VOLUME 1: CHAPTER 2: THE ROUTEING PROCESS AND ALTERNATIVES

Figures (Volume 2 of this EIA Report)

Appendices (Volume 4 of this EIA Report)

There are no appendices associated with this Chapter.

2. THE ROUTEING PROCESS AND ALTERNATIVES

2.1 Introduction

2.1.1 This Chapter describes the routeing process and consideration of alternatives that have been undertaken for the Proposed Development.

2.1.2 The Proposed Development has been the subject of a routeing process to establish a proposed route[1], alignment[2] 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 proposed route, alignment and design solution of the Proposed Development.

2.1.3 Further review of the Proposed Development during the EIA stage of the project has also led to further refinements to minimise potential environmental effects where practicable.

2.1.4 These processes have enabled the consideration of reasonable alternatives, in accordance with Regulation 5(2)(d) and Schedule 4, paragraph 2 of the EIA Regulations.

2.2 A Rationalised Approach

2.2.1 As discussed in **Chapter 1 – Introduction and Background**, 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 Consultation on this approach, and the options that have been considered during the route and alignment stages of the Connagill Cluster Grid Connections (including in relation to the Proposed Development) are set out in the following documents available via the Applicants webpage[3]:

- Routeing Stage Public Consultation Event held on 30th November 2023 at Strathy Village Hall.
- SSEN Transmission (December 2023): Connagill Cluster Grid Connections: Consultation Document (Route Stage).
- SSEN Transmission (April 2024): Connagill Cluster Grid Connections: Report on Consultation (Route Stage).
- Alignment Stage Public Consultation Event held on 20th May 2024 at Strathy Village Hall.
- SSEN Transmission (May 2024): Connagill Cluster Grid Connections: Consultation Document (Alignment Stage).
- SSEN Transmission (September 2024): Connagill Cluster Grid Connections: Report on Consultation (Alignment Stage).

2.2.3 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 'H' wood pole OHLs for each connection.

2.2.4 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

[1] 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.
[2] A centre line of an overhead line or underground cable.
[3] Connagill Cluster Wind Farm Connections - SSEN Transmission (ssen-transmission.co.uk)

of the consented Strathy South Wind Farm (208 MW). An alternative conductor (OSLO) would be required; however, this conductor is yet to be technically approved and may not be suitable for trident 'H' wood pole OHLs due to its weight. An OHL supported by a steel structure (i.e. 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 in Section 2.5 below.

2.2.5 Further decisions in relation to the routeing and alignment stages relevant to the Proposed Development are discussed further in this Chapter.

2.3 Development Considerations

2.3.1 SSEN Transmission has obligations under section 9 of the 1989 Act to 'develop and maintain an efficient, co-ordinated and economical system of electricity transmission'.

2.3.2 Furthermore, the requirements of the Construction (Design and Management) Regulations 2015[4] (CDM Regulations) require that the project design aims to minimise hazards and reduces risks during construction.

2.3.3 Taking account of these obligations, SSEN Transmission has considered technical, economic and environmental factors in evaluating practicable alternatives to the Proposed Development, with the objective of identifying a proposed alignment and design solution which is 'technically feasible and economically viable' and 'which causes the least disturbance to the environment and to the people who live, work, visit and recreate within it'.

2.4 Approach to Route and Alignment Selection

2.4.1 Guidelines for the routeing of new high voltage overhead transmission lines have been established within the electricity supply industry. These guidelines are known as the 'Holford Rules'[5] 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, minimises changes in direction, takes advantage of topography and minimises visual interaction with other transmission infrastructure.

2.4.2 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.

2.4.3 The approach to route and alignment selection has therefore been informed by SSEN Transmission's guidance[6]. The guidance splits the routeing stage of a project into four principal stages, as follows:

- Stage 0: Routeing Strategy Development;
- Stage 1: Corridor Selection;
- Stage 2: Route Selection; and
- Stage 3: Alignment Selection.

