Strathy Wood Wind Farm Grid Connection

EIA Report:
Non-Technical Summary

November 2024

Scottish & Southern Electricity Networks

TRANSMISSION

CONTENTS

1. INTRODUCTION AND BACKGROUND

1.1 Overview

1.1.1 This Non-Technical Summary (NTS) forms part of the Environmental Impact Assessment Report ('EIA Report') that has been prepared on behalf of Scottish Hydro Electric Transmission plc ("the Applicant") who, operating and known as Scottish and Southern Electricity Networks Transmission ("SSEN Transmission"), own, operate, and develop the high voltage electricity transmission system in the north of Scotland and remote islands.

1.1.2 The EIA Report has been prepared to accompany an application for consent under section 37 of the Electricity Act 1989 ("the 1989 Act"), and deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended) ("the Planning Act"), to construct and operate approximately 4.5 km of new 132 kV double circuit overhead line (OHL), herein after referred to as the Proposed Development, to connect the consented Strathy Wood Wind Farm[1] to the electricity transmission network at Connagill 275/132 kV substation via a 'T' on the existing Strathy North Wind Farm 132 kV trident wood pole OHL.

1.1.3 The Applicant is also seeking deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended) for certain elements of the project, or ancillary development required to facilitate its construction and operation. The ancillary development will include the installation of a cable sealing end (CSE) compound, temporary and permanent access tracks, forestry and vegetation clearance, and temporary working measures/areas.

1.1.4 The Proposed Development would initially transport electricity generated by the consented Strathy Wood Wind Farm (comprising 13 turbines with 62.4MW capacity[2]) but would eventually be utilised as shared infrastructure to facilitate part of the connection requirements for the consented Strathy South Wind Farm Farm (comprising 39 turbines with 208 MW capacity[3]). This phased approach would allow renewable electricity generated by Strathy Wood Wind Farm to be exported to the electricity network sooner, whilst also providing opportunities for shared infrastructure in the longer term.

1.1.5 The Proposed Development is recognised in Scotland's fourth National Planning Framework (NPF4) as a National Development[4] under 'ND3 Strategic Renewable Electricity Generation and Transmission Infrastructure'. It therefore forms a vital element to deliver network and grid infrastructure required to deliver the Government's legally binding targets for net zero emissions and renewable energy electricity generation objectives.

1.1.6 An Environmental Impact Assessment ("EIA") has been undertaken for the Proposed Development in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to assess the likely significant effects of the Proposed Development. The findings of the EIA are presented in the EIA Report, including the measures which would be taken to prevent, reduce and, where possible, offset predicted likely significant adverse effects. The purpose of this document is to provide a summary of the EIA Report findings on a topic by topic basis as structured in the EIA Report, in non-technical language.

1.2 The Proposed Development and Wider Works

1.2.1 Both the consented Strathy Wood and Strathy South wind farms require connection to the electricity transmission network at Connagill 275/132 kV substation by September 2026 and April 2027 respectively. This is in accordance with agreements between SSEN Transmission, National Grid Electricity System Operator (as

[1] Received consent from the Scottish Government in December 2021 (Reference ECU00005239).
[2] Since consent was granted, the Strathy Wood Wind Farm developer has reduced the number of turbines to be constructed to 11.
[3] Received consent from the Scottish Government in December 2021 (Reference ECU00002133).
[4] Given that this development is of a scale that would have otherwise been classified as 'Major' by the Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009.

operator of the National Grid), RWE Renewables (as developers of the consented Strathy Wood Wind Farm) and SSE Renewables (as developers of the consented Strathy South Wind Farm). The Applicant has identified an opportunity to utilise the Proposed Development as shared infrastructure to facilitate part of the connection requirements for Strathy South Wind Farm.

1.2.2 The Proposed Development would commence from a new CSE compound near to Strathy Wood Wind Farm on-site substation and head north to connect to the existing network initially via a 'T' onto the existing Strathy North 132 kV trident 'H' wood pole OHL (referred to as 'the existing 132 kV wood pole OHL') which would transport the electricity generated from Strathy Wood Wind Farm to the existing Connagill 275/132 kV substation for onward transmission. Two trident 'H' wood poles would be constructed to complete what is known as a 'T-in' connection where the new line meets the existing Strathy North trident 'H' wood pole 132 kV OHL.

1.2.3 Following construction of a new steel lattice OHL, from within the vicinity of the 'T-in' point to Connagill 275/132 kV substation (referred to as "the Strathy South Wind Farm 'Northern Section' Grid Connection"), the Proposed Development would then join that new steel lattice OHL at the 'T' point. This would allow the Proposed Development to also act as 'shared infrastructure' for part of the connection for the consented Strathy South Wind Farm. The Strathy South Wind Farm 'Northern Section' Grid Connection will be subject to a separate section 37 application.

1.2.4 **Figure 1** provides an overview of the Proposed Development in the context of the consented Strathy Wood and Strathy South wind farms.

Connagill Cluster Grid Connections

1.2.5 The Proposed Development forms part of a wider connection strategy for renewable generation in the area referred to as the Connagill Cluster Grid Connections. The developments that make up the Connagill Cluster Grid Connections include[5] the consented Strathy Wood and Strathy South wind farms, the proposed Melvich Wind Energy Hub (comprising 12 turbines with 57.6 MW capacity plus 42 MW of battery storage) and the proposed Kirkton Energy Park (comprising 11 turbines with 52.8 MW capacity plus 20 MW of battery storage). To facilitate the Connagill Cluster Grid Connections, a new switching station, known as Strathy Switching Station, would also be required. In light of these connection requirements, the Applicant has taken a rationalised approach to these connection requests with the aim of utilising shared infrastructure where practicable.

1.2.6 The proposed technology soution and consenting approach for each grid connection across the cluster is outlined in **Table 1.1**.

[5] 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.

Table 1.1: Connagill Cluster Grid Connections – Proposed Technology Solutions and Consenting Approach

Project	Technology Solution	Description	Consenting Approach
Infrastructure to connect Strathy South and Strathy Wood Wind Farms to Connagill 275/132 kV Substation	132 kV underground cable (referred to in this EIA Report as Strathy South Wind Farm 'Southern Section' Grid Connection)	From Strathy South Wind Farm on-site substation to a CSE compound in the vicinity of Strathy Wood Wind Farm on-site substation.	Anticipated to be Permitted Development under Class 40 1(a) of The Town and Country Planning (General Permitted Development) (Scotland) Order 1992. Submission of a Shadow Habitat Regulations Appraisal (HRA). Anticipated to be submitted in spring 2025.
	132 kV OHL supported by steel structure (referred to in this EIA Report as the Proposed Development)	From a new CSE compound near to Strathy Wood Wind Farm on-site substation a new double circuit 132 kV OHL would head north to connect to the existing network via a 'T' onto the existing Strathy North 132 kV trident 'H' wood pole OHL. This OHL would transport the electricity generated from Strathy Wood Wind Farm initially to Connagill 275/132 kV substation for onward transmission.	Section 37 of the Electricity Act 1989.
	132 kV OHL supported by steel structure (referred to in this EIA Report as Strathy South Wind Farm 'Northern Section' Grid Connection)	Due to the combined generating capacity of the consented Strathy South and Strathy Wood wind farms, the shared connection would be unable to utilise the existing 132 kV wood pole OHL to Connagill 275/132 kV substation (as per the Proposed Development). Instead, a new section of double circuit 132 kV OHL would continue the connection from within the vicinity of the 'T' point to Connagill 275/132 kV substation. A new 12.5 km double circuit 132 kV OHL supported by steel structures would therefore be constructed to continue the connection between the Strathy North 'T' (at Dallangwell) to Connagill 275/132 kV substation. A section of OHL would be capable of operating at 275 kV in the future, if required. Upon completion of this OHL, electricity generated by Strathy Wood, Strathy South and Strathy North wind farms would be transferred over to the new structure and redundant parts of the existing 132 kV wood pole OHL removed (see below).	Section 37 of the Electricity Act 1989. Application for consent anticipated to be submitted in spring 2025.

Project	Technology Solution	Description	Consenting Approach
Infrastructure to connect Melvich Wind Energy Hub to Connagill 275/132 kV Substation	132 kV underground cable	From Melvich wind farm on-site substation to the existing Strathy North 132 kV trident 'H' wood pole OHL (section to be retained).	Anticipated to be Permitted Development under Class 40 1(a) of The Town and Country Planning (General Permitted Development) (Scotland) Order 1992. The requirement for a CSE structure would fall under ancillary development of the section 37 submission for the Strathy South Wind Farm 'Northern Section' Grid Connection.
Infrastructure to connect Kirkton Energy Park to Connagill 275/132 kV Substation	132 kV trident wood pole OHL	The works would include a short span (<1 km) of single circuit 132 kV trident wood pole OHL between Kirkton wind farm substation and a 'T' on the existing Strathy North 132 kV trident 'H' wood pole OHL (section to be retained).	Section 37 of the Electricity Act 1989. Application for consent anticipated to be submitted in autumn 2025.
Existing Strathy North 132 kV OHL	132 kV trident wood pole OHL	Once the Strathy South Wind Farm 'Northern Section' Grid Connection is constructed, to further rationalise the project, a section of the the existing Strathy North 132 kV trident H-wood pole OHL would be removed to a point in proximity of Melvich Wind Energy Hub on-site substation. The section of wood pole OHL that would remain in place would be re-purposed for use by the Melvich and Kirkton Grid Connections into Connagill 275/132 kV substation.	This would fall under ancillary development of the section 37 submission for the Strathy South Wind Farm 'Northern Section' Grid Connection.
Strathy Switching Station	Switching station	To facilitate the four connections, a new switching station would be required to collect all incoming circuits onto a double busbar before taking these through the double circuit 132 kV OHL supported by steel structure.	Town and Country Planning (Scotland) Act 1997. Applicaiton for planning permission anticipated to be submitted in autumn 2025.

1.2.7 Further information on the Connagill Cluster Grid Connections is available at: Connagill Cluster Wind Farm Connections - SSEN Transmission (ssen-transmission.co.uk). These grid connections are considered in this EIA Report where relevant within the cumulative assessments.

1.3 EIA Report Structure

1.3.1 The EIA Report consists of the following volumes:

- Volume 1: Main Report;
- Volume 2: Figures;
- Volume 3a: Visualisations (NatureScot guidelines)[6];
- Volume 3b: Visualisations (The Highland Council guidelines);[7];
- Volume 4: Appendices to support each of the Chapters in the EIA Report where required; and
- Non-Technical Summary.

1.3.2 A Planning Statement is also included with the application as supporting documentation. The Planning Statement considers the compatibility of the Proposed Development in the context of the development plan and national energy and planning policies.

1.4 Notifications

1.4.1 In accordance with the Electricity (Applications for Consent) Regulations 1990, and Regulation 14 of the EIA Regulations, the application and the EIA Report will be advertised in the John O'Groats Journal and the Northern Times newspapers. Adverts will also be placed in the Edinburgh Gazette and on the Applicant's website.

