

Blarghour Wind Farm 132 kV OHL Connection

Consultation Document – Alignment Selection

July 2023



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GLOSSARY

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GLOSSARY

Term	Definition
Alignment	A centre line of an overhead line OHL, along with location of key angle structures.
Amenity	The natural environment, cultural heritage, landscape and visual quality. Also includes the impact of SHE Transmission's works on communities, such as the effects of noise and disturbance from construction activities.
Conductor	A metallic wire strung from structure to structure, to carry electric current.
Consultation	The dynamic process of dialogue between individuals or groups, based on a genuine exchange of views and, normally, with the objective of influencing decisions, policies or programmes of action.
Corridor	A linear area which allows a continuous connection between the defined connection points. The corridor may vary in width along its length; in unconstrained areas it may be many kilometres wide.
Environmental Impact Assessment (EIA)	A formal process set down in The Electricity Works (EIA) (Scotland) Regulations 2000 (as amended in 2008) used to systematically identify, predict and assess the likely significant environmental impacts of a proposed project or development.
Gardens and Designed Landscapes (GDLs)	The Inventory of Gardens and Designed Landscapes lists those gardens or designed landscapes which are considered by a panel of experts to be of national importance.
Ground Water Dependent Terrestrial Ecosystem (GWDTE)	Wetlands identified as being directly dependent on groundwater bodies.
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities.
Kilovolt (kV)	One thousand volts.
Listed Building	Building included on the list of buildings of special architectural or historic interest and afforded statutory protection under the 'Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997' and other planning legislation. Classified categories A – C(s).
Micrositing	The process of positioning individual structures to avoid localised environmental or technical constraints.
Mitigation	Term used to indicate avoidance, remediation or alleviation of adverse impacts.
National Scenic Area (NSA)	A national level designation applied to those landscapes considered to be of exceptional scenic value.
Overhead line (OHL)	An electric line installed above ground, usually supported by lattice steel towers or poles.
Plantation Woodland	Woodland of any age that obviously originated from planting.
Riparian Woodland	Natural home for plants and animals occurring in a thin strip of land bordering a stream or river.
Route	A linear area of approximately 1 km width (although this may be narrower/wider in specific locations in response to identified pinch points / constraints), which provides a continuous connection between defined connection points.
Routeing	The work undertaken which leads to the selection of a proposed alignment, capable of being taken forward into the consenting process under Section 37 of the Electricity Act 1989.

Term	Definition
Scheduled Monument	A monument which has been scheduled by the Scottish Ministers as being of national importance under the terms of the 'Ancient Monuments and Archaeological Areas Act 1979'.
Semi-natural Woodland	Woodland that does not obviously originate from planting. The distribution of species will generally reflect the variations in the site and the soil. Planted trees must account for less than 30% of the canopy composition
Sites of Special Scientific Interest (SSSI)	Areas of national importance. The aim of the SSSI network is to maintain an adequate representation of all natural and semi-natural habitats and native species across Britain.
Span	The section of overhead line between two structures.
Special Area of Conservation (SAC)	An area designated under the EC Habitats Directive to ensure that rare, endangered or vulnerable habitats or species of community interest are either maintained at or restored to a favourable conservation status.
Special Landscape Area (SLA)	Landscapes designated by The Highland Council which are considered to be of regional/local importance for their scenic qualities.
Special Protection Area (SPA)	An area designated under the Wild Birds Directive (Directive74/409/EEC) to protect important bird habitats. Implemented under the Wildlife and Countryside Act 1981.
Stakeholders	Organisations and individuals who can affect or are affected by SHE Transmission works.
Study Area	The area within which the corridor, route and alignment study takes place.
Terminal Structure	A structure (tower or pole) required where the line terminates either at a substation or at the beginning and end of an underground cable section.
The National Grid	The electricity transmission network in the Great Britain.
Volts	The international unit of electric potential and electromotive force.
Wayleave	A voluntary agreement entered into between a landowner upon whose land an overhead line is to be constructed and SHE Transmission
Wild Land Area (WLA)	Those areas comprising the greatest and most extensive areas of wild characteristics within Scotland.

PREFACE

This Consultation Document has been prepared by ERM on behalf of Scottish and Southern Electricity Networks Transmission (SSEN Transmission) to seek comments from all interested parties on the Preferred Alignment identified for the proposed Blarghour Wind Farm Connection between the Blarghour Wind Farm Substation and the proposed Creag Dhubh Substation.

