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## 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 following stages are described in this Chapter, along with their respective outcomes:

- Design solutions considered;
- The approach to the routeing and alignment selection stages of the project;
- The route options process and consultation responses;
- The alignment selection stage process and consultation responses; and
- Other considerations to avoid or reduce potential effects.

### 2.2 Development Considerations

2.2.1 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'.

2.2.2 SSEN Transmission, under the 1989 Act, 'when formulating proposals to generate, transmit, distribute or supply electricity' is required, under Schedule 9 to:

- "have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest"; and
- "do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects".

2.2.3 Furthermore, the requirements of the Construction (Design and Management) Regulations 2015<sup>1</sup> (CDM regulations) require that the project design aims to minimise hazards and reduces risks during construction.

2.2.4 Taking account of these obligations, SSEN Transmission has considered technical, economic and environmental factors in evaluating the reasonable alternatives to the Proposed Development, with the objective of identifying a proposed alignment and associated Limit of Deviation (LOD) 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'.

### 2.3 Design Solutions

2.3.1 This Section describes the asset solutions and options that were considered in identifying the most appropriate design solution to deliver the Proposed Development. **Chapter 3 – The Proposed Development** describes the technology options selected for the Proposed Development in greater detail.

2.3.2 Following identification of the Proposed Development solution, the route and alignment selection stage of the project gave consideration to different design solutions that could mitigate any likely significant environmental effects, or provide another benefit, for example rationalisation of the electricity network in a particular area.

2.3.3 SSEN Transmission has determined that a trident wood pole is the preferred technological solution for the Proposed Development and would make use of this type of support structure for the OHL where possible. This is preferred as it is considered trident wood poles provide the lowest cost solution and least environmental effects whilst being suitable to provide the required capacity of electricity export. Some sections of ground

<sup>1</sup> <http://www.legislation.gov.uk/uk/si/2015/51/contents/made> (accessed 23/02/2022)

within the LOD are at an elevation considered unsuitable for wood pole structures, including at the location of the Bhlaraidh Extension Wind Farm on-site substation (approximately 500 m Above Ordnance Datum (AOD)). While it is possible in some instances to utilise wood pole structures up to 500 m AOD, issues such as exposure and wind loading would necessitate deeper planting of poles and shorter spans to a point where it becomes technically, environmentally and economically unviable as is the case with the Proposed Development. Therefore stronger, more resilient structures tend to be favoured at higher elevations instead. These more resilient structures include steel lattice towers, composite or steel versions of the trident support, or NeSTS (SSEN Transmission's New Suite of Transmission Structures). Use of UGC is also a potential solution for areas of higher ground, but this can result in increased disruption of habitats and / or areas of peat soils, increased cost and additional maintenance challenges.

- 2.3.4 Early in the design process, it was established that the last 500 m (approximately) of the connection into Fort Augustus substation would be routed by way of UGC to mitigate likely landscape and visual impacts. This was increased to approximately 2 km during alignment selection in order to reduce the need for tree felling, such that the OHL would transition to UGC where the two existing OHLs within the existing wayleave corridor converge, which restrict further OHL construction.
- 2.3.5 SSEN Transmission have a policy to avoid OHL developments encroaching on clearance zones from wind turbines. The stand off distance between OHLs and wind turbines is equivalent to three times the rotor diameter of the wind turbine. This is because the 'wake effect' of the wind turbines within this clearance zone can cause excessive vibration on the OHL components. While the impact of the wake effect can vary depending on wind turbine height, local topography and specific OHL arrangements, the vibrations can lead to premature fatigue and failure of the OHL.
- 2.3.6 The potential impact of 'wake effect' at this site has been studied as part of the routeing and EA process and it is not possible to achieve an OHL alignment that does not encroach on the three rotor diameter clearance or significantly increase the cost of the Proposed Development as a result of deviating around the Bhlaraidh Wind Farm or its Extension. As a result, the alternative structures previously consulted on for use at higher altitude are now to be replaced with UGC. The proposed UGC would run in close proximity to the existing and proposed wind farm access tracks. This would utilise construction and operational corridors that would be disturbed during the construction of the wind farm, potentially reducing some of the environmental effects normally associated with installing UGC through undisturbed areas or with the creation of access tracks and foundations that would have been required to support alternative structures. This option also has the potential to take advantage of construction efficiencies by laying ducts for the UGC while the wind farm developer is laying the wind farm access tracks. Finally, use of UGC on the higher ground removes the need to use more resilient structures, such as steel lattice towers.
- 2.3.7 The route from Bhlaraidh Extension Wind Farm on-site substation through to Fort Augustus substation thus comprises first UGC for approximately 3 km, transitioning to 132 kV wood pole OHL for approximately 14.5 km, and then transitioning to UGC for an additional 2 km (approximately) to complete the alignment.

