VOLUME 2: CHAPTER 4 – THE ROUTEING PROCESS AND ALTERNATIVES

Figures (Volume 3 of this EIA Report)

Appendices (Volume 5 of this EIA Report)

There are no appendices associated with this chapter.

4. THE ROUTEING PROCESS AND ALTERNATIVES

4.1 Introduction

4.1.1 The need for the Spittal to Loch Buidhe to Beauly 400 kV Overhead Line (OHL) Connection and the work undertaken by the Applicant to assess the strategic electricity transmission infrastructure requirements to identify a viable and enduring technical design solution is explained in **Chapter 2: Established Need for the Proposed Development**.

4.1.2 In accordance with Regulation 5(2)(d) and Schedule 4, paragraph 2 of the EIA Regulations, this chapter describes the reasonable alternatives studied by the Applicant which are relevant to the Proposed Development and sets out the main reasons for the options which have been selected, taking account of the potential effects on the environment of the alternatives considered. The chapter describes the consideration of alternatives that has been undertaken for the Proposed Development following the need identification, including both: (i) the alternative types of technology considered to address that need; and (ii) the routeing process for the selected technology type, being OHL, comprising of the corridor, route and alignment selection stages. The approach has followed SSEN Transmission's Routeing Procedure which provides a systematic framework for the identification and appraisal of alternatives for OHL projects. The Routeing Procedure is explained further in **Section 4.4**.

4.1.3 An iterative approach has been taken to the identification, appraisal and selection of OHL alternatives through the corridor, route and alignment stages of the process. The routeing process and the final configuration of the Proposed Development has been informed at each stage through consideration of environmental, technical (engineering feasibility) and economic (cost) criteria. It has also been informed by an ongoing process of consultation with statutory and non-statutory consultees, local communities and landowners.

4.1.4 The initial sections of this chapter (**Sections 4.2 to 4.3**) outline the relevant statutory framework, and the strategic alternatives considered by the Applicant in defining the nature of the project and its technology in response to the needs case identified and established by the relevant UK Government agencies and as set out in **Chapter 2: Established Need for the Proposed Development**. The principal stages which were subsequently followed in the development of the new OHL transmission infrastructure are described in this chapter, along with their respective outcomes:

- The approach to the corridor, routeing and alignment selection stages of the project (**Section 4.4**);
- The corridor selection stage process (**Section 4.5 and 4.7**);
- The route selection stage process and consultation responses **(Section 4.6 and 4.7)**;
- The alignment selection stage process and consultation responses (**Section 4.8 and 4.9**);
- Further consideration of alternatives during the EIA process (**Section 4.10**).

4.2 Alternatives Considered

Statutory and Licence Framework

4.2.1 It is important to set out the statutory and licence framework that informs the practice of the Applicant when determining: (i) the type of infrastructure technology; and (ii) the route for that infrastructure.

4.2.2 First, SSEN Transmission, as a transmission licence holder, has a statutory duty under section 9(2)(a) of the Electricity Act 1989 to 'develop and maintain an efficient, coordinated and economical system of electricity transmission'.

4.2.3 Secondly, SSEN Transmission has a statutory duty under Schedule 9 (para. 3) of the Electricity Act 1989, '*when formulating proposals to generate, transmit, distribute or supply electricity*' 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*".

4.2.4 Thirdly, under the terms of the transmission licence, SSEN Transmission is obliged to comply with the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS)[1], which provides the criteria for the planning and design of the transmission system. The NETS SQSS requires SSEN Transmission to provide a transmission connection capable of withstanding single circuit faults without loss of supply and without disconnection of generation stations.

4.2.5 Fourthly, the requirements of the Construction (Design and Management) Regulations 2015[2] (CDM Regulations) require that the design aims to minimise hazards and reduces risks during construction, operation and maintenance of assets.

4.2.6 Taking account of these obligations, SSEN Transmission has considered the technical, economic and environmental factors in identifying and evaluating the reasonable alternatives for the Proposed Development.

Scope of Alternatives Study

4.2.7 The EIA Regulations require the Applicant to report upon the reasonable alternatives that were studied and the main reasons for the choice of the development, taking into account the environmental effects. Section 4.3 describes the strategic and technological alternatives that have been considered by SSEN Transmission in taking forward the Proposed Development in response to the need case which has been set out in **Chapter 2: Established Need for the Proposed Development**. In summary, those alternatives were:

- **Do nothing:** the "do-nothing" scenario; and
- **Alternative technology types**: underground cable and subsea cable options

4.2.8 **Section 4.4** summarises the routeing process then undertaken by the Applicant for the selected technology type, describing the approach to the corridor, routeing and alignment selection stages of the project.

4.2.9 **Sections 4.5** to **4.10** describe in more detail the alternatives considered for the selected technology with the objective of identifying a Proposed Alignment and associated Limit of Deviation (LoD) for the OHL which is technically feasible, economically viable and, wherever possible, minimises disturbance to the environment and to the people who live, work, visit and enjoy recreation within it.

4.3 Strategic Alternatives: Do Nothing Scenario / Technology Types

"Do-Nothing" Scenario

4.3.1 As established in **Chapter 2: Established Need for the Proposed Development**, the Proposed Development is of national importance, contributing significantly towards the delivery of UK and Scottish Government's Net Zero Targets and helping reduce the UK's dependence on imported oil and gas. In a "do-nothing" scenario, the current electricity transmission network would not have capacity to support the transfer of power from both onshore and offshore renewable generation in the north of Scotland to key centres of demand across the country, and therefore the UK Government's targets of 50 GW of offshore wind generation by 2030 and delivery

[1] National Energy System Operator (NESO), 2024. National Electricity Transmission System Security and Quality of Supply Standard, Version 2.8, (2024). [Online] Available at: https://www.neso.energy/industry-information/codes/security-and-quality-supply-standard-sqss/sqss-code-documents.
[2] http://www.legislation.gov.uk/uksi/2015/51/contents/made (accessed 16/12/2024)

of Net Zero targets could not be met. This Strategic Option would not meet the requirements of the network and was discounted from further consideration given it did not represent a reasonable alternative. Accordingly, it was necessary to consider the available options for new infrastructure, during the holistic network design ('HND') and network options assessment ('NOA') processes.

Alternative Technology Types: HND and NOA process

Primary Solution: OHL or UGC

4.3.2 When undertaking the initial assessment of the technology options to reinforce the transmission network (as set out in **Chapter 2: Established Need for the Proposed Development**) SSEN Transmission's System Planning and Network Investment team assessed the potential technical options against its statutory and licence framework described at **Section 4.2**. As noted in Chapter 2, this consisted of both onshore and offshore options. In this case, an onshore option was selected, which meant that there was an initial strategic choice to make between underground cable (UGC) or overhead line (OHL) technology for the entire length of the route. At that time, the key factor distinguishing these two technology types was their relative cost. In summary:

4.3.3 **IET endorsed Costing Study**: at the time the technology options were being considered, the Applicant was mindful of the study titled 'Electricity Transmission Costing Study: An Independent Report Endorsed by the Institution of Engineering & Technology', authored by Parsons Brinkerhoff in April 2012[3] ("the Parsons Brinckerhoff Report"). The report concluded that an underground cable had a build cost rate of 6.9-17.2 times greater than OHL, with a lifetime cost of 4.9-10.5 times greater (please see the cost comparison charts and tables in Section 8 of the Parsons Brinckerhoff Report[4]). The Parsons Brinckerhoff Report was a general (rather than project-specific) study, and does not seek to establish a cost ratio that can be applied to all projects (see page vii). Nonetheless, the purpose of the report was to assist in determining the acceptability of a project in planning terms, *'based on an accredited view of the relative costs'* (Foreword). The report sets out the key reasons why underground cable is significantly more expensive than an OHL over an equivalent distance.

4.3.4 **Draft UK Government Policy:** The Draft Overarching National Policy Statement of Energy dated 2021 (EN-1)[5] and its supporting Draft National Policy Statement for Electricity Networks Infrastructure dated 2021 (EN-5),[6] had also been published at the time the options were being considered. EN-5, in particular, introduced the UK Government's 'strong starting presumption' in favour of an overhead line (para. 2.9.21) on the basis of, among other factors, the '*additional cost of the proposed underground... alternatives, including their significantly higher lifetime cost of repair and later uprating'* (para. 2.9.26).

4.3.5 With consideration of these factors, the applicant's submission to the National Energy System Operator (NESO) (previously National Grid ESO) to inform the onshore options was based upon costs for OHL as the use of underground cable did not meet the requirements for an economical network when a suitable alternative comprising OHL was available to perform the required network function.

4.3.6 After the NESO recommendations to proceed with the reinforcements, the development of the Spittal to Loch Buidhe to Beauly 400 kV OHL Connection project commenced based on using OHL technology for its entire length.

4.3.7 During project development, the final published versions of the Overarching National Policy Statement for Energy (EN-1)[7] and its supporting National Policy Statement for Electricity Networks Infrastructure (EN-5)

4 Institute of Engineering and Technology (IET) Electricity Transmission Costing Study - An Independent Report (2012) , report by Parsons Brinkerhoff
5 Department of Energy Security and Net Zero (2021) Draft Overarching National Policy Statement EN-1 Overarching National Policy Statement for Energy
6 Department of Energy Security and Net Zero (2021) Draft Overarching National Policy Statement of Energy: EN-5 Electricity Networks National Policy Statement - final word version
7 Department of Energy Security and Net Zero (2023) Overarching National Policy Statement for Energy (EN-1)

reinforced that decision. In particular, section 2.9.20 of EN-5, affirmed the UK government's "strong starting presumption"[8] for OHL. In addition to the cost of undergrounding, there are further technological challenges that were explained to consultees during the project development phase (as noted below).

Combined Solutions: Partial Underground Cable Options

4.3.8 Through the development stages (refer to **Section 4.4**), where challenges to the consenting, construction or operation of an OHL are identified, the potential use of shorter sections of underground cable borne in mind by the project team. However, in the present case, there were no challenges that could not be overcome through re-routeing the OHL to minimise impacts on sensitive areas such as those of national significance. This meant that, in turn, it was possible to avoid through other means both: (i) the technical engineering challenges; and (ii) system limitations that would be inherent in partial use of underground cables on a 400kv line.

Technical Challenges of Undergrounding

4.3.9 As part of the consultation phase (during project development), the Applicant explained the technical challenges involved in undergrounding to consultees. These challenges were presented within "The challenges with undergrounding at 400kV" document[9], which explains in general terms the rationale behind the Applicant's decision to adopt a continuous OHL route. These challenges are explained in more detail at in **Section 4.10**.

System Limitations of Short Sections of Underground Cable

4.3.10 A key technical consideration when assessing underground cable sections is the impact to the wider transmission network. High voltage underground cable causes the network to operate less efficiently and generates constraint issues. Underground cable does not transport electricity as efficiently as OHL and requires new or upgraded substation sites to house reactive compensation equipment. This equipment is essential to manage the flow of electricity through the network when using underground cables. It would increase the size of existing substation footprints or require new sites to be constructed. Reactive compensation equipment is not relied upon to the same extent when using OHL and is part of the reason underground cables are more expensive than OHL technology. Fundamental to the use of short sections of underground cable is the availability of suitable sites to extend or build new substations whilst minimising technical challenges and environmental impacts.

4.3.11 During 2023 studies were conducted by SSEN Transmission on the impact of introducing underground cable onto the 400 kV network. It was determined that the estimated length at which reactive compensation infrastructure would be required would be between 1-2 km of 400 kV underground cable installed across the entirety of the over 500 km of new 400 kV OHL infrastructure. Notwithstanding the environmental, technical and cost considerations, introducing underground cable sections presents challenges to achieve a functionally operable and compliant circuit on a comparable basis with 400 kV OHL.

4.3.12 In line with the above, and in consideration with the system limitations, technical, environmental and cost challenges described, the practical application of 400 kV underground cabling was not considered to be a reasonable alternative technology at any stage of the development of the Proposed Development. Therefore, the Proposed Development has been progressed as a high voltage OHL in accordance with the process described in the section below. Moreover, as noted below, the Applicant's decision during the project development/consultation phases to adopt a continuous OHL is further supported by factors that have been considered in further detail (or which have emerged) during the EIA study, as noted below at **Section 4.10.**

[8] Department for Energy Security and Net Zero (2023) National Policy Statement for Electricity Networks Infrastructure (EN-5)

[9] https://www.ssen-transmission.co.uk/globalassets/projects/2030-projects/2030-project-documents/the-challenges-with-undergrounding-at-400kv.pdf

4.4 OHL Alternatives: Summary of the Routeing Process

SSEN Routeing Guidance

4.4.1 Guidelines for the routeing of new high voltage OHLs have been established within the electricity supply industry. These guidelines are known as the 'Holford Rules[10]' 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, minimising changes in direction, taking advantage of topography, and minimising visual interaction with other transmission infrastructure.

4.4.2 Based on the principles set out in the *Holford Rules,* SSEN Transmission has developed its own guidance[11], but broadening the basis for routeing decisions to reflect contemporary practice, and to provide a framework to ensure technical, environmental and economic (cost) considerations are identified and appraised at each stage of the routeing process.

4.4.3 The approach to corridor, route and alignment selection has therefore been informed by SSEN Transmission's guidance ('*Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above*')[12] (hereafter referred to as SSEN Transmission's '*Routeing Guidance'*). The principal objective of the routeing process, as set out at Section 3.1 of the *Routeing Guidance,* is to balance technical and cost considerations with environmental considerations, to select a proposed alignment which is economically viable, technically feasible, minimises impacts on important resources or features of the environment and reduces disturbance to those living in it, working in it, visiting it or using it for recreational purposes (the **'Routeing Objective'**). The process of routeing a project to meet that objective is split into four principal stages, as follows:

- Stage 0: Routeing Strategy Development[13];
- Stage 1: Corridor Selection;
- Stage 2: Route Selection; and
- Stage 3: Alignment Selection.

4.4.4 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. 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 Stages 1 to 3 of the process. At Stage 0, SSEN Transmission determined the requirement for a comprehensive approach to corridor, route and alignment selection and the consultation requirements informing each stage.