The Consultation Document is available online at:

<https://www.ssen-transmission.co.uk/projects/project-map/blarghour-wind-farm-connection-project/>

Face to face public consultation events will be held between 2pm to 7pm on 2nd August 2023 at Loch Fyne Hotel Inveraray, Argyll, Inveraray, Scotland, PA32 8XT.

Information on this event can be found via the project website:

<https://www.ssen-transmission.co.uk/projects/project-map/blarghour-wind-farm-connection-project/>

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All comments are requested by 18th August 2023.

1. EXECUTIVE SUMMARY

SSEN Transmission is proposing to construct and operate a 132 kV overhead line (OHL) and Underground Cable (UGC) to connect the proposed Blarghour Wind Farm to the proposed Creag Dhubh Substation ('Proposed Development') (**Figure 1.1**). The developer for Blarghour Wind Farm has a contracted connection date of October 2027. The 73.1 MW wind farm requires a single circuit 132 kV connection from the proposed wind farm substation compound and terminating at the proposed Creag Dhubh Substation. The technology options considered include OHL comprised predominantly of trident "H" wood pole supports, switching to trident "H" steel poles or steel lattice towers at altitudes over c. 300 m AOD, and a section of UGC on approach to Creag Dhubh Substation.

An alignment (OHL and UGC) option was identified, which provided feasible areas for the overhead line to be developed and from which it has been appraised against environmental, engineering and economic criteria. This Consultation Document invites comments from all interested parties on the alignment option under consideration.

Due to technical and safety constraints associated with existing Inveraray to Taynuilt West OHL infrastructure and the proposed Creag Dhubh to Inveraray 275 kV OHL there is only one viable alignment option to be considered for both the OHL and UGC sections (**Figure 1.2**). Safety of the line during the operation and maintenance phase (post construction) prevents SSEN Transmission designing multiple crossing points between transmission OHL. Further to this, the location of an existing OHL running parallel to the A819, requires adequate safety clearance such that when the steel lattice towers are removed the work force and surrounding infrastructure are not put at risk. Additionally, the topography of the site immediately adjacent to steep ground and cliffs, for the most part, prevents lateral movement of the OHL to the west.

The key environmental considerations are the Glen Etive and Glen Fyne SPA located c. 150 m to the west of the OHL Alignment at the closest point. Breeding populations of golden eagle associated with Glen Etive and Glen Fyne SPA may be impacted due to disturbance during construction and risk of collision during operation. The OHL Alignment predominantly crosses peatland habitats and blanket bog (Annex 1 habitat when in moderate or good condition), which may contain Ground Water Dependent Terrestrial Ecosystems (GWDTE) habitats. Commercial forestry would need to be felled to create a clear space for the construction and operation of the northern section of the OHL and UGC Alignment.

The key engineering consideration is the topography of the site with the presence of steep slopes which restrict the available corridor for the OHL Alignment. Another consideration is the altitude which exceeds the threshold for a wood pole on the most southern section of the OHL which will necessitate the use of alternative supports (steel pole or towers). Significant areas of peatland have been identified along the OHL Alignment in particular on approach to the wind farm substation. The topography of the area and both the existing and proposed infrastructure provide significant constraints in terms of area available and constructability of the line. Whilst the proposed and existing infrastructure provide constraints, benefits may also be realised in the form of utilisation of common infrastructure items such as permanent access tracks.

The Preferred OHL Alignment and Preferred UGC Alignment are illustrated in **Figure 1.1, Appendix A**.

2. INTRODUCTION

2.1 Purpose of Document

SSEN Transmission operating under licence held by Scottish Hydro Electric Transmission plc, is proposing to construct and operate a 132 kV OHL and UGC to connect the proposed Blarghour Wind Farm to the proposed Creag Dhubh Substation ('Proposed Development') (**Figure 1.1**).

The overall purpose of this document is to inform both face to face and virtual consultation events covering the Proposed Development, and to aid the overall project understanding for stakeholders as well as allowing for potential cumulative effects to be understood.

This document presents the findings of an environmental, technical and cost appraisal of the alignment option(s) identified by SSEN Transmission and describes the process by which a Preferred Alignment for the OHL and UGC has been selected. The Preferred Alignment is considered to provide the optimal opportunity to achieve an economically viable, technically feasible and environmentally balanced solution.