1.4.2 Notice of the section 37 application, including this EIA Report and associated documents and figures, will be available for viewing at West End Stores and Melvich Post Office, Melvich, Portskerra, Thurso, KW14 7YL (normal opening hours Monday to Friday 8.30am to 5.30pm and Saturday 9am to 5pm).

1.4.3 An electronic version of the EIA Report is available online at: https://www.ssen-transmission.co.uk/projects/project-map/Connagill-Cluster/

1.4.4 This EIA Report is available in other formats if required. For details, including costs, contact:

James Harris
Consents and Environment Manager
Scottish and Southern Electricity Networks
Inveralmond House
200 Dunkeld Road
Perth
PH1 3AQ

Email: james.jh.harris@sse.com

[6] NatureScot (Formerly Scottish Natural Heritage (SNH)), (2017), Visual Representation of Wind Farms (Version 2.2) (SNH, 2017)
[7] The Highland Council (THC), (2016), Visualisation Standards for Wind Energy Developments (THC, 2016)

2. THE ROUTEING PROCESS AND ALTERNATIVES

2.1 Introduction

2.1.1 The Proposed Development has been subject to a routeing process to establish a proposed route[8], alignment[9] and design solution that was determined to provide an optimum balance of environmental, technical and economic factors. This process included a programme of consultation at both routeing and alignment stage, designed to engage with key stakeholders in order to invite feedback on the rationale for, and approach to, the selection of the final alignment and design solution of the Proposed Development. Further review of the Proposed Development during the EIA stage of the project has also led to further refinements to minimise potential environmental effects.

2.2 A Rationalised Approach

2.2.1 As mentioned, the Proposed Development forms part of the Connagill Cluster Grid Connections which, following a review of the various technology options available, resulted in the Applicant identifying a rationalised approach across the other grid connections that make up the Connagill Cluster Grid Connections.

2.2.2 As part of the rationalised approach for the Strathy Wood and Strathy South wind farm grid connections, the Applicant considered the use of either a single steel structure OHL (to carry both connections) or two separate parallel trident wood pole OHLs for each connection.

2.2.3 Appraisal of these options considered the environmental, technical and economic constraints and concluded that combining the connections onto one OHL supported by steel structures was the optimal solution. This was primarily due to a trident 'H' wood pole OHL being unable to carry a standard conductor (UPAS) at the capacity of the consented Strathy South Wind Farm (208 MW). An OHL supported by a steel structure (steel lattice tower) would be able to carry conductors that are capable of carrying a much larger capacity and have the additional benefit of providing an opportunity for futureproofing. It was therefore concluded that a steel lattice tower would be the optimal OHL design solution to be considered at routeing and alignment stage for the Proposed Development. Underground cable (UGC) design solutions were also considered, as further explained below.

2.3 Approach to Route and Alignment Selection

2.3.1 Guidelines for the routeing of new high voltage OHLs have been established within the electricity supply industry. These guidelines are known as the 'Holford Rules' and have been widely used throughout the UK since the 1960s. The 'Holford Rules' set out a hierarchical approach to routeing which advocates avoiding areas of high amenity value, minimise changes in direction, takes advantage of topography and minimises visual interaction with other transmission infrastructure.

2.3.2 SSEN Transmission has developed its own guidance, based on the principles set out in the Holford Rules, but broadening the basis for routeing decisions to reflect contemporary practice, and providing a framework to ensure environmental, technical and economic considerations are identified and appraised at each stage of the routeing process.

2.3.3 The approach to route and alignment selection has therefore been informed by the Applicant's routeing guidance, which splits the routeing stage of a project into four principal stages, as follows:

- Stage 0: Routeing Strategy Development;

[8] A linear area of approximately 1 km width (although this may be narrower/wider in specific locations in response to identified constraints), which provides a continuous connection between defined connection points.
[9] A centre line of an overhead line or UGC.

- Stage 1: Corridor Selection;
- Stage 2: Route Selection; and
- Stage 3: Alignment Selection.

2.3.4 Each stage is an iterative process and involves an increasing level of detail and resolution, bringing cost, technical and environmental considerations together in a way which seeks to achieve the best balance at each stage. The stages that are carried out can vary depending on the type, nature of and size of a project and consultation is carried out at each stage of the process, where relevant. Each stage is described in further detail in the following sections.

Routeing Strategy Development (Stage 0)

2.3.5 During the Routeing Strategy Development stage, the Applicant considered the proposed strategy for the routeing stage of the project and confirmed which stages, as set out within SSEN Transmission's guidance, are applicable to the Proposed Development.

Corridor Selection (Stage 1)

2.3.6 The Corridor Selection stage occurred simultaneously with Stage 2: Route Selection. An Area of Search[10] was identified within which the identification and appraisal of feasible route options could be considered.

Route Selection (Stage 2)

2.3.7 The route selection stage of the project involved the identification of route options and an appraisal of environmental, technical and economic constraints of the route options, prior to arriving at an optimal route for the purposes of consultation and a proposed route to take forward to the alignment selection stage (Stage 3).

2.3.8 Route options were initially identified following desk-based review and site walkovers. Appraisal of route options involved systematic consideration against a number of environmental, technical and economic topic areas, in line with SSEN Transmission guidance. A Red-Amber-Green (RAG) rating was applied to each topic area for each route option, indicating potential constraint to development (red indicating high potential for the development to be constrained, amber intermediate potential and green low potential).

Alignment Selection (Stage 3)

2.3.9 The alignment selection stage of the project sought to determine an alignment (subject to a Limit of Deviation (LoD) of approximately 100 m) within the proposed route identified during the route selection stage of the project. When identifying and appraising alignment options for Stage 3, localised constraints needed to be considered.

2.4 Route Selection (Stage 2): Summary of Appraisal and Reporting

2.4.1 Given the rationalised approach to shared infrastructure beyond the Strathy Wood Wind Farm on-site substation (hereafter referred to as Strathy Wood substation), the route selection stage for the Proposed Development considered the connection requirements for both the Strathy Wood and Strathy South wind farms.

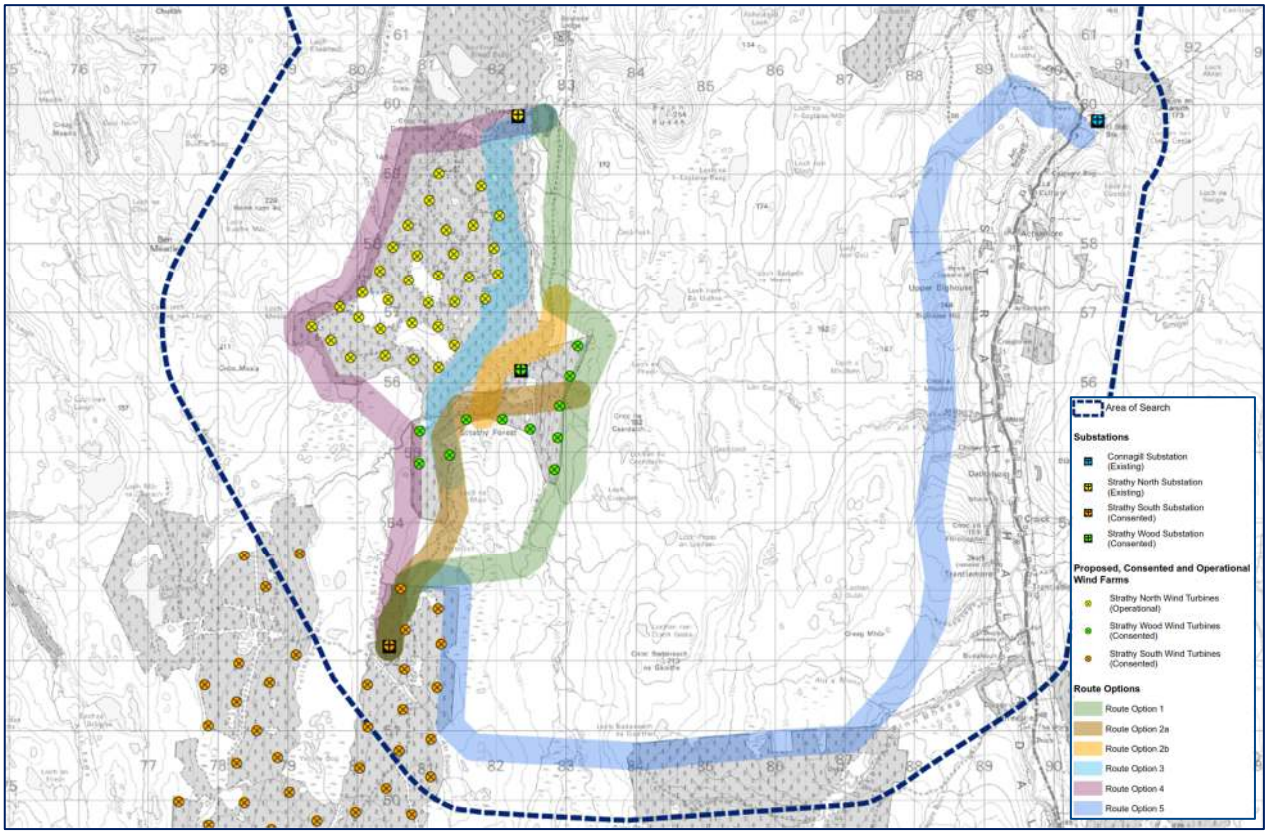
2.4.2 During routeing studies, SSEN Transmission identified six route options between the Strathy South Wind Farm on-site substation (hereafter referred to as Strathy South substation) and Strathy North substation, based on initial desk-based review and knowledge of the site, as displayed on **Plate 2.1.**

2.4.3 The appraisal assumed the use of UGC technology between Strathy South substation and Strathy Wood substation for Route Options 2a and 2b, and the entirety of Route Option 3. This design choice was primarily

[10] The area within which the route study takes place between the connection points and taking into consideration known constraints including topography, altitude and features of environmental sensitivity

driven by the presence of sensitive diver species in the locality to these route options and early consultation with NatureScot whom indicated that OHL in this locality would not be appropriate as a result of the presence of the sensitive diver species. In addition, due to the proximity of the turbines associated with the consented Strathy South and Strathy Wood wind farms to Routes Options 2a and 2b and the operational turbines of Strathy North Wind Farm to Route Option 3, it was considered that these would pose a challenge in selection of an OHL alignment and being able to maintain the required separation distances. Elsewhere, and for all other route options, the appraisal considered use of OHL (steel lattice tower).