2.4.4 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

[4] UK Government (2015), *Construction (Design and Management) Regulations 2015*, Online, available at: http://www.legislation.gov.uk/uksi/2015/51/contents/made [accessed 08/01/2024]

[5] Scottish Hydro Electric Transmission Limited (SHETL) (October 2004), *The Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines with NGC 1992 and SHETL 2003 Notes; Revision 1.01*

[6] SSEN Transmission (September 2020), Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above.

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)

2.4.5 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)

2.4.6 The Corridor Selection stage occurred simultaneously with Stage 2: Route Selection. An Area of Search[7] was identified within which the identification and appraisal of feasible route options could be considered.

Route Selection (Stage 2)

2.4.7 The route selection stage (Stage 2) 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[8] for the purposes of consultation and a proposed route[9] to take forward to the alignment selection stage (Stage 3).

2.4.8 Route options were initially identified following desk-based review and site walkovers. In accordance with the steps outlined in the Holford Rules and SSEN Transmission guidance, the following principles were taken into account during the route selection stage (where practicable) and the alignment selection stage of the project:

- Avoid if possible major areas of highest amenity value (including those covered by national and international designations and other sensitive landscapes);
- Avoid by deviation, smaller areas of high amenity value;
- Try to avoid sharp changes of direction and reduce the number of larger angle structures required;
- Avoid skylining the route in key views and where necessary, cross ridges obliquely where a dip in the ridge provides an opportunity;
- Target the route towards open valleys and woods where the scale of poles or towers will be reduced and views broken by trees (avoid slicing through landscape types and try to keep to edges and landscape transitions);
- Consider the appearance of other lines in the landscape to avoid a dominating or confusing wirescape effect; and
- Approach urban areas through industrial zones and consider the use of undergrounding in residential and valued recreational areas.

2.4.9 Appraisal of route options involved systematic consideration against the topic areas noted below:

- Environmental:
  - Natural Heritage;
  - Cultural Heritage;
  - Proximity to Dwellings;
  - Landscape and Visual;
  - Land Use; and
  - Planning.

[7] 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.
[8] A route to be taken forward to stakeholder consultation following a comparative appraisal of route options.
[9] A route taken forward following stakeholder consultation to the alignment selection stage (Stage 3) of the routeing process

- Technical:
  - Infrastructure Crossings;
  - Environmental Design;
  - Ground Conditions;
  - Construction and Maintenance; and
  - Proximity.
- Cost
  - Capital; and
  - Operational.

2.4.10 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)

2.4.11 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 options stage of the project (described above).

2.4.12 When identifying and appraising alignment options for Stage 3, localised constraints needed to be considered. The following tasks were therefore undertaken during this process:

- Desk-based review and targeted site survey by project landscape architects, ecologists, ornithologists, archaeologists, geologists and hydrologists to review alignment options;
- Targeted National Vegetation Classification (NVC) habitat surveys, protected species surveys and peat depth and condition surveys to supplement existing data;
- Review of ornithological survey data and records for the area, including requests for data held by RSPB, and request of bird data from surrounding developments to supplement the existing survey data;
- Review of comments received from stakeholders, including landowners during the route option selection stage;
- Workshops to discuss alignment options prior to the identification of an optimal alignment; and
- Site reconnaissance visits by the SSEN Transmission engineering team and environmental consultants to review alignment options.

2.5 Summary of Appraisal: Route Selection (Stage 2)

2.5.1 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.

2.5.2 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. A summary of the route options is outlined below and all route options are displayed on **Plate 2.1** and **Figure 2.1**.