Interested parties are invited to provide their views on the Preferred Alignment put forward in this document. All comments received will inform SSEN Transmission's selection of a Proposed Alignment to be taken forward for further environmental assessment and more detailed technical assessment prior to submission of an application for consent under section 37 of the Electricity Act 1989, as amended (hereafter referred to as s37 consent).

2.2 Background and Project Need

SSEN Transmission has a duty under Section 9 of the Electricity Act 1989 to 'develop and maintain an efficient, coordinated and economical system of electricity transmission and to facilitate competition in the generation and supply of electricity. SSEN Transmission also has obligations to offer non-discriminatory terms for connection to the transmission system, both for new generation and for new sources of electricity demand.

The developer of Blarghour Wind Farm has been granted consent (EC00005267¹) by the Scottish Government's Energy Consents Unit (ECU) under Section 36 of the Electricity Act 1989 for a 73.1 MW wind farm, which has a contracted connection date of October 2027. SSEN Transmission has a statutory duty under Schedule 9 of the Electricity Act 1989 to connect the new development to the transmission network by the contracted connection date.

The development is in line with SSEN Transmission's commitment and licence obligation to facilitate the connection of renewables generators to the grid through an economical, efficient and coordinated approach to transmission reinforcement.

2.3 Previous Work

SSEN Transmission consulted on two route options (Route 1 and Route 2) for the Proposed Development in May 2022. The consultation period opened on 11th May 2022 and continued until 6th June 2022.

The Consultation Document concluded that the Preferred Route 2 was marginally preferable over Route 1. The consultation process has further highlighted that Route 2 would likely have a lower impact on interested assets. Notably these include:

- A lower potential for impact to sensitive habitats including peat and blanket bog;
- Route 2 runs alongside existing infrastructure providing better potential access for the majority of the route;
- The constraints present along Route 2 are well understood in order to provide potential mitigation;
- Route 2 may be preferable due to the ability to backcloth the OHL in Glen Aray, and route alongside existing electrical and road infrastructure;

¹ <https://www.energyconsents.scot/ApplicationDetails.aspx?cr=EC00005267>

- Route 2 is at lower elevation which is likely to reduce restrictions and impacts on the selection of a suitable tower / pole structure relative to Route 1.

The consultation process confirmed that Route 2 remained the Preferred Route, hence Route 2 was taken forward as the Proposed Route.

The project then moved into the alignment stage to identify a Preferred Alignment.

2.4 Document Structure

This Consultation Document comprises the following sections:

- Section 1: Executive Summary
- Section 2: Introduction
- Section 3: Description of proposals – describes the proposals including key activities and construction programme;
- Section 4: Alignment selection process – describes the process for selecting the alignment, based on environmental, engineering, and cost considerations;
- Section 5: Baseline – Describes the pertinent features identified within the Proposed Route identified during the previous stage, setting the context in which alignment option(s) will be situated.
- Section 6: Alignment Selection – Describes the options under assessment and any deviations from the selected route option.
- Section 7: Alignment appraisal – a summary of the environmental, engineering and cost topics, followed by a comparative analysis summary and a description of the Preferred Alignment; and
- Section 8: Consultation on the proposals – invites comments on the preferred option process and next steps.

This document is supported by a series of figures within **Appendix A**.

3. DESCRIPTION OF THE PROPOSALS

The OHL Alignment heads east out of Blarghour Wind Farm Substation, for approx. 4.8 km, towards Drimfern. From Drimfern the OHL Alignment heads approximately 4.2 km north, in parallel to the A819 toward Taynafead, prior to terminating at a terminal wood pole structure where the OHL Alignment will underground (**Figure 1.1**). The UGC Alignment will commence from the terminal wood pole structure located immediately adjacent to a forestry track within Keppochan East and Tullich Forest. From here the UGC Alignment crosses the track and follows the opposite verge in a north easterly direction for approx. 350 m before passing north into the proposed Creag Dhubh Substation (**Figure 1.1**).

3.1 Alignment Design and Construction

The technology solution proposed and appraised considers:

- Alignments comprised of, in part, underground cable (UGC);
- Alignments comprised of, in part, trident “H” wood pole overhead line (OHL);
- Alignments comprised of, in part, trident “H” steel poles; or
- Alignments comprised of, in part, steel lattice tower OHL

Figure 1.1 (Appendix A) shows the Preferred Alignment that is presented in this Consultation Document.