4.4.5 Appraisal of the level of environmental, technical and cost constraints at Stage 1 to 3 involved systematic consideration against the following topic areas and criteria, derived from SSEN Transmission's *Routeing Guidance*:

- Environmental:
  - Natural Heritage – designations; protected species; habitats; ornithology; hydrology, geology and hydrogeology; and consideration of Biodiversity Net Gain (BNG).
  - Cultural Heritage – designations; and cultural heritage assets.
  - People – proximity to dwellings.

[10] National Grid, n. d. The Holford Rules. [Online] Available at: https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf

11 A summary of SSEN Transmission's approach to the routeing process is set out in 'Routeing Overhead Lines' guidance note. SSEN Transmission, n.d. Routeing Overhead Lines guidance note. [Online] Available at: https://www.ssen-transmission.co.uk/globalassets/projects/2030-projects/2030-project-documents/routeing-overhead-lines.pdf

[12] 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)

[13] Setting out the proposed strategy for the routeing stage of a particular project.

  - Landscape and Visual – designations; landscape character; and visual amenity.
  - Land Use – agriculture; forestry; and recreation.
  - Planning – policy; and proposals.
- Technical:
  - Infrastructure crossings – major crossings; and road crossings.
  - Environmental design – elevation; atmospheric pollution; contaminated land; and flooding.
  - Ground conditions – terrain; and peat.
  - Construction/maintenance – access; and angle towers.
  - Proximity – clearance distance; wind farms; communication masts; urban environments; and metallic pipelines.
- Cost:
  - Capital.
  - Operational.

4.4.6 The SSEN Transmission *Routeing Guidance* sets out the key factors to be considered and appraised in relation to the constraints for each of the listed criteria. Each alternative OHL route (discussed below) was appraised drawing on this guidance and supported by a comprehensive Geographical Information System (GIS) analytical tool and with reference to other available published constraints data and information gathered by the project team from preliminary site visits (and at Stage 3 from specific field surveys within the Proposed Route). A Red/Amber/Green (RAG) Rating was then applied to each topic area for each alternative, indicating the potential level of constraint to development. A Red rating indicates the least preferred option(s) typically with a high potential for the development to be constrained; Amber indicates an intermediate potential for the development to be constrained; and Green indicates most preferred and with a low potential for the development to be constrained) as per **Table 4.1** below to assist with a comparative appraisal to identify the preferred alternative.

Table 4.1: RAG Rating Table

Performance	Comparative Appraisal
Most preferred	Low potential for the development to be constrained
	Intermediate potential for the development to be constrained
Least preferred	High potential for the development to be constrained

4.4.7 The RAG Ratings for each topic were used to examine the differences between the options being considered. The appraisal compared the wider implications of each option on those topics (both individually and combined) and reached a reasoned conclusion, on balance across all the topics.

4.4.8 For the Proposed Development, the Applicant prepared reports detailing the appraisal of alternatives at each stage and consulted on the findings of the appraisals on three separate occasions. These reports, known as 'Consultation Documents', set out the approach to identification and selection of alternatives and captured the detailed findings of the appraisals undertaken to help identify a Preferred[14] Corridor, Route and Alignment for the OHL. The Consultation Documents were made available at the start of each consultation period together with supporting maps and booklets. Following consultation on route and alignment options, SSEN Transmission reviewed all the feedback received together with updated information including relevant survey findings and considered this in the confirmation of the alternatives to be taken forward at each stage. The feedback received

[14] The Preferred Option at each of these stages represents the option which the Applicant has identified as the best balance of technical and environmental constraint from initial appraisal. This is then subject to consultation with stakeholders, where local and previously unknown considerations may confirm or alter the initial preference. Following consultation, and once confirmed, this becomes the Proposed Option to be taken forward to the next stage of project development.

from these consultations was documented in a series of Reports on Consultation (RoC) which were published by SSEN Transmission setting out their responses to the comments raised and presenting the Proposed Corridor, Route and Alignment.

4.4.9 Further information on the overall approach to consultation undertaken through the project's pre-application stages, including a more detailed coverage of issues raised in relation to the scope of the EIA, is presented in **Chapter 6: Scope and Consultation**. A summary of the public consultations undertaken specifically on the alternatives considered at the corridor, route and alignment stages are set out in **Sections 4.7 and Section 4.9** of this chapter.

Planning Policy: NPF4

4.4.10 As a general principle, NPF4 sets out a mitigation hierarchy, involving avoidance of the relevant impact, failing which to (i) minimising; (ii) restoring; or (iii) offsetting the impact. NPF4 then sets out various environmental factors of key significance from a policy perspective, such as peatland (Policy 5) and ancient woodland (Policy 6).

4.4.11 Whilst SSEN's *Routeing Guidance* pre-dates the publication of NPF4, it applies the same principles. For example, the key receptors (including the above examples of peat and ancient woodland) form part of the list of topics subject to the 'RAG' assessment (see Annex 9). Moreover, the *Routeing Guidance* reflects the NPF4 mitigation hierarchy, by seeking to '*avoid',* failing which '*minimise',* the effects on those receptors through careful routeing of the infrastructure (see, for example, Annex 6 (Notes A1 & A2) and Annex 8 of the *Routeing Guidance*).

4.4.12 Application of SSEN's *Routeing Guidance* therefore ensures that the mitigation hierarchy referred to in relevant NPF4 planning policies is embedded within routeing decision-making.

Summary of the Approach to Routeing

4.4.13 In summary of the above, the SSEN *Routing Guidance*: (i) applies the Holford Rules;[15]and (ii) is aligned with the NPF4 policy principles and objectives. In accordance with the *Routeing Guidance,* the following principles have been taken into account during the corridor, route and alignment stages (where practicable) of the Proposed Development:

- 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 towers 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.

4.4.14 The specific approach to the identification and appraisal of alternatives for each stage of the project is explained in the remainder of this chapter, prior to the summaries presented for the findings of the appraisals.

[15] Scottish Hydro Electric Transmission Limited (SHETL). (July 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*

4.5 Corridor Selection (Stage 1)

Corridor Options Identification

4.5.1 At the commencement of determining the Proposed Development, corridor options were identified by SSEN Transmission as broad study areas within which route options for the proposed OHL could subsequently be identified. A high-level desk-based exercise was undertaken to identify corridor options using ArcMap GIS.

4.5.2 Due to the length of the proposed OHL and to ensure the presentation of information and appraisals was easily comprehended, the corridor was separated into two geographic sections. The Northern Corridor Options reflected the area between Spittal and Loch Buidhe, whilst the Southern Corridor options reflected the area between Loch Buidhe and Beauly. Two corridor options were identified on the northern section of the proposed OHL – a western corridor and an eastern corridor. Three corridor options were identified on the southern section of the proposed OHL – a western corridor, a central corridor and an eastern corridor (see **Volume 3, Figure 4.1: Corridor Options).**

Corridor Options Appraisal

4.5.3 Appraisal of the level of technical, economic (cost) and environmental constraints within the corridor options involved systematic consideration against the topic areas and criteria, derived from SSEN Transmission's *Routeing Guidance* as detailed in **Section 4.4**.

4.5.4 A corridor options appraisal was undertaken which concluded there was no clear Preferred Corridor due to the challenging terrain and large number of technical, environmental and community constraints within all corridor options. The eastern corridor in the southern section was considered to be significantly constrained by environmental, community and engineering factors. Therefore, the western and eastern corridors in the northern section and only the central and western corridors in the southern section were selected as the appropriate geographical areas for identification and appraisal of route options (Stage 2).

4.5.5 The options for corridor and route selection were broadly similar due to environmental and technical constraints. This led to the decision to consult the communities and statutory consultees when a number of preferred route options had been identified and not at early corridor identification stage in order to allow for a more targeted consultation process that reduced the potential for concern in Black Isle communities in the eastern corridor in the southern section. This is described in the Routeing Consultation Document (August 2023)[16].

4.6 Route Selection (Stage 2)

Route Options Identification

4.6.1 The route selection stage involved the identification of route options within which subsequent alignment options may be identified. To support the routeing stage, SSEN Transmission engaged Continuum Industries to utilise their Artificial Intelligence (AI) based *Optioneer* software to identify route options to be considered. The route options identified within the Preferred Corridor were approximately 1 km wide to allow for a reasonable number of alignment options to be identified (see **Volume 3, Figure 4.2: Route Options**).

4.6.2 Due to the length of the proposed OHL, and to make the presentation of information and appraisals more easily comprehended by stakeholders, the route was separated into five route 'Sections' from north to south (Sections A to E). A number of route options, ranging between two and six, were identified within each Section. All options identified were allocated an alpha-numeric descriptor code (e.g. A1, A1.1 etc).

[16] Spittal – Loch Buidhe – Beauly 400 kV OHL Connection Project: Routeing Consultation Document (August 2023), produced by SSEN Transmission.

Route Options Appraisal

4.6.3 To provide a consistent basis for comparative appraisal of the options in each section, the options to be appraised were assembled into clear 'end-to-end' route alternatives which stretched for the full length of the OHL section. The options were then appraised following the methodology set out in **Section 4.4** above.

4.6.4 A route options appraisal was undertaken and presented in the in the Routeing and Site Selection Consultation Booklet (February 2023)[17] and the Spittal to Loch Buidhe to Beauly OHL Connection Story Map[18]. The appraisal of route options was set out in additional detail in the Routeing Consultation Document[19] published in August 2023. A summary of the route options and the technical, economic (cost) and environmental appraisal is provided below. An overview of the consultation undertaken on the route options and the subsequent identification of the Proposed Route by the Applicant is provided in **Section 4.7** of this chapter. Further details of all consultation activities relevant to the progression and scope of the EIA are presented in **Chapter 6: Scope and Consultation**.

Section A – Spittal to Brora

Description of Section A Route Options

4.6.5 Two main route options were identified within Section A: A1 and A2. There were three pairs of sub options within Option A1 (A1.1 & A1.2 / A1.3 & A1.4 / A1.5 & A1.6). A comparative assessment of each of these pairs was undertaken and the preferred combination of sub options was then compared with Option A2.

4.6.6 Constraints between Spittal and Brora included local settlements such as Dunbeath and Helmsdale, alongside the Spittal Hill Wind Farm and a number of other planned wind farms in the area. In addition, there is the RSPB Reserve and a number of Sites of Special Scientific Interest (SSSIs), as well as the Causeymire – Knockfin Flows Wild Land Area (WLA), the Ben Klibreck – Armine Forest WLA and The Flow Country World Heritage Site (WHS). The terrain in the area is a mix of moderate hills with some steep slopes and areas with more gradual undulated terrain.

Summary of Section A Route Options Appraisal

4.6.7 Option A1 was considered the environmentally and technically preferred option due to the potential to avoid or minimise impact to designated sites, peat, habitat and landscape character, including areas designated as wild land and an RSPB reserve. Despite its higher RAG ratings in most of the assessments related to crossings and proximity to third party infrastructure, Option A2 terrain was expected to be more challenging. This was due to significant areas of unavoidable peatland and the access and construction within this corridor.

Preferred Route in Section A

4.6.8 Option A1 (including a combination of sub-routes within Option A1) was the preferred overall route option due to the potential to avoid or minimise impacts to designated sites, peat, habitat and landscape character as well as less peatland and challenging terrain.

Consultation Responses in Section A

4.6.9 During consultations at the route option stage (see **Section 4.7** of this chapter), responses received from statutory and non-statutory consultees in relation to this section provided general support for the preferred route identified. However, environmental sensitivities were highlighted, particularly in relation to designated sites, as well as cultural heritage sites of national interest.

[17] Spittal – Loch Buidhe – Beauly 400 kV Reinforcement: OHL Routeing and Site Selection Consultation Booklet (February 2023), produced by SSEN Transmission

[18] Spittal to Loch Buidhe to Beauly OHL Connection Story Map (February 2023), produced by SSEN Transmission. Available online at: https://storymaps.arcgis.com/stories/364d4f42d26f408c85530363cb9bf53b

[19] Spittal – Loch Buidhe – Beauly 400 kV OHL Connection Project: Routeing Consultation Document (August 2023), produced by SSEN Transmission.

Proposed Route in Section A

4.6.10 As a result of analysis of feedback from communities, statutory consultees and other local groups and key agencies, SSEN Transmission remained of the opinion that, subject to further consideration of environmental constraints and sensitivities at the alignment selection stage, Option A1 (with sub-options A1.1, A1.3, A1.5 and A1.6 (southern end) would be taken forward as the proposed route. The main reasons for the selection of Option A1 (and its sub-options) were the potential to avoid or minimise impacts to designated sites, peat, habitat and landscape character as well as less challenging terrain and significant areas of unavoidable peatland, when compared with Option A2.

Section B – Brora to Loch Buidhe

Description of Section B Route Options

4.6.11 Three main route options were identified within Section B: B1, B2 and B3. There were two sub options within Option B1 (B1.1 and B1.2). The preferred combination of sub-options was then assessed against B2 and B3.

4.6.12 Constraints included a number of designated areas such as the Strath Carnaig and Strath Fleet Moors Special Protection Area (SPA) and SSSI, the Dornoch Firth and Loch Fleet Ramsar and SPA, Mound Alderwoods Special Area of Conversion (SAC) and SSSI and Strathfleet SSSI. The terrain in this section has a mix of high hills and steep slopes. There are also a number of wind farms to avoid including the constructed Kilbraur wind farm and the consented Kilbraur extension wind farm. On the approach to the Loch Buidhe substation, there are a number of OHLs that need to be avoided where possible.

Summary of Section B Route Options Appraisal

4.6.13 From an environmental perspective, all options performed similarly; however, Option B2 was preferred. Option B1 and B3 had a greater potential to impact the Special Landscape Area designation and the setting of the Dunrobin Castle Garden and Designated Landscape (GDL) and scheduled monuments. Option B1 (with sub-option B1.1) was considered the technically preferred option due to the greater technical constraints associated with Options B2 and B3 including terrain, steep gradients, peat and construction/maintenance challenges.

Preferred Route in Section B

4.6.14 At that stage, there was no clear preferred route option for Section B between Options B1 (with B1.1 and B1.2) or B3 due to the environmental constraints associated with B1 and B3 and the technical constraints associated with B3. Option B2 was not the preferred option as there were considerable constraints including terrain, steep gradients, peat and construction/maintenance challenges.

Consultation Responses in Section B

4.6.15 During consultations at the route option stage (see **Section 4.7** of this chapter), responses received from statutory consultees in this section acknowledged significant challenges associated with all route options, and that careful design of an alignment would be required. Comments received from the local community in relation to this Section focused on whether the existing transmission corridors could be used, wildlife, cultural heritage, access tracks and private water supplies.