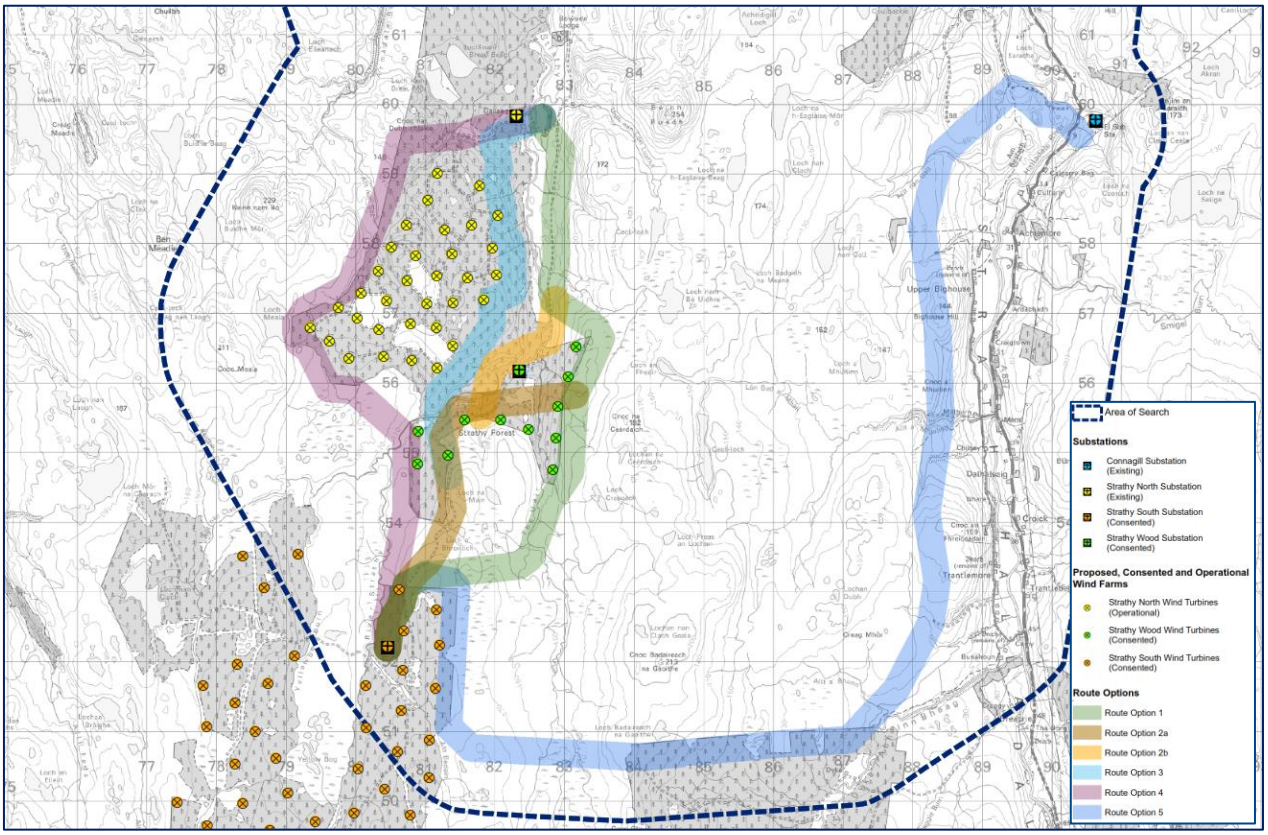
- **Route Option 1:** This route travels in a north, north-east direction from the Strathy South Wind Farm on-site substation for just over 1 km before turning east to the south of Loch a’Bhrollich. The route then travels north/north-east for approximately 3.5 km following The Uair watercourse until it reaches Strathy Forest plantation, where it follows the forestry boundary. The route then curves to the north-west for 1 km until it joins an existing access track, which it runs parallel to for around 3.5 km to where the route

terminates at the Strathy North substation near Dallangwell. This route would be achieved via OHL for its entirety.

