

3 CONSIDERATION OF ALTERNATIVES

3.1 Introduction

- 3.1.1 The overall objective of the Proposed Development is to increase the network capability in Argyll and Kintyre, beyond that already under current construction and/or public development¹, to enable the connection of further renewable generation and to export to the wider GB network. Further details on the project need are provided in **Chapter 1: Introduction (EIAR Volume 2)**. In accordance with Regulation 5(2)(d) and Schedule 4, paragraph 2 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017², known hereafter as the “EIA Regulations”, this chapter outlines the reasonable alternatives studied by Applicant, which are relevant to the Proposed Development and its specific characteristics. The chapter also describes the main reasons for the option chosen, taking into account the effects of the Proposed Development on the environment.
- 3.1.2 An iterative process of design development, route and alignment selection³ (the routeing process) has been completed since project inception in 2021, in response to anticipated increases in renewable energy generation within the wider area which will require connection to the transmission network. A summary of this process is provided in **Section 3.3**.
- 3.1.3 This chapter summaries key stages in the routeing process and the alternatives which have been considered at each stage in order to reach the final design, namely the Proposed Development, as described in **Chapter 2: Description of the Proposed Development (EIAR Volume 2)**. The routeing process and the final configuration of the Proposed Development has been informed throughout by the consideration of a balance of factors including engineering feasibility, environmental sensitivities, network resilience and cost factors, as well as landowner and wayleave considerations. The routeing process has also been supported throughout by an ongoing process of consultation with statutory and non-statutory consultees, landowners, and the local community. A summary of consultation is provided in **Technical Appendix 3.1 and 3.2 (EIAR Volume 4)**.
- 3.1.4 This chapter is supported by the following figures and technical appendices:
- Volume 3a: Figures
 - **Figure 1.1: Location Plan and Overview;**
 - **Figure 2.1: Proposed Development;**
 - **Figure 3.1: Routeing Options;** and
 - **Figure 3.2: Alignment Options.**
 - Volume 4: Technical Appendices
 - **Technical Appendix 3.1: Creag Dhubh to Inveraray 275 kV Overhead Line, Routeing Report on Consultation;** and
 - **Technical Appendix 3.2: Creag Dhubh to Inveraray 275 kV Overhead Line, Alignment Report on Consultation.**

¹ Includes those developments within the public domain which are consented (not yet constructed) or the subject of a valid planning application.

² <https://www.legislation.gov.uk/ssi/2017/101/introduction/made>

³ The SHE Transmission Approach to Routeing of Overhead Lines, 2016.

SSEN, 2020. Procedures for Routeing Overhead Lines and Underground Cables of 132kV and above. Document reference: PR-NET-ENV-501. September 2020.

Scottish and Southern Electricity Networks (March 2018) PR-NET-ENV-501: Procedures for Routeing Overhead Lines of 132kV and above

3.1.5 This chapter is also supported by further routeing, alignment and consultation documents produced throughout the project evolution (2021-2022). These are referenced throughout the text where applicable.

3.2 Key Policy Considerations

3.2.1 The Applicant has obligations under section 9 of the Electricity Act to 'develop and maintain an efficient, co-ordinated and economical system of electricity transmission'.

3.2.2 The Applicant, as a licence holder under the Electricity 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".

3.2.3 Under the terms of the transmission licence, the Applicant is obliged to comply with the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS)⁴, which provides the criteria for the planning and design of the transmission system. The NETS SQSS requires the Applicant to provide a transmission connection capable of withstanding single circuit faults without loss of supply and without disconnection of generation stations. Furthermore, the Construction (Design and Management) Regulations 2015 (CDM Regulations) require that the design aims to minimise hazards and reduce risks across the whole project lifecycle.

3.2.4 Taking account of these obligations, the Applicant has considered engineering, cost, and environment factors in evaluating the alternatives for the Proposed Development, with the aim of identifying a solution that meets the objectives of the Proposed Development 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'.

3.3 Design Alternatives

3.3.1 The EIA Regulations require the Applicant to describe the reasonable alternatives that were studied and to provide an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects. The following alternatives have been considered during the project development:

- The "Do Nothing" scenario; and
- A new 275 kV connection between the proposed Creag Dhubh substation and the recently constructed Crossaig to Inveraray 275 kV overhead line (OHL), including:
 - Six alternative Route Options; and
 - Three alternative Alignment Options.