Plate 2.1: Route Options



2.4.4 The comparative appraisal included within the Connagill Cluster Grid Connections Consultation Document (Routeing Stage)[11] noted that whilst Route Option 3 was identified as the optimal environmental option given it traverses the shortest length of the designated sites, from a technical and safety perspective this route option was considered not to be viable. The main reason for this being that Route Option 3 passes through the operational Strathy North Wind Farm and as the technology solution for this route option would make use of UGC, this makes the interface with the existing wind turbine cables very challenging, particularly to establish the required construction corridor width and would require additional infrastructure elements to support an UGC, thereby increasing the potential environmental impacts of this option.

2.4.5 Both Route Options 2a and 2b have reduced presence within the natural heritage designations compared with other options, and they both offer opportunities at Stage 3: Alignment Stage to minimise adverse effects on the qualifying habitats of the Caithness and Sutherland Peatlands Special Area of Conservation (SAC) by selecting an alignment which closely follows the existing access track and associated disturbed land adjacent. Route Option 2b is located closer to the existing access track in the vicinity of Strathy Wood substation compared to Route Option 2a, which would provide opportunities to reduce the requirements for new track infrastructure

[11] Connagill Cluster Grid Connections: Consultation Document (Route Stage) (December 2023), produced by SSEN Transmission. Available at https://www.ssen-transmission.co.uk/globalassets/projects/connagill-cluster-documents/connagill-cluster-grid-connections---routeing-consultation-document.pdf

(particularly within the natural heritage designation and the steeper ground to the west and north of Strathy Wood substation). However, particular constraints were identified within Route Option 2b, including the regionally important heritage site, Brarathy township, and the proximity to the River Strathy and associated flooding zone. As such, both **Route Options 2a and 2b** were presented as the Optimal Route for consultation, to allow consideration of all potential alignment options in the vicinity of Strathy Wood substation.

2.4.6 Route Options 4 and 5 could only carry one circuit and would not permit infrastructure to be rationalised and, therefore, both route options were discounted from further appraisal.

2.4.7 The conclusions of the routeing study also recommended that through the constrained section of the Optimal Route, as it passes within the Caithness and Sutherland Peatlands Special Protection Area (SPA) between Strathy South substation and Strathy Wood substation, the connection should utilise UGC technology to minimise impacts on nearby sensitive qualifying diver species. Similarly, the study recommended the use of UGC when in proximity to the turbines associated with the consented Strathy South and Strathy Wood wind farms, to avoid construction challenges of being able to maintain the required separation distances.

2.4.8 The route selection stage reporting and consultation process was designed to engage with stakeholders including statutory and non-statutory consultees, local communities, landowners and individual residents in order to invite feedback on the rationale for and approach to, the selection of the Optimal Route. SSEN Transmission aimed to streamline the consultation and routeing process of the Connagill Cluster Grid Connections, for which this grid connection was part of. This was to allow stakeholders the opportunity to review the Cluster as a whole, allowing the opportunity to consider the consolidation of infrastructure and construction practices where practicable.

2.4.9 Consultation responses received from statutory consultees (NatureScot and RSPB) noted a preference for Route Option 3 (which was the environmental preference documented in the Consultation Document (Routeing Stage)) as it largely avoids the Caithness and Sutherland Peatlands SPA, SAC and Ramsar site, compared to the Optimal Route (Route Options 2a and 2b), thereby helping to maintain the SAC and SPA conservation objectives. However, due to technical and safety constraints with routeing a grid connection through an operational wind farm, the Report on Consultation (Routeing Stage)[12] outlined that Route Option 3 was considered not to be viable (as noted in paragraph 2.4.4). It was considered the Optimal Route would have a reduced presence within the natural heritage designations compared with other route options, and they both offer opportunities at alignment stage to minimise adverse effects on the qualifying habitats of the Caithness and Sutherland SAC by selecting an alignment which closely follows the existing access track and associated disturbed land adjacent to the track.

2.4.10 The reporting on the route stage consultation process concluded with the confirmation that the Optimal Route identified within the Route Stage Consultation Document[11] would be taken forward to the alignment selection stage as the Proposed Route. The route option put forward as the Proposed Route was therefore **Route Option 2a and 2b,** which would comprise a combination of 132 kV UGC between Strathy South substation and Strathy Wood substation and 132 kV double circuit OHL supported by steel lattice towers between Strathy Wood substation and Strathy North substation near Dallangwell. All comments at route stage were taken forward into the alignment stage. This process remained inclusive, seeking further consultation where appropriate.

2.5 Alignment Selection (Stage 3): Summary of Appraisal and Reporting

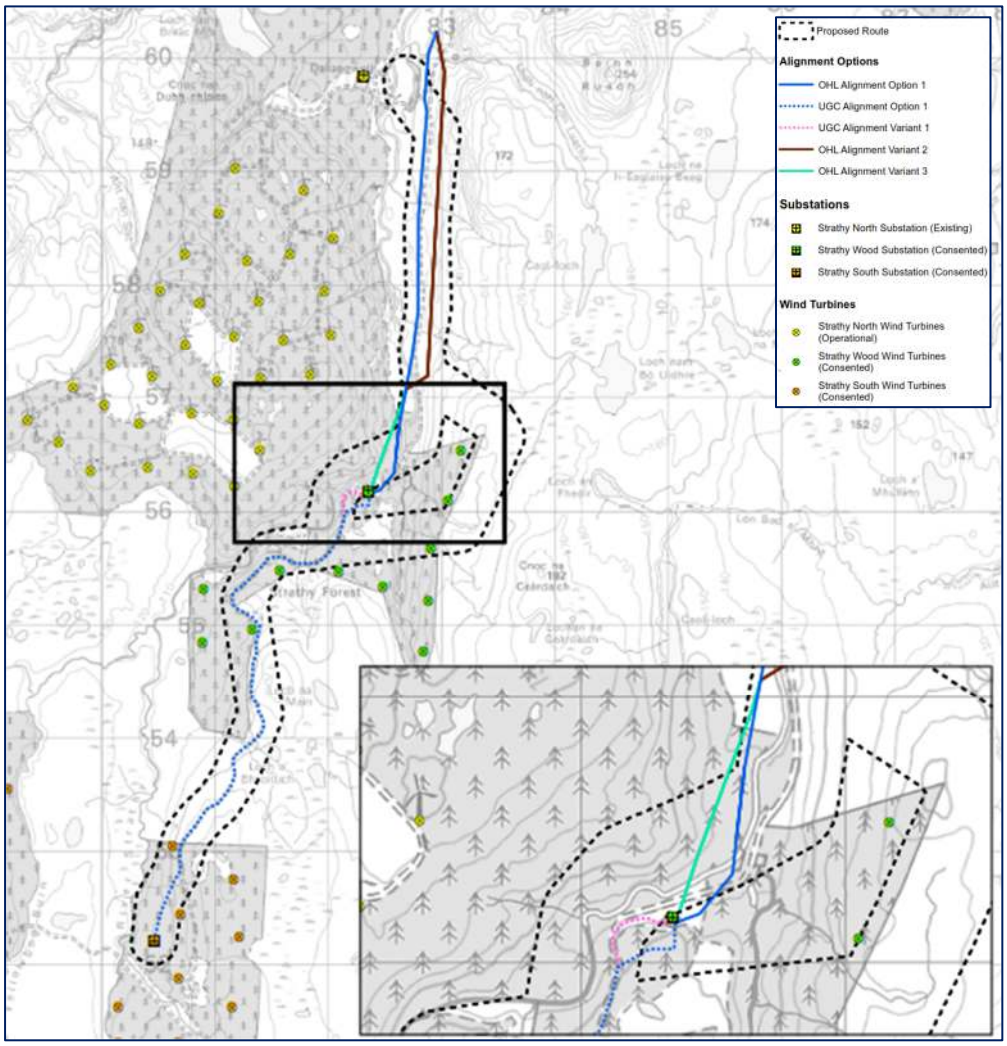
2.5.1 One technically feasible and economically viable alignment option was identified within the Proposed Route based on the key environmental and engineering constraints identified during Stage 2: Route Selection. This

[12] Connagill Cluster Grid Connections: Report on Consultation (Routeing Stage) (April 2024), produced by SSEN Transmission. Available at: https://www.ssen-transmission.co.uk/globalassets/projects/connagill-cluster-documents/2024-consultation-documents/report-on-consultation-routeing-stage---connagill-cluster---april-2024.pdf

was referred to as Alignment Option 1. Given the narrow width of the Proposed Route (at 400 m) and known constraints and opportunities, there was limited scope for alternative alignments to be considered. However, a number of variants branching from Alignment Option 1 were developed, namely, to consider how to navigate around Strathy Wood substation, crossing of the River Strathy, and traversing natural heritage designations.

2.5.2 One baseline alignment (Alignment Option 1) and three alignment variants were included at alignment consultation stage and summarised in the Consultation Document (Alignment Stage)[13], as displayed on **Plate 2.2.**

Plate 2.2: Proposed Route and Alignment Options



2.5.3 Various constraints were taken into account to reach an optimal alignment across environmental and technical considerations. The comparative appraisal agreed in identifying Alignment Variant 1 (UGC) as optimal over the comparable section of Alignment Option 1 (UGC), on approach to Strathy Wood substation, despite crossing slightly more elevated terrain which may result in installation being slightly more challenging, however, it would allow infrastructure to be outwith an area of native woodland. A combination of Alignment Option 1 (UGC) and Alignment Variant 1 (UCG) was considered optimal between Strathy South substation and Strathy Wood substation.

[13] Connagill Cluster Grid Connections: Consultation Document (Alignment Stage) (May 2024), produced by SSEN Transmission. Available at: https://www.ssen-transmission.co.uk/globalassets/projects/connagill-cluster-documents/2024-consultation-documents/conngaill-cluster-grid-connections---alignment.pdf

2.5.4 Between Strathy Wood substation and Strathy North substation Alignment Option 1 transitioned to OHL, referred to as Alignment Option 1 (OHL). Two alignment variants were developed, as displayed on **Plate 2.2,** to consider how best to traverse natural heritage designations (Alignment Variant 2 (OHL)) and crossing of the River Strathy (Alignment Variant 3 (OHL)) compared to Alignment Option 1 (OHL). The comparative appraisal agreed in identifying both Alignment Variants 2 (OHL) and 3 (OHL) to be optimal, from both an environmental and engineering perspective, over the comparable sections of Alignment Option 1 (OHL). The area east of the existing wind farm track, through which Alignment Variant 2 (OHL) would traverse, is considered to be less sensitive than those to the west. The habitats are present 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 access track. 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. Being further from the River Strathy means that both Alignment Variants 2 (OHL) and 3 (OHL) would cross less of the mapped floodplain, and while Alignment Variant 3 (OHL) may bring development closer to regionally significant heritage assets, through careful placement of towers and application of measures during construction, it was not considered that it would be a constraint to development. A combination of Alignment Variant 3 (OHL) and Alignment Variant 2 (OHL) was considered optimal between Strathy Wood substation and Strathy North substation.