Proposed Route in Section B

4.6.16 As a result of analysis of feedback from communities, statutory consultees and other local groups and key agencies, SSEN Transmission remained of the opinion that, subject to further consideration of environmental constraints and sensitivities at the alignment selection stage, Option B1 (with sub-option B1.1) was likely to be a more preferential route than Options B2 or B3 and would be taken forward as the proposed route. The main reasons were due to the reduced potential to impact protected species as well as less challenging terrain, steep gradients and peatland.

Section C – West of Dornoch

Description of Section C Route Options

4.6.17 The assessment of this section appraised and compared two route options: C1 and C2. Given the limited length of proposed OHL in this area, no sub-routes were identified.

4.6.18 Proximity to local properties around the Bonar Bridge area toward Invershin were noted as a key constraint in this section. Other constraints included a number of natural heritage designations such as the Dornoch Firth National Scenic Area (NSA), Strath Carnaig and Strath Fleet Moors SPA and SSSI, the River Oykel SAC and Kyle of Sutherland Marshes SSSI. There are a number of scheduled monuments, the Battle of Carbisdale Registered Battlefield and areas of ancient woodlands within this section.

Summary of Section C Route Options Appraisal

4.6.19 Environmentally, there was no clear preferred option. Both options pass through areas of ancient woodland and natural heritage designations including the Strath Carnaig and Strath Fleet Moors SPA and SSSI and the River Oykel SAC. Option C1 also passed through the Kyle of Sutherland Marshes SSSI and the Battle of Carbisdale Registered Battlefield. Option C2 was more visible from Bonar Bridge and the Dornoch Firth NSA.

4.6.20 Option C1 was the technically preferred route as it crosses the Kyle of Sutherland at a narrower section. For Option C2, there are significant areas of coastal flooding, and the span crossing Kyle of Sutherland was more challenging with respect to construction, operation and maintenance.

Preferred Route in Section C

4.6.21 Option C1 was the preferred overall route for Section C, as there were fewer technical constraints associated with crossing the Kyle of Sutherland.

Consultation Responses in Section C

4.6.22 During consultations at the route option stage (see **Section 4.7** of this chapter), comments received from the statutory consultees highlighted some of the sensitivities of this section. Historic Environment Scotland (HES) outlined a preference for Option C2, citing potential impacts on the battlefield landscape and scheduled monuments along Option C1. NatureScot advised that C1 would be less likely to have an impact from a protected areas perspective.

4.6.23 Comments received from the local community in relation to this Section focused on the use of visualisations at consultation, visual amenity, wildlife and habitat, cultural heritage, access tracks, flood risk and private water supplies.

Proposed Route in Section C

4.6.24 As a result of analysis of feedback from communities, statutory consultees and other local groups and key agencies, SSEN Transmission remained of the opinion that, subject to further consideration of environmental constraints and sensitivities at the alignment selection stage, Option C1 was a more preferential route than Option C2 and would be taken forward as the proposed route. The main reasons were due to the reduced technical considerations associated with crossing the Kyle of Sutherland.

Section D – Dornoch to Dingwall

Description of Section D Route Options

4.6.25 Three routes were identified and appraised during the route selection process within Section D: D1, D2 and D3. There was one sub option for option D1 and one sub option for D2 (D1.1 and D2.1 respectively). An

assessment of each sub option was undertaken to arrive at the preferred route options for D1 and D2. Options D1 and D2 were then compared.

4.6.26 Local settlements including Ardross, Alness, Dingwall, Evanton, Contin and Strathpeffer were key constraints in this section. Other constraints in this section include a number of commercial forestry areas and areas of ancient woodland, the Novar SPA, the Amat Wood SAC and SSSI, and Grade A listed buildings such as the Ardross Castle and Ardross Castle GDL. There are a number of existing OHLs within this section including the 132 kV Beauly – Shin OHL and 275 kV Beauly – Loch Buidhe OHL. The terrain in this section varies with large sections comprising very challenging hilly terrain.

Summary of Section D Route Options Appraisal

4.6.27 Option D1 was both the environmentally and technically preferred option as it avoids direct impact on SAC, SPA and SSSI sites and also has the potential to avoid or minimise impacts to cultural heritage receptors as well as landscape character and designations. In addition, it has comparatively lower gradients with fewer construction challenges and access road requirements. It also has fewer interactions with existing infrastructure and dwellings.

Preferred Route in Section D

4.6.28 Option D1 (with sub-option D1.1) was the preferred overall route option due to the reduced potential to impact designated sites, cultural heritage receptors as well as landscape character as well as comparatively lower gradients and fewer interactions with existing infrastructure and dwellings.

Consultation Responses in Section D

4.6.29 During consultations at route option stage (see **Section 4.7** of this chapter), responses received from statutory and non-statutory consultees highlighted some sensitivities in this section. NatureScot advised that Option D1 was their preference from a protected areas perspective. HES identified the potential for significant adverse impacts on heritage assets in Option D2 and a pinch point in Option D1 northwest of Dingwall, highlighting further consideration of historical assets being required as the design progresses.

4.6.30 Comments received from the local community in relation to this Section focused on core paths, recreation and tourism, technology choice, visual amenity, wildlife, habitat and cultural heritage.

4.6.31 In response to the consultation, local community groups from the Strathpeffer area suggested an alternative route option in Section D that would re-route the proposed southern section of D1 to the west of Strathpeffer; the suggested route would be an OHL solution across land at Tarvie, Little Scatwell and then following a route to the south of Loch Achonachie until it joins up with the northern part of the Section E route options. Exploration of this new route option was supported by The Highland Council (THC).

Proposed Route in Section D

4.6.32 As a result of analysis of feedback from communities, statutory consultees and other local groups and key agencies, SSEN Transmission remained of the opinion that, subject to further consideration of environmental constraints and sensitivities at the alignment selection stage, Option D1 (as well as the alternative route option proposed by the community) was a more preferential route than Options D2 or D3 and would be taken forward as the proposed route. However, based on further assessment, SSEN Transmission did not proceed with the sub-option D1.1 and the northern section of D1 was therefore the preferred route. The main reasons were that it would avoid direct impact on SAC, SPA and SSSI sites, has potential to minimise impact on cultural heritage receptors as well as landscape character and designations and has comparatively lower gradients and fewer interactions with existing infrastructure and dwellings.

Section E – Dingwall to Beauly

Description of Section E Route Options

4.6.33 Three route options were identified within Section E: E1, E2 and E3. An assessment of sub-option E1.1 was undertaken against E1 to arrive at the preferred route option for assessment of E1. Options E1, E2 and E3 were then compared.

4.6.34 Constraints in this section included areas of ancient woodland, the Fairburn GDL and Grade A listed Fairburn Tower, Conon Islands SAC and Lower River Conon SSSI, and the Brahan GDL. There are a number of existing OHLs in the area including the 132 kV Beauly – Corriemoillie OHL near to Muirton Mains and Loch Achonachie. Proximity to properties in this area was also a key consideration.

Summary of Section E Route Options Appraisal

4.6.35 There was no clear environmentally preferred option. However, Option E1 (with sub option E1.1) presented the best opportunity to minimise impact on the Fairburn GDL, Fairburn Tower Category A Listed Building, visual receptors and Annex 1 habitat. Option E1 (without sub option E1.1) was considered the technically preferred option considering ease of access, construction and less terrain/gradient challenges; it is considerably shorter in length and avoids peatland.

Preferred Route in Section E

4.6.36 Option E1 (with sub-option E1.1) was the overall preferred route option due to the opportunity to minimise impact on the Fairburn GDL, visual receptors and habitat.. Although there were technical challenges associated with E1.1, there was greater potential for environmental impact on the GDL if E1.1 was not selected.

Consultation Responses in Section E

4.6.37 During consultations at the route option stage (see **Section 4.7** of this chapter), statutory consultees indicated general support for the preferred route. From both a landscape and visual and protected areas perspective, NatureScot advised that Option E1 was preferred. HES highlighted the potential for significant adverse impacts in Option E1 and E1.1 due to scheduled monuments in the south and Fairburn GDL and Category A Listed tower in the north. Comments received from the local community in relation to this section focused on core paths, recreation and tourism, visual amenity, technology choice, wildlife, habitat and cultural heritage.

Proposed Route in Section E

4.6.38 As a result of analysis of feedback from communities, statutory consultees and other local groups and key agencies, SSEN Transmission remained of the opinion that, subject to further consideration of environmental constraints and sensitivities at the alignment selection stage, Option E1 (with sub-option E1.1) would be taken forward as the proposed route. The main reasons were that it presents the best opportunity to minimise impact on the Fairburn GDL, Fairburn Tower A Listed Building, visual receptors and habitat.

4.7 Reporting of Corridor and Route Option Stages and Consultation

4.7.1 As noted above, feedback was sought from all interested parties on the Preferred Route (presented in the Routeing and Site Selection Consultation Booklet (February 2023)[20] and the Spittal to Loch Buidhe to Beauly OHL Connection Story Map[21]. The appraisal of route options was set out in additional detail in the Consultation Document[22], published in August 2023. The Consultation Document summarised the project need, the routeing

[20] Spittal – Loch Buidhe – Beauly 400 kV Reinforcement: OHL Routeing and Site Selection Consultation Booklet (February 2023), produced by SSEN Transmission

[21] Spittal to Loch Buidhe to Beauly OHL Connection Story Map (February 2023), produced by SSEN Transmission. Available online at: https://storymaps.arcgis.com/stories/364d4f42d26f408c85530363cb9bf53b

[22] Spittal – Loch Buidhe – Beauly 400 kV OHL Connection Project: Routeing Consultation Document (August 2023), produced by SSEN Transmission.

process undertaken, a description of the corridor and route options appraised, and the findings of the appraisal process leading to identification of Preferred Routes in each Section of the OHL. As noted in **Section 4.5**, the Consultation Document also outlined the outcome of the corridor options appraisal. During this Consultation, SSEN Transmission also consulted on proposals for the three new 400 kV substations, located in Spittal, Loch Buidhe and Beauly, setting out information on the site options identified and appraised.

4.7.2 Feedback was sought from all interested parties on the route option appraisals undertaken, as well as the rationale for, and approach to, the selection of the Preferred Route. The consultation sought to capture views from:

- statutory consultees;
- non-statutory consultees;
- community members and local organisations, including local elected members; and
- landowners and land occupiers.

4.7.3 A series of in-person consultation events were held between 20th February 2023 and 2nd March 2023 where local stakeholders could meet with the project team to discuss the proposals in more detail. These events took place at the dates and locations in **Table 4.2**.

Table 4.2: February/March Consultation Locations

Date	Event	Recorded Attendance
20th February 2023	Halkirk – Ross Institute	18
21st February 2023	Spittal (Coffee Morning) - Spittal Hall	9
21st February 2023	Helmsdale – Bunilidh Social Club	35
22nd February 2023	Dunbeath – Dunbeath Hall	36
23rd February 2023	Golspie – Fountain Road Hall	34
27th February 2023	Bonar Bridge – Community Hall	39
28th February 2023	Ardross – Community Hall	35
1st March 2023	Dingwall – Legion Hall	160
2nd March 2023	Beauly – Kilmorack Hall	214

4.7.4 To continue engagement on the Proposed Development, SSEN Transmission developed an online consultation tool and hosted a virtual consultation event, to enable the local community and stakeholders to experience the full exhibition from home on a computer, tablet or mobile device. The virtual consultation event took place via the project website[23] on 6th March 2023.

4.7.5 The consultation period was originally intended to run between 20th February and 31st March 2023. In response to calls for an extension to the consultation period, the consultation deadline was extended until Friday 14th April, running for over seven weeks.

[23] https:// https://www.ssen-transmission.co.uk/projects/project-map/spittal--loch-buidhe--beauly-400kv-connection/

4.7.6 Following consultation, the RoC[24] was published in December 2023 which detailed the consultation process and events and recorded the key feedback from stakeholders and consultees during the consultation process. The RoC explained how SSEN Transmission responded to the feedback received, and how it informed the selection of the OHL Proposed Route in Sections A, B, C and E.

Refined Routes

4.7.7 Ahead of the Alignment Options consultation events in June 2024, SSEN Transmission hosted a series of update events in March 2024, providing information on further refinements of the Proposed Route options whilst finalising the alignment options. During this time, SSEN Transmission sought the views of communities, landowners and other non-statutory stakeholders. These events were an opportunity to share work in progress and to present the development of more refined options which had evolved since the earlier consultations.

4.7.8 These update events were a precursor to, but form part of the Alignment Pre-application Consultation process which was formally launched from 27th May 2024.

4.7.9 The series of in-person consultation events were held between 11th March and 28th March 2024 where local stakeholders could meet with the project team to discuss the proposals in more detail. These events took place at the dates and locations in **Table 4.3.**

Table 4.3: March 2024 Consultation Locations

Date	Event	Recorded Attendance
Monday 11th March 2024	Ross Institute, Halkirk	38
Tuesday 12th March 2024	Spittal Village Hall, Spittal	19
Tuesday 12th March 2024	Helmsdale Community Centre, Helmsdale	32
Wednesday 13th March 2024	Dunbeath Community Centre, Dunbeath	45
Thursday 14th March 2024	Rogart Village Hall, Rogart	37
Thursday 14th March 2024	Brora Scout and Guide Hall, Brora	69
Monday 18th March 2024	Bonar Bridge Community Hall, Bonar Bridge	66
Tuesday 19th March 2024	Ardross Community Hall, Ardross	40
Wednesday 20th March 2024	Contin Village Hall, Contin	32
Wednesday 20th March 2024	Fairburn Memorial Hall, Marybank	69
Thursday 21st March 2024	Garve Village Hall, Garve	4
Thursday 21st March 2024	Strathpeffer Pavilion, Strathpeffer	107
Tuesday 26th March 2024	Kiltarlity Hall, Kiltarlity	159
Thursday 28th March 2024	Phipps Hall, Beauly	141

[24] Spittal – Loch Buidhe – Beauly 400 kV OHL Connection Project: Report on Consultation (December 2023), produced by SSEN Transmission

4.7.10 Due to feedback received during the earlier Route Option consultation, further consideration of alternative route options near the local settlements of Tarvie, Contin and Strathpeffer was required prior to identifying a proposed route, preferred alignment and design solution. Four potential routes were identified with Options 1 and 2 being in closer proximity to Strathpeffer and Options 3 and 4 travelling further west through Tarvie before continuing south and then east to the west of Fairburn. The routes were referred to as the Section D/E Alternative Route Options and were further assessed as part of Routeing Consultation Report Addendum (March 2024)[25].

