitats.
- 2.1.7 Target notes on habitat descriptions were taken for each habitat type. The scientific names for vascular (flowering) plant species follow those in the New Flora of the British Isles⁸. Nomenclature for bryophytes follows Mosses and Liverworts of Britain and Ireland⁹. Relative plant species abundance was estimated using the DAFOR¹⁰ scale.
- 2.1.8 Invasive non-native plant species were also recorded by target notes when encountered.
- 2.1.9 Habitats were recorded in the field using Geographical Information System (GIS) enabled software. Once recorded, these habitats were later quality assured utilising GIS desktop software. Habitat symbology was ascribed following UKHab Basic Edition: Suggested Symbology for Maps¹¹; any habitats not included within the suggested symbology were given an alternative symbol. Each feature with a Secondary Code is displayed on the map.
- 2.1.10 The metadata for the survey is summarised in Appendix B, to accompany the GIS shapefile output.
- 2.1.11 Following data collection, habitats were assessed for their potential to be a Scottish Biodiversity List (SBL) habitat or Highland Local Biodiversity Action Plan (BAP) priority habitat.

2.2 Habitat Condition Assessment

2.2.1 Concurrently with the UKHab survey, a HCA of all habitats within the Survey Area was undertaken. The HCA followed the 2019 SSEN Guidance¹², which requires habitat condition to be assessed using the system presented in Natural England's (NE) Farm Environment Plan (FEP) manual¹³. The results of the HCA will be reported with the separate Biodiversity Net Gain Report.

2.3 Notes and Limitations

2.3.1 Every effort has been made to provide a comprehensive description of the Survey Area; however, the following specific limitations apply to this assessment:

⁸ Stace C. A. (2019). New Flora of the British Isles. Fourth Edition. C&M Floristics, Suffolk.

⁹ Atherton, I., Bosanquet, S., Lawley, M. eds. (2010). Mosses and Liverworts of the British Isles: a field guide. British Bryological Society.

¹⁰The DAFOR scale has been used to estimate the frequency and cover of the different plant species as follows: Dominant (D), Ab undant (A), Frequent (F), Occasional (O), Rare (R), The term 'Locally' (L) is also used where the frequency and distribution of a species are patchy and 'Edge' (E) is also used where a species only occurs on the edge of a habitat type.

¹¹ UKHab Working Group (2020). UKHab Basic Edition: Suggested Symbology for Maps. UKHab Working Group (UKHab Ltd), Stockport, Cheshire. Available at: https://ecountability.co.uk/ukhabworkinggroup-ukhab/

¹² SSEN (2019). Biodiversity Net Gain Technical Assessment Methodology & Associated Guidance. SSEN, Perth.

¹³ Natural England (2010). Higher Level Stewardship, Farm Environment Plan (FEP) Manual, 3rd Edition.

Scottish & Southern Electricity Networks

TRANSMISSION

- The results of the UKHab survey represent a current evaluation (as opposed to one seeking to describe what the habitats were before any human interference or may become in the future). In the absence of changes in land use, hydrology, or otherwise, and depending on the sensitivity and condition of habitats identified, it is likely that habitat data remain valid for up to three years¹⁴.
- No access was taken into the farmland to the south-west of the Site as cattle and sheep were grazing. This is not considered a limitation to the findings of this report as the habitats could be assessed from the perimeter.

3 **Results**

- 3.1.1 The results of the UKHab survey are grouped into broad habitat categories and then listed in order of their alpha-numeric codes, as depicted by the UKHab User Manual.
- 3.1.2 The results of the UKHab survey are shown in **Figure 1** (**Appendix A**), Target Notes (TNs) providing further detail are shown in **Appendix C** and a species list is shown in **Appendix D**.
- 3.1.3 A total of seven Primary Habitats were recorded as area-based habitats across the Survey Area which are listed in **Table 3.1**, along with the total area covered in the Survey Area by each habitat type and whether they are priority habitats.

Primary Habitat Codes	Secondary Habitat Codes	Area (ha)	Priority Habitat
f1a Blanket bog	 13 Scattered dwarf shrubs (Habitat Mosaic), 58 Grazed (Management) 73 Bare ground (Management) 156 Rock outcrop (Species Feature) 191 Ditch (Origin) 	18.43	SBL Habitat: Blanket bog Highland Nature BAP: Peatland and wetland
f1a5 Blanket bog (H7130)	14 Scattered rushes (Habitat Mosaic)58 Grazed (Management)156 Rock outcrop (Species Feature)	16.36	Annex I habitat: 7130 Blanket bogs SBL Habitat: Blanket bog Highland Nature BAP: Peatland and wetland
f1a6 Degraded blanket bog	58 Grazed (Management)	21.12	SBL Habitat: Blanket bog Highland Nature BAP: Peatland and wetland
f2c Upland flushes, fens and swamps	13 Scattered dwarf shrubs (Habitat Mosaic)14 Scattered rushes (Habitat Mosaic)	2.56	SBL Habitat: Upland flushes, fens and swamps Highland Nature BAP: Peatland and wetland