## 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'<sup>2</sup> 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.

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<sup>2</sup> 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*

- 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<sup>3</sup>. The guidance splits the routeing stage of a project into four principal stages, as follows:
- Stage 0: Routeing Strategy Development<sup>4</sup>;
  - 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 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.
- 2.4.5 In accordance with the steps outlined in the Holford Rules and SSEN Transmission guidance, the following principles have been taken into account during the route (where practicable) and alignment stages 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 pole 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.

## 2.5 Corridor Selection (Stage 1)

- 2.5.1 A Corridor was identified which encompassed a range of feasible route options between the two connection points at Bhlaraidh Extension Wind Farm on-site substation and Fort Augustus substation (see **Figure 2.1**).

## 2.6 Route Selection (Stage 2)

- 2.6.1 The route selection stage of the project involves the identification of route options (circa 1 km wide), and an appraisal of the environmental, technical and economic constraints of the route options, prior to arriving at a preferred route for the purposes of consultation and a proposed route to take forward to the alignment selection stage (Stage 3).

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<sup>3</sup> SSEN Transmission (March 2018), Procedures for Routeing Overhead Lines of 132kV and above (updated in September 2020 to include underground cables of 132 kV and above)

<sup>4</sup> Setting out the proposed strategy for the routeing stage of a particular project.

2.6.2 Route options were identified following desk-based review and site walkovers, giving due consideration to the principles set out in the Holford Rules and SSEN Transmission guidance, as described in Section 2.4 of this Chapter.

2.6.3 Appraisal of route options involved systematic consideration against the topic areas included in **Table 2.1** overleaf.

**Table 2.1: Topic Areas Considered**

	Category	Sub-Topic
<b>Environmental</b>	<b>Natural Heritage</b>	Designations
		Protected Species
		Habitats
		Ornithology
		Geology, Hydrology and Hydrogeology
	<b>Cultural Heritage</b>	Designations
		Cultural Heritage Assets
	<b>People</b>	Proximity to Dwellings
	<b>Landscape and Visual</b>	Designations
		Character
		Visual
	<b>Land Use</b>	Agriculture
		Forestry
		Recreation
	<b>Planning</b>	Policy
Proposals		
<b>Engineering</b>	<b>Infrastructure Crossings</b>	Major Crossings (132kV, 275kV, Rail, 200+m wide river, navigable canal, gas or hydro pipeline)
		Road Crossings
	<b>Environmental Design</b>	Elevation
		Pollution Areas
		Flooding
	<b>Ground Conditions</b>	Terrain
		Peat
	<b>Construction / Maintenance</b>	Access
		Angle Towers
	<b>Proximity</b>	Clearance Distance
		Proximity to Windfarms
Urban Environments		
<b>Cost</b>	<b>Capital</b>	Construction, Diversions, Public Road Improvements, Felling, Land Assembly, and Consents Mitigations
	<b>Operational</b>	Inspections and Maintenance

2.6.4 A Red-Amber-Green (RAG) rating was applied to each topic area for each route option, indicating potential constraint to development.