- **Route Option 2a:** An alternative option to Route Option 1, following alongside the existing access track as an UGC for approximately 5 km where it would cut through the Strathy Forest plantation, to the south of the consented Strathy Wood substation, and rejoin Route Option 1, where it would transition to OHL for the final stretch, to connect to Strathy North substation.
- **Route Option 2b:** Similar to Route Option 2a, however it would continue to be routed along the existing access track and River Strathy, keeping to the north of the consented Strathy Wood substation, where it would rejoin Route Option 1 (and transition to OHL) to the west of Strathy Forest plantation to connect to Strathy North substation.
- **Route Option 3:** Approximately 9 km in length and achieved by an UGC for its entirety, the route overlaps with Route Options 2a and 2b, travelling for approximately 3 km along the existing access track. Upon reaching 'the chimney', the route would cross the River Strathy and run adjacent to the east of the Strathy North wind turbines, continuing north for approximately 5 km through areas of coniferous forestry and felled plantation. Upon reaching the wind farm access track, the route would turn north/north-east for approximately 1 km before crossing the River Strathy again and terminating at Strathy North substation.
- **Route Option 4:** Approximately 12 km in length and achieved by an OHL for its entirety, this route travels north upon leaving Strathy South Wind Farm on-site substation, running adjacent to the River Strathy for approximately 3 km. The route then crosses the river and heads in a north-west direction for 1 km to reach the southern edge of the Strathy Forest plantation. The route continues north along the west boundary of the plantation for approximately 4.5 km. It then passes in an eastward direction, to the north of the wind turbines, before joining the wind farm access track, crossing the River Strathy and terminating at the Strathy North substation.
- **Route Option 5:** Approximately 21.5 km in length, this route option would connect the Strathy South Wind Farm to Connagill 275/132 kV substation directly, by passing the requirement for a connection at Strathy North substation. An additional connection between Strathy Wood and Strathy South would be required. The route would be achieved by an OHL for its entirety and would initially overlap with other routes upon leaving the Strathy South Wind Farm on-site substation before heading in an easterly direction for 1 km. The route then heads south alongside the Strathy Forest plantation for 2.5 km, before turning east for around 7.5 km and then north for a further 16 km running broadly in parallel to the Halladale River. Once the route meets the existing Strathy North 132 kV trident 'H' wood pole OHL, it turns south-east for a final 1 km before crossing the Halladale River and terminating at Connagill 275/132 kV substation.

2.5.3 The design choice to utilise UGC for Route Options 2a, 2b and 3 between Strathy South substation and Strathy Wood substation was primarily 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 prescence 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.

Plate 2.1: Route Options



Optimal Route Option

2.5.4 The comparative appraisal included within the Connagill Cluster Grid Connections Consultation Document (Routeing Stage)[10] ("the Route Stage Consultation Document") noted that whilst Route Option 3 was identified as the optimal environmental option given it traverses the shortest length of the natural heritage designated sites, from an engineering 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.

2.5.5 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 Selection 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 (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 Brarathy township heritage site and the proximity to the River Strathy and

[10] 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

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.

2.5.6 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.

2.5.7 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.

2.6 Route Selection (Stage 2): Reporting and Consultation

2.6.1 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, as is described further in **Appendix 4.1** associated with **Chapter 4 – Scope and Consultation**.

2.6.2 SSEN Transmission aimed to streamline consultation of the routeing process for the Connagill Cluster Grid Connections, of which the Proposed Development is part of. This was to allow stakeholders the opportunity to review the Connagill Cluster Grid Connections as a whole during the routeing stages to consider the proposals to consolidate infrastructure and construction practices where practicable.