2.5.5 The main cost considerations present are technology (OHL or UGC), length and access. Given the design solution and length of each comparative variant were similar to the baseline alignment there was no material cost differential between each alignment option and as such, costs were not assessed in detail as part of the alignment selection process but were considered during development design meetings.

2.5.6 The Optimal Alignment to be taken forward to consultation was a combination of Alignment Option 1 (UGC), Alignment Variant 1 (UGC), Alignment Variant 3 (OHL) and Alignment Variant 2 (OHL). It was considered that this would provide an optimum balance of environmental and technical factors.

2.5.7 However, it should be noted that only **Alignment Variant 3 (OHL) in combination with Alignment Variant 2 (OHL)** is of relevance to the Proposed Development. Alignment Option 1 (UGC) and Alignment Variant 1 (UGC) will form the Strathy South Wind Farm 'Southern Section' Grid Connection, which, as set out in **Table 1.1**, is anticipated to be permitted development under Class 40 1(a) of The Town and Country Planning (General Permitted Development) (Scotland) Order 1992.

2.5.8 SSEN Transmission once again streamlined the alignment stage consultation with other grid connections proposed as part of the Connagill Cluster Grid Connections. No comments were raised by stakeholders or members of the public on the Optimal Alignment and the reporting on the consultation process[14] concluded that the Optimal Alignment identified would be taken forward to the EIA and consenting stage as the Proposed Alignment**.**

[14] Connagill Cluster Grid Connections: Report on Consultation (Alignment Stage) (September 2024), produced by SSEN Transmission. Available at: report-on-consultation-alignment-stage-september-2024.pdf (ssen-transmission.co.uk)

3. THE PROPOSED DEVELOPMENT

3.1 Project Overview

3.1.1 The Proposed Development would commence from a new CSE compound near to Strathy Wood Wind Farm on-site substation. From the CSE compound, approximately 4.5 km of 132 kV double circuit OHL supported by steel lattice towers would head north to connect to the existing network via a 'T' onto the existing Strathy North 132 kV trident 'H' wood pole OHL, which would transport the electricity generated from Strathy Wood Wind Farm to the existing Connagill 275/132 kV substation for onward transmission. Two trident 'H' wood poles would be constructed to complete the 'T-in' connection with the existing Strathy North 132 kV trident 'H' wood pole OHL.

3.1.2 It is assumed that delivery of all construction materials and components for use at the Proposed Development, would be delivered from the east, via the A9 and A836 public road network and would make use of an existing junction (located approximately 1 km east of Strathy) onto an existing track leading to Strathy South Wind Farm. The formation of new access tracks would be required to facilitate both the construction and, in places, the maintenance of the Proposed Development, as new stone 'spur' tracks (permanent and temporary) to access each steel tower from the existing track.

3.2 Development for which Section 37 Consent and deemed planning permission is sought

3.2.1 The Proposed Development would include the following works, for which Section 37 consent under the 1989 Act, including deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended), is sought:

- The installation and operation of approximately 4.5 km of new double circuit 132 kV OHL supported by steel lattice towers; and
- The installation and operation of 2 No. trident wood poles (H Poles) and downlead spans of up to 18 m from each pole, for connection onto the existing 132 kV trident 'H' wood pole OHL.

3.3 Ancillary Development for which Deemed Planning Permission is sought

3.3.1 The following works would be required as part of the Proposed Development, or to facilitate its construction and operation:

- The construction of a CSE compound to facilitate the transition between OHL and UGC[15] to be situated at approximate Ordnance Survey (OS) grid reference NC 82363 56167 which is positioned in the vicinity of the consented Strathy Wood Wind Farm on-site substation;
- The formation of access tracks (permanent and temporary) and the installation of culverts to facilitate access and ongoing maintenance where required;
- Working areas around infrastructure (i.e. around individual tower and pole foundations) to facilitate construction;
- Tree felling and vegetation clearance to facilitate construction and operation of the proposed access tracks, to comply with the Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002[16]; and
- Temporary measures to protect water crossings (e.g. scaffolding and temporary bridges).

[15] UGC elements are associated with the Strathy South wind Farm Grid Connection and are anticipated to be classed as permitted development under Class 40 1(a) of The Town and Country Planning (General Permitted Development) (Scotland) Order 1992.
[16] The Electricity Safety, Quality and Continuity Regulations (2002), available at https://www.legislation.gov.uk/uksi/2002/2665/contents/made

3.4 Limits of Deviation

3.4.1 In general terms, a Limit of Deviation (LoD) defines the maximum extent within which a development can be built. In the case of the Proposed Development, a prescribed horizontal LoD is required for each of the key components of the project to allow flexibility in the final siting of individual towers, UGCs and access tracks to reflect localised land, engineering, and environmental constraints. A vertical LoD, i.e. the maximum height of a pole / tower above ground level, is also sought to allow a height increase or decrease on the proposed indicative pole / tower height presented in the EIA Report.

3.5 Description of Overhead Line (OHL)

Steel Lattice Towers

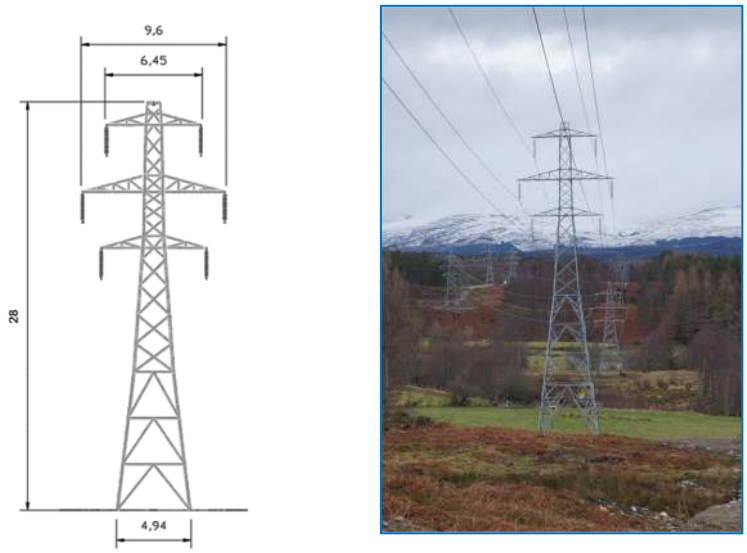
3.5.1 The 19 No. steel lattice towers that form part of the Proposed Development would be constructed from fabricated galvanised steel and would be grey in colour. The towers would likely comprise a 'L7c' series of steel lattice tower (an example schematic and photograph of which is shown in **Plate 3.1** overleaf). Three types of tower are proposed to be used, as described below:

- Suspension towers: these are used for straight sections of OHL where there is no need to terminate the conductor. There are 15 No. suspension towers proposed;
- Angle / tension towers: these are typically used where there is a need to change the orientation of the OHL. There are 3 No. angle / tension towers proposed; and
- Terminal towers; where the OHL transitions to UGC, via a CSE. There is 1 No. terminal tower proposed.

3.5.2 The towers would carry two circuits, each with three conductors supported from either glass, porcelain, or composite insulators attached to the horizontal cross arms on both sides of each steel lattice tower. An Optical Ground Wire (OPGW)[17] would be suspended between tower peaks, above the conductors.

3.5.3 The span length (distance between towers) would vary slightly depending on topography and land usage. Typically, the span lengths for the Proposed Development would be between approximately 200 - 280 m. Tower heights would also vary, depending on local topography, but would typically be in the region of approximately 26 m to 36 m in height. The average OHL structure height would be approximately 30 m.

Plate 3.1: Example Schematic and Photograph of Steel Lattice Tower Double Circuit (L7c series)



[17] Optical Ground Wire is a dual functioning cable, providing a 'shield' to conductors from lightning, whilst also comprising optical cables for telecommunication purposes.

Trident H Wood Poles

3.5.4 The proposed double circuit 132 kV OHL supported by steel lattice towers would connect onto the existing single circuit Strathy North 132 kV trident 'H' wood pole OHL via the construction of two new trident 'H' wood poles.

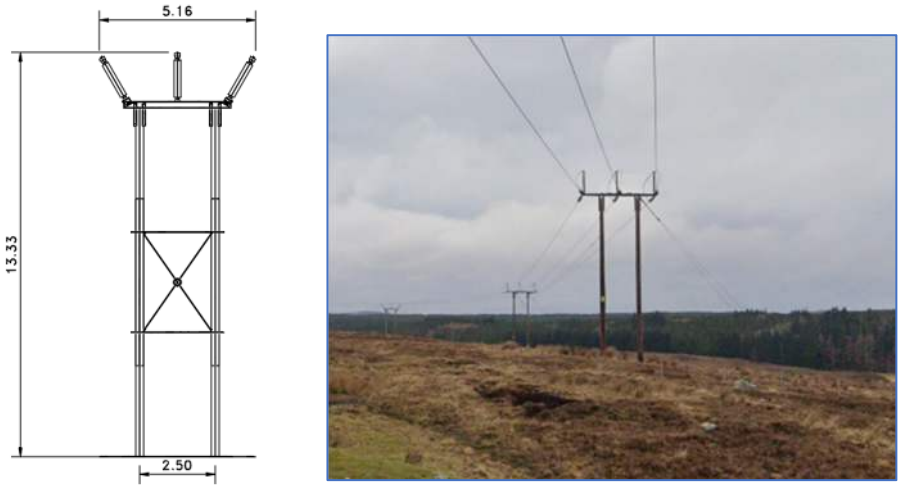
3.5.5 The proposed new trident 'H' wood poles would be installed on the alignment of the existing single circuit 132 kV OHL between existing Pole 128 and Pole 129 (and would be referred to as Pole 128A and 129A) (as illustrated on **Figure 1**). The spacing between the individual poles would be approximately 30 m, but this would be confirmed after a detailed line study.

3.5.6 Downleads of up to 18 m in length would connect the junction tower of the proposed double circuit 132 kV OHL (Tower 19) to each new trident 'H' wood pole.

3.5.7 Each proposed new trident 'H' wood pole would have a nominal height of between approximately 13.5 - 15 m (including insulators and support), depending on ground conditions. Three conductors in horizontal formation and made from aluminium alloy would be strung between each 'H' pole forming a single circuit.

3.5.8 An example schematic and photograph of a trident 'H' wood pole (suspension pole) is shown in **Plate 3.2**.

Plate 3.2: Example Schematic and Photograph of 'H' Wood Pole



3.5.9 The need for the two new trident 'H' wood poles to 'T' onto the existing Strathy North 132 kV OHL would allow electricity generated by Strathy Wood Wind Farm to be transported to the existing Connagill 275/132 kV Substation for onward transmission, however this would be a temporary arrangement. Following construction of a separate new 132 kV double circuit OHL from within the vicinity of the 'T' point to Connagill 275/132 kV Substation (known as the Strathy South Wind Farm 'Northern Section' Grid Connection (see **Table 1.1**) and subject to a separate section 37 application), the Proposed Development would join that new double circuit steel lattice OHL at the 'T' point.