4.7.11 During the Refined Routes consultation held in March 2024, the appraisal for the alternative routes to the public was presented and feedback sought. The public consultation period for the Refined Routes was open from 26th February until 28th April 2024. These refined route options were then further assessed as part of Alignment Selection Appraisal (Stage 3) (as discussed in **Section 4.8**).

4.8 Alignment Selection (Stage 3)

Alignment Options Identification

4.8.1 The alignment selection stage involves the development of a Potential Alignment (subject to indicative LoD which was contingent on further review during the EIA Stage) within the Proposed Route, which is technically feasible and economically viable, and which minimises disturbance to the environment wherever possible; and to those living, working, visiting or using it for recreational purposes.

4.8.2 An iterative design development process was implemented with SSEN Transmission's OHL Contractors in developing a Potential Alignment. In some locations, where more significant, lengthy or competing/complex constraints were identified and a preference for an alignment could not be easily reached, additional 'Alternative' alignments were identified. For the ease of comparative appraisal, the sections identified in **Section 4.6** have been further subdivided into subsections. Both Potential and Alternative Alignments can be viewed at **Volume 3, Figure 4.3**.

Alignment Options Appraisal

4.8.3 In considering the potential environmental constraints of the Potential and Alternative alignments, 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 towers 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 stage;
- Workshops with SSEN Transmission, the OHL Contractors and environmental consultants to discuss alignment options, prior to the identification of a preferred alignment and design solution;
- Site reconnaissance visits by the SSEN Transmission engineering team and environmental consultants to review alignment options; and
- Workshops with statutory consultees to present the preferred alignment and design solution, and seek preliminary feedback, prior to more formal consultation (see **Section 4.9** of this chapter).

[25] Spittal – Loch Buidhe – Beauly 400 kV OHL Connection Project: Consultation Document: Routeing Consultation Report Addendum (March 2024), produced by SSEN Transmission.

4.8.4 An alignment options appraisal was undertaken and presented in the Consultation Document: Alignment Selection (May 2024)[26]. A summary of the alignment options and the technical, economic (cost) and environmental appraisal is provided below. An overview of the consultation undertaken on the alignment options and the subsequent identification of the Proposed Alignment by the Applicant is provided in **Section 4.9** of this Chapter. Further details of all consultation activities relevant to the progression and scope of the EIA are presented in **Chapter 6: Scope and Consultation**.

Section A – Spittal to Brora

Section A1.1

Potential

4.8.5 Potential Alignment A1.1 extended from the proposed Banniskirk Substation in a south easterly direction for approximately 4 km before turning south, running adjacent to the eastern bank of the Loch of Toftingall and east of Halsary Wind Farm for approximately 3 km. The length of the Potential Alignment A1.1 was approximately 8.3 km.

Alternative

4.8.6 Alternative Alignment A1.1 extended from the proposed Banniskirk Substation in a south easterly direction for approximately 8.5 km, where it turns west approximately 3 km to the east of Halsary Wind Farm. The length of the Alternative Alignment A1.1 was approximately 12 km.

Environmental Constraints

4.8.7 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on the Caithness and Sutherland Peatlands SPA/Ramsar/SAC and Shielton Peatlands SSSI;
- Minimising potential impacts on The Flow Country WHS; and
- Minimising potential impacts on Class 1 Peatland.

Technical Considerations

4.8.8 The key technical considerations in this section included areas of peatland.

Preferred Alignment

4.8.9 Potential Alignment A1.1 was selected as, on balance, it was the least constrained option from both an environmental and engineering perspective. Both options were considered equally acceptable from a cost perspective. Potential Alignment A1.1 was subject to consultation with stakeholders, to allow for local and previously unknown considerations that may have confirmed or altered the initial preference.

Consultation Responses

4.8.10 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees indicated general support for the preferred alignment. HES advised that the Potential Alignment A1.1 is further from a number of monuments with sensitive settings that would be adversely affected if the Alternative Alignment A1.1 (which runs further east) was to be progressed. NatureScot advised that they did not intend to provide further landscape and visual commentary at that stage but recognised that the Potential Alignment A1.1 had addressed much of their previous feedback. Comments received from the local community

[26] Spittal – Loch Buidhe – Beauly 400 kV OHL Connection Project: Consultation Document: Alignment Selection (May 2024), produced by SSEN Transmission.

in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat and cultural heritage.

Proposed Alignment

4.8.11 Following review of consultation responses, and considering the need to balance cost, technical and environmental factors when developing a project, SSEN Transmission determined that Potential Alignment A1.1 was taken forward as the Proposed Alignment and design solution. The main reasons were that it minimises impacts on the Caithness and Sutherland Peatlands SPA/Ramsar/SAC and Shielton Peatlands SSSI, The Flow Country WHS and Class 1 Peatland. Therefore, this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section A1.2

Potential

4.8.12 Potential Alignment A1.2 continued south from Halsary Wind Farm. This alignment followed the eastern side of the A9, running through Achavanich and between Lochs Rangag and Stemster. The length of the Potential Alignment A1.2 in this section was approximately 12.7 km.

Alternative

4.8.13 Owing to a combination of environmental and technical constraints, there was no alternative alignment option identified in this section.

Environmental Constraints

4.8.14 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on the Caithness and Sutherland Peatlands SPA/Ramsar/SAC and Shielton Peatlands SSSI;
- Minimising potential impacts on The Flow Country WHS;
- Minimising potential impacts on Class 1 and Class 2 Peatland;
- Minimising potential impacts on the adjacent Causeymire – Knockfin Flows WLA and The Flow Country and Berriedale Coast SLA;
- Avoiding direct impacts and minimising potential setting impacts on cultural heritage features, including scheduled monuments; and
- Minimising potential impacts on road users on the A9.

Technical Considerations

4.8.15 The key technical considerations in this section included an existing network of tracks and roads.

Preferred Alignment

4.8.16 Potential Alignment A1.2 was the only option identified in this section. This was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.17 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory and non-statutory consultees highlighted some sensitivities in this section. HES advised that Potential Alignment A1.2 has the potential to impact the settings of Achkinloch, chambered cairn 755m SW of, Loch Stemster

(SM419) and Achkinloch, stone setting SW of, Loch Stemster (SM420). SSEN Transmission were committed to working with HES to micro-site the tower positions further to minimise impacts where possible, given there are no other alternative options in this section. NatureScot advised that they did not intend to provide further landscape and visual commentary at that stage but recognised that the Potential Alignment A1.2 had addressed much of their previous feedback. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage, access tracks and flood risk.

Proposed Alignment

4.8.18 Potential Alignment A1.2 was the only option identified in this section and therefore this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section A1.3

Potential

4.8.19 Potential Alignment A1.3 crossed the A9 at Crofts of Benachieltin in a south westerly direction from a point near to Braehungie. The length of the Potential Alignment A1.3 in this section was approximately 1.1 km.

Alternative

4.8.20 Alternative Alignment A1.3 crossed the A9 at Crofts of Benachielt in a south westerly direction but to the north of the Potential Alignment A1.3. The length of the Alternative Alignment A1.3 in this section was approximately 1 km.

Environmental Constraints

4.8.21 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on the Caithness and Sutherland Peatlands SPA/Ramsar/SAC and Coire na Beinne Mires SSSI; and
- Minimising potential impacts on the adjacent Causeymire – Knockfin Flows WLA and The Flow Country WHS and Berriedale Coast SLA.

Technical Considerations

4.8.22 The key technical considerations in this section included a crossing of the existing 132 kV OHL and the A9. Additionally, 5% of Potential Alignment A1.3 was located within an area identified on Scottish Environment Protection Agency (SEPA) flood maps.

Preferred Alignment

4.8.23 Potential Alignment A1.3 was selected as on balance it was the least constrained option from both an environmental and engineering perspective. Both options were considered equally acceptable from a cost perspective. Potential Alignment A1.3 was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.24 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees included no specific comments on this section of the Potential and Alternative Alignments for the OHL. NatureScot recognised that Potential Alignment A1.3 had addressed much of their previous feedback. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage, access tracks and flood risk.

Proposed Alignment

4.8.25 Following review of consultation responses, and considering the need to balance cost, technical and environmental factors when developing a project, SSEN Transmission determined that Potential Alignment A1.3 was taken forward as the Proposed Alignment and design solution. The main reason was it avoids interaction with The Flow Country WHS as there were similar constraints technically within this section. Therefore, this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section A1.4

Potential

4.8.26 Potential Alignment A1.4 continued south, inland of the A9 and existing 132 kV line. The alignment passed the village of Houstry and Buolfruich Wind Farm and was to the west of the villages of Dunbeath and Berriedale before reaching the western outskirts of Helmsdale. The length of the Potential Alignment A1.4 was approximately 27.5 km in length.

Alternative

4.8.27 Owing to a combination of environmental and technical constraints, there was no alternative alignment option identified in this section.

Environmental Constraints

4.8.28 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 1a and 2a Ancient Woodland;
- Minimising potential impacts on Dunbeath Water SSSI, Berriedale Water SSSI, Langwell Water SSSI and Berriedale and Langwell Water SAC;
- Minimising potential impacts on Class 1 and Class 2 Peatland;
- Avoiding direct impacts and minimising potential setting impacts on cultural heritage features, including scheduled monuments; and
- Minimising potential impacts on The Flow Country and Berriedale Coast SLA and adjacent Causeymire – Knockfin Flows WLA.

Technical Considerations

4.8.29 The key technical considerations in this section included the existing 132 kV OHL, which runs parallel to the alignment. Additionally, there are elevations of greater than 200 m above ordnance datum (AOD) and variable topography with slope angles varying up to 22° which posed construction challenges.

Preferred Alignment

4.8.30 Potential Alignment A1.4 was the only option identified in this section. This was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.31 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees indicated general support for the preferred alignment. HES advised that Potential Alignment A1.4 had the potential to impact a number of scheduled monuments and the settings of local monuments in the area. However, HES noted that given the topography of this section, there was potential opportunity for careful positioning and micro-siting of towers to lessen that impact, and that this was encouraged. NatureScot advised

that they did not intend to provide further landscape and visual commentary at that stage but recognised that the Potential Alignment A1.4 had addressed much of their previous feedback. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage, access tracks and flood risk.

Proposed Alignment

4.8.32 Potential Alignment A1.4 was the only option identified in this section and therefore this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section A1.5

Potential

4.8.33 Potential Alignment A1.5 extended inland in a south westerly direction. In this section the alignment crossed the River Helmsdale and followed an inland route away from the town of Brora. The length of Potential Alignment A1.5 was approximately 17.5 km.

Alternative

4.8.34 Owing to a combination of environmental and technical constraints, there was no alternative alignment option identified in this section.

Environmental Constraints

4.8.35 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Class 1 and Class 2 Peatland;
- Minimising potential impacts on Loch Fleet, Loch Brora and Glen Loth SLA; and
- Avoiding direct impacts and minimising potential setting impacts on cultural heritage features, including scheduled monuments.

Technical Considerations

4.8.36 The key technical considerations in this section included one major infrastructure crossing (railway line), as well as elevations of greater than 200 m AOD which was considered challenging for construction. The highest recorded elevation is 375 m AOD. Topography was also variable in this section, with slope angles ranging from 2° - 22°. Most towers were on ground sloping 6° or more.

Preferred Alignment

4.8.37 Potential Alignment A1.5 was the only option identified in this section. This was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.38 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees indicated general support for the preferred alignment. HES advised that Potential Alignment A1.5 had the potential to impact a number of scheduled monuments and the settings of local monuments in the area. However, HES noted that given the topography of this section, there was potential opportunity for careful positioning and micro-siting of towers to lessen that impact, and that this was encouraged. NatureScot advised that they did not intend to provide further landscape and visual commentary at that stage but recognised that the Potential Alignment A1.5 had addressed much of their previous feedback. Comments received from the

local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage, access tracks and flood risk.

Proposed Alignment

4.8.39 Potential Alignment A1.5 was the only option identified in this section and therefore this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section B – Brora to Loch Buidhe

Section B1.1

Potential

4.8.40 The Potential Alignment B1.1 continued south west, traversing Loch Brora, 6 km inland from Brora. The length of Potential Alignment B1.1 was approximately 13 km.

Alternative

4.8.41 Owing to a combination of environmental and technical constraints, there was no alternative alignment option identified in this section.

Environmental Constraints

4.8.42 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 1a Ancient Woodland;
- Minimising potential impacts on Carrol Rock SSSI;
- Minimising potential impacts on Loch Fleet, Loch Brora and Glen Loth SLA;
- Minimising potential impacts on Dunrobin Castle GDL; and
- Avoiding direct impacts and minimising potential setting impacts on cultural heritage features, including scheduled monuments.

Technical Considerations

4.8.43 The key technical considerations in this section included one major crossing (Loch Brora), as well as elevations of greater than 200 m AOD which was considered challenging for construction. The highest recorded elevation was 370 m AOD. Topography was also variable in this section, with one tower on a slope angle of 20° - 22°.

Preferred Alignment

4.8.44 Potential Alignment B1.1 was the only option identified in this section. This was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.45 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees indicated general support for the preferred alignment. HES advised they were content with the list of assets within their remit identified for assessment within the consultation document and that they had no further specific comments at that stage but would be happy to provide further advice. NatureScot advised that they did not intend to provide further landscape and visual commentary at that stage but recognised that the Potential Alignment B1.1 had addressed much of their previous feedback. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage, access tracks and flood risk.

Proposed Alignment

4.8.46 Potential Alignment B1.1 was the only option identified in this section and therefore this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section B1.2

Potential

4.8.47 Potential Alignment B1.2 travelled north west of the Dornoch Firth and Loch Fleet, passed over Strath Fleet, the A839 and the River Fleet. The Potential Alignment B1.2 then passed through Strath Carnaig and Strath Fleet Moors before connecting into the proposed Carnaig Substation. The length of Potential Alignment B1.2 was approximately 16.5 km.

Alternative

4.8.48 Owing to a combination of environmental and technical constraints, there was no alternative alignment option identified in this section.