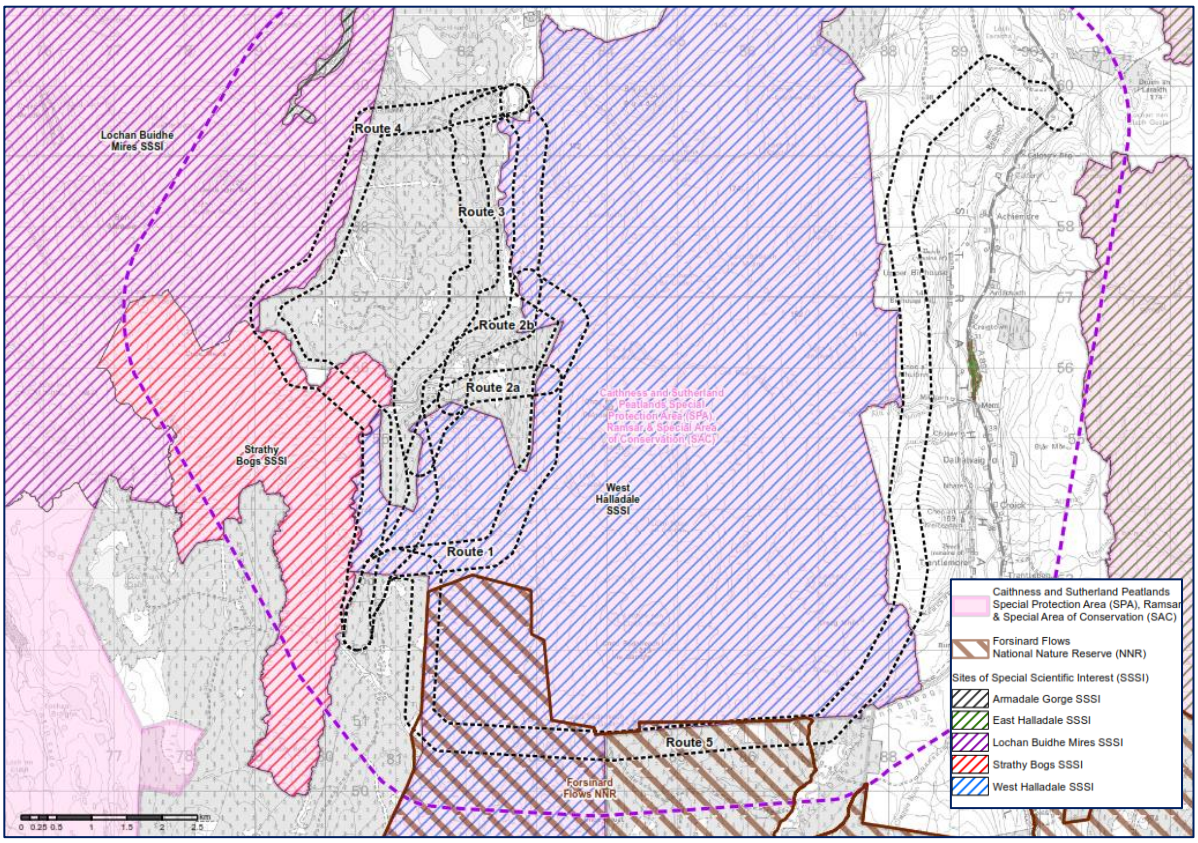
Route Stage Consultation Responses and the Applicant's Response

2.6.3 At route selection stage, consultation responses received from NatureScot and RSPB Scotland noted a preference for Route Option 3 (which was the environmental preference documented in the Route Stage Consultation Document) as it would largely avoid the Caithness and Sutherland Peatlands SAC, SPA and Ramsar site, compared to the Optimal Route (Route Options 2a and 2b), thereby helping to maintain the SAC and SPA conservation objectives (refer to **Plate 2.2** for natural heritage designations). However, the route stage Report on Consultation[11] outlined the technical and safety constraints with routeing a grid connection through an operational wind farm that have deemed Route Option 3 challenging to construct. If constructed as an OHL, this route would fall within the wind wake effect of the wind turbines and would not meet the required spacing between wind turbines and the OHL and, therefore, undergrounding Route Option 3 would be necessary. To support an UGC here, two double-circuit cable sealing end (CSE) compounds would be required at either end of the cable to convert to OHL. The compounds would include a stone hard-standing platform with a perimeter palisade security fence, allowing the UGC to transition and connect to an overhead steel tower. The estimated footprint of each of these compounds is approximately 70 m x 70 m and they would also each require permanent access tracks for operations and maintenance. These additional infrastructure elements would likely increase the potential environmental impacts of this option. The construction of an UGC through an operational wind farm would be very challenging due to the need to avoid interface with existing wind turbines and their associated cable connection, all of which would require adequate clearance to provide the required width of the working construction corridor. From a technical and safety perspective, this route option was therefore not considered to be a viable option. It is considered the Optimal Route (Route Options 2a and 2b) would have a reduced presence within the natural heritage designations compared with Route Option 1, and could offer opportunities at alignment stage to minimise adverse effects on the qualifying habitats of the

[11] Conngaill Cluster 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

Caithness and Sutherland SAC by selecting an alignment which closely follows the existing access track and associated disturbed land adjacent to the track.