## 2.7 Summary of Route Option Appraisal (Stage 2)

2.7.1 The following part of this Chapter summarises the route options appraised during Stage 2 of the routing process. A summary of the route options identified and appraised is set out, together with the main environmental and technical constraints identified during the appraisal. Confirmation of the preferred route that

was taken to consultation, a summary of consultation responses, and confirmation of the proposed route, being that route that was finalised (i.e. following consultation and taken to Stage 3: Alignment Selection) is provided.

#### *Route Option 1 and Route Option 1A*

- 2.7.2 Route Option 1 represents the most westerly route option of those considered, travelling generally in a south-westerly direction from Bhlaraidh Extension Wind Farm on-site substation to the existing OHL wayleave corridor, before then heading south-east within the vicinity of the existing OHL wayleave to Fort Augustus substation at Auchterawe. This route option typically follows existing infrastructure corridors, such as the A887 (public road) and existing OHL infrastructure, including the Beauly-Denny OHL.

#### *Route Option 1A*

- 2.7.3 A minor variation to Route Option 1 was identified in the form of Route Option 1A. It overlaps Route Option 1 for most of its length, but deviates towards a more south south-west heading before Dundreggan, passing through Inverwick Forest and onto higher ground with less forestry cover. It continues along the more open west slope of Carn Tarsuinn, before merging with Route Option 1 once again as the latter enters Inchnacardoch Forest above Auchterawe and following the existing wayleave corridor.

#### *Route Option 2*

- 2.7.4 Route Option 2 represents the most easterly route option of those considered, travelling generally south-east to Invermoriston, then south-west toward Fort Augustus before continuing through Inchnacardoch Forest toward Fort Augustus substation at Auchterawe. This route option typically follows the A887 and A82, as well as the Great Glen Way alongside Loch Ness.

#### *Route Option 2A*

- 2.7.5 A minor variation to Route Option 2 was identified in the form of Route Option 2A. It differs from Route Option 2 by turning to head east rather than west at the existing access track north of Carn an Tuairneir, keeping to the higher open ground. Route Option 2A banks to the south at the south-east corner of the Bhlaraidh Extension Wind Farm site boundary, making use of a slight seat in the landform to head towards Levishie, passing through Levishie Wood, and re-joining Route Option 2.

#### *Route Option 3*

- 2.7.6 Route Option 3 represents the central, most 'direct' route option of those considered, travelling generally south-west along the same path as Route Option 1 and then deviating through Portclair Forest onto higher open ground. It passes between the peaks of Carn Dubh and Burach on a south south-west heading before passing into Inchnacardoch Forest and meeting the existing wayleave corridor, and finally taking a south-easterly direction to Fort Augustus substation at Auchterawe. During route identification, this route option was recognised as the shortest and most direct route between the connection points while making sensible use of the landform.

- 2.7.7 The conclusions of the Route Options Appraisal identified route options 1, 1A and 3 as offering viable solutions for the project from an environmental perspective, however Route Option 1A was considered, on balance, to be the Preferred Route for the following reasons:

- Environment: Route Option 1A would have reduced landscape and visual impacts compared with Route Option 3, avoids designated areas including a Special Landscape Area, Site of Special Scientific Interest and a Drinking Water Protection Area, and presents fewer concerns for cultural heritage. Route Option 1A provided greater opportunities for avoiding the most sensitive woodland areas and need for felling overall in comparison with Route Option 3, along with reduced ornithology constraints

and would likely require reduced access track construction given proximity to existing tracks in the existing wayleave corridor.

- Engineering: Route Option 1A was more favourable, on balance, in terms of road crossings, flooding considerations, terrain, presence of existing access and having a reduced requirement for angle poles.
- Economic: All route options were considered to be comparable in terms of costs, utilising the same technologies and requiring similar capital expenditure when considering all factors.