3.2 Underground Cable

A set of three cables, arranged in trefoil installation, of 2500 mm² Aluminium core, cross-linked XLPE insulation, Smooth Welded Aluminium Sheath cables is proposed as the most appropriate option for the UGC on the Proposed Development, matching the proposed OHL rating. Cable trenching is likely to be the method of cable laying, where sections of trench are opened, cable laid inside PVC ducts and then backfilled in a rolling fashion, avoiding the need to open long lengths of trench at once. The proposed trench size would be approx. 0.55 m with a working width of approximately 30 m.

Location of the trench will preferably be adjacent to existing access tracks or through forestry rides / fire breaks to reduce impacts on the surrounding habitats, in terms of forestry and habitat loss associated with cable clearance and any new access track provision.

3.3 Overhead Line



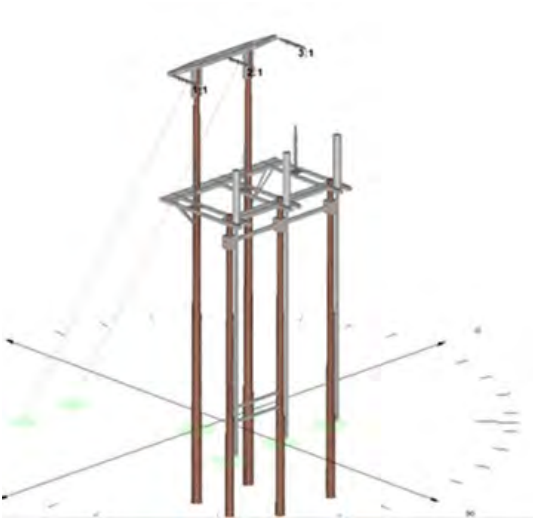
SSEN Transmission are currently in the process of testing a new trident “H” steel pole, a steel equivalent of the proposed trident “H” wood pole, currently routinely deployed on projects. Following completion of the testing process, if found to be fit for purpose and in line with safety standards and meets the overall project programme, it is SSEN’s preference to employ this new structure on this project in place of steel lattice towers at altitudes above 300 m (AOD). Should testing not be complete in time for this project, the project team will need to revert to steel lattice towers. At altitudes below c. 300 m (AOD) trident “H” wood poles are intended for use.

Generally, the height, including extensions, for the wood poles (or steel equivalent) is 12 - 15 m (above ground level) and for steel lattice towers between 26 m and 36 m. The final design of support type is generally dependent on three main factors: altitude, weather and the topography of the location. The size of supports and span lengths will also vary depending on these factors, with supports being closer together at high altitudes to withstand the effects of greater exposure to high winds, ice and other weather events. The support configuration, height and the distance between supports will therefore only be fully determined after a detailed alignment survey.

The proposed trident “H” wood poles (or steel equivalent) will support three conductors (wires) on three insulators positioned at the top of the pole. The L7 steel lattice towers can support six conductors (wires) on six cross-arms (three on each side) and an earth wire at the tower peak but under the proposed arrangement it is expected the steel lattice tower will support two conductors (wires) on one side (using two cross-arms) and one conductor (wire) on the opposite side (using one cross-arm) and an earth wire at the tower peak. Typical designs for all structures can be seen in **Plate 2.1**. Should trident “H” steel poles be selected for use, they will fundamentally look like the trident “H” wood pole illustrated in **Plate 2.1** but be constructed entirely of metal.

At the end of the OHL Alignment will be a wood pole terminal structure to facilitate the line passing from OHL to UGC (**Plate 2.1**).

Plate 2.1: Indicative Trident “H” Wood Pole, Steel Lattice Tower and wood pole terminal structure.

Indicative trident “H” wood pole	Indicative steel lattice tower	Indicative wood pole terminal structure
 A photograph showing a series of trident 'H' wood poles in a grassy field. The poles are dark brown and have a cross-arm structure at the top. The background shows a cloudy sky and distant hills.	 A photograph of a steel lattice tower in a green field. The tower is a lattice structure with a cross-arm at the top. The background shows a forested hillside.	 A 3D diagram of a wood pole terminal structure. It shows three vertical poles with a cross-arm at the top. The diagram is rendered in a light brown color and includes some technical annotations like '3.1' and '2.1'.