Plate 2.2: Route Options and Natural Heritage Designated Sites



2.6.4 Concerns were raised regarding the Proposed Development being located partially within the sensitive Flow Country landscape, and the potential for cumulative impacts on qualifying features of the adjacent designated sites. As such, the Route Stage Report on Consultation[1111] confirmed that further survey and assessment would be undertaken at Alignment Selection Stage to inform the final design and to minimise impacts on these sites (including the (at the time) candidate World Heritage Site (WHS)).

2.6.5 RSPB Scotland recommended that for the section of 132 kV UGC between Strathy South substation and Strathy Wood substation that cannot avoid traversing designated sites (as displayed on **Plate 2.2**), the use of Horizontal Directional Drilling (HDD) rather than cable trenches be considered to minimise direct impacts on the SAC qualifying habitats. However, the Route Stage Report on Consultation[1111] outlined that HDD would be technically very challenging to undertake and would require a large laydown and construction compound at either of the HDD section(s) that could require large areas of peat in these areas to be cleared or disturbed. HDD is also limited in terms of its use and is typically best suited to crossing shorter areas as opposed to large expansive habitats.

2.6.6 It was also recommended by RSPB Scotland that the wind farm developers connected by this project are consulted to share bird and habitat data, as this will provide useful information with respect to SPA species distribution and movements, and likely impacts with respect to the SAC and (at the time) candidate WHS. SSEN Transmission approached the developers to request their data, and the data received has been used to inform the assessments within this EIA Report.

2.6.7 RSPB Scotland noted that surveys covering the Optimal Route were undertaken between 2018-2019 and were on the cusp of expiring and recommended that new surveys be undertaken. Nevertheless, SSEN Transmission

considered that it would be acceptable to use datasets spanning a period of several years to build up an accurate picture of bird use in the area. Therefore, as well as the surveys completed in 2018-2019, a scarce breeding bird survey was also completed in 2022. Additionally, survey areas for the neighbouring Strathy North Wind Farm (for which data is available up to and including 2021), Strathy Wood Wind Farm (for which data is available from 2018-2019) and the proposed Strathy South Wind Farm 'Northern Section' Grid Connection (for which data is available from 2022) encompassed the Optimal Route and would provide a reliable baseline of data to inform an ornithological impact assessment. SSEN Transmission did not intend to carry out any further fieldwork as had previously been agreed with NatureScot during pre-routeing consultation.

2.6.8 Historic Environment Scotland noted that they were content with the Optimal Route selected on the basis that it would raise no significant impacts for their interests.

2.6.9 The reporting on the 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.

2.6.10 All comments at route stage were taken forward into the alignment stage. This process remained inclusive, seeking further consultation where appropriate.