## 2.8 Reporting of Route Option Stage and Consultation

- 2.8.1 The appraisal of route options was set out in a Consultation Document<sup>5</sup>, published in November 2020. The Consultation Document provided a summary of project need, the route option process that had been undertaken and a description of the route options appraised. The Consultation Document sought comments from stakeholders and members of the public on the route option studies undertaken, as well as the rationale for, and approach to, the selection of the preferred route.
- 2.8.2 As noted in **Chapter 1**, SSEN Transmission had intended to hold face to face consultation events at several locations along the route following publication of the Consultation Document. However, as a result of the COVID 19 pandemic these events had to be cancelled.
- 2.8.3 To continue engagement on the project, SSEN Transmission developed an online consultation tool and hosted virtual consultation events, to enable the local community and stakeholders to experience the full exhibition from home on a computer, tablet or mobile device.
- 2.8.4 The virtual consultation events took place via the project website <https://www.ssen-transmission.co.uk/projects/bhlaraidh-extension-windfarm-connection/> at the following times:
- 10 November 2020; 13:00 – 15:00 and 17:00 – 19:00; and
  - 11 November 2020; 14:00 – 16:00.
- 2.8.5 Comments received from stakeholders in response to the Consultation Document, or following virtual consultation events, were documented in a Report on Consultation, published in January 2021<sup>6</sup>.
- 2.8.6 The route options consultation process raised a number of comments seeking clarification, setting requirements for further assessment, or stating a preference for a particular route option. These points included:
- Identification of particular issues with certain route options, particularly Route Option 2 which had the potential to directly and / or indirectly impact cultural heritage assets, and Route Option 3 which would impact current forestry conservation and expansion efforts, including of Caledonian pinewood remnants;
  - Requests for clear mapping of the proposed infrastructure over relevant survey data including habitat and peatland maps;
  - Expectations that the Applicant follow best practice guidelines in their assessment, for example considering guidance from 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments' when conducting peat surveys; and
  - Requests for clear mitigation plans and procedures to be documented with relation to any outstanding potential impacts, including peat disturbance and CO<sub>2</sub> release.
- 2.8.7 Following consultation, it was initially confirmed that the preferred route (Route Option 1A) would be taken forward as the proposed route for the consideration of alignment options at Stage 3. However, further

<sup>5</sup> Bhlaraidh Extension Wind Farm Grid Connection Works: Consultation Document: Route Options (November 2020), produced by SSEN Transmission

<sup>6</sup> Bhlaraidh Extension Grid Connection: Report on Consultation – Route Options (January 2021), produced by SSEN Transmission



consultation with the principal landowner, FLS, subsequent to the routeing stage, indicated a strong preference for Route Option 1 in order to reduce potential adverse effects on core Caledonian pine wood remnant and regeneration zone. Consequently, the Applicant agreed that Route Option 1 should be taken forward as the Proposed Route into the alignment selection stage of the project.

## 2.9 Alignment Selection (Stage 3)

- 2.9.1 The alignment selection stage of the project sought to determine an alignment (subject to a LOD of 100 m) within the Proposed Route identified during the route options stage (Route Option 1), typically including the location of terminal and angle support structures, sealing end compounds for underground cables, and the definition of an access strategy.
- 2.9.2 SSEN Transmission engaged an experienced OHL construction consultant to provide specialist technical input into the alignment stage to identify and explore the advantages, disadvantages and constructability of OHL alignment options and design solutions.
- 2.9.3 Subsequently, a 'base' alignment was developed by the OHL consultant on the basis of it being the most technically feasible and economically viable alignment, giving due consideration to a range of technical and cost criteria over the construction and operation phases of a new OHL.
- 2.9.4 Alternative OHL alignment options and design solutions (referred to as 'diversions') were also considered by the OHL consultant and project environment and engineering teams as part of the iterative alignment selection process.
- 2.9.5 In considering the potential environmental constraints of the base alignment and alternative diversions and design solutions, the following tasks were undertaken during the alignment selection stage:
- Desk-based review and targeted site survey by project landscape architects, ecologists, ornithologists, archaeologists, geologists and hydrologists to review alignment options and provide advice on variants or micro-siting opportunities for positioning of poles and indicative construction access;
  - Targeted Phase 1 / National Vegetation Classification (NVC) habitat surveys and protected species surveys to supplement existing data;
  - Review of ornithological survey data and records for the area, including requests for data held by RSPB, and targeted bird surveys to supplement existing survey data;
  - Review of comments received from stakeholders during the route options;
  - Workshops with SSEN Transmission, the OHL consultant and environmental consultants to discuss alignment options and diversions, prior to the identification of a preferred alignment and design solution; and
  - Site reconnaissance visits by the SSEN Transmission engineering team and environmental consultants to review alignment options.