3.4 Construction Activities

Key tasks during construction would involve:

- Establishment of suitable laydown areas for material and temporary construction compounds;
- Installation of temporary access tracks solutions as necessary comprising bog mats and trackway for wood pole construction;
- Upgrades to existing access tracks and potentially construction of new access tracks where required;
- Tree felling;
- Preparation of temporary working areas including excavations and construction of steel tower foundations;
- Delivery of structures and materials to site, assembly and erection of steel towers/ wood poles;
- Excavation of a trench for cable ducts and construction of joint bays;
- Tower/pole conductor 'stringing' and commissioning of the OHL and UGC;
- Removal of temporary infrastructure and reinstatement of the immediate vicinity of the wood pole/ steel lattice tower/ underground cable, and any ground disturbed, to pre-existing condition.

3.5 Forestry Removal

Woodland removal which may be required prior to the construction work will be identified and described after a Proposed Alignment has been selected. Removal of sections of commercial forest would be undertaken in consultation with Scottish Forestry and affected landowners. After felling, timber removed that is commercially viable would be sold and the remaining forest material would be dealt with in a way that delivers the best practicable environmental outcome and is compliant with waste regulations and guidance including SEPA's "Use of Trees Cleared to Facilitate Development on Afforested Land" guidance.

An operational corridor would be required to enable the safe operation and maintenance of the OHL (and UGC). This will vary depending on the type of woodland (based on species present) in proximity to the OHL. In areas of native woodland, it is usually possible to provide a narrower corridor due to a reduced risk of trees falling on the OHL.

3.6 Access during Construction

Access to every tower and pole is required during construction. A more detailed plan for access during construction will be prepared once a Proposed Alignment has been identified and the preferred support structure type(s) selected. Where feasible, existing access tracks will be used and upgraded where necessary. Opportunities exist for the Proposed Development to utilise accesses created by other projects proposed in the local area including Blarghour Wind Farm, Creag Dhubh to Inveraray 275 kV OHL and Creag Dhubh Substation (**Figure 1.2**). Where this is not possible, new access tracks will be required and where there is a justified long-term requirement for operations and maintenance they will be left in place, otherwise they will be removed after commissioning.

The type of temporary track required will depend on a variety of factors including the sensitivity of the location, the type of land use and the ground conditions, with the latter confirmed through pre-construction ground information. When the use of heavy plant and machinery is not required and the volume of traffic to carry out the works is not substantial, use can be made of low ground pressure vehicles which do not require a track. Stone tracks will be required when heavy plant and a substantial volume of traffic is anticipated; these may be floated over areas of peat, or may use cut and fill approaches, subject to ground conditions and gradients. In areas identified as sensitive, temporary matting would be used for access, provided that the ground is relatively level.

3.7 Indicative Project Construction Programme

Subject to consents and approvals being granted, construction would take place over approximately an 18 to 22 month period, commencing in September 2025, with energisation of the project scheduled for October 2027.

The detailed construction phasing and programme would be subject to change as the design progresses and necessary consents and wayleaves are agreed.

4. ALIGNMENT SELECTION PROCESS

4.1 Guidance Documents

The approach to alignment selection is informed by the following SSEN Transmission guidance:

- Procedures for Routeing Overhead Lines and Underground Cables of 132 kV or above, SSEN Transmission, 2020 (PR-NET-ENV-501) (Routeing Guidance); and
- Biodiversity Net Gain Flow Chart, Guidance and Project Toolkit (FC-NET-ENV-500)

The guidance develops a process which aims to balance environmental, technical and economic considerations throughout a staged process.

The principal routeing stages are:

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

This consultation document presents the appraisal completed at Stage 3 – Alignment Selection.

The method of identifying a Preferred Alignment in this study has involved the following four key tasks:

- Identification of the baseline;
- Identification of suitable alignment options;
- Environmental, technical and cost analysis of alignment option(s); and
- Identification of a Preferred Alignment.

4.2 Main Considerations

Alignment option was identified following site appraisals that considered the constraints identified during the desk-based baseline studies. The following has been taken into account:

- 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 sky lining the alignment in key views and where necessary, cross ridges obliquely where a dip in the ridge provides an opportunity;
- Target the alignment towards open valleys and woods where the apparent height of 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
- Technical issues related to clearances, connectivity, outages, maintenance, and faults.

