



Harris to Stornoway 132 kV Overhead Line Replacement

Scottish Hydro Electric Transmission plc

Design and Access Statement

October 2022

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1. Design and Access Statement

1.1. Introduction

- 1.1.1. This Design and Access Statement has been produced to accompany the application under Section 37 of the Electricity Act 1989 to Scottish Ministers for consent for the construction and operation of a c.58 km single circuit 132 kV overhead line (OHL), supported by low profile trident H poles between the existing Harris GSP and the existing Stornoway Substation, and ancillary works to facilitate construction and operation of the Proposed Development. These ancillary works would include vegetation clearance, upgrade existing or establishment of new junction bell mouths, establishment of temporary access (for the construction of the OHL), measures to protect road and other public/private crossings during construction and dismantling of the existing aged 132 kV OHL asset which will be dismantled and removed as part of the project works.
- 1.1.2. The Design and Access Statement is a requirement for National Developments as set out in the Town and Country Planning Development Management Procedure (Scotland) Regulations 2013. There is no statutory requirement for a Design and Access Statement for applications under the Electricity Act 1989, as such this is submitted voluntarily.
- 1.1.3. The Design and Access Statement describes the design and access principles which have guided route selection and the proposed layout of the main elements of the Proposed Development. It also contains a written statement about how issues relating to access to the development for disabled people has been dealt with.

1.2. Overhead Line Design Principles

- 1.2.1. Legislation and standards drive design. Under the terms of the transmission licence, the Applicant is obliged to comply with the National Electricity Transmission System Security and Quality of Supply Standard¹ (NETS SQSS), 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.
- 1.2.2. An iterative process of design development and route selection in accordance with the Applicant's guidance² (the routeing process) has been completed since project inception in 2021, in response to the need for existing asset management.
- 1.2.3. Chapter 3 of the Environmental Impact Assessment Report (EIAR) summarises key stages in the routeing process and the alternatives which have been considered at each stage in order to reach the final design. The Applicant considered a number of alternative technical options which included in situ replacement of the most degraded poles along the existing OHL, an underground

¹ National Electricity Transmission System Security and Quality of Supply Standard, Version 2.4, (2019): <https://www.nationalgrideso.com/codes/security-and-quality-supply-standards?code-documents>

² Scottish and Southern Electricity Networks (2020) PR-NET-ENV-501: Procedures for Routeing Overhead Lines and Underground Cables of 132kV and above, Rev 2.0

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cablings option and a subsea cable option. None of these options were considered viable alternatives to an overhead line, on the basis of wider connection issues and/or cost. A new OHL was therefore identified as preferred. Low Profile Trident H Poles were preferred over other OHL solutions such as New Suite of Transmission Structures (NeSTS) or Towers, as they minimise landscape and visual impact which is a key consideration on the Western Isles, and this consequently leads to reduced programme risk when compared to other options.

- 1.2.4. The Proposed Development has been determined based on environmental assessments, engineering analysis, cost considerations and stakeholder consultation undertaken. An iterative route selection process follows four stages: Stage 0 – Routeing Strategy Development, Stage 1 – Corridor Selection, Stage 2 – Route Selection, and Stage 3 – Alignment Selection.
- 1.2.5. The existing 132 kV trident wood pole OHL between the two connection points is over 30 years of age and is in need of replacement. The construction of the new OHL would improve reliability over the existing OHL, meet more onerous climatic design parameters, and would also include a fibre-optic cable, thus meeting the requirements for modern communication, protection and operation of the circuit.
- 1.2.6. The Proposed Development would comprise the construction of a new 132 kV OHL supported by low profile trident H poles. The majority of which would be wood pole formation. Low-profile steel trident H poles may be used in certain locations to achieve long spans. The design of the low-profile steel poles is still to be finalised; however, it is envisaged that they will look very similar to the wood pole trident, the only marked difference would be the replacement of the wood poles with steel poles.