3.5.10 Electricity generated by the operational Strathy North Wind Farm and consented Strathy Wood and Strathy South wind farms would then be transported to Connagill 275 / 132 kV Substation via the proposed double circuit 132 kV OHL. At this point, one of the new trident 'H' wood poles (Pole 128A) proposed as part of the Proposed Development, plus approximately 8 km of the existing Strathy North 132 kV trident 'H' wood pole OHL (north of Pole 128A), would be dismantled and removed. The dismantling works would form ancillary works of the Strathy South Wind Farm 'Northern Section' Grid Connection section 37 application, for which deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997 would be sought. The second new trident 'H' wood pole (Pole 129A), plus the existing Strathy North 132 kV trident 'H'

wood pole OHL up to this point, would remain in-situ to allow Strathy North Wind Farm to join the (separately proposed) double circuit 132 kV OHL.

3.1 Description of Cable Sealing End Compounds

3.1.1 One CSE compound would be required to facilitate the transitions from UGC (required as part of the Strathy South Wind Farm 'Southern Section' Grid Connection that will eventually share this proposed grid connection with Strathy Wood Wind Farm) to OHL. This would be located in the vicinity of Strathy Wood Wind Farm on-site substation at approximate OS grid reference NC 82363 56167 (see **Figure 1**).

3.1.2 The compound would require a level area of approximately 40 m x 30 m. Ground works, including a cut-fill exercise, would be required at the proposed site to achieve a level area of this size. Due to the hazards associated with live electricity, the compound would be secured by installing fencing and gates around its perimeter, usually of 2.4 m in height. Within the CSE compound there would be a terminal tower, and associated gantry infrastructure. A permanent access track would also be required.

3.1.3 The plant required to facilitate the transition between UGC and OHL is shown in **Plate 3.3**, and an example photo of a CSE compound is shown in **Plate 3.4**.

Plate 3.3: Overhead Line to Cable Transition

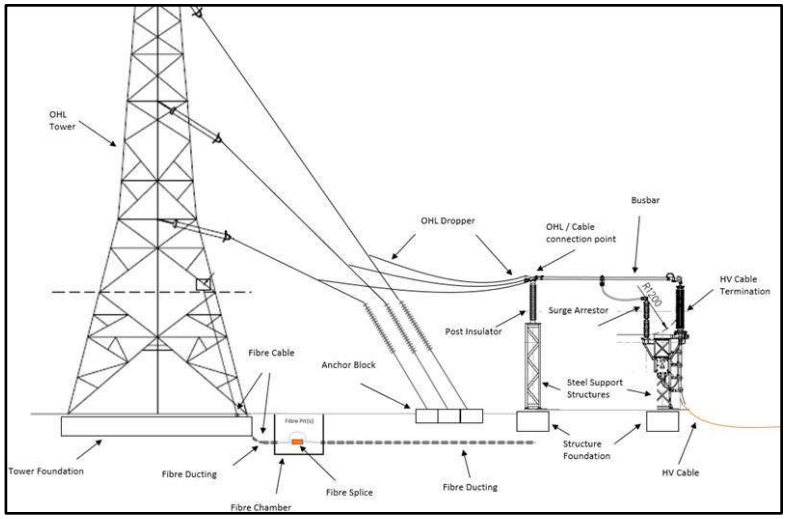


Plate 3.4: Example of a Cable Sealing End Compound

3.2 Associated Works

3.2.1 Other associated works are required to facilitate construction of the Proposed Development or would occur as a consequence of its construction and operation. These works, listed below, do not form part of the description of the Proposed Development and are therefore not included in the application for statutory consents. On that basis they are not, therefore, assessed in detail in this EIA Report. The associated works are:

- Borrow pits and quarries which would be required to source stone for the construction of access tracks. Separate planning applications for these works would be sought by the Principal Contractor;
- Temporary construction compounds which would be required to facilitate construction of the Proposed Development. The final location and design of temporary site compounds would be confirmed by the Principal Contractor and separate planning permissions would be sought as required;
- Modification of the existing distribution network in some areas to accommodate the new OHL. These works are likely to comprise the diversion of short sections of underground cables within the vicinity of the Proposed Development and would be undertaken by Scottish Hydro Electric Power Distribution (SHEPD). Consent would be sought by SHEPD as required; and
- Wider elements associated with the Connagill Cluster Grid Connections and Strathy switching station. Separate consents would be sought by the Applicant for these developments, as set out in **Table 1.1**. These developments are considered in this EIA Report where relevant in the cumulative assessments.

3.3 Construction Programme and Working Hours

3.3.1 It is anticipated that construction of the project would take place over a 12 month period, following the granting of consents, although detailed programming of the works would be the responsibility of the Principal Contractor in agreement with SSEN Transmission.

3.3.2 Construction activities would in general be undertaken during daytime periods. Weekend working would also be proposed with timings to be confirmed by the Principal Contractor in due course. Working hours are anticipated 7 days a week between approximately 07.00 to 19.00 March to September and 07.30 to 17.00 (or within daylight hours) October to February. Working hours would be confirmed by the Principal Contractor and agreed with The Highland Council as planning authority. As working hours would be during daytime periods only, any external lighting requirements during construction are anticipated to be minimal.

3.3.3 SSEN Transmission considers it important to act as a responsible developer with regards to the communities which host the construction works. The delivery of a major programme of capital investment provides the opportunity to maximise support of local communities. Employment of construction staff would be the responsibility of the Principal Contractor; however, the Applicant would encourage the Principal Contractor to make use of suitable labour and resources from areas local to the Proposed Development where possible.

3.4 Environmental Management during Construction

3.4.1 During construction, best practice measures will be applied, including the implementation of General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs) developed by the Applicant. A CEMP will be developed and implemented by the Principal Contractor as a contractual requirement, aiming to avoid, minimise, and control adverse environmental impacts associated with the project. Monthly inspections and quarterly audits by SSEN Transmission will ensure CEMP compliance, managed on-site by an Environmental Clerk of Works (EnvCoW) and supported by other environmental professionals where required.

Reinstatement

3.4.2 Reinstatement works are generally undertaken during construction (and immediate post-construction phase) and aim to address any areas of ground disturbance and changes to the landscape as part of the construction works. Such works would involve the reinstatement of areas disturbed during the construction phase.

3.4.3 An outline site 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. In more sensitive areas, further site-specific measures are required to ensure successful reinstatement, including site specific soil and peat management measures, and the employment of specialist advisers (i.e. Ecological Clerk of Works (ECoW)).

SSEN Transmission's Biodiversity Ambition

3.4.4 Biodiversity Net Gain (BNG) ensures that nature is left in a better state after development, achieved through a toolkit developed by SSEN Transmission based on the Natural England Biodiversity Metric. This toolkit quantifies biodiversity by habitat value, allowing assessment of development projects' impact on biodiversity post-construction. SSEN Transmission is committed to minimising environmental impacts by ensuring natural environment considerations are considered throughout project development stages, utilising mitigation hierarchy to avoid impacts, contributing positively to biodiversity strategies, and collaborating with the supply chain for maximum benefit. As part of this approach, SSEN Transmission has made commitments to ultimately ensure a 10% net gain for biodiversity in line with the Applicant's biodiversity ambition and environmental legacy commitments[18], Sustainability Strategy[19] and Sustainability Plan[20].

3.5 Operation and Maintenance

3.5.1 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.

3.5.2 During the operation of the Proposed Development, it would be necessary to manage vegetation to maintain required safety clearance distances from infrastructure.

3.6 Decommissioning the Proposed Development

3.6.1 If the Proposed Development were to be decommissioned all components of the OHL, inclusive of steel from the towers, conductors and fittings, would be removed from site and either recycled or disposed of appropriately.

3.6.2 A method statement would be agreed with The Highland Council setting out the detail of the decommissioning process for the OHL.

3.6.3 Efforts would be made to repurpose the Proposed Development for future connections prior to any decommissioning. Consent to be applied for is therefore in perpetuity.

[18] SSEN Transmission (2023). Delivering a positive environmental legacy. https://www.ssen-transmission.co.uk/globalassets/documents/sustainability-and-environment/environmental-legacy-booklet

19 Delivering a smart, sustainable energy future: The Scottish Hydro Electric Transmission Sustainability Strategy (2018) https://www.ssen-transmission.co.uk/media/2701/sustainability-strategy.pdf

20 Our Sustainability Plan: Turning Ambition into Action. (2019) SHE Transmission. https://www.ssen-transmission.co.uk/media/3215/our-sustainability-plan-consultation-report.pdf

4. EIA APPROACH, SCOPE AND CONSULTATION

4.1 EIA Approach

4.1.1 EIA is a process that considers how a proposed development is predicted to change existing environmental conditions and what the consequences of such changes will be. It therefore informs both the project design and the decision-making processes related to the granting of development consents or planning permission.

4.1.2 The EIA Report has been prepared in accordance with the EIA Regulations and current best practice guidance. The proposed methodologies for the assessment of likely significant effects for each topic area covered in the technical chapters of the EIA Report have been the subject of consultation with statutory and non-statutory consultees.

4.1.3 The result of the assessment is the determination of whether the likely effect of the Proposed Development on the receptors in the study area would be significant or not significant, and, adverse or beneficial.

4.1.4 The EIA has examined potential effects of the Proposed Development on the following factors:

- Landscape and Visual;
- Ecology;
- Ornithology;
- Soils, Geology and Water;
- Cultural Heritage;
- Traffic and Transport;
- Forestry; and
- Socio-economic, Tourism and Recreation.

4.1.5 Each of the above factors are considered in technical topic-based reports that each include an assessment of the likely significant effects of the Proposed Development on the particular receptors of relevance to the topic, a description of the proposed mitigation measures relevant, and, confirmation of the predicted residual effects. The consideration of cumulative effects is also discussed where relevant in each specialist topic.

4.1.6 Mitigation measures are identified to prevent, reduce or remedy any potentially significant adverse environmental effects identified, beyond that already taken into account as normal good practice (i.e. embedded mitigation for example, the Construction Environment Management Plan). Such measures would be implemented during detailed design, construction and / or operation of the Proposed Development.

4.2 Pre-application Consultation

4.2.1 SSEN Transmission has sought to maintain an open dialogue with local communities within the vicinity of the Proposed Development throughout the evolution of the project. This has included carrying out consultation events during the route and alignment selection stages, engaging with local elected members such as Ward Councillors and Community Councils and engaging with landowners, residents, community groups and businesses that may be affected by the Proposed Development. SSEN Transmission has held parallel communication with other stakeholders, including statutory consultees, to understand their views on the proposals at the route and alignment selection stages, which has led to key areas of design evolution and development.

4.2.2 In March 2022, a virtual public consultation was carried out[21], with route options for the Proposed Development presented to members of the public, along with information on other separate wind farm grid connections that were being progressed at the time by the Applicant.