Environmental Constraints

4.8.49 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 1a Ancient Woodland;
- Minimising potential impacts on Class 1 and Class 2 Peatland;
- Minimising potential impacts on Strathfleet SSSI, and Strath Carnaig and Strath Fleet Moors SSSI and SPA; and
- Minimising potential impacts on Loch Brora and Glen Loth SLA.

Technical Considerations

4.8.50 The key technical considerations in this section included three major infrastructure crossings (A839, railway and existing 132 kV OHL). Part of the alignment also ran parallel to the existing 132 kV and 275 kV lines. The alignment traversed through varying elevations ranging from 10 m AOD to 250 m AOD. Thirteen towers were sited at challenging elevations of greater than 200 m AOD. Topography also varied across the alignment with several towers in flatter areas of slope angles ranging from 0° - 5° and all other towers on more challenging slopes of between 6° - 19°. One tower was on a 24° slope.

Preferred Alignment

4.8.51 Potential Alignment B1.2 was the only option identified in this section. This was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.52 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees indicated general support for the preferred alignment. HES advised that Potential Alignment B1.2 had the potential to impact on the settings of the local monuments but that given the topography in the area, there was potential opportunity for careful positioning of towers to lessen that impact, and they encouraged that this be explored if technically possible. HES noted that the Potential Alignment B1.2 now avoided Carn Liath, cairn and chambered cairn 1200m WNW of Torboll (SM1772) and instead closely followed the existing 275 kV OHL to the west. This represented a significant improvement upon previous route options that converged on top of the scheduled monument. NatureScot advised that they did not intend to provide further landscape and

visual commentary at that stage but recognised that the Potential Alignment B1.2 had addressed much of their previous feedback. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage, access tracks and flood risk

Proposed Alignment

4.8.53 Potential Alignment B1.1 was the only option identified in this section and therefore this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section C – Loch Buidhe to Dounie

Section C1.1

Potential

4.8.54 Potential Alignment C1.1 extended west from the proposed Carnaig Substation where it traversed north of Loch Leisgein before crossing the Kyle of Sutherland at Invershin. The length of Potential Alignment C1.1 was approximately 7.8 km.

Alternative

4.8.55 Alternative Alignment C1.1 extended west from the proposed Carnaig Substation where it traversed south of Loch Leisgein before crossing the Kyle of Sutherland at Invershin. The length of Alternative Alignment C1.1 was approximately 7.5 km.

Environmental Constraints

4.8.56 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 2b Ancient Woodland;
- Minimising potential impacts on Class 1 and Class 2 Peatland;
- Minimising potential impacts on Strath Carnaig and Strath Fleet Moors SSSI and SPA, River Oykel SAC and Kyle of Sutherland Marshes SSSI; and
- Minimising potential impacts on cultural heritage features, including scheduled monuments and Carbisdale Battlefield.

Technical Considerations

4.8.57 The key technical considerations in this section included crossings of the Kyle of Sutherland, existing 132 kV and 275 kV OHL infrastructure, the A836 and an existing railway. This was as well as areas of peat, complex earthworks, navigating topographically challenging terrain and proposed wind farm infrastructure.

Preferred Alignment

4.8.58 Potential Alignment C1.1 was selected as on balance it was the least constrained option from an environmental perspective and had the fewest engineering constraints. Both options were considered equally acceptable from a cost perspective. Potential Alignment C1.1 was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.59 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees indicated general support for the preferred alignment. HES advised that both options had similar levels of impact on the settings of the local monuments, and despite the proximity of the Potential Alignment

C1.1 to these monuments, the 400kV OHL was unlikely to have significant adverse impacts on the setting of these scheduled monuments. NatureScot advised that they did not intend to provide further landscape and visual commentary at that stage but recognised that the Potential Alignment C1.1 had addressed much of their previous feedback. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, impact on tourism, wildlife and habitat, cultural heritage, access tracks and flood risk.

Proposed Alignment

4.8.60 Following review of consultation responses, and considering the need to balance cost, technical and environmental factors when developing a project, SSEN Transmission determined that Potential Alignment C1.1 was taken forward as the Proposed Alignment. The main reasons were it reduced potential impacts to forestry areas, avoided existing wind farm infrastructure as well as marginally less challenging terrain. Therefore, this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section C1.2

Potential

4.8.61 Potential Alignment C1.2 continued from north-west of Carbisdale Castle in a south westerly direction for 2.5 km, before straightening until it reached the River Carron. The length of Potential Alignment C1.2 was approximately 4 km.

Alternative

4.8.62 Alternative Alignment C1.2 continued from further west of Potential Alignment C1.2 for 1 km before it turned south-east for 2.5 km, then south-west for a further 1 km before it reached the River Carron. The length of Alternative Alignment C1.2 was approximately 4.7 km.

Environmental Constraints

4.8.63 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 2b Ancient Woodland;
- Minimising potential impacts on Class 1 Peatland;
- Minimising potential impacts on River Oykel SAC and Kyle of Sutherland Marshes SSSI; and
- Minimising potential impacts on cultural heritage features, including Carbisdale Battlefield.

Technical Considerations

4.8.64 The key technical considerations in this section included a number of forestry access tracks, complex earthworks and navigating topographically challenging terrain.

Preferred Alignment

4.8.65 Potential Alignment C1.2 was selected as on balance it was the least constrained option from an engineering perspective. The Alternative Alignment C1.2 was marginally less environmentally constrained and both options were considered equally acceptable from a cost perspective. Potential Alignment C1.2 was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.66 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees indicated general support for the preferred alignment. HES advised that both options skirt around the outside edge of the Carbisdale Battlefield which is on the inventory of historic battlefields however there was a preference for the Potential Alignment C1.2 as it was positioned slightly lower in the landscape. NatureScot advised that they did not intend to provide further landscape and visual commentary at that stage but recognised that Potential Alignment C1.2 had addressed much of their previous feedback.

Proposed Alignment

4.8.67 Following review of consultation responses, and considering the need to balance cost, technical and environmental factors when developing a project, SSEN Transmission determined that Potential Alignment C1.2 was taken forward as the Proposed Alignment. The main reasons were less challenging terrain, earthworks and access. Therefore, this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section D – Dounie to Near Strathpeffer

Section D1.1

Potential

4.8.68 Potential Alignment D1.1 extended from the River Carron in a southerly direction for approximately 4.8 km. The alignment continued south-east for a further 3 km before it turned south-west for another 8 km. The final stretch of the alignment in this section travelled south-east, passing adjacent to Loch Morie. The length of Potential Alignment D1.1 was approximately 21 km.

Alternative

4.8.69 Alternative Alignment D1.1 extended from the River Carron in a southerly direction for approximately 4.8 km. The alignment continued south-east for a further 3 km before it turned south-west for another 8 km. The final stretch of the alignment in this section travelled south-east, slightly further from Loch Morie in comparison to Potential Alignment D1.1. The length of Alternative Alignment D1.1 was approximately 20.8 km.

Environmental Constraints

4.8.70 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 2a and 2b Ancient Woodland;
- Minimising potential impacts on Class 1 and Class 2 Peatland;
- Minimising potential impacts on a Drinking Water Protected Area;
- Avoiding direct impacts and minimising potential setting impacts on cultural heritage features, including scheduled monuments;
- Minimising potential impacts on Rhiddoroch - Beinn Dearg - Ben Wyvis WLA; and
- Minimising potential impacts on residential properties in and around Dounie and Strathrusdale.

Technical Considerations

4.8.71 The key technical considerations in this section included areas of peat and navigating topographically challenging terrain including the slopes opposite Braentra.

Preferred Alignment

4.8.72 Potential Alignment D1.1 was selected as on balance it was the least constrained option from an environmental perspective. Both options were considered equally acceptable from a cost and engineering perspective. Potential Alignment D1.1 was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.73 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees included no specific comments on this section of the Potential and Alternative Alignments for the OHL. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage, access tracks and private water supplies. Changes to the Refined Route and Alignment Options were made in this area based on feedback received during the route options consultation and implemented in the Potential Alignment D1.1.

Proposed Alignment

4.8.74 Following review of consultation responses, and considering the need to balance cost, technical and environmental factors when developing a project, SSEN Transmission determined that Potential Alignment D1.1 was taken forward as the Proposed Alignment. The main reason was it would be marginally less visible from residential properties in Strathrusdale as there were similar constraints technically within this section. Therefore, this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section D1.2

Potential

4.8.75 Potential Alignment D1.2 extended from south of Boath in a south westerly direction for approximately 16 km crossing the River Glass and running further inland and north-west from the Heights of Brae than Alternative Alignment D1.2[27].

Alternative

4.8.76 Alternative Alignment D1.2 extended from south of Boath in a south westerly direction for approximately 16 km crossing the River Glass and running adjacent to the north west of the Heights of Brae.

Environmental Constraints

4.8.77 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 2a and 2b Ancient Woodland;
- Minimising potential impacts on Allt nan Caorach SSSI;
- Minimising potential impacts on Class 1 and Class 2 Peatland;
- Minimising potential impacts on a Drinking Water Protected Area; and
- Avoiding direct impacts and minimising potential setting impacts on cultural heritage features, including scheduled monuments in particular in the Strath Sgitheath area (see **Volume 3, Figure 4.3**: **Potential and Alternative Alignments** for Potential Alignment D1.2 and **Volume 3, Figure 12.1-6**: **Baseline Designated Assets** for cultural heritage features).

[27] This option was suggested in community feedback during public information events in March 2024 as an opportunity to minimise impact on cultural heritage assets in this area.

Technical Considerations

4.8.78 The key technical considerations in this section included crossing of the River Glass and navigating cultural heritage features to reduce construction complexity.

Preferred Alignment

4.8.79 Potential Alignment D1.2 was selected as on balance it was the least constrained option from an environmental perspective and had the fewest engineering constraints. Both options were considered equally acceptable from a cost perspective. Potential Alignment D1.2 was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.80 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees indicated general support for the preferred alignment. HES advised that Potential Alignment D1.2 had much less of an impact on Strath Sgitheath and Firth View settlement and that they would support this as a design outcome, however they did not at that stage offer an opinion on the potential for the impact on the Balnacrae monument setting, beyond a likely potential for a significant effect resulting from each alignment option in Section D1.2. NatureScot advised that they did not intend to provide further landscape and visual commentary at this alignment stage but recognised that the Potential Alignment D1.2 had addressed much of their previous feedback. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage, access tracks and private water supplies. The Potential Alignment D1.2 option was suggested in community feedback during public information events in March 2024. Following investigation by the project design development team, this option was presented during the consultation events in June as an opportunity to minimise impact on cultural heritage assets in this area.

Proposed Alignment

4.8.81 Following review of consultation responses, and considering the need to balance cost, technical and environmental factors when developing a project, SSEN Transmission determined that Potential Alignment D1.2 was taken forward as the Proposed Alignment. The main reasons were influenced by discussions with HES which focussed on the potential that the Proposed Alignment would reduce impact on Strath Sgitheach and Firth View settlement scheduled monuments, and avoid an area of Grade 2a Ancient Woodland. Although HES acknowledged that Potential Alignment D1.2 is closer to Balnacrae cairn scheduled monument, they accepted that the alternative alignment would also impact the setting of this monument. On balance, and following dialogue with HES, it was considered preferable to minimise the impact on Strath Sgitheach and Firth View settlement scheduled monuments, whilst recognising the potential that the impact on Balnacrae scheduled monument could become more significant. Therefore, this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section E – Near Strathpeffer to Beauly

Section E1.1

Potential 1

4.8.82 E1.1 Potential Alignment 1 extended from north of Strathpeffer, in a south-westerly direction, and then maintained a south-easterly route past Coul House before crossing the River Conon and passing in a southern direction through Fairburn GDL east of Fairburn Tower and crossing the River Orrin. The length of E1.1 Potential Alignment 1 was 11.3 km.

Potential 2

4.8.83 E1.1 Potential Alignment 2 extended from north of Strathpeffer, in a south-westerly direction, and then maintained a south-easterly route past Coul House from where it turned south-westerly before crossing the River Conon. E1.1 Potential Alignment 2 then continued south and south-east circumventing Fairburn House and passing through the west of GDL. The length of E1.1 Potential Alignment 2 was approximately 14 km.

Alternative 1

4.8.84 E1.1 Alternative Alignment 1 extended from north of Strathpeffer in a south-westerly direction, passing Loch Garve *en route* to the River Conon to the east of Little Scatwell. E1.1 Alternative Alignment 1 then turned south-east where it passed south of Loch Achonachie before following the same alignment as E1.1 Potential 2 at Muirton Wood, to the west of Fairburn House, passing through the western edge of the GDL. The length of E1.1 Alternative Alignment 1 was approximately 19.2 km.

Alternative 2

4.8.85 E1.1 Alternative Alignment 2 extended from north of Strathpeffer in a south-westerly direction, passing Loch Garve and Tarvie *en route* to the River Conon to the east of Little Scatwell. E1.1 Alternative Alignment 2 then turned south-east, passing further south of Loch Achonachie than E1.1 Alternative 1, towards Fairburn Wind Farm and avoided Fairburn GDL. The length of E1.1 Alternative Alignment 2 was approximately 19.3 km.

Environmental Constraints

4.8.86 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 1a, 2a and 2b Ancient Woodland;
- Minimising potential impacts on Fairburn GDL;
- Avoiding direct impacts and minimising potential setting impacts on cultural heritage features, including scheduled monuments and Category A and B Listed Buildings;
- Minimising potential impacts on areas of prime agricultural land; and
- Minimising potential impacts on recreational amenity, including core paths and cycling routes.

Technical Considerations

4.8.87 The key technical considerations in this section included crossings of two rivers, a railway and an existing 132 kV OHL. There were also flood zone areas close to River Conon and Black Water, as well as large cross slopes and proposed wind farm infrastructure.