Plate 1.1 Typical Trident wood pole design

- 1.2.7. The spacing between the trident poles would vary depending on topography, altitude and land use, with a maximum span length of 120 m and an average span of 80 m. The trident H poles would be a maximum of 18 m above ground level, with a typical average pole height of 10.5 m above ground level. The OHL would be composed of a combination of suspension poles, angle / tension poles, failure containment poles and terminal poles.
- 1.2.8. The alignment of the Proposed Development has responded where possible, to comments and concerns raised during the consultation process (Chapter 4: EIA Consultation and Scoping, EIAR Volume 2) and is considered to represent a balance between environment, engineering, and cost factors.
- 1.2.9. As described in Chapter 3: Consideration of Alternatives (EIAR Volume 2) the routeing process has facilitated the effective mitigation of many potentially significant environmental effects through the design. A summary of the potential effects addressed through the routeing process and the issues remaining following the selection of the Proposed Alignment is provided in Table 2.3 of Chapter 2 of the EIAR.

1.3. Overhead Line Access Principles

- 1.3.1. No new permanent access tracks are required to facilitate the Proposed Development and ancillary works.
- 1.3.2. Access tracks that could service the construction and operation of the Proposed Development, have been identified and are shown in Figure 2.1: Proposed Development of the EIAR.
- 1.3.3. Construction access would be from the A859 road and is expected to use a mix of existing tracks and temporary lower impact access solutions over open ground to gain access to the Operational Corridor. Preference will be given to the use of low ground pressure vehicles and trackway panels in boggy / soft ground areas to reduce any damage to, and compaction of, the ground. There is potential for proposed temporary access tracks to be required; however, the use of these accesses would be kept to a minimum to minimise disruption to habitats along the route. In certain situations, helicopters may be used for pole delivery to point of installation. All sections of tracks used for construction are proposed as temporary in nature and would be removed following completion of the development, with land reinstated to as close to its existing condition, as reasonably possible. The use of stone access tracks is considered unlikely to be necessary and would be kept to a minimum.
- 1.3.4. Mitigation is proposed in Chapter 11 of the EIAR to minimise the effects of the Proposed Development on the local road network where required.
- 1.3.5. The nature and characteristics of an OHL development is such that it is not designed or intended for use or access by the public. Once operational, it is envisaged that the level of activity associated with the Proposed Development would be minimal with only regular maintenance visits required.

1.4. Consultation

- 1.4.1. Permission for the Proposed Development is being sought under section 37 of the Electricity Act 1989, (as amended) which does not carry a statutory requirement for formal consultation. However, the Applicant recognises the benefits of carrying out early consultation during the planning process and considers producing a Consultation Document as best practice.
- 1.4.2. Consultations with the planning authority, statutory consultees and local communities was carried out during the course of the design development process during 2021 – 2022. Public consultation was first undertaken in June-July 2021, when the Preferred Corridor for a new 132 kV trident “H” pole overhead line between Harris GSP and Stornoway Substation, to replace the existing single pole trident design, was presented. Further public consultation on a Preferred Route took place from September-October 2021, and consultation on a Preferred Alignment took place from February-March 2022. A final round of community consultation on the alignment selection stage took place in June 2022.
- 1.4.3. A summary of how consultation has influenced the design is provided within each technical chapter of the EIAR, as well as in the Pre-Application Consultation Report: Harris - Stornoway 132 kV Overhead Line Replacement: Report on Consultation and Routeing Decisions.

1.5. Conclusion

- 1.5.1. The design of the Proposed Development is largely driven by legislation and standards. However, the proposed design and routing layout perspective is carefully considered to avoid and minimise environmental impacts and ensure the siting of the OHL is sensitive to the landscape context whilst also being fit for purpose. The Proposed Development involves the replacement of high-voltage electricity infrastructure and as such is not designed for public use or access. Once operational, it is envisaged that the level of activity associated with the Proposed Development would be minimal with only regular maintenance visits required for authorised personnel.

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