Table 3.1 - Area-based Habitat Summary

¹⁴ CIEEM (2019). Advice Note on the lifespan of ecological reports and surveys. Available: https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf



Primary Habitat Codes	Secondary Habitat Codes	Area (ha)	Priority Habitat
h1b5 Dry heaths; upland (H4030)	58 Grazed (Management) 63 Burnt (Management) 116 Wind farm (Land Use) 156 Rock outcrop (Species Feature)	9.12	Annex I Habitat: 4030 European dry heaths SBL Habitat: Upland heathland Highland Nature BAP: Upland and moorland
h1b6 Wet heathland with cross-leaved heath; upland (H4010)	14 Scattered rushes (Habitat Mosaic)58 Grazed (Management)73 Bare ground (Management)156 Rock outcrop (Species Feature)	10.65	Annex I habitat: 4010 Northern Atlantic wet heaths with Erica tetralix SBL Habitat: Upland heathland Highland Nature BAP: Upland and moorland
u1c Artificial unvegetated, unsealed surface	111 Road (Land Use)	2.27	-

3.1.4 A total of two Primary Habitats were recorded as linear-based habitats across the Survey Area which are listed in **Table 3.2**, along with the total length within the Survey Area by each habitat type and whether they are priority habitats.

Table 3.2 - Linear-based Habitat Summary

Primary Habitat Codes	Secondary Habitat Codes	Length (km)	Priority Habitat
f2c Upland flushes, fens and swamps	-	0.56	SBL Habitat: Upland flushes, fens and swamps Highland Nature BAP: Peatland and wetland
r2 - Rivers and lakes	-	0.93	SBL Habitat: Rivers Highland Nature BAP: Freshwater: rivers, burns and lochs

3.1.5 No Primary Habitats were recorded as point features within the Survey Area.

Blanket bog

3.1.6 Blanket bog (f1a5 Blanket bog) was recorded throughout the Survey Area and was often dominated by *Sphagnum* and purple moor-grass whilst abundant species included cross-leaved heath, deergrass and sweet vernal grass. Frequent to occasional species included marsh lousewort, heath milkwort, soft rush, *Polytrichum commune*, hare's-tail cottongrass, tormentil, heather, common cottongrass, common sedge, deer fern, heath rush, marsh violet, wavy-hair grass, marsh thistle and cinquefoil. As shown in **Photo 1** below.





Photo 1: f1a5 Blanket bog

3.1.7 Further blanket bog (f1a Blanket bog) was recorded within the Survey Area that could not be taken beyond level 4 of the UKHab: f1a blanket bog (See **Photo 2** below). This was due to the abundance of ericoid species and therefore did not meet the criteria for f1a5 Blanket bog detailed above. The habitat was often dominated by heather with abundant species including deergrass, *Sphagnum sp.*, purple moor-grass, *Polytrichum commune* and wavy-hair grass. Cross-leaved heath, heath milkwort, tormentil and star sedge were frequent whilst hare's-tail cottongrass, common cottongrass and common sedge were occasional. Additionally, soft rush and marsh violet were recorded as occasional in wetter areas such as along water courses.



Photo 2: f1a Blanket bog

Degraded blanket bog

3.1.8 Degraded blanket bog was recorded to the south of the access road. It was classed as degraded due to the presence of drainage channels from the surrounding works (TN01, 02 and 03), see **Photo 3** below. The habitat was dominated by heather and purple moor-grass whilst abundant species included cross-leaved heath, deergrass and *Sphagnum* species. Occasional species include hare's-tail cottongrass, bog asphodel and bog bilberry.





Photo 3: f1a6 Degraded blanket bog

Upland flushes, fens and swamps

3.1.9 Flushes were recorded throughout the Survey Area as area-based and linear-based habitats depending on size, see **Photo 4** below. Flushes were often dominated by bog pond weed and abundant to occasional species included sweet vernal grass, *Sphagnum* species, *Polytrichum commune*, heather, common cottongrass, soft rush, purple moor-grass, tormentil, marsh violet, deer fern, cross-leaved heath, common sedge, marsh thistle, common butterwort and hare's-tail cottongrass.



Photo 4: f2c Upland flushes, fens and swamps



Dry heaths; upland

3.1.10 Dry heath was recorded throughout the Survey Area, primarily on hillsides where the habitat was naturally drier than the surrounding wetland habitat. Some areas were also subject to burning, see Photo 5. The habitat was dominated by heather and abundant species included feather-moss and reindeer lichen. Rare species included tormentil, purple moor-grass, heath milkwort, deergrass, wavy-hair grass and bog asphodel. Hare's tail and sphagnum was also recorded in wet hollows.



Photo 5: h1b5 Dry heaths; upland

Wet heathland with cross-leaved heath; upland

3.1.11 Wet heath was recorded throughout the Survey Area and was often dominated by heather, purple moor-grass and deergrass (**Photo 6**). Abundant to frequent species include cross-leaved heath, common cottongrass, *Sphagnum* species, heath rush and matgrass.