## 2.10 Summary of Alignment Selection Appraisal

- 2.10.1 The following part of this Chapter summarises the alignment options and design solutions appraised during the alignment selection stage of the routeing process (Stage 3). A description of the base alignment and diversions<sup>7</sup> considered is provided, together with the main environmental and technical constraints. Confirmation of the preferred alignment and design solution (i.e. taken to consultation), a summary of consultation responses, and confirmation of the proposed alignment (i.e. following consultation and taken to the EA stage) is also provided.

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<sup>7</sup> An alternative alignment or design solution proposed to avoid localised constraints.

2.10.2 The following Alignment Options were identified (see **Figure 2.2**):

*Alignment Option 1*

2.10.3 Alignment Option 1 represents the base alignment from which all other options are derived.

2.10.4 This alignment option starts at the consented Bhlaraidh Extension Wind Farm on-site substation and travels initially south for around 1 km before veering slightly westwards as it crosses an existing wind farm track and then turning south again to follow the eastern side of the existing Bhlaraidh Wind Farm access track, also to be used for Bhlaraidh Extension Wind Farm for around 3.5 km. The majority of this part of the alignment would require to be steel lattice towers or composite or NeSTS poles due to the higher elevation of the ground.

2.10.5 The alignment continues southwards as a wood pole OHL solution, crossing the access track which turns to the east, until passing west of the small settlement of Bhlaraidh at which point it takes a more south-west route to cross the A887 road. From here, the alignment continues south of the A887 road, crosses the River Moriston, then follows a heading roughly parallel to the river along the north edge of Portclair Forest.

2.10.6 The alignment passes immediately south of the Dundreggan Reservoir Dam then follows a parallel route to the existing 132 kV OHL towards the existing wayleave corridor. It would not follow the full length of the existing OHL. Instead, approximately 0.5 km before the existing wayleave corridor, it would cut the corner and turn south-west and follow along the west edge of Inverwick Forest. It would then follow the eastern side of the existing OHL until it reaches Fort Augustus substation. It is expected that the final 2 km (approximate) of the alignment would be an UGC into Fort Augustus substation.

*Alignment Diversion 1*

2.10.7 Alignment Diversion 1 departs from Alignment Option 1 north of Levishie Forest near the boundary of the Bhlaraidh Extension Wind Farm, heading south-west and crossing to the west side of the wind farm access track. The diversion would then head south, following the west side of the access track instead of the east. It would pass into Levishie Forest and turn to a south-west heading just north of the existing quarry, then through the wooded area south-east and south of Coille Bhlaraidh.

2.10.8 The diversion would continue westwards, passing to the north of the Dundreggan Dam and A887, crossing the road approximately 0.86 km south-west of the dam. The diversion would continue on a south-west heading between the A887 and the River Moriston until a point on open ground south-east of Dundreggan, some 2.5 km upstream of Dundreggan Dam, at which point it would cross to the south side of the river and rejoin Alignment Option 1 north of Inverwick Forest.

*Alignment Diversion 2*

2.10.9 Alignment Diversion 2 departs from Alignment Option 1 west of the residences at Bhlaraidh, north of the A887. It heads west south-west towards the quarry, then south south-west to cross the A887 and the River Moriston, rejoining Alignment Option 1. It is a relatively short diversion, approximately 1 km in length.