4.2.3 Upon consideration of a rationalised approach for the Connagill Cluster Grid Connection projects, including the Proposed Development, a further in-person public consultation event took place in November 2023 to present the appraisal of the rationalise route options for each grid connection. This was followed by the issue of the Connagill Cluster Grid Connections Consultation Document (Route Stage)[11], published in December 2023. Comments received from all stakeholders (including members of the public) in response to the Consultation Document, or following the consultation event, were documented in a Report on Consultation (Route Stage), published in April 2024[12]. The Report on Consultation also confirmed the proposed route to be taken forward to the alignment selection stage, and outlined the Applicant's responses provided at route stage consultation, along with confirmation of the action to be taken, where relevant.

4.2.4 Following confirmation of the proposed route, the appraisal of alignment options for the various grid connections associated with the Connagill Cluster Grid Connections (including the Proposed Development) was set out in the Connagill Cluster Grid Connections Consultation Document (Alignment Stage)[13] and presented at a public consultation event, in May 2024. Comments received from all stakeholders in response were documented in a Report on Consultation (Alignment Stage), published in September 2024[14]. The Report on Consultation confirmed the proposed alignment to be taken forward to the EIA stage, and also outlined the Applicant's responses provided at alignment stage consultation, along with confirmation of the action to be taken, where relevant.

4.3 Screening

4.3.1 A Screening Opinion[22] was sought for the Strathy Wood Grid Connection from Scottish Ministers by the Applicant in April 2019 for a trident 'H' wood pole connection. The Screening Opinion provided by the Scottish Ministers in June 2019 determined that the Proposed Development constitutes 'EIA Development' under the terms of the EIA Regulations, and the application for consent under section 37 of the 1989 Act should be accompanied by an EIA Report.

4.3.2 As the technology type proposed has since changed from trident 'H' wood pole to steel lattice tower, the Applicant has taken the decision to produce an EIA Report to accompany an application for consent, without requesting a further EIA Screening Opinion from the Scottish Ministers.

4.4 Scoping

4.4.1 A Scoping Report[23] was submitted to Scottish Ministers by the Applicant in April 2020 to support a formal request under Regulation 12 of the EIA Regulations for a Scoping Opinion to determine the information to be provided within the EIA Report. A Scoping Opinion was provided by the Scottish Ministers in December 2020.

4.4.2 Given the change in technology type proposed (from trident 'H' wood pole to steel lattice tower), as well as the time that has since lapsed, the Applicant sought a further Scoping Opinion from the Scottish Ministers in 2024. The EIA Scoping Report[24] was issued in January 2024 and the Scoping Opinion of the Scottish Ministers was issued in August 2024. Key issues that were raised by the Scoping Opinion have shaped the EIA Report.

[21] Virtual consultation was carried out in accordance with Scottish Government's Guidance on pre-application consultation for major planning applications during the Covid-19 emergency period.
[22] Strathy Wood Wind Farm Grid Connection: Screening Request (April 2019), produced by SSEN Transmission
[23] Strathy Wood Wind Farm Grid Connection: Scoping Report (June 2020), produced by SSEN Transmission
[24] Strathy Wood Wind Farm Grid Connection: Scoping Report (January 2024), produced by SSEN Transmission

4.5 Further Consultee Engagement

4.5.1 Stakeholder consultation has been ongoing since the early stages of the project and has continued throughout the Scoping and EIA process.

5. LANDSCAPE AND VISUAL

5.1 Landscape and Visual

5.1.1 A Landscape and Visual Impact Assessment (LVIA) has been undertaken for the Proposed Development in accordance with best practice guidance, the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3).

5.1.2 A study area of 2.5 km from the proposed OHL has been applied, which is considered appropriate to identify all potential significant effects.

5.1.3 The LVIA considers the two separate subjects of landscape and visual amenity as follows:

- The landscape assessment has considered the potential effects of the Proposed Development on landscape character, landscape designations and protected landscapes.
- The visual assessment has considered the potential effects of the Proposed Development on visual amenity of those present within the landscape, including established views from residential areas and travel routes.

5.1.4 The Proposed Development is required to transmit electricity generated by Strathy Wood Wind Farm, and this wind farm has therefore been considered as part of the assessment baseline.

5.1.5 The LVIA also gives consideration to cumulative effects occurring as a result of the addition of the Proposed Development to other infrastructure developments within the study area that form part of the Connagill Cluster Grid Connections. These include:

- Wind Farms
  - Strathy South Wind Farm (including on-site substation);
  - Melvich Wind Energy Hub (including on-site substation); and
  - Kirkton Energy Park (including on-site substation).
- Grid Infrastructure
  - Strathy South Wind Farm ‘Southern Section’ Grid Connection;
  - Strathy South Wind Farm ‘Northern Section’ Grid Connection;
  - Melvich Wind Energy Hub Grid Connection;
  - Kirkton Energy Park Grid Connection; and
  - Strathy Switching Station.

5.1.6 Mitigation measures are proposed to help minimise effects of the Proposed Development and are considered within the assessment of operational effects.

5.2 Landscape Effects

5.2.1 The landscape assessment has established that there would be no effect on the Special Landscape Qualities of the Farr Bay, Strathy and Portskerra Special Landscape Area or the East Halladale Flows Wild Land Area.

5.2.2 There would be significant direct and indirect temporary effects for Landscape Character Type (LCT) 134 (Sweeping Moorland and Flows) during construction due to the loss of landcover to temporary working areas and access tracks and an increase in the level of activity from that associated with Strathy North and Strathy Wood wind farms and forest extraction operations. There would be no predicted significant landscape effects for this LCT during operation.

5.2.3 No significant effects are predicted for any other LCT, designated or protected landscapes within the study area as a result of the Proposed Development during either construction or operation.

5.3 Visual Effects

5.3.1 The visual assessment identified that short term, temporary significant effects would be experienced by receptors at one building within the study area (Building B3: Bowside Cottage (also known as Gamekeepers Cottage)) during construction. However, this effect is predicted to become not significant during operation. No significant visual effects were assessed for other built receptors within the study area during construction or operation.

5.3.2 Users of one route receptor (Route R1: Scottish Hill Track 344 – Strath Halladale (Trantlebeg) to Strathy) would experience significant visual effects in both directions during both construction and operation as a result of the Proposed Development. However, no significant visual effects were assessed for any other route or recreational receptor within the study area during construction or operation.

5.4 Cumulative Landscape and Visual Effects

5.4.1 The cumulative landscape and visual assessment carried out for the Proposed Development considered the potential landscape and visual effects of the Proposed Development when added to two cumulative baseline scenarios.

- Cumulative Scenario 1 comprises the consented and proposed wind farm developments and their associated grid infrastructure (associated with the Connagill Cluster Grid Connections) assuming the Proposed Alignment for the Strathy South Wind Farm 'Northern Section' Grid Connection (and not the proposed Melvich Wind Energy Hub or the Alternative Alignment for the Strathy South Wind Farm 'Northern Section' Grid Connection); and
- Cumulative Scenario 2 comprises the consented and proposed wind farm developments and their associated grid infrastructure (associated with the Connagill Cluster Grid Connections) assuming the Alternative Alignment for the Strathy South Wind Farm 'Northern Section' Grid Connection and the proposed Melvich Wind Energy Hub (and not the Proposed Alignment for the Strathy South Wind Farm 'Northern Section' Grid Connection).

5.4.2 No significant cumulative effects greater than those effects assessed for the Proposed Development in isolation were identified as a result of the addition of the Proposed Development to either cumulative scenario.

6. ECOLOGY

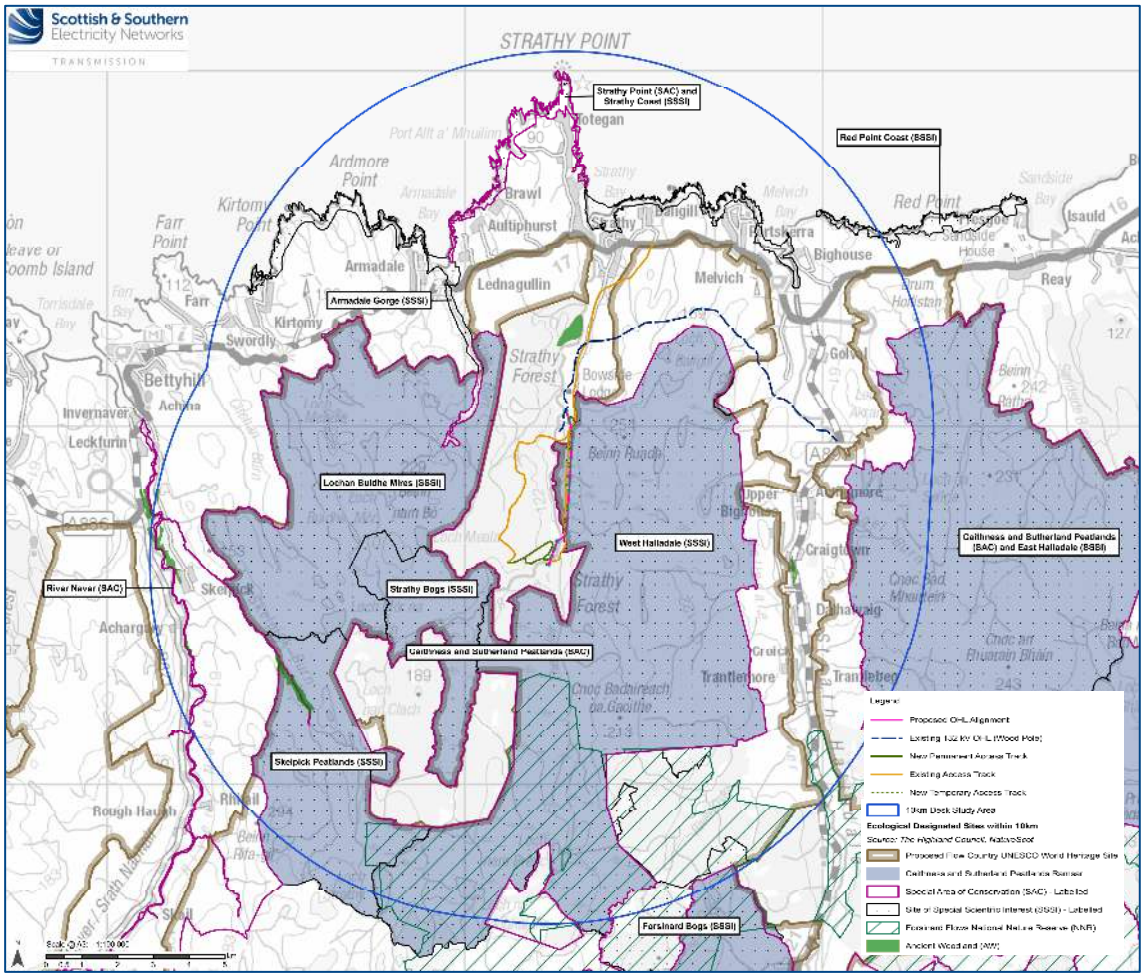
6.1.1 An assessment has been undertaken of the potential impacts of the Proposed Development on terrestrial ecology (non-avian) features including designated sites, habitats and protected species and reaches conclusions as to the predicted likely significance of residual effects. The assessment is based on best practice guidance including the Chartered Institute for Ecology and Environmental Managements (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

6.1.2 Given the nature of the Proposed Development, most of the impacts on terrestrial ecology features will arise from construction with direct habitat losses restricted to the footprints of the towers, poles, CSE compound and the new sections of permanent access track.