Do Nothing Scenario

3.3.2 The "do-nothing" scenario assumes that no options are considered.

⁴ National Electricity Transmission System Security and Quality of Supply Standard, Version 2.4, (2019). Available at: <https://www.nationalgrideso.com/codes/security-and-quality-supply-standards?code-documents>

- 3.3.3 The construction of the new OHL which will form part of the Argyll and Kintyre transmission network in Scotland is necessary due to the growth in renewable electricity generation requiring an increase in transmission capacity. Therefore, a “do-nothing” scenario would result in a significant network capacity deficit. This would not support the Applicant’s ability to meet their licence requirements, in respect of the planning and operation criteria, as required by NETS SQSS. Furthermore, without the transmission capacity increase future renewable energy generating developments in the region would be constrained by a lack of suitable grid connection. This would therefore impact Scotland’s carbon reduction targets and commitment to net zero emissions by 2045. The network would be at risk of potentially huge transmission constraints, through being unable to convey the generation connected to it, resulting in significant operational cost to constrain generation. Additionally, this would also make any future reinforcement of the network expensive and difficult due to the network being highly constrained resulting in high construction outage costs.
- 3.3.4 The “do nothing” scenario is not considered a sustainable development option, resulting in insufficient capacity in the network and a failure to meet the generation and supply demands. It would be inconsistent with the Applicant’s licence obligations to develop and maintain an efficient, coordinated, and economic electricity system, which on balance causes the least disturbance to the environment and to the people who live and work within it.

Route Options

- 3.3.5 The project was first introduced to stakeholders in 2021. At this stage the Applicant shared the general project scope and identified search areas for a new OHL route (**Figure 1.1: Location Plan and Overview, EIAR Volume 3a**).
- 3.3.6 A comparative analysis of environmental, engineering and cost criteria of six alternative 500 m wide Route Options identified by the Applicant was undertaken. In June 2021⁵ stakeholders were consulted on the route selection process undertaken and the selection of the Original Preferred Route Option (Route Option DE) (**Figure 3.1: Routeing Options, EIAR Volume 3a**).
- 3.3.7 Prior to the consultation, the Applicant was aware of an Unexploded Ordnance (UXO) concern on the Ladyfield Plantation, along the Original Preferred Route. However, after further engagement with the landowner, the MOD and a specialist UXO contractor, further information on the extent of UXO presence was gathered.
- 3.3.8 The UXO Contractor concluded the following:
- Based on the minimum tree clearance and an estimated tree density, clearance would take a minimum of 260 days and could increase the cost to deliver the scheme by c50%;
 - The point at which SSEN Transmission would know the extent of UXO presence in heavily wooded areas would be after consent had been gained in mid/late 2023 as SSEN Transmission are not able to begin felling operations until consent has been received and commencement requirements discharged. This could potentially result in identifying that the prevalence of UXO is much higher than previously estimated and could potentially delay completion by years; and
 - Factoring in the 263 days for clearance there is not sufficient time to achieve the April 2027 completion date from the point of receiving Section 37 consent.

⁵ Consultation Document. Overhead Line Route Selection. Creag Dhuhb to Inveraray 275 kV Overhead Line. June 2021. Reference LT000194.

3.3.9 The time required for clearance along the Original Preferred Route Option (Route Option DE) would cause significant delay to the project programme and the Argyll 275 kV Strategy as a whole (approximately 1 year delay). In addition, the cost of UXO clearance and particularly the tree stump removal, would be considerable and far in excess of the cost of changing the preferred route to one of the other suitable route options. There is also a risk of further delay if a higher number of UXO are found than estimated. Therefore, the Original Preferred Route Option (Route Option DE) was moved to the west of the A819 and thereafter known as the New Proposed Route Option.

Alignment Options

3.3.10 Following the routing stage, a Baseline Alignment to the west of the A819 was developed with the aim of providing the optimal alignment within the New Proposed Route Option, taking account of technical criteria (in accordance with SSEN Transmission Guidance⁶). The Baseline Alignment is also considered to represent the base cost option and was assessed against a range of environmental criteria. Following the identification of the Baseline Alignment, amendments were suggested (hereafter referred to as 'deviations'). These deviations were largely suggested to address environmental and engineering issues and previous consultation. The suggested deviations were assessed⁷ against the Baseline Alignment in line with the engineering and environmental criteria in accordance with SSEN Transmission Guidance⁵.

3.3.11 The two deviations identified are explain below (**Figure 3.2: Alignment Options, EIAR Volume 3a**):

- **Alignment Deviation 1:** This option moved the Alignment to the west in the vicinity of Stronmagachan and offered improvements in response to consultee feedback. Moving the Alignment west moves it further away from residential properties. Additionally, it reduces the impact on a working farm by moving the alignment out of the lambing or "in-bye" fields. It also allows the Alignment to avoid being sited on top of a ridge, as the Baseline Alignment is, which may help reduce visual impact from the trunk road and/or local properties and avoids the potential for additional towers with shorter spans. This option goes through part of the Blarghour windfarm proposed Habitat Management Area however further assessment is being undertaken with a view to providing an alternative area.
- **Alignment Deviation 2:** This option extended the section that the new OHL will run in parallel to the existing 132 kV Inveraray to Taynuilt OHL (ITE/ITW) OHL before an angle turns towards Creag Dhubh and offers improvement in response to landowner feedback. The rationale for moving is in theory it reduces the area of land sterilisation by the two OHLs. The area of land between the existing ITE/ITW and the Baseline Alignment will likely be sterilised due to safety concerns about being enclosed between two live lines. Extending the section that the two OHL runs in parallel, minimises the land area between the two lines and therefore limits the extent of sterilisation.