4.3 Baseline Conditions

The following information sources have informed the desk based baseline study to identify potential environmental constraints within and adjacent to the alignment option(s). The study area applied for natural heritage features was 10 km (from Proposed Route), for landscape and visual 15 km (from Proposed Route), and cultural heritage 2.5 km (from Proposed Route).

- Identification of environmental designated sites and other constraints, utilising GIS datasets available via Site Link and other sources. These designations include:

- Special Areas of Conservation (SAC);
 - Special Protection Areas (SPA);
 - Proposed Special Protection Areas (pSPA);
 - Sites of Special Scientific Interest (SSSI);
 - National Scenic Area (NSA);
 - Wild Land Areas (WLA);
 - Royal Society for the Protection of Birds (RSPB) reserves;
 - Land capability for agriculture;
 - Geological Conservation Review Sites;
 - Carbon-rich soil, deep peat and priority peatland habitats; and
 - Areas at risk of flooding (SEPA flood map²).
- Identification of archaeological designations and other recorded sites, utilising GIS datasets available via Historic Environment Scotland Data Services and Local Historic Environment Teams. These include:
 - World Heritage Sites (WHS) and buffers;
 - Scheduled Monuments;
 - Category A, B and C listed buildings; and
 - Gardens and Designed Landscapes.
 - Review of the Argyll and Bute Local Development Plan 2015 to identify local policies and further environmental constraints and opportunities, such as Local Nature Conservation Sites (LNCS), core paths or other locations important to the public;
 - Review of Landscape Character Assessments (LCA) of relevance to the Proposed Development;
 - Review of Ordnance Survey (OS) mapping (1:50,000 and 1:25,000 and online GIS data sources from OS Open Data) and aerial photography (where available) to identify other potential constraints such as settlement, properties, walking routes, cycling routes etc.;
 - Extrapolation of OS Vectormap GIS data to identify further environmental constraint including locations of watercourses and waterbodies, roads classifications and degree of slope;
 - Review of ornithological data available for wind farms within a 2 km buffer of the Study Area from the Argyll and Bute planning portal; and
 - Review of other local information through online and published media such as tourism sites.

Further to the desk study data, the appraisal has been supplemented by information collected during ornithological surveys (September 2021 – August 2022, inclusive of breeding birds) undertaken along the Proposed Route. Ecology, peat, hydrology, cultural heritage, landscape, visual and further ornithology surveys are programmed to be undertaken in 2023, to inform the consenting phase of the Proposed Development.

Technical studies have also been undertaken to understand the site specific conditions for pole / tower locations and along the alignment option(s).

Appraisal Method

- 4.4 Appraisal of alignment option(s) has involved systematic consideration against the following environmental topic areas:

4.4.1 Environmental Criteria:

- **Natural Heritage** - Designations, Protected Species, Habitats, Ornithology and Geology, Hydrology and Hydrogeology.
- **Cultural Heritage** - Designations and Cultural Heritage Assets.
- **People** – Settlements, Visual and Physical Effects (OHL only).

² <http://map.sepa.org.uk/floodmap/map.htm>

- **Landscape** - Designations and Character.
- **Land Use** - Agriculture, Forestry and Recreation.

4.4.2 Engineering Criteria:

- **Infrastructure crossings** – major crossings, road crossings;
- **Environmental design** – elevation, atmospheric pollution, contaminated land, flooding;
- **Ground conditions** – terrain, peat;
- **Construction / Maintenance** – access;
- **Proximity** – clearance distance, communication masts, metallic pipelines.

4.4.3 Economic Criteria:

Appraisal of alignment options has involved systematic consideration against the following economic topic areas:

- **Capital** – construction, diversions, public road improvements, felling, land assembly;
- **Operational** – inspections, maintenance.

Each Alignment Option has been considered in terms of its potential interaction with the environmental, engineering and economic characteristics, features and sensitives. The Alignment Options have then been compared to determine which has the greatest and least capacity or potential to accommodate the Proposed Development. Environmental Engineering and Economic sensitivity have been considered qualitatively, based on professional judgement and utilising the red, amber, green (RAG) rating. It has been applied to each topic area indicating potential impacts. This rating is based on a three-point scale as described in **Table 4.1**. In line with the RAG assessment criteria defined within the SSEN Transmission Guidance, a RAG rating has been applied to each topic area within each Alignment Option.