Preferred Alignment

4.8.88 E1.1 Potential Alignments 1 and 2 were selected as on balance these were considered to be the least constrained option from an environmental perspective, and also had the fewest engineering constraints compared to E1.1 Alternative Alignments 1 and 2. All options were considered acceptable from a cost perspective. E1.1 Potential Alignments 1 and 2 were subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.89 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory and non-statutory consultees highlighted some sensitivities in this section. HES advised that E1.1 Alternative Alignment 2 would have the least impacts on the heritage assets in the area however recognised that there were other constraints relating to the E1.1 Alternative Alignments. HES did not advise a preference between

E1.1 Potential Alignment 1 and E1.1 Potential Alignment 2 although it did identify that Potential Alignment 2 appears likely to have slightly less of an impact than E1.1 Potential Alignment 1, especially on the setting of Fairburn Tower. However, it may have had more of a potential impact on the GDL. HES noted the potential impact of the 132 kV OHL crossing arrangements on ancient woodland. During the refined route consultation, NatureScot advised that E1.1 Potential Alignment 1 and E1.1 Potential Alignment 2 would be preferred to E1.1 Alternative Alignment 1 and E1.1 Alternative Alignment 2 as they were further removed from Wild Land and designated sites (SPA) and had no anticipated landscape issues of national interest. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage, woodland, recreation and tourism, access tracks, private water supplies and close proximity of properties. The E1.1 Alternative Alignment 1 and E1.1 Alternative Alignment 2 were suggested in feedback from the Strathpeffer community in 2023 and following the assessment, these options were presented during the consultation events in March and June 2024.

Proposed Alignment

4.8.90 Following review of consultation responses, and considering the need to balance cost, technical and environmental factors when developing a project, SSEN Transmission determined that E1.1 Potential Alignments 1 and 2 were taken forward as the Proposed Alignment. The main reasons were reduced potential impacts to Grades 1a and 2a Ancient Woodland and ornithology as well as flood zones, less challenging terrain and proposed wind farm infrastructure. Therefore, this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section E1.2

Potential

4.8.91 Potential Alignment E1.2 extended south east from south of the River Orrin for approximately 2 km before turning south west travelling between Loch nan Eun and Loch Nam Bonnach. The length of Potential Alignment E1.2 was approximately 9.2 km.

Alternative

4.8.92 Alternative Alignment E1.2 extended south east from south of the River Orrin for approximately 2 km before it turned south west travelling between Loch nan Eun and Loch Nam Bonnach. The length of Alternative Alignment E1.2 was approximately 8.5 km.

Environmental Constraints

4.8.93 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 2a and 2b Ancient Woodland;
- Minimising potential impacts on Class 1 and Class 2 Peatland;
- Avoiding direct impacts and minimising potential setting impacts on cultural heritage features, including scheduled monuments; and
- Minimising potential impacts on properties and core paths in Beauly and along sections of the A831.

Technical Considerations

4.8.94 The key technical considerations in this section included a crossing of the existing 132 kV Beauly – Denny OHL and navigating topographically challenging terrain.

Preferred Alignment

4.8.95 Potential Alignment E1.2 was selected as on balance it was the least constrained option from an environmental perspective. There was a marginal engineering difference from the engineering perspective and both options were considered equally acceptable from a cost perspective. Potential Alignment E1.2 was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.96 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees indicated general support for the preferred alignment. HES advised that the Potential Alignment E1.2 would be likely to have impacts on Dun Fhamhair, fort (SM5212), Dun A Chliabhain, fort (SM2424), Dun Garbhlaich, fort, Kilmorack (SM2422) and Dun Mor, fort (SM4979). HES supported Potential Alignment E1.2 as it will have likely have less of an impact on the setting of the monuments than Alternative Alignment E1.2 as it will have been less visible in inward views of Dun Mor. NatureScot advised that they did not intend to provide further landscape and visual commentary at that stage but recognised that the Potential Alignment E1.2 had addressed much of their previous feedback. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, cultural heritage and access tracks.

Proposed Alignment

4.8.97 Following review of consultation responses, and considering the need to balance cost, technical and environmental factors when developing a project, SSEN Transmission determined that Potential Alignment E1.2 was taken forward as the Proposed Alignment. The main reasons were the potential to avoid or minimise impacts on cultural heritage features, including scheduled monuments and Grade 2a Ancient Woodland as well as reduced visual impact on residential properties in Torgormack and Farley and less challenging terrain. Therefore, this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

Section E1.3

Potential

4.8.98 Potential Alignment E1.3 extended in an easterly direction from a point to the south-east of Ardochy and crossed the River Beauly to the north of the Crask of Aigas. The Potential Alignment E1.3 passed through Ruttle Wood to the north of the Scheduled Monument Dun Fíonn before connecting into the proposed Fanellan substation. The length of Potential Alignment E1.3 was approximately 2 km.

Alternative

4.8.99 Alternative Alignment E1.3 extended in a south easterly direction from a point to the south east of Ardochy before turning east and crossed the River Beauly to the north of the Crask of Aigas. The Alternative Alignment E1.3 passed through Ruttle Wood adjacent to the Scheduled Monument Dun Fionn before connecting into the proposed Fanellan substation. The length of Alternative Alignment E1.3 was approximately 2 km.

Environmental Constraints

4.8.100 The key environmental constraints in this section with respect to the consideration of alignment options included:

- Minimising potential impacts on Grade 1a, 2a and 2b Ancient Woodland;
- Avoiding direct impacts and minimising potential setting impacts on cultural heritage features including scheduled monument such as Dun Fionn prehistoric fort; and

- Minimising potential impacts on properties and core paths in Beauly and along sections of the A831.

Technical Considerations

4.8.101 The key technical considerations in this section included crossing of the A831, the Crask of Aigas and River Beauly.

Preferred Alignment

4.8.102 Potential Alignment E1.3 was selected as on balance it was the least constrained option from an environmental perspective and had the fewest engineering constraints. Both options were considered equally acceptable from a cost perspective. Potential Alignment E1.3 was subject to consultation with stakeholders, where local and previously unknown considerations may have confirmed or altered the initial preference.

Consultation Responses

4.8.103 During consultations at alignment selection stage (see **Section 4.9**), responses received from statutory consultees included no specific comments on this section of the Potential and Alternative Alignments for the OHL. Comments received from the local community in relation to this section focused on visualisations presented during the consultation, visual amenity, wildlife and habitat, woodland, cultural heritage and access tracks.

Proposed Alignment

4.8.104 Following review of consultation responses, and considering the need to balance cost, technical and environmental factors when developing a project, SSEN Transmission determined that Potential Alignment E1.3 was taken forward as the Proposed Alignment. The main reasons were that it avoids direct impact on Dun Fionn prehistoric fort and a less challenging crossing of the Crask of Aigas. Therefore, this option was taken forward as the Proposed Alignment to be studied in more detail through the process of EIA.

4.9 Reporting of Alignment Selection Stage and Consultation

4.9.1 Feedback was sought from all interested parties on the Preferred Alignment (presented in the Consultation Document: Alignment Selection[28], published in May 2024. The Consultation Document summarised the project need, the alignment development process undertaken, a description of the Potential and Alternative Alignments appraised, and the findings of the appraisal process leading to identification of Preferred Alignments in each Section of the OHL.

4.9.2 Feedback was sought from all interested parties on the potential and alternative alignment options appraisals undertaken, and approach to the selection of the Preferred Alignment. The consultation sought to capture views from:

- statutory consultees;
- non-statutory consultees;
- community members and local organisations, including local elected members; and
- landowners and land occupiers.

4.9.3 A series of in-person consultation events were held between 4th June 2024 and 13th June 2024 where local stakeholders could meet with the project team to discuss the proposals in more detail. These events took place at the dates and locations in **Table 4.4**.

[28] Spittal – Loch Buidhe – Beauly 400 kV OHL Connection Project: Consultation Document: Alignment Selection (May 2024), produced by SSEN Transmission

Table 4.4 June 2024 Consultation Locations

Date	Event	Recorded Attendance
Monday 3rd June 2024	Ross Institute, Halkirk	48
Tuesday 4th June 2024	Spittal Village Hall, Spittal	14
Tuesday 4th June 2024	Helmsdale Community Centre, Helmsdale	28
Wednesday 5th June 2024	Dunbeath Community Centre, Dunbeath	44
Thursday 6th June 2024	Rogart Village Hall, Rogart	35
Thursday 6th June 2024	Brora Scout and Guide Hall, Brora	35
Monday 10th June 2024	Bonar Bridge Community Hall, Bonar Bridge	54
Tuesday 11th June 2024	Ardross Community Hall, Ardross	30
Wednesday 12th June 2024	Contin Village Hall, Contin	13
Wednesday 12th June 2024	Fairburn Memorial Hall, Marybank	42
Thursday 13th June 2024	Garve Village Hall, Garve	2
Thursday 13th June 2024	Strathpeffer Pavilion, Strathpeffer	61
Wednesday 19th June 2024	Phipps Hall, Beauly	77
Thursday 20th June 2024	Kiltarlity Hall, Kiltarlity	69

4.9.4 The public consultation period on Alignment Options was open from 27th May 2024 until 22nd July 2024.

4.9.5 Following consultation, the RoC was published in January 2025[29] which detailed the Applicants' response to comments received by stakeholders on the Potential and Alternative Alignments and detailed the actions that would be taken forward as the project progresses through to the EIA and consenting stage.

4.10 Further Considerations of Alternatives During the EIA Process

4.10.1 The earlier sections in this chapter focus on the consideration of alternatives by the Applicant prior to this EIA stage, during the project development and consultation phases. However, during this EIA process, the Applicant has continued to reflect upon: (i) the use of alternative technology types for the Proposed Development; and (ii) the means by which effects of the selected technology type, OHL, could be further minimised. The considerations that have formed part of this EIA process are summarised in this section.

Alternative Technology Types: Whole/Partial Use of UGC

4.10.2 As highlighted in the previous sections, the policy support and cost analysis that informs the initial selection of proposed reinforcements provides the strong starting presumption for use of OHL infrastructure. EN-5 also recognises the engineering feasibility and environmental impacts of alternatives influence this policy and any

[29] Spittal – Loch Buidhe – Beauly 400 kV OHL Connection Project: Alignment Report on Consultation (January 2025), produced by SSEN Transmission

resulting decision on national infrastructure technology selection. In this regard, the following section outlines additional considerations that have influenced the selection of OHL and support why the use of alternative technologies has not been taken further.

Technical and Environmental Considerations of HVDC Subsea Cable

4.10.3 The benefits and limitations of subsea HVDC systems are explored within this section:

- One of the key benefits of HVDC subsea cable is its ability to transmit electricity uninterrupted over large distances of greater than 500km without the need to construct interim substations to manage the performance of the cable.
- The use of subsea cable can avoid challenges seen onshore, such as avoiding developed areas such as cities and towns, as well as isolated dwellings, which impact on the available routes for OHLs.
- The current capacity of proven HVDC technology at 525 kV is 2 GW, whereas the equivalent High Voltage Alternating Current (HVAC) OHL technology operating at 400 kV is approximately 6 GW, offering approximately three times the capacity. Therefore, to achieve the capacity of one 400 kV OHL, three HVDC systems would be required.
- The use of three HVDC systems to achieve the same capacity as one 400 kV OHL would require more substation infrastructure than the equivalent OHL, with each HVDC system requiring its own Converter Station (footprint of approximately 93,000 m2 (9.3 hectares)), resulting in the need for, on average, three converter stations at either end of the cable route, as opposed to one substation site required for HVAC technology. This would result in more convertor stations with a number of buildings to house the equipment. The HVDC technology still requires connection to the Alternating Current (AC) network, and so the use of HVDC does not remove the need for AC substations and can lead to larger substations to enable the three HVDC systems to connect to the AC system. The HVDC converter stations would be required in addition to the current proposed AC substations.
- The current cost of HVDC systems is significantly higher than the equivalent HVAC OHL system. Therefore, in addition to having substantially less capacity than HVAC, there would be additional cost to the consumer to install this technology to achieve the same capacity, Recent findings published by the Institution of Engineering and Technology[30] (IET) found that offshore HVDC subsea cable was 5 times more expensive than an OHL.
- With an HVDC system, additional Converter Stations would be required at any point along the routes not to manage the flow of electricity but to connect the system back to the existing network to either supply the Distribution Network or allow Generators or large Demand users to connect on HVAC. This would be necessary to ensure security of supply. The construction of this additional infrastructure to allow connection to the existing HVAC network drives further costs to the consumer (through increased energy bills), as well as requiring land take with localised impacts.
- HVDC underground cable requires a smaller footprint than an equivalent HVAC underground cable when considered on an individual basis. However, with three HVDC cables required to achieve the equivalent capacity of one 400kV HVAC system, the construction footprint becomes similar between HVDC and HVAC. This may not represent the best solution for landowners due to the greater footprint and associated impact on agricultural land, and the same issues with regards to operation and maintenance needs apply to the use of HVDC underground cables as previously described.
- Similar to onshore infrastructure, subsea cables present technical and environmental challenges, and there are significant constraints in the marine environment that can limit the infrastructure that can be placed subsea, such as (but not limited to) existing and planned offshore windfarms, offshore oil and gas infrastructure, designated Marine Protection Areas, crossing existing and planned cables and pipelines, as well as potential impacts to the seabed and marine environment, including protected species.