*Alignment Diversion 3*

2.10.10 Alignment Diversion 3 departs from Alignment Option 1 approximately 1 km south-east of Dundreggan Dam, near a bend in the River Moriston. It continues on a south-west heading for approximately 2 km through Portclair / Inverwick Forest, essentially eliminating the 'bend' in Alignment Option 1 which follows the River Moriston. The diversion rejoins Alignment Option 1 at the angle tower of the existing 132 kV OHL, approximately 1.25 km upstream of the dam.

*Alignment Diversion 4*

2.10.11 Alignment Diversion 4 departs from Alignment Option 1 at Inverwick, south of Dundreggan, and follows a south-west path up over higher ground through Inverwick Forest. It continues for approximately 2 km before rejoining Alignment Option 1 near Allt Phaocaichain.

*Alignment Diversion 5*

2.10.12 Alignment Diversion 5 departs from Alignment Option 1 as it meets the existing wayleave corridor, passing beneath the east OHL as a short section of UGC, and taking a path south-east between the two existing OHLs. It continues to travel along the rough centreline between the two, until near the point at which they converge, approximately 2 km from Fort Augustus substation. At this point, the diversion would change from OHL to UGC, and continue south-east until the connecting point with Fort Augustus substation. Unlike the other alignment diversions, this diversion would not rejoin Alignment Option 1 prior to the Fort Augustus substation connection point.

*Alignment Diversion 6A*

2.10.13 Alignment Diversion 6A departs from Alignment Option 1 near the residences at Bhlaraidh, north of the A887. It heads west south-west towards the quarry, slightly north of Alignment Diversion 2, then south-west to follow along the north side of the A887 through the wayleave of an existing 33 kV OHL. This 33 kV OHL would be undergrounded as part of development of this diversion, requiring widening of the existing wayleave. The diversion continues through the wayleave roughly parallel to the A887 until a point immediately north-east of Dundreggan Dam. It crosses the River Moriston approximately 100 m downstream of the dam, rejoining Alignment Option 1 immediately to the south where the existing 132 kV OHL connects into the dam.

*Alignment Diversion 6B*

2.10.14 Alignment Diversion 6B stems off Alignment Diversion 6A approximately 1.1 km downstream of Dundreggan Dam, rejoining Alignment Option 1 at the same point Alignment Diversion 3 stems off.

*Alignment Diversion 7*

2.10.15 Alignment Diversion 7 stems off Alignment Option 1 approximately 100 m south of the starting point of Alignment Diversion 1, following a southerly heading roughly parallel to the wind farm access track. The diversion turns south-west just before the north boundary of Levisie Forest to avoid the native woodland block and crosses over the wind farm access track. It continues in this direction, crossing the Allt Bhlaraidh watercourse before joining Alignment Diversion 1.

*Alignment Diversion 8A*

2.10.16 Alignment Diversion 8A stems off Alignment Diversion 1 north of the quarry situated west of the settlement of Bhlaraidh, within Levisie Forest. It heads south-east for approximately 300 m before joining Alignment Diversion 6A within the existing wayleave. The alignment diversion maintains a distance from the quarry itself to account for potential future expansion eastwards.

*Alignment Diversion 8B*

2.10.17 Alignment Diversion 8B stems off Alignment Diversion 1 at the same point as Alignment Diversion 8A but instead heads south past the west of the quarry for approximately 350 m, again maintaining a separation distance to account for possible future expansion of the quarry, before joining Alignment Diversion 6A.

2.10.18 The conclusions of the Alignment Options Appraisal identified a Preferred Alignment comprising Alignment Option 1 combined with alignment diversions 7, 1, 8A, 6A and 5. This was derived based on the following reasoning.