2.7 Summary of Appraisal: Alignment Selection (Stage 3)

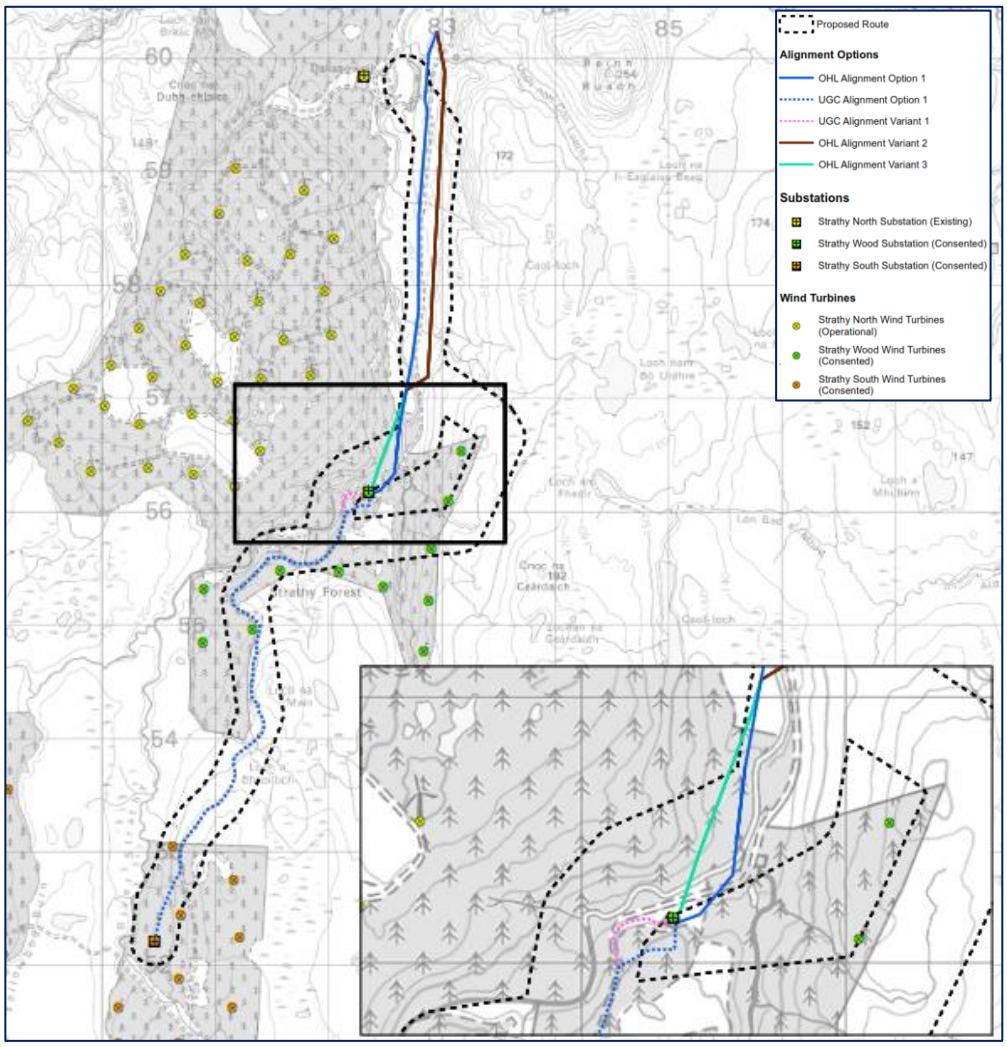
2.7.1 One technically feasible and economically viable alignment option was identified within the Proposed Route based on the key environmental and engineering constraints identified during Stage 2: Route Selection. This was referred to as Alignment Option 1. Given the narrow width of the Proposed Route (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.

2.7.2 As mentioned in paragraph 2.6.9, although Route Option 2a was taken forward in combination with Route Option 2b as the Proposed Route, on further review it was considered that the deviation of Route Option 2a, as it passes through and exits Strathy Forest to the east, would occur ahead of reaching Strathy Wood substation, and this would not enable the rationalisation of infrastructure. As a result, no alignments through the northern section of Route Option 2a were considered at alignment selection stage.

2.7.3 One baseline alignment (Alignment Option 1) and three alignment variants were included at alignment consultation stage and summarised in the Alignment Stage Consultation Document[12], as displayed on **Plate 2.3** and **Figure 2.2**.