6.2 Designated Sites

6.2.1 **Plate 6.1** shows the Proposed Development in the context of ecologically designated sites.

Plate 6.1: Ecologically Designated Sites



6.2.2 The Proposed Development would impact approximately 2.57 ha of habitat within the Caithness and Sutherland Peatlands Special Area of Conservation (SAC) and Ramsar 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. However, the Proposed Development only affects a very small proportion (c. 0.002%) 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 no significant adverse effects are predicted.

6.2.3 A Shadow Habitats Regulations Assessment (HRA) has been undertaken for the Proposed Development, 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 Proposed Development would have no adverse effects on the integrity of the SAC / Ramsar (either alone or in combination with any other plans or projects).

6.2.4 The Proposed Development 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. As concluded for the SAC / Ramsar, the Proposed Development affects only a very small proportion of the WHS and no significant adverse effects are assessed. A separate World Heritage Site Assessment has been undertaken and concluded that the Proposed Development would result in no significant adverse effects on the attributes of the WHS.

6.3 Habitats

6.3.1 The Proposed Development passes over upland habitats typical of the landscape, which are dominated by mire and wet heath communities that are Annex I habitats[25] (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 Development (which would utilise mostly an existing access track upgraded for the consented Strathy Wood and Strathy South wind farms for construction and operation), permanent habitat losses outside the boundary of the SAC / Ramsar designated site are also very minor and estimated at 1.77 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. No significant adverse effects on non-designated habitats are assessed.

6.4 Protected Species

6.4.1 Signs of protected species including badger (*Meles meles*), otter (*Lutra lutra*), pine marten (*Martes martes*), common lizard (*Zootoca vivipara*) and adder (*Vipera berus*) were identified within the ecological study area, although the Proposed Development is assessed to result in no adverse effects upon them. No evidence of water vole (*Arvicola amphibius*) was identified in the study area, although this species has been recorded in the wider local area and as there is suitable habitat present, this species could be present albeit in very low numbers and not detected by previous surveys. Embedded mitigation relevant to identified ecological receptors include the development and implementation of a site-specific CEMP, which would be used in conjunction with the Applicant's GEMPs and SPPs. Furthermore, a suitably experienced ECoW would be appointed to undertake pre-construction surveys for protected species and oversee construction works to minimise any potential effects on nature conservation interests.

6.5 Cumulative

6.5.1 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

[25] 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.

losses of peatland, including within the boundaries of the Flow Country WHS and Caithness and Sutherland Peatlands SAC / Ramsar

7. ORNITHOLOGY

7.1.1 An ornithological assessment has been carried out to determine the potential effects of the Proposed Development on ornithological features to reach conclusions as to the predicted likely significance of effects on ornithology. The assessment follows current best practice and details the methods used to establish the bird species and populations present that may be affected by the Proposed Development, together with the process used to determine their importance. The ways in which birds might be affected (directly or indirectly) by the Proposed Development are explained and an assessment is made with regards to the significance of these effects.

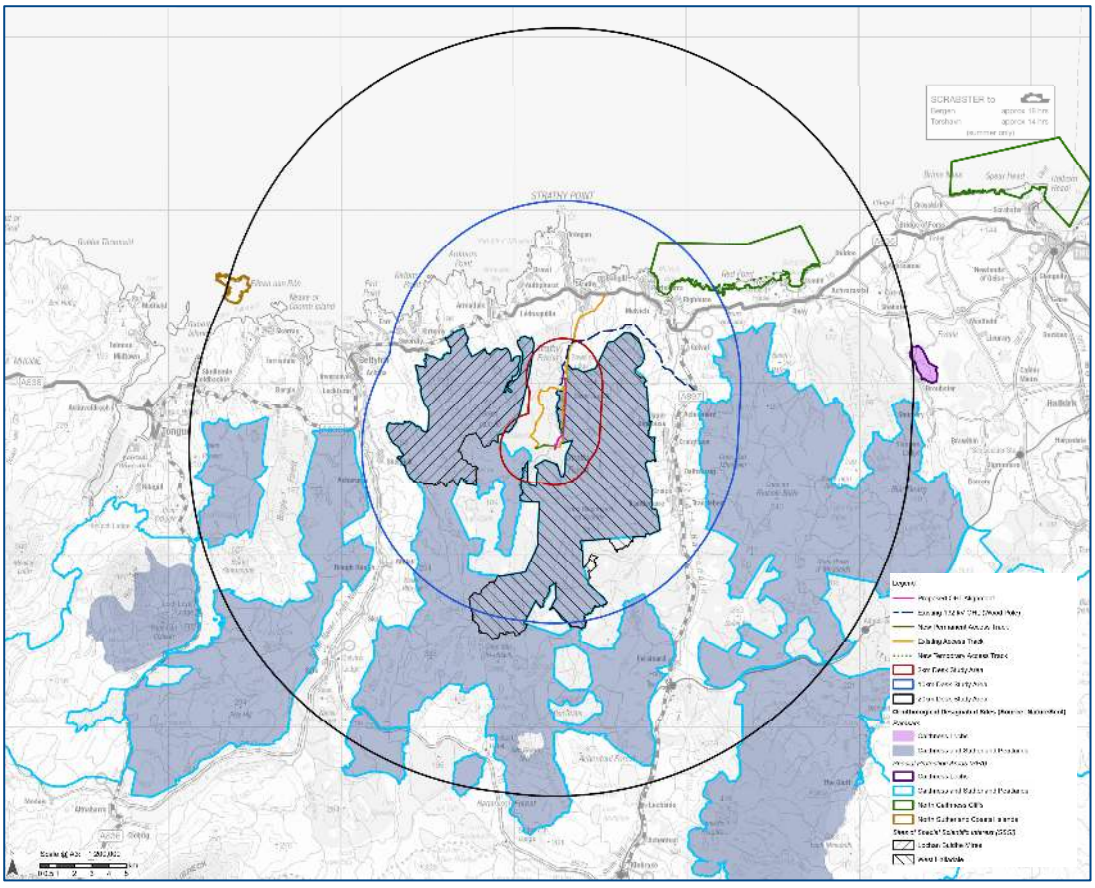
7.1.2 Baseline ornithology field surveys of the Proposed Development and surrounding area were carried out between October 2018 and August 2019, and between May and July 2022. Additionally, a desk study was completed to supplement the field survey results.

7.1.3 Based on the results of the field surveys and desk study, the following Important Ornithological Features (IOFs) were identified: Caithness and Sutherland Peatlands Special Protection Area (SPA) and Ramsar site, West Halladale Site of Special Scientific Interest (SSSI), Lochan Buidhe Mires SSSI, golden plover (*Pluvialis apricaria*), greenshank (*Tringa nebularia*), red-throated diver (*Gavia stellata*), black-throated diver (*Gavia arctica*), osprey (*Pandion haliaetus*), hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*) and white-tailed eagle (*Haliaeetus albicilla*).

7.1.4 An assessment of potential effects of the Proposed Development on each IOF during construction and operation was completed. Potential cumulative effects were also considered for relevant IOFs.

7.1.5 **Plate 7.1** shows the Proposed Development in the context of ornithological designated sites.

Plate 7.1: Ornithological Designated Sites



7.1.6 Ornithological sensitivities were taken into consideration during the design of the Proposed Development, with the layout designed to minimise potential effects on IOFs where possible. Embedded mitigation would comprise implementation of a Bird Protection Plan (BPP) to safeguard breeding birds and roosting raptors listed on Schedule 1A to the Wildlife and Countryside Act 1981 (as amended) (W&CA).

7.1.7 To reduce collision risk to breeding red-throated diver and hen harrier, line markers would be installed along key sections of the OHL component of the Proposed Development where these species are considered to be at greatest risk of collision.

7.1.8 Additionally, specific mitigation for breeding hen harrier is proposed to reduce potentially significant effects due to displacement resulting from habitat loss during construction of the Proposed Development, or due to operational disturbance. This would be delivered via a landscape scale Outline HMP, which combines the HMPs for the Connagill Cluster Grid Connection projects and is being developed in consultation with NatureScot.

7.1.9 The hen harrier mitigation would benefit other upland bird species such as breeding waders. Additional enhancement measures proposed for IOFs include installation of artificial nest rafts for breeding diver species to provide additional nest sites.

7.1.10 It is also proposed that a programme of ornithological monitoring is undertaken by a suitably experienced and licensed ornithologist during construction of the Proposed Development, comprising surveys for breeding waders, raptors and divers, including checks of any artificial diver nest rafts installed.

7.1.11 Following implementation of embedded and targeted mitigation measures, no significant residual effects of the Proposed Development are assessed under the EIA Regulations on any IOFs.

8. SOILS, GEOLOGY AND WATER

8.1.1 An assessment has been undertaken of the potential effects on geology (including soils and peat) and the water environment (hydrology and hydrogeology) during the construction and operational phases of the Proposed Development.

8.1.2 Information for the study area was compiled using baseline information from a desk study, which was verified by an extensive programme of field work. The site and the immediate area have been subject to much previous investigation and assessment and this information has been used to characterise baseline conditions. The assessment undertaken considered the sensitivity of receptors identified during the baseline study and mitigation measures incorporated in the development design. It has also considered potential future changes to baseline conditions.

8.1.3 The assessment considers potential effects on carbon rich soils and peat (peat management plan), and peat stability (peat landslide hazard risk assessment).

8.1.4 Subject to adoption of best practice construction techniques and a site-specific CEMP, no significant adverse effects on geology (including soils and peat) and the water environment have been identified. The CEMP will include provision for drainage management plans which would be agreed with statutory consultees, including Scottish Environment Protection Agency (SEPA), and which would be used to safeguard water resources and manage flood risk. A commitment to deploy Sustainable Drainage Systems (SuDS) in these plans has been made. The CEMP will also include provision of a Pollution Prevention Plan which would also be agreed with statutory consultees including SEPA prior to any construction works being undertaken.

8.1.5 The design of the Proposed Development has been informed by a detailed programme of peat depth probing as required by NPF4 and it has been shown that wherever possible areas of deep peat have been avoided. The assessment of peat and carbon rich soils has considered all of the proposed infrastructure, including temporary and permanent access tracks. A project specific outline peat management plan has been prepared which confirms the soils disturbed by the Proposed Development are limited in volume and that these soils can be readily and beneficially reused in restoration works.