2.10.19 From an environmental perspective, while less preferable from an LVIA standpoint, this alignment would minimise potential forestry loss and adverse effects on Annex 1 habitats. While Alignment Diversion 7 would cross the Allt Bhlaraidh watercourse and some of its tributaries, it would accord with the general preferences for soils and hydrology by avoiding the larger areas of flood extents and be further from licenced hydropower schemes identified near the existing wayleave corridor. Alignment Diversion 8A would make best use of the felled area east of the quarry near Bhlaraidh, reducing felling requirements, and by transferring 'off' Alignment Diversion 1 near the quarry, would avoid the felling requirements and impacts on Annex 1 and other sensitive habitats which would result from Diversion 1 further upstream. Alignment Diversion 6A is less preferred than Alignment Option 1 due to potential for direct impact on recorded assets, but these are considered to be only a minor constraint to development. Alignment Diversion 6A was also preferable in terms of proximity to dwellings by veering west from Bhlaraidh rather than passing by it. It was considered potentially less favourable for ornithology due to the presence of an osprey nest, however the nature of this constraint was later determined during full breeding bird surveys. Alignment Diversion 6A would potentially have a slightly greater adverse effect on recreational activities (for example fishing and watersports) downstream of Dundreggan Dam given its closer proximity to such, however this was considered likely to be offset by Alignment Diversion 5 switching from OHL to UGC approximately 2 km from Fort Augustus substation, reducing its presence during operation for core paths through Inchnacardoch Forest.

2.10.20 From an engineering perspective there was no clear preference; all alignments were reasonable options in terms of construction, with only slight or marginal differences in constraint to development.

2.10.21 From a cost perspective, Alignment Option 1 with alignment diversions 6A and 5 was a slight preference given the reduced tree felling requirements. However, it was noted that this would deliver a small saving in comparison with the overall capital costs of the development.

2.10.22 Taking the key considerations for all three main topics into account, selection of a Preferred Alignment was largely driven by environmental constraints and the overall preference identified through comparative analysis as Alignment Option 1 with alignment diversions 7, 1, 8A, 6A and 5.

## 2.11 Reporting of Alignment Selection Stage and Consultation

2.11.1 The appraisal of the alignment selection stage of the project was set out in a Consultation Document<sup>8</sup>, published in June 2021. The Consultation Document sought comments from stakeholders and members of the public on the alignment selection studies undertaken, and the reasons for the design decisions taken during the alignment selection stage in the selection of the preferred alignment and technology selection.

2.11.2 Public consultation events detailing the preferred alignment and technology selection described in the Consultation Document: Alignment Selection (June 2021) were also held online due to the COVID-19 Pandemic. The virtual consultation events took place via the project website <https://www.ssen-transmission.co.uk/projects/bhlaraidh-extension-windfarm-connection/> at the following times:

- 23 June 2021; 12:30 – 15:00;
- 23 June 2021; 16:30 – 19:00; and
- 24 June 2021; 13:00 – 15:00.

2.11.3 Comments received from stakeholders in response to the Consultation Document (June 2021), or following virtual consultation events, were documented in a Report on Consultation, published in April 2022<sup>9</sup> which confirmed that the Preferred Alignment described in 2.10.22 should be taken forward as the Proposed Alignment for the EA.

<sup>8</sup> Bhlaraidh Extension Grid Connection: Consultation Document – Alignment Selection (June 2021), produced by SSEN Transmission

<sup>9</sup> Bhlaraidh Extension Grid Connection: Report on Consultation (April 2022), produced by SSEN Transmission

2.11.4 The Report on Consultation also confirmed how SSEN Transmission have responded to comments received by stakeholders on the preferred alignment and technology selection and detailed the actions that would be taken as the project progresses through to the EA and consenting stage.