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Technical and Environmental Considerations of HVAC Underground Cable

4.10.4 The benefits and challenges of using HVAC underground cable (UGC) are set out below.

- A key benefit of the use of UGC is it can reduce landscape and visual impacts in certain circumstances by removing the need for OHL infrastructure. However, as noted in paragraph 4.3.10 the requirements for reactive compensation and further substation infrastructure can introduce different localised environmental impacts.
- UGC is present in a limited capacity on the SSEN Transmission network, mainly at 132 kV. However, 132 kV cabling requires reduced width working and operational corridors in comparison to 275 kV and 400 kV, being circa half the width required for these voltages. This provides for a reduced footprint of this infrastructure and can assist with managing the challenges associated with UGC set out in this section. In this context it is important to note that, the 132 kV network is not critical to the operation of the transmission network however the 275 kV and 400 kV network connected to the Main Interconnected Transmission System are. Therefore, issues with operability can be more acceptable on radial 132 kV UGC dependent on the connections it is facilitating.
- In order to deliver the necessary capacity for the Proposed Development, which requires a three phase 400 kV double circuit, up to 30 parallel cables would be required underground. For electrical and thermal reasons, these cables need to be suitably spaced out. To achieve the required spacing, a group of trenches at a combined width of over 40 m wide would need to be excavated, typically between 1 m and 3 m deep. During the construction period, a working corridor of over 70 m wide is required for cable installation to accommodate access tracks, working and storage areas. UGC construction requires a continuous access along the entire length of the UGC cable section.
- UGC construction differs from OHL construction where construction access is generally restricted to the tower locations and does not need to be continuous along the alignment. The specialised equipment for UGC construction and weight of cable drums can require more substantial access infrastructure to accommodate heavier and larger equipment compared to OHL construction. An additional impact is the requirement for cable joint bays. UGC can only be transported in certain lengths ranging from 500 m – 1000 m and therefore cable joints are required at these intervals. These are generally below ground concrete structures where the cable joints are located. For up to 30 cables, these structures are approximately 45m in width and space restrictions may drive cable alignments to where joint bays can suitably be located. In addition, the joint bays require permanent access for operation and maintenance purposes.
- The installation of UGC can have lasting impacts on the surrounding environment. Woodland removal may be required to install transmission circuits within a corridor that has been cleared of trees and other vegetation for installation and operational purposes—this being required for both OHLs and underground cabling. UGC operational corridors need to maintain a set width and be clear of trees, to ensure root growth does not damage cables, limiting opportunities for tree retention in design, construction, and operation.
- In an agricultural setting, UGC can offer benefits that, once installed, the ground can be farmed provided the UGC is able to be installed at depth below that at which the field is ploughed. This can allow farmers to utilise the full area of their fields.
- Peat and carbon-rich soils present a significant challenge to underground cabling. The Scottish Government's NPF4 clearly sets out that development proposals should seek to avoid or minimise impacts to peatland, carbon-rich soils and priority peatland habitat. Where the development of essential infrastructure will affect peatland, NPF4 clearly sets out that it would only be considered where there is a specific locational need and where it can be clearly demonstrated that no other alternative options are available to avoid excavating peat. Installing cables in peatland presents significant risks of movement as watercourses and ground conditions change over time which can cause cable damage and faults. To mitigate against this, cables need to be installed in solid structures, like ducts and trenches, which can

result in additional environmental impacts such as amending ground water flows, damaging the surrounding peatlands. In addition, due to the heat generated by the cables, this can impact reinstated peat via drying and damaging this habitat.

- Excavations involved with underground trenches have a higher likelihood to disrupt shallow groundwater systems which can result in the lowering of groundwater levels in the immediate vicinity of the excavations. In contrast, OHLs are unlikely to alter groundwater flows. Cable trenches can also modify water drainage pathways to groundwater flows, with potential impacts on environmentally sensitive wetland habitats such as marshes, flushes; and heightened risk to groundwater fed Private Water Supplies (PWS).
- Due to UGC being unable to dissipate the heat generated during their operation they are less efficient in terms of their capacity than the equivalent OHL., to overcome this, additional cables would be required in comparison to the number of OHL conductors necessary to achieve the same overall capacity. Recent studies undertaken by the IET found that UGC is estimated to cost a minimum of 4.5 times more than the equivalent OHL which is driven through items such as increased cable numbers and requirements for large excavations and land take.
- It is more challenging to find a suitable route and install UGC on undulating terrain and steep slopes such as those associated with upland areas. Where there is rock near to the surface this can require significant rock breaking activities. This can permanently alter the landscape setting removing the natural appearance and creating hard edges, where a cable trench is positioned.
- It is noted that minor faults occur with less frequency with underground cable in comparison to OHL. However, restoring power in the event of an underground cable fault can take significantly longer than for an OHL. Underground cable faults often require extensive works, specialist resource, tools and equipment to locate the fault, followed by significant civils work to expose the damage, replace the damaged section and carry out the repairs. This presents significant risks to security of supply and network reliability. It also impacts on SSEN Transmission's ability to meet its licence obligations of maintaining an efficient transmission network. Undergrounding cables over a significant length can have additional risk to the electricity transmission network in the event of cable failure and consequent outages On the 400kV network this could impact a significant number of customers due to the critical nature of these circuits.
- The installation of UGC can often require crossing of infrastructure such as public roads or railways. These cannot be excavated in the same manner as other areas therefore Horizontal Directional Drilling (HDD) is often used. The use of this method leaves the cable section within the drill section inaccessible for repair and maintenance due to the installation method "sealing" behind it. In the specific areas where HDD installation is deployed it also results in the cable operating closer to cable ratings due to the depth at which it is installed. This can reduce the operational life of the cable.
- Underground cable can present risks of environmental pollution to watercourses due to cable surround material being washed out during flood events. In addition, joint boxes/bays (where cable sections are jointed) need to be raised substantially to avoid all flooding as water ingress to these installations affects the operation of the cable and reduces its operational life. Moreover, the link boxes/bays will need to be kept clear of vegetation. Permanent vehicular access is required to all link boxes/bays.
- Underground cables pose more challenges from an operational perspective than OHLs. The ongoing maintenance and inspection of underground cable is significantly more difficult due to them being buried and therefore less accessible to both locate and subsequently fix the faults. Although minor faults are less common in underground cables, when they occur they result in major disruption to the electricity network and take significantly longer to resolve, often requiring extensive works. Underground cables have an operational life of approximately 40 years, similar to an OHL conductor, whereas steel lattice towers and conductors have an operational life of approximately 50-70 years. When the Proposed Development's OHL conductor reaches the end of its design life, it can be replaced with limited impact to landowners, whereas the replacement of an underground cable would be significantly more disruptive to both landowners, the local community, and the environment.

Further Economic Considerations

4.10.5 A recent study by the IET31, released in 2025, ("the 2025 IET Report") provides a further source of guidance on the indicative costs of different transmission technologies (as an update to the 2012 Parsons Brinckerhoff Report). The 2025 IET Report found that OHL was the most economic form of electricity transmission in comparison to onshore UGC and subsea cables. The 2025 IET Report32 includes, [within Section 5,] a cost comparison based on the parameter of the lifetime cost to transmit one Mega Watt (MW) by a distance of one kilometre (km). The indicative costs are necessarily based upon assumptions as recorded in the report (e.g. typical circuit lengths, operational voltages and configurations across the National Grid), but nonetheless offer a useful guide to the factors that generally make OHL the most cost-effective technology. **Table 4.5** below summarises the IET report table 5.3 and as illustrated within the supporting Flyer[33]. For present purposes, the lifetime cost of UGC was estimated to be 4-5 times greater than OHL (page 8).

Table 4.5: IET Indicative Cost Comparison

Technology	Cost - £/MWkm
OHL	£1190/MWkm
UGC	£5350/MWkm
Subsea Cable	£6400/MWkm

4.10.6 The cost of investing in the electricity transmission network is paid for by electricity consumers. As noted above at paragraph 4.2.2 of this chapter, Section 9(2) of the Electricity Act 1989 places a duty on the Applicant to develop and maintain an efficient, coordinated and economical system of electricity transmission. As noted in the 2025 IET Report, underground cable is currently/at the date of the 2025 Report estimated to be at least 4.5 times more expensive than OHL, and therefore in line with the Applicant's electricity transmission licence obligation, cost is a key consideration directing the use of OHL technology.

4.10.7 Balancing the potential benefits of partial UGC against its significant disbenefits, all as set out in detail above, the Applicant is clear in its view that, having conducted the careful routeing exercise identified in this Chapter, a continuous OHL solution is the most appropriate project solution to meet the need for new infrastructure, and that neither UGC (whole or partial) nor subsea cabling is a potential reasonable alternative requiring further detailed study.

OHL Alternatives: Further Design Considerations

4.10.8 The work undertaken during the route and alignment stages of the project enabled a rigorous consideration of reasonable OHL alternatives with respect to the Proposed Development. This work continued throughout the later stages of the design with further consideration of tower positions and the siting of infrastructure such as access tracks. This was informed by more detailed environmental and engineering information as it became available through fieldwork. The design was modified where possible whilst meeting the technical requirements for the construction and operation of the Proposed Development in often remote areas and in challenging terrain.

4.10.9 Access considerations were an important part of the design process. Habitat and peat probing survey results were used in tandem with engineering requirements to establish the most appropriate access routes through sensitive areas during both construction and operation. A combination of cut and fill access tracks, floating

31 100110238_001-rev-j-electricity-transmission-costs-and-characteristics_final-full.pdf

32 Institute of Engineering and Technology (2025) A comparison of electricity transmission technologies: Costs and characteristics: 100110238_001-rev-j-electricity-transmission-costs-and-characteristics_final-full.pdf

33 Institute of Engineering and Technology (2025) Electricity technologies Flyer : electricity-transmission-technologies-flyer-2pp-v9_print-ready.pdf

access tracks and trackway panels have been identified, dependent on peat depth, habitat type, terrain and slope.

4.10.10 An appraisal of crossing points with other transmission lines was also considered as part of the design process. When crossing transmission lines, the initial preference was to have the two lines cross over each other in a diamond arrangement. An appraisal at each location was considered and it was determined by SSEN Transmission that this approach would be used for each of the crossing locations. This is because it avoids the use of underground cable and minimises the land sterilisation caused by cable sealing end compounds.

4.10.11 Further detail on ongoing design of the Proposed Development is provided below, presented by topic.

Ecology and Ornithology

4.10.12 The decision by the Applicant to develop and take forward the Potential Alignment within Section A1.1 led to a review to reduce the number of towers within the Caithness and Sutherland Peatlands SAC, SPA and Ramsar Site. The Potential Alignment within Section C1.1 was also reviewed to site towers outwith the River Oykel SAC and Kyle of Sutherland Marches SSSI.

4.10.13 Despite the extensive routeing process, given the length of the Proposed Development and technical complexities faced, several towers have had to be positioned within sites designated for natural heritage. These instances are provided in **Table 4.6** below alongside further justification for their inclusion.

Table 4.6: Designations Review

Section	Tower No.	Designation	Justification
A	N24-N28, N33-N37	Flow Country WHS, Caithness and Sutherland Peatlands SAC, SPA and Ramsar, Shielton Peatlands SSSI	Existing Halsary and Bad a Cheo windfarms to the north-west, designated areas continue to the south-east and to the west. LoD has been limited within this section.
A	N83-N84	Dunbeath Water SSSI, Grade 2a Ancient Woodland	Cluster of Scheduled Monuments to the north-west. Additional ancient woodland to the south-east. OHL oversails Dunbeath Water SSSI. Towers have been sited outwith the site boundary and LoD has been limited within this section.
A	N109-N110	Berriedale Water SSSI, Grade 1a Ancient Woodland	Flow Country WHS to the north-west. Additional ancient woodland, residential receptors and the A9 to the south-west. OHL oversails Berriedale Water SSSI and Grade 1a Ancient Woodland. LoD has been limited within this section.
A	N115	Langwell Water SSSI, Grade 1a Ancient Woodland	Greater areas of ancient woodland to the east and west. Flow Country WHS to the north-west. LoD has been limited to the OC within this section.
A	N126-N138, N147-N148	Flow Country WHS	Flow Country extends to the north and south. To avoid this site the alignment would have to cross the A9 and pass over difficult terrain. LoD has been limited within this section.

Section	Tower No.	Designation	Justification
A	N182-N183	Grade 2a Ancient Woodland	Scheduled Monuments and steep terrain to the north. LoD has been limited to the operational corridor to limit impact on ancient woodland.
B	N262-263	Strathfleet SSSI	Challenging terrain. Scheduled Monuments to the west. Only viable tower position in this area. LoD has been limited within the SSSI.
B	N268-297	Strath Carnaig and Strath Fleet Moors SPA and SSSI	Proposed 400 kV Carnaig Substation within SPA and SSSI. LoD has been limited within the SPA and SSSI.
B	N275-276	Grade 1a Ancient Woodland	No viable alternative due to Special arrangement crossing of existing 132 kV OHL. Additional ancient woodland to the east, more challenging terrain to the west. OHL oversails section of Grade 1a Ancient Woodland. Towers have been sited outwith site boundary and LoD has been limited.
D	S38-39, S88-S89, S115-S116	Grade 2a Ancient Woodland	No viable alternative due to technical challenges associated with river crossings (River Carron, River Averon and River Glass). LoD has been limited within these sections.
D	S115-S116	Allt nan Caorach SSSI	No viable alternative due to technical challenges associated with river crossing (River Glass).
E	S152-S153, S195-S198, S226-S229	Grade 2a Ancient Woodland	No viable alternative due to technical challenges associated with river crossings (Peffery Burn, Allt Goibhre and River Beauly).
E	S180-S181, S228-S229	Grade 1a Ancient Woodland	No viable alternative due to Special arrangement crossing of existing 132 kV OHL and River Beauly crossing.

Hydrology and Geology

4.10.14 Changes were made to tower locations and proposed access roads to avoid the SEPA Recommended Riparian Corridor Layer[34]. The environmental significance of the riparian buffers is set by SEPA as a mechanism to protect the quality of the watercourses. Infrastructure was also sited away from Class 1 and 2 peatland and deeper areas of peat.

Cultural Heritage

4.10.15 Along the alignment, particular effort was made to site infrastructure to minimise impact on cultural heritage assets. SSEN Transmission consulted with HES through workshops to identify key areas of concern and where

[34] Recommended Riparian Corridor Layer for use in Land Use Planning (SEPA, 2024) Available online at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fpuqhuwhn%2Frecommended-riparian-corridor-note.docx&wdOrigin=BROWSELINK

the design could be altered to reduce effects. This consultation led to design reviews at the following locations and the design was modified as a result:

- The crossing of the River Helmsdale at Marrel has a number of scheduled monuments within close proximity. The Proposed Alignment was moved to reduce setting impacts to the scheduled monuments in this area.
- At Glen Loth, the Clach Mhic Mhios standing stone is a scheduled monument very sensitive to change due to its visual relationship with the skyline to the south south-west. A tower was therefore sited further east to reduce the skylining of the tower for views south-east from the standing stone.
- Near Culrain is Carbisdale Registered Battlefield. The towers were sited so that although the Proposed Alignment oversails the north-west edge of the registered battlefield, the siting of towers would avoid direct impact.
- At Heights of Brae, there are scheduled monuments sensitive to change due to their visual relationship with the coastline to the south-east. The potential alignment in Section D1.2 was moved north of Strath Sgitheach Scheduled Monument and Firth View Scheduled Monument. It was not possible to move the alignment to the north of Balnacrae, chambered cairn due to the safety distance required from the Abhainn Dubh Wind Farm.
- To the east of Coul House Category A Listed Building and the west of Fairburn GDL, the towers in Potential Alignment 2 on Section E1.1 were sited to reduce setting impact where practicable.