3.3.12 A comparative appraisal of the environmental, engineering, and cost sensitivities and risks was then undertaken for each Alignment Option in accordance with the methodology set out in SSEN Transmission guidance. The Preferred Alignment was consulted on in April 2022 (**Technical Appendix 3.2: Creag Dhubh to Inveraray 275 kV Overhead Line, Alignment Report on Consultation**)

⁶ The SSEN Transmission Approach to Routing of Overhead Lines, 2016.

⁷ Detailed review of the comparative analysis of deviation options is reported in the Alignment Selection Report (SSEN Transmission, 2017).

- 3.3.13 The alignment and consultation process identified that from north to south, the Preferred Alignment would comprise the Baseline Alignment then changing to Deviation 1 to the Inveraray – Crossaig connection. This was carried through as the Proposed Alignment and forms part of the Proposed Development. (**Figure 2.1: Proposed Development, EIAR Volume 3a**). The Proposed Alignment was favourable:
- From an engineering perspective as it makes use of flatter more open terrain and in doing so is able to increase distance from local properties and use less towers; reduce the impact to local farming operations and residences; and require less extensive felling, making use of previously felled areas.
 - From an environmental perspective the Proposed Development reduces impacts on ancient and oak woodland; is further from private water supplies; properties and is screened by local topography; has less impact on landscape designations; and fewer impacts on visual receptors and recreational receptors.

3.4 Summary

- 3.4.1 The Applicant has considered a number of alternatives in determining the key parameters of the Proposed Development, as well as key feedback from statutory bodies, the local community and other key stakeholders.
- 3.4.2 The “do nothing” scenario (i.e., no new 275 kV OHL) would result in a significant network capacity deficit due to the substantial growth in current and expected electricity generation in the north of Scotland and is therefore not considered to be a sustainable development option. The project will enable the connection between north and south Argyll which will in turn enable the export of power more widely across Scotland. Further details on the project need are provided in **Chapter 1: Introduction (EIAR Volume 2)**.
- 3.4.3 A Preferred Route Option was selected based on environmental, cost and engineering constraints and brought forward to consultation. Following consultation SSEN Transmission was made aware of a significant UXO along the Original Preferred Route Option, therefore the route was moved from the east to the west of the A819.
- 3.4.4 Following the move to the west of the A819, alternative Alignment Options for the Proposed Development were developed, assessed and also brought forward to consultation. From a technical, environmental and cost perspective a combination of Deviation 1 moving onto the Baseline Alignment was chosen as the Preferred Alignment and carried through as the Proposed Alignment that forms part of the Proposed Development.
- 3.4.5 Further details on the Proposed Development can be found in **Chapter 2: Project Description (EIAR Volume 2)**. A summary of how consultation has influenced the design is provided within each technical chapter as well as **Technical Appendix 4.3: Consultation Register (EIAR Volume 4)**.
- 3.4.6 Details of all the key routing and consultation documents produced through the project evolution are also provided in **Table 3-1**.

Table 3-1: Summary of Routeing and Consultation Documents through Project Evolution

Year	Routeing / Consultation Stage	Document / Website Reference
June-July 2021	<p>The route selection process was consulted on in June-July 2021.</p> <p>From this process, a Preferred Route Option (Route Option DE) was selected to be brought forward to the alignment selection stage.</p>	<p>Consultation Document. Overhead Line Route Selection. Creag Dhubh to Inveraray 275 kV Overhead Line. June 2021. Reference LT000194.</p> <p>https://www.ssen-transmission.co.uk/projects/creag-dhubh-inveraray-275kv-overhead-line/</p>
March 2022	<p>Statutory consultees, local residents and community councils were contacted by SSEN Transmission notifying them of the change in route to the west of the A819 due to the UXO risk.</p>	<p>Postcard drop</p>
March 2022	<p>The EIA Scoping Report was submitted to the ECU in March 2022 with the New Proposed Route Option.</p>	<p>Environmental Impact Assessment Scoping Report. Creag Dhubh to Inveraray 275 kV Overhead Line (LT000194). March 2022. ECU reference ECU00003442</p> <p>https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00003442</p>
April-May 2022	<p>The alignment selection process was consulted on in April-May 2022.</p> <p>This was based on the New Proposed Route Option to the west of the A819.</p>	<p>North Argyll 275 kV Overhead Line Reinforcement. Alignment Selection Consultation Document: Creag Dhubh to Inveraray 275 kV Overhead Line.</p> <p>https://www.ssen-transmission.co.uk/projects/creag-dhubh-inveraray-275kv-overhead-line/</p>