Table 4.1: RAG Ratings

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

5. BASELINE

5.1 Desk-based Review of Constraints

This section provides a review of baseline information and key constraints, under each of the environmental, technical and economic subject areas, present within the Study Area. The Study Area is comprised of the Proposed Route, identified and consulted on during the previous stage of the routing process. The Proposed Route has been utilised for this purpose as all alignment option(s) considered will be identified within the Proposed Route and maybe located anywhere within it. Appropriate topic specific buffers have been applied to the Study Area to account for impacts that may occur remote to the Proposed Development ('Zone of Influence').

5.2 Natural Heritage

5.2.1 Designations

International Designations

No internationally designated sites are directly within the Study Area (**Figure 1.3**).

National Designations

No nationally designated sites are directly within the Study Area.

Local Designations and Reserves

No locally designated sites are directly within the Study Area.

5.2.2 Protected Species

Protected species surveys were undertaken within the southern section of the Study Area between the proposed Blarghour Wind Farm Substation and just short of Drimfern in summer 2022.

European protected species known to occur in the vicinity of the Proposed Development, and likely to be present across the Study Area include otter (*Lutra lutra*), wildcat (*Felis silvestris grampia*) and bat species. UK BAP species that may also be found across the Study Area include red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*), polecat (*Mustela putorius*), water vole (*Arvicola amphibius*), badger (*Meles meles*), brown hare (*Lepus europaeus*), mountain hare (*Lepus timidus*) and hedgehog (*Erinaceus europaeus*). Freshwater pearl mussel (*Margaritifera margaritifera*) were not identified within 5 km. Suitable habitats occur within the Study Area for freshwater pearl mussel and this species may therefore be present.

No evidence of protected mammal species presence was detected within the Study Area. However, the burns and standing water bodies throughout the Study Area may offer foraging or commuting potential for bats, water voles and otters. Water vole burrows may also be found adjacent to watercourses, however, populations are subject to significant fluctuations annually and between years so may not always be present even in suitable habitat.

The areas of bracken and much of the blanket bog offer suitable habitat for foraging and commuting reptiles. In addition, the damper areas of blanket bog offer suitable habitat for amphibian species.

Woodland habitats both coniferous and broadleaved provide habitat for both red squirrel and pine marten which generally utilise shelters within trees / tree canopy.

Wildcat, whilst extremely rare in Scotland, will utilise a mosaic of habitats including woodland, heathland and farmland, in which to find shelter and prey, all of which are found within the Study Area.

Badgers are unlikely to be found in areas where the water table is high on account of any excavations (i.e. setts) filling with water. Whilst badgers are likely to be present in the local area, setts will be confined to drier

areas and the size of foraging areas (or territory size) will be dependent on resource availability and relative prey abundance.

5.2.3 Habitats

The Survey Area for habitats encompasses the Study Area plus a 250 m buffer to allow for detection of GWDTEs as per Scottish Environment Protection Agency (SEPA) guidance³.

Within the southern section of the Study Area, between the proposed Blarghour Wind Farm Substation and just before Drimfern, overall the habitats are dominated by blanket bog, degraded blanket bog and upland acid grassland. Other habitats include alpine and subalpine heaths, continuous bracken, purple moorgrass and rush pastures, upland flushes, fens and swamps and running and standing water bodies. Ten SBL habitats present which vary in terms of their importance for species and conservation requirements include:

- Blanket bog,
- Inland rock outcrop and scree habitats,
- *Juncus squarrosus*-*Festuca ovina* grassland,
- *Nardus stricta*-*Galium saxatile* grassland,
- Oligotrophic and dystrophic lakes,
- Purple moor- grass and rush pastures,
- Rivers and streams,
- Upland calcareous grassland,
- Upland heathland, and;
- Upland flushes, fens and swamps.

Six EU Habitats Directive Annex 1 Priority habitats were recorded within the Survey Area and include:

- H4010 Northern Atlantic wet heaths with *Erica tetralix* (upland),
- H4030 European dry heaths (upland),
- H4060 Alpine and boreal heaths,
- H7230 Alkaline fens,
- H7310 Blanket bog, and;
- H8210 Calcareous rocky slopes and crevices (with chasmophytic vegetation).