Photo 6: h1b6 Wet heathland with cross-leaved heath; upland

Rivers and lakes

3.1.12 Torroboll Burn originates at Loch Dailidh n' Airbh c. 1.18 km east of the Survey Area. The burn enters the from the east and bisects the Survey Area (**Photo 7**), travelling north-west towards the River Shin.





Photo 7: r2 Rivers and lakes

Artificial unvegetated, unsealed surface

3.1.13 The tracks to the neighbouring windfarm and OHL within the Survey Area comprised stone.

3.2 Habitat Summary

- 3.2.1 Alignment Option 1 The alignment UGC is located within f1a blanket bog, f1a6 degraded blanket bog, h1b6 wet heathland with cross-leaved heath, upland (H4010) and u1c artificial unvegetated unsealed surface. Of these, h1b6 wet heathland is an Annex I habitat with the remaining habitats (except for u1c artificial unvegetated unsealed surface) SBL priority habitats or fall within a broad habitat action plan within the Highland Nature BAP.
- 3.2.2 Alignment Option 2 The alignment is located within f1a blanket bog, f1a6 degraded blanket bog, h1b6 wet heathland with cross-leaved heath, upland (H4010) and u1c artificial unvegetated unsealed surface. Of these, h1b6 wet heathland is an Annex I habitat with the remaining habitats (except for u1c artificial unvegetated unsealed surface) SBL priority habitats or fall within a broad habitat action plan within the Highland Nature BAP.
- 3.2.3 Alignment Option 3 The alignment is located within f1a blanket bog, f1a5 blanket bog (H7130), f1a6 degraded blanket bog, h1b6 wet heathland with cross-leaved heath, upland (H4010) and u1c artificial unvegetated unsealed surface. Of these, f1a5 blanket bog and h1b6 wet heathland are Annex I habitats with the remaining habitats (except for u1c artificial unvegetated unsealed surface) SBL priority habitats or fall within a broad habitat action plan within the Highland Nature BAP.

3.3 Invasive Non-Native Species

3.3.1 No invasive non-native species were recorded within the Survey Area.



Appendix A – Figures

Figure 1: UKHab Survey Results





Appendix B - Metadata

Table B0.1 : Summary of UKHab Metadata

Metadata heading	Survey metadata
Scope and purpose of the survey	Baseline UKHab survey to inform optioneering report.
Area surveyed	Survey Area = LOD (UGC and 100m buffer) and 250m buffer.
Edition of UKHab Used	UKHab Professional V1.1
The Level of UKHab Primary Hierarchy used	Level 5 as far as reasonably possible
List of secondary code groups recorded	Habitat Mosaic; Management; Origin; Species Feature; and Land Use.
Additional data captured	Habitat Condition Assessment
Map Projection and unit	British National Grid (BNG) in metres.
Organisation undertaking the survey	WSP UK Ltd.



Appendix C – Target Notes

Table C1 : Target Notes

Target Note (TN)	Grid Reference	Description	
01	NC 60465 03536		Drainiage channels along roadside.
02	NC 60316 03424		Drainage channels within peatland.
03	NC 60396 03377		Digging and draingage channnels have disturbed blanket bog around the pylon and along the track.



Target Note (TN)	Grid Reference	Description	
04	NC 60302 03045		Drainiage channels present within degraded blanket bog.



Appendix D – Species List

Table D1 : Species List

Common name	Latin name	
Trees and shrubs		
Scots pine	Pinus sylvestris	
Plants and Mosses		
Bog asphodel	Narthecium ossifragum	
Bog bilberry	Vaccinium uliginosum	
Bog pond weed	Potamogeton polygonifolius	
Cinquefoil	Potentilla sp.	
Common butterwort	Pinguicula vulgaris	
Common cottongrass	Eriophorum angustifolium	
Common sedge	Carex nigra	
Cross-leaved heath	Erica tetralix	
Deer fern	Struthiopteris spicant	
Deergrass	Muhlenbergia rigens	
Feather-moss	Kindbergia praelonga	
Hare's-tail cottongrass	Eriophorum vaginatum	
Heath bedstraw	Galium saxatile	
Heath milkwort	Polygala serpyllifolia	
Heath rush	Juncus squarrosus	
Heather	Calluna vulgaris	
Marsh lousewort	Pedicularis palustris	
Marsh thistle	Cirsium palustre	
Marsh violet	Viola palustris	
Matgrass	Nardus stricta	
Moss	Polytrichum commune	
Moss	Sphagnum sp.	
Purple moor-grass	Molinia caerulea	
Reindeer lichen	Cladonia rangiferina	
Sheep's fescue	Festuca ovina	
Soft rush	Juncus effusus	
Star sedge	Carex echinata	
Sweet vernal grass	Anthoxanthum odoratum	
Tormentil	Potentilla erecta	
Wavy-hair grass	Deschampsia flexuosa	