2.11.5 The consultation process for the project also raised a number of comments seeking clarification or setting requirements for the development. These points include:

- For tree felling through Glen Moriston to not be highly visible from public roads;
- For visualisation locations to be agreed with the Highland Council (THC) at Scoping stage;
- For the alignment to make best use of previously disturbed ground;
- Justification for the 100 m Limit of Deviation (LOD) and to identify where this should be curtailed to avoid potential impacts on sensitive areas;
- That the U1663 road at Auchterawe must remain open for use during installation of UGC at the crossing point;
- 50 m separation distances from water courses and bodies is to be observed for all poles / structures;
- Compensatory planting plans are to be provided;
- A Vehicle Restraint System (VRS) will be required for any poles within 5 m of the A887; and
- Construction works directly onto the A887 where traffic management is deployed and / or where numerous movements of construction traffic are required to access and egress the A887 are to be avoided within July or August of any year.

2.11.6 A number of requests for further details to be submitted with the planning application or discussed with the local planning authority were also raised, as per the following:

- Sediment management protocols;
- Sustainable Design Statement;
- A financial guarantee for the removal of redundant infrastructure at the end of the development's lifespan;
- Design and Access Statement;
- Framework Construction Traffic Management Plan;
- A 'wear and tear' agreement with THC for any damage or degradation of public roads as a result of construction traffic;
- Discuss works crossing any trunk roads with the relevant THC Area Manager;
- Drainage Impact Assessment;
- Review of THC's Developer Contributions Supplementary Guidance (DCSG) and discussion with the Council on appropriate agreement(s) to be put in place;
- A 5-year wind blow clause to be discussed with FLS;
- Confirmation for Sustrans that Cycle Network Route 78 will not be impacted by the Proposed Development; and
- Felling Method Statement for Transport Scotland.

2.11.7 To address these points, the following actions are being / were undertaken:

- **Chapter 3: The Proposed Development** sets out arrangements for removal of redundant infrastructure. Consent to be applied for is in perpetuity and therefore a financial guarantee is not appropriate.
- Felling requirements are outlined in **Chapter 9: Forestry** and were planned to minimise visual impacts on roadways, where practicable. This informed the compensatory planting requirements and a Compensatory Planting Strategy is included in **Appendix 9.4**.

- Further consultation was carried out with THC with regard to visualisation locations and LOD requirements.
- Works and VRS relating to the A887 will be discussed with Transport Scotland prior to any works commencing.
- Pole locations have been selected so as to observe the greatest practicable separation from watercourses and water bodies.
- Details of construction methodologies, likely transport requirements and construction environmental management are set out within **Chapter 3: The Proposed Development**, while mitigation measures are proposed throughout the EA, in lieu of a formal Sustainable Design Statement or Design and Access Statement.
- Principles, design standards and best practice measures for the management and control of drainage are set out within the Hydrology chapter (see **Chapter 7**) in lieu of a formal Drainage Impact Assessment.
- Further consultation with THC confirmed DCSG was not relevant to the type of development proposed.
- The requested further details and statements have been discussed with the relevant parties and details included in this EA Report, where appropriate.

2.11.8 All comments and considerations were taken forward into the EA and consenting stage.

## **2.12 Further Consideration of Alternatives during the EA Process**

2.12.1 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 different detailed design solutions available for the project.

2.12.2 Further detailed engineering investigations have resulted in the alignment being moved slightly eastward to run closer to the existing wind farm access track and avoid challenging terrain on the western side of Allt Bhlaraidh. Moving alignment east of Allt Bhlaraidh and further east of the dam would bring it out of an area of commercial forestry and into an area of native woodland where it would take advantage of the existing 33 kV OHL wayleave corridor and reduce the total volume of felling for this section (see **Chapter 9: Forestry**).

2.12.3 The crossing of the A887 has also been moved further eastward to avoid a stand of oak trees north-east of Dundreggan dam and an area of particularly challenging terrain. The revised crossing would bring the line south of the road approximately 1.2 km east of the dam and avoid an area of Caledonia Pine Woodland that would have been crossed by the preferred alignment as presented during alignment stage consultation.

2.12.4 Finally, further consultation with FLS saw the UGC section on the approach to Fort Augustus substation moved to between the existing OHLs rather than passing down the western side. This would reduce the requirement to widen the existing wayleave corridor.