[12] 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

Plate 2.3: Proposed Route and Alignment Options



Optimal Alignment Option

2.7.4 Various constraints were taken into account to reach an optimal alignment across environmental and technical considerations. Between Strathy South substation and Strathy Wood substation Alignment Option 1 would be achieved via UGC for its entirety to minimise impacts on nearby sensitive diver species and to navigate wind turbines associated with the Strathy South and Strathy Wood wind farms, as identified at Stage 2: Route Selection. Alignment Option 1 (UGC) was designed to closely follow the existing access track infrastructure and associated disturbed land adjacent, to minimise adverse effects on the qualifying habitats of the Caithness and Sutherland Peatlands SAC that it would traverse. On approach to Strathy Wood substation, Alignment Variant 1 (UGC) was considered, to appraise how best to navigate the substation. The comparative appraisal agreed in identifying Alignment Variant 1 (UGC), as displayed on **Plate 2.3** and **Figure 2.2**, as optimal; despite crossing slightly more elevated terrain which may result in installation being slightly more challenging compared to the comparable section of Alignment Option 1 (UGC), 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.

2.7.5 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 2.3** and **Figure 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.

2.7.6 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 in which the alignment options were discussed.

2.7.7 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.

2.8 Alignment Selection (Stage 3): Reporting and Consultation

2.8.1 As stated in paragraph 2.6.2, SSEN Transmission streamlined consultation for the Connagill Cluster Grid Connections, of which the Proposed Development is part of. No comments were raised by stakeholders on the Optimal Alignment presented in the Alignment Stage Consultation Document[12] [12] and no comments were received from members of the public following the alignment stage consultation event (see paragraph 2.2.2).

2.8.2 The reporting on the consultation process, detailed within the Report on Consultation (Alignment Stage)[13] concluded that the Optimal Alignment identified within the Alignment Stage Consultation Document[12] would be taken forward to the EIA and consenting stage as the Proposed Alignment. The Proposed Alignment was therefore a combination of Alignment Option 1 (UGC) – Alignment Variant 1 (UGC) – Alignment Variant 3 (OHL) – Alignment Variant 2 (OHL), as it was considered to provide an optimum balance of environmental and technical factors. 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 of **Chapter 1**, is anticipated to be permitted development under Class 40 1(a) of The Town and Country Planning (General Permitted Development) (Scotland) Order 1992.

[13] 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)

2.8.3 All comments raised through the alignment stage consultation, as well as those resulting from any further meetings and liaison with stakeholders were taken forwards to the EIA and consenting stage. The process remained inclusive, seeking further consultation where appropriate.

2.9 Further Consideration during the EIA Process

2.9.1 The work that was undertaken during the route and alignment stages of the Proposed Development enabled a rigorous consideration of reasonable alternatives with respect to route options, alignment selection and the consideration of design solutions available for the project. Further review of the Proposed Alignment during the EIA stage of the project by the engineering and environmental teams has resulted in some minor adjustments to the Proposed Alignment including:

- Amendment to the (northern) crossing point of the River Strathy to reduce the extent of infrastructure within a mapped floodplain on the western side of the river bank;
- Proposed utilisation of existing tracks through Strathy North Wind Farm to negate the need to construct a new bridge crossing over the River Strathy to access towers on the western side of the River Strathy;
- Minimise location within qualifying habitat of the Caithness and Sutherland Peatlands SAC and Ramsar. Targeting infrastructure within poorer quality habitats which exhibit greater evidence of habitat modification and less likely to meet the requirements of a qualifying interest of the SAC;
- Movement of infrastructure as far as technically viable from mapped sensitive bird nest sites;
- Realignment of proposed new access track to avoid direct impact with recorded cultural heritage features; and
- Targeting the alignment of the OHL and access tracks to avoid areas noted in Native Woodland Survey of Scotland and take advantage of areas which are already felled, in particular the route of the proposed new access track from Strathy North Wind Farm which has been routed through a damaged area of windblown conifer within Strathy Wood Forest. This design negates the need for any larger areas of felling of Strathy North Forest coniferous plantation, where subsequent windblow would be a predictable outcome.

2.9.2 The final alignment of the Proposed Development is discussed further in **Chapter 3 - The Proposed Development** and presented in **Figure 3.1**.