4.10.16 SSEN Transmission and HES reviewed the Proposed Alignment alongside visualisations during a site walkover which identified locations where HES requested further consideration of the Proposed Development in relation to specific assets. These were reviewed by the Applicant, the justification and outcome of which is outlined in **Table 4.7** below.

Table 4.7: HES Consultation Review

Asset	Mitigation Requested	Justification	Outcome
Scheduled Monuments			
Balnacrae, chambered cairn	Shift alignment north upslope above/behind the chambered cairn and keep view east to coast clear. The cairn is aligned south-west to north-east so important to keep outward views to the south-west along the passage clear.	At Strath Sgiathach, Abhainn Dubh wind farm is proposed to north of the Proposed Development. SSEN Transmission must maintain a 3 x rotor diameter from the proposed turbine locations. Tower located to south-east to reflect alignment of Cairn south-west to north-east so views to south-west from the Cairn are largely unobstructed. Additional restriction from riparian layer prevents horizontal movement of towers. Potential for peat deposits.	Movement not currently possible due to conflicting environmental and engineering constraints. Alternative to move the alignment north of the asset within the LOD will be reviewed based on the status of the Abhainn Dubh Wind Farm which currently is a live planning application under review by the consenting authorities.
Invershin Farm, standing stone	Shift alignment south as far as possible to free up as much of the view as possible over the lower ground to the river. Also minimise volume of infrastructure for special	Current crossing point restricted by proximity to residential properties and River Oykel SAC and ancient woodland.	Potential to explore further mitigation through planning condition. This will include reviewing the infrastructure required for the special arrangement and maintaining as great a distance as possible from the asset.

Asset	Mitigation Requested	Justification	Outcome
	arrangement within this lower ground.		
East Kinnauld School, broch	Shift alignment to the west behind existing OHL. Shift the closest tower (Tower N263) in the key view to the coast as it is currently directly in this line of sight.	This would require an additional crossing point of the existing OHL. Topographic conditions mean that Tower N263 is in feasible position to allow OHL to pass through Strath Fleet.	Will review micro-siting to push Tower N263 east as far as possible to not disturb the view to the coast.
East Kinnauld, fort	Shift alignment to the west behind existing OHL. Alternatively, shift towers to ensure that the alignment is not directly in the key views east down the strath when standing at the fort. Also minimise impacts on lower ground to south.	This would require additional crossing point of the existing OHL. Topographic conditions and proximity to residential properties mean that Tower N263 is in feasible position to allow OHL to pass through Strath Fleet.	Will review potential to micro-site Tower N263 east as far as possible to not disturb the view to the coast.
Clach Mhic Mhios, standing stone	Noted alignment previously amended during consultation to avoid impacts of national interest. Micro-siting in this location could therefore make a significant difference between impacts being of national interest or not, so micro-siting should not be considered in this location.	Noted – micro-siting has achieved requested mitigation expressed previously during consultation.	No further action required. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works.
Caen, long cairn	Shift alignment to the west to run behind the group of long cairns in this area (including SM13647). Alternatively, shift towers as far as possible to avoid or reduce impacts on views east down the strath along the river towards the coast. Ensure the shifting of towers does not create additional impacts on other cairns in the group. Ensure towers are neither on the axis of the cairn nor between it and the sea.	Micro-siting here has reduced impacts as far as is practicable within existing topographical, environment and residential/community constraints.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works.

Asset	Mitigation Requested	Justification	Outcome
Caen, long cairn and round cairn	Shift alignment to west to run behind the grouping of long cairns in this area (including SM13647). Alternatively, shift towers as far as possible to avoid or reduce impacts on the key views out over the lower ground to the east and south of the cairn and overlooking the river. Cairn is aligned east to west and parallel to the river. Therefore, avoid towers on that alignment and avoid towers sharing the same plateau as the cairn.	Micro-siting here has reduced impacts as far as is practicable within existing topographical, environment and residential/community constraints.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works.
Caen, long cairn	Shift alignment to west to run behind the grouping of long cairns in this area (including SM13647). Alternatively, ensure towers do not backdrop the cairn (SM1771) in views towards the site from this cairn.	Micro-siting here has reduced impacts as far as is practicable within existing topographical, environment and residential/community constraints.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works.
Rinsary, homestead	None likely to be possible. Alternatively, shift alignment to the south-east of the existing OHL to lessen the impacts on the setting of the monument. This would however have implications for monuments further south.	This would require an additional crossing of the existing OHL. Topographic conditions mean that dual towers would be required to span the valley. Movement south would move the alignment in closer proximity to coastal communities and A9.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works.
Langwell Tulloch, broch	Shift towers to be as far as possible from monument to reduce impacts (provided it does not increase impacts on SM423). Tower to the south of the monument on the other side of the valley has the greatest impact. Move the tower to the north and downslope would exacerbate impacts for SM423 but lessen the	Micro-siting of Towers N114 and N115 has reduced impacts as far as is practicable within existing topographical, environment and residential/community constraints.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works.

Asset	Mitigation Requested	Justification	Outcome
	perceived massing from this monument. Preferable to micro-site to best suit SM423.		
Turnal Rock, hut circle complex	None likely to be possible. The alignment is likely to be above key views to the Langwell Water when viewed from this monument, and any micro-siting to remove this impact would likely adversely affect other monuments.	Micro-siting of Towers N114 and 115 has reduced impacts as far as is practicable within existing topographical, environment and residential/community constraints.	Movement not possible due to conflicting environmental and engineering constraints.
Tulloch Turnal, broch	None likely to be possible. The alignment is likely to be above key views to the Langwell Water when viewed from this monument, and any micro-siting to remove this impact would likely adversely affect other monuments.	Micro-siting of Towers N114 and 115 has reduced impacts as far as is practicable within existing topographical, environment and residential/community constraints.	Movement not possible due to conflicting environmental and engineering constraints.
Cnoc Bad Asgaraidh, chambered cairn	Shift the closest east tower to avoid impacts on key views to east down the river valley. The chambered cairn has key views aligned on the Langwell Water and the sea beyond, and at present the alignment would directly block that view. Therefore avoid towers on that alignment and avoid alignment cutting across the view to the sea.	Not technically feasible to reduce or lengthen the proposed spans between towers in this area to enable movement of the tower east of the scheduled monument. If the alignment were within the valley, it would introduce an additional tower and thus not reduce overall prominence of infrastructure looking east down river. Therefore, gradient and topographical challenges limit any possibility of movement in this area. There is also an interface with Emergency Services Communication Mast in this area.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. This includes the potential to micro-site Tower N116 further south-west, to maintain open views east along the river.
Upper Borgue, standing stone	Shift tower as far as possible to give the standing stone as much prominence as possible in views to and from the coast. Also ensure tower does not appear directly behind the stone in views towards it from SM596.	Tower N98 located to south-east of SM502 in attempt to reduce impact on key views towards scheduled monument from north-east. Ground conditions (deep peat) and significant slide slope prevent further movement to west. Proximity to residential properties and communities also prevent movement east.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. This includes ensuring the prominence from the A9 is maintained and not backdropped

Asset	Mitigation Requested	Justification	Outcome
			and maintain open sightlines east and north to SM596.
Upper Borgue, broch	Shift pylons to east and north as far as possible to reduce impacts of alignment running directly through the lower ground that this site relates to. Ensure that this does not cause greater impacts on SM424 and SM502 and that tower is not directly behind SM502 in view towards it from this site.	Tower N96 located as far as possible to east of SM596. Ground conditions (deep peat) and significant slide slope prevent further movement to west. Proximity to residential properties and communities also prevent movement east.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. This includes maintaining open sightlines east and south to SM502.
Achorn, broch	Shift closest towers north-east and south-west to give as much space as possible to the broch and to reduce impacts as far as possible. Avoid positioning a tower that blocks views looking north-west to allow a better appreciation of the relationship of the monument to the strath.	Topographic restrictions, distributed crofting settlements proximity of a community to the east, Dunbeath Water SSSI, ancient woodland and deep peat to the south all prevent further movement of Tower N86.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. The includes the potential to micro-site Tower N86 to south-west, to avoid backdropping views from SM522.
Achorn Bridge, prehistoric & post-medieval settlement	As with Achorn Broch (SM511), shift closest towers as far as possible from the monument to give as much space as possible and try to reduce impacts. See above.	Topographic restrictions, distributed crofting settlements proximity of a community to the east, Dunbeath Water SSSI, ancient woodland and deep peat to the south all prevent further movement of Tower N86.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. This includes ensuring movement limited to not further erode views north along the valley to the associated settlement areas.
Buolachraber, chambered cairn	Mitigation for SM445 should also help to reduce impacts on the setting of this monument. Ensure no towers are backdropped behind SM445 in views from this cairn.	Topographic restrictions, proximity of a community to the east, ancient woodland and deep peat to south all prevent further movement of Towers N77 and N78.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. This includes the potential to micro-site towers to extend gap over the Burn of Houstry.

Asset	Mitigation Requested	Justification	Outcome
Buolacrabher, chambered cairn	Shift closest towers to south-west and north-east as far as possible to give as much space to the views south down the Burn of Houstry.	Topographic restrictions, proximity of a community to the east, ancient woodland and deep peat to south all prevent further movement of Towers N77 and N78.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. This includes the potential to micro-site towers to extend gap over the Burn of Houstry.
Cairn Liath, long cairn & round cairn	Ensure that towers running to north-east towards Houstry do not appear directly behind the north-east end of the cairn in views from the south-west end of the cairn and on approach towards it from the existing track.	Topographic restrictions, proximity of a community to the east, ancient woodland and deep peat to south all prevent further movement of Towers N81 and N82.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. This includes micro-siting to avoid placement on the long axis of the cairn.
Loedebest cairn,	None likely to be possible.	Noted	N/A
Loedebest, chambered cairn	None likely to be possible.	Noted	N/A
Loedebest, settlement	None likely to be possible.	Noted	N/A
Balcraggie Lodge, settlement	Towers shifted so that the span across the strath is greater to lessen impacts. Consider shift alongside potential impacts to SM511 and SM512 at Achorn.	Topographic restrictions, proximity of a community to the east, ancient woodland and deep peat to south all prevent further movement of Towers N83 and N84.	Movement not possible due to conflicting environmental and engineering constraints.
Cnoc na Maranaich, chambered cairn, burial cist & standing stone	None likely to be possible.	Topographic restrictions, proximity of a community to the east, ancient woodland and deep peat to south all prevent further movement of Towers N80 and N81.	Movement not possible due to conflicting environmental and engineering constraints.
Minera, broch	None likely to be possible.	Noted	N/A
Minera, standing stone	None likely to be possible.	Noted	N/A
Achkinloch, stone setting SW of, Loch Stemster	None likely to be possible.	Noted	N/A

Asset	Mitigation Requested	Justification	Outcome
Achkinloch, chambered cairn	Shift towers to ensure that there are none directly along the suggested alignment of the cairn in views out to the west.	Topographic restrictions (gradient) restrict movement to west for Towers N48 and N49. Further limited by the existing OHL and A9 to the west and the Peatlands Natura sites and WHS to the east. Movement would potentially also interfere with Emergency Services Communication Mast which is a hotspot areas for emergency communications.	Movement not possible due to conflicting environmental and engineering constraints. SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. This includes the potential to micro-site towers to maintain western view on axial alignment.
Dun Mor, fort	Shift west tower to north-east and south-west as far as possible to reduce number of towers within the lower ground around the river to the west of the fort.	Micro-siting of Tower S203 already shifted north of previous position in order to reduce impact on visual connection between assets.	Potential to explore further mitigation through planning condition. This will include micro-siting to maintain western views through burn valley.
Dun a Chliabhain, fort	None.	Noted.	SSEN Transmission will consult with HES if there are proposed amendments within the LoD, and if further beneficial locations become available following GI works. This includes ensuring that towers are positioned so that they are not directly behind SM2424 when viewed from this fort.
Dun Garbhlaich, fort, Kilmorack	Ensure that closest towers to the north do not backdrop directly behind the fort in views from the lower ground to the south-east. Shift closest north towers as far as possible away from the monument may help to reduce impacts from proximity slightly.	Micro-siting of Tower S198 already shifted from previous position in order to reduce impact on visual connection between assets. Topographical restriction may prevent further movement to north.	Potential to explore further mitigation through planning condition. This will include micro-siting to focus on the views from south / south-east from likely associated plateau settlement to limit backdropping by moving Tower 212 further north-east.
Registered Battlefields			
Battle of Carbisdale	None available.	Noted.	N/A

4.11 Conclusion on Study of Reasonable Alternatives

4.11.1 The Applicant has, consistent with its statutory and licence duties, balanced the full range of economic and environmental considerations when designing the Proposed Development. During the project development, consultation, and EIA stages, it has: (i) considered the potential for alternative types of technology to address the established need for new electricity infrastructure; and (ii) studied in detail alternative routes for its selected technology (i.e. a continuous OHL) so that it can strike the optimal balance of considerations.

4.11.2 The Applicant recognises the sensitive nature of projects that introduce new transmission infrastructure into the landscape, and, mindful of that sensitivity, has ensured that its processes have been robust. As explained above, rigorous processes are in place to ensure that environmental sensitivities are identified and taken into account during routeing. The Applicant's decisions have been informed throughout by the extensive experience of its own engineering and environmental teams, and the expertise of the external consultants appointed for this EIA process. They have been underpinned by detailed studies and collected data. Of particular significance, they have been influenced throughout by active consultation with the community and statutory consultees: for example, the choice of routes for Sections D/E was developed in direct response to feedback from the Strathpeffer community. As a further example, detailed consultation was undertaken with HES to reduce effects to cultural heritage assets where practicable including assets at Marrel, Glen Loth and Heights of Brae.

4.11.3 As this chapter explains, the Applicant has implemented its *Routing Guidance*, which: (i) applies the Holford rules; and (ii) seeks to avoid, failing which minimise, impacts on the environment (consistent with the mitigation hierarchy set out within NPF4). The approach to mitigation and offsetting of impacts that cannot be avoided or further minimised has been detailed within the topic specific technical chapters (again, consistent with the NPF4 mitigation hierarchy).

4.11.4 In summary, the Applicant's approach to routeing has secured the most sensitive routeing approach overall. In particular, it has enabled the Applicant to comply with its Routeing Objective, and its overarching duties to: (i) establish an economic, efficient and coordinated approach to its design; and (ii) do what it reasonably can to mitigate the effects of the Proposed Development on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.