8.1.6 Notwithstanding these safeguards, a programme of baseline and construction phase water quality monitoring is proposed which would be used to confirm that the Proposed Development does not have a significant effect on geology and the water environment. It is proposed that the monitoring programme is agreed with statutory consultees.

9. CULTURAL HERITAGE

9.1.1 There are no designated heritage sites in the near surrounding area which would have significant visibility of the Proposed Development and would give rise to any significant direct or indirect effects. As such, a detailed assessment on designated heritage sites has been scoped out of assessment, as agreed with The Highland Council and Historic Environment Scotland (HES) during the scoping process.

9.1.2 An assessment to consider the likely significant effects on cultural heritage assets from the construction and operation of the Proposed Development has been carried out.

9.1.3 Four non-designated heritage assets were identified within or just outside the defined LoD of the Proposed Development, all of which were identified as being of Regional heritage importance (medium sensitivity). The potential for unidentified archaeological remains is considered to be low to negligible.

9.1.4 The Proposed Development has been designed to avoid heritage assets where possible, however an unavoidable direct significant impact has been predicted for one heritage asset; Site 4c: Bowside Hut Circle at Dallangwell, south of Uidh nan Con Luatha.

9.1.5 Recommended mitigation for this heritage asset includes avoidance of laying or dragging conductors across the feature and if this proves not practicable, then the application of matting or temporary earth banking to be laid over the feature. Even with this protection in place, no plant, vehicles or other machinery should cross the feature during construction works. Monitoring of works by an Archaeological Clerk of Works (ACoW) is also recommended during the construction stage to ensure that the mitigation is carried out correctly.

9.1.6 Following the application of mitigation measures, the residual direct effect on this heritage asset is considered to be reduced to not significant.

10. TRAFFIC AND TRANSPORT

10.1.1 An assessment of traffic and transport effects on the public road network associated with the constriction phase of the Proposed Development has been undertaken.

10.1.2 The assessment considers the direct effects during construction on increased traffic flows in the surrounding study area, including upon local road users and local residents. Where certain criteria is met in accordance with best practice guidance, a review of the effects on severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation and accidents / road safety have been evaluated. The operational phase of the Proposed Development would not have any significant effects on the public road network as a result of the low levels of traffic that are forecast and is scoped out of the assessment.

10.1.3 The study area encompasses the area over which all desk-based and field data were gathered to inform the traffic and transport assessment. The study area comprises the following road links:

- The A9 between Georgemas and Scrabster; and
- The A836 between Thurso and Strathy.

10.1.4 The Proposed Development would lead to a temporary increase in traffic volumes on the road network within the study area during the construction phase. However, no link capacity issues are expected on any of the roads assessed due to the additional movements associated with the Proposed Development. The effects of construction traffic are temporary in nature and are transitory.

10.1.5 The assessment identified a significant effect could be expected on Scottish Hill Track 344 by track users during the construction phase. To reduce effects to not significant levels, a series of mitigation measures and management plans have been proposed to help mitigate and offset impacts during the construction phase. These include the implementation of a Construction Traffic Management Plan, Outdoor Access Management Plan and Staff Travel Plan.

10.1.6 The assessment confirms the predicted residual effects (i.e. after the implementation of mitigation) would be minor in nature and they would not be significant. There are no long-term detrimental transport or access issues associated with the construction phase of the Proposed Development.

11. FORESTRY

11.1.1 The Proposed Development is predicted to result in the direct permanent loss of 5.24 ha of woodland due to the requirement to create an Operational Corridor (OC) for the construction and safe operation of the proposed OHL, including the creation of access tracks.

11.1.2 The woodland within Strathy Wood Forest has, for much of the area of interest, been felled previously with some natural conifer regeneration present. The proposed access track requires the removal of mainly windblown conifer with a small area of standing conifer trees.

11.1.3 Mitigation through design is for minimal tree felling and utilising the current unplanted ground where possible. There are no areas of ancient woodland or ancient or veteran trees present. Nearby areas of well established upland birchwood native woodland are avoided by the Proposed Development.

11.1.4 No significant effects were identified from the direct loss of woodland. However, given that the Proposed Development would result in the permanent loss of woodland, the Applicant is committed to making arrangements to plant off-site the equivalent area of woodland as compensatory planting, meeting the Scottish Government's Control of Woodland Removal (CoWRP) objective of no net loss of woodland. The development of compensatory planting scheme agreements will be progressed with landowners within the regional land boundary of the Local Authority of where the Proposed Development is geographically located.

11.1.5 The area of woodland removal required for other consented and proposed development will be mitigated through the Scottish Government's CoWRP objective of no net loss of woodland. In this way there is considered to be no cumulative effect on forestry.

12. SOCIO-ECONOMIC, TOURISM AND RECREATION

12.1.1 An assessment has been completed to consider the predicted effects on socio-economic activity, tourism and recreation activity during construction and operation of the Proposed Development.

12.1.2 The Proposed Development would help support the national target of reaching net zero by 2045, and not only transporting renewable energy, but unlocking local and national economic benefits. Construction of the Proposed Development, which is expected to commence in November 2025 for twelve months is anticipated to cost £145 million. The following effects are predicted:

- Supporting 51 person years of employment over the 12 month construction programme, providing a GVA (Gross Value Added) injection of £3.8 million to the local economy;
- Further local benefits from workers staying and spending locally during the construction programme;
- Supporting existing operational employment at the SSEN Transmission headquarters in Perth with other regional offices in inverness and Wick; and
- Facilitating the delivery of the predicted economic impacts (jobs and GVA) of Strathy Wood Wind Farm (and eventually Strathy South Wind Farm).

12.1.3 In addition, there would be potential community benefits through the SSEN Transmission Community Benefit Fund[26] which was launched in September 2024 and through which requests for local goodwill funding will be considered.

12.1.4 The assessment demonstrates that there are beneficial socio-economic effects across the construction and operational phases of the Proposed Development. For example, the local economy would be supported by the Proposed Development through direct and indirect employment and expenditure opportunities. As no specific mitigation measures are proposed in relation to potential socio-economics effects during the construction or operational phase, the residual construction effects of the Proposed Development on the economy are deemed to be **Moderate Beneficial** (significant) at the regional and **Minor Beneficial** (not significant) at the national level. These effects would be temporary during the construction period. The residual operational effects of the Proposed Development on the economy are deemed to be **Negligible** (not significant) at both the regional and national level.

12.1.5 The main benefits will be associated with the construction phase, as the Proposed Development is not expected to generate any direct full-time employment onsite during its operation. There would however be regular ad hoc maintenance, as required.

12.1.6 The review of the tourism and recreational asset base found that all the main tourist attractions as reported by VisitScotland[27] in the Highlands are more than 100 miles from the Proposed Development. The North Coast 500 route has driven an increase in visitor numbers in recent years, but the stretch of the route in proximity to the Proposed Development is known for its coastal views. It is considered that the Proposed Development, which is located inland, would not change the attractiveness of this route. The main access track to be used by the Proposed Development forms part of Scottish Hill Track 344: Strath Halladale, which travels between Strath Halladale (Trantlebeg) and Strathy. Measures present in an Outdoor Access Management Plan would be implemented by the Principal Contractor, which would set out how existing public access would be managed during construction of the Proposed Development. The mitigation proposed and the review of secondary research into tourists attitudes to renewable developments confirms that visitors are not dissuaded from visiting an area where there is renewable energy infrastructure, including OHLs and steel lattice towers. This confirms there would be no adverse effects on these assets as a result of the Proposed Development.

[26] https://www.ssen-transmission.co.uk/information-centre/Community-Benefit-Fund/
[27] Tourism in the Highlands, VisitScotland, 2019

12.1.7 The residual construction and operational effects of the Proposed Development on tourism and recreational receptors are deemed to be **Negligible** (not significant).

12.1.8 In terms of cumulative effects, the predicted residual cumulative effect in relation to socio-economic activities during construction are deemed to be the same as those predicted for the Proposed Development in isolation. The residual cumulative effects during the operational phase are predicted to result in **Minor Beneficial** (not significant) effects on the economy in Highland (regional) and on the economy in Scotland (national). The predicted cumulative residual effect in relation to construction and operational activities on tourism and recreational receptors are deemed to be **Negligible** (not significant).

12.1.9 The Applicant brings a track record in supporting local good causes and community investments through their investments and operation and this would be the case at the Proposed Development. As noted, SSEN Transmission recently launched a new Community Benefit Fund and eligible organisations in the north of Scotland will be able to apply for an initial share of £2m, which is part of SSEN Transmission's opening £10m Community Benefit Fund. This initial funding aims to kickstart impactful projects or initiatives that will bring meaningful benefits to communities. Local community groups will be encouraged to apply for community funds through this new funding programme.

13. SUMMARY

13.1.1 This Non-Technical Summary provides a summary of the EIA Report for the Strathy Wood Wind Farm Grid Connection. The main findings of the environmental impact assessment are summarised for the Proposed Development, concluding that likely significant residual effects (i.e. after mitigation) are predicted for:

Landscape and Visual

- Temporary significant adverse landscape effects during construction on LCT 134 (Sweeping Moorland and Flows). No significant adverse effects are predicted on this LCT during operation.
- Temporary significant adverse visual effects on receptors at Building 3: Bowside Cottage (also known as Gamekeepers Cottage) during construction. No significant adverse effects are predicted on this built receptor during operation.
- Significant adverse visual effects on recreational users of R1: Scottish Hill Track 334 – Strath Halladale (Trantlebeg) to Strathy in both directions during construction and operation.

Socio-economic

- Temporary significant beneficial socio-economic effects during construction of the Proposed Development at the regional level (Highlands).

FIGURES

Scottish & Southern Electricity Networks
TRANSMISSION

Armadale
Lednagullin
Strathy
Melvich
Trantlebeg

Strathy Forest
Strathy Forest

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Scale @ A3: 1:60,000
0 0.25 0.5 1 1.5 2 2.5 km

274000m.E
953000m.N

Legend

- Proposed OHL Alignment
- Proposed Steel Lattice Tower
- Proposed Wood Pole (H pole)
- Proposed Cable Sealing End Compound

Existing Infrastructure

- Strathy North 132kV Grid Connection
- Connagill 275/132 kV Substation
- Strathy North Wind Turbines
- Strathy North Substation

Consented Infrastructure

- Strathy South Wind Turbines
- Strathy Wood Wind Turbines
- Strathy South Substation
- Strathy Wood Substation

Project No:	LT559
Project:	Strathy Wood Wind Farm Grid Connection - Non-Technical Summary
Title:	Figure 1: Overview of the Proposed Development
Drawn by:	LS
Date:	08/11/2024
Drawing:	122023-NTS-D1-1.0.0