Seven potential GWDTE were recorded within the Survey Area;

- CG10 *Festuca ovina* – *Agrostis capillaris* – *Thymus praecox* grassland,
- M6 *Carex echinata* - *Sphagnum fallax* mire (M6b, M6c and M6d),
- M10 *Carex dioica* - *Pinguicula vulgaris* mire,
- M11 *Carex demissa* - *Saxifraga aizoides* mire,
- M15 *Scirpus cespitosus* - *Erica tetralix* wet heath,
- M23a *Juncus effusus*-*Holcus lanatus* rush pasture, *Juncus acutiflorus* sub-community, and;
- M32b *Philonotis fontana*-*Micranthes stellaris* spring, *Montia fontana*-*Chrysosplenium oppositifolium* sub-community.

No frequent-dominant invasive non-native flora species were recorded within the Survey Area, however as the climate continues to warm bracken is likely to become more invasive within the Survey Area.

³ Land Use Planning System. SEPA Guidance Note 31. Guidance on Assessing the impacts of development proposals on Ground Water Abstraction and Ground Water Dependent Terrestrial Ecosystems. 11/09/2017.

The survey of all of the habitats at this site did not reveal the presence of any Nationally Scarce or Rare vascular plant species, however the Vulnerable mossy saxifrage was detected within the Survey Area, associated with an M32 spring.

The remainder of the Survey Area hosts agricultural pasture, mainly used for sheep grazing, improved and semi-improved grassland, adjacent to the A819 road between Taynafead and Drimfern, often on a steep undulating topography. Cliff and scattered scrub woodland are also present within this central part of the Survey Area. Further to this commercial conifer plantation at Keppochan East and Tullich Forest is the predominant habitat in the northern most 1.2 km, with broadleaf woodland most notably located within the Study Area, south east of Stronmagachan, where a woodland block listed on the Ancient Woodland Inventory (AWI) is located.

5.3 Ornithology

5.3.1 Designations

Glen Etive and Glen Fyne SPA, designated for breeding populations of golden eagle (*Aquila chrysaetos*), is located immediately to the east of the Study Area (c. 10 m at the closest point).

The Study Area is considered likely to have connectivity with Glen Etive and Glen Fyne SPA (based on information collected during the ornithology surveys in 2021 / 2022). Up to three golden eagles, considered to possibly belong to the qualifying population of the SPA, were recorded displaying, foraging and mating on site.

5.3.2 Species

Due to the nature of avifauna being highly mobile species, records of their presence within the Study Area and surrounding habitats may suggest species that are resident, passing through or breeding. Often birds will breed in different locations year on year (with few exceptions) records should not be considered fixed but indicative of presence and general use of the Study Area.

The breeding bird assemblage includes seven species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended): golden eagle, hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*), peregrine falcon (*Falco peregrinus*), white-tailed eagle (*Haliaeetus albicilla*), crossbill (*Loxia curvirostra*) and goshawk (*Accipiter gentilis*).

The breeding bird assemblage include nine priority species listed on the Scottish Biodiversity List; five red-listed species and six amber-listed species of conservation concern.

Nine species of raptor were recorded during surveys: buzzard (*Buteo buteo*), golden eagle, hen harrier, kestrel (*Falco tinnunculus*), merlin, peregrine falcon, sparrowhawk (*Accipiter nisus*), goshawk and white-tailed eagle. The wider survey area is considered to support an occupied home range of each of these species.

The western section of the Study Area supports breeding territories of snipe (*Gallinago gallinago*), curlew (*Numenius arquata*) and golden plover (*Pluvialis apricaria*).

The wider survey area supports breeding wildfowl resident's mallard (*Anas platyrhynchos*) and teal (*Anas crecca*). Bird surveys are ongoing throughout 2023 to collect more detailed data on the ornithological assemblage of the Study Area.

5.4 Geology, Hydrology and Hydrogeology

5.4.1 Designations

There are no designated sites for hydrology or geology within or adjacent to the Study Area.

5.4.2 Peat and Soil

There are large areas of Class 2 peat⁴ present within the Study Area (no areas of Class 1 peat). The most southerly c. 2.2 km (linear) of the Study Area is entirely composed of Class 2 peat, to where the land starts to peak and descend into Glen Aray. An area of c. 500 m (linear) peat is located within the study area west of Drimfern, located where the land flattens out following steeper slopes into the glen. The final area of Class 2 peat is located within the Study Area adjacent to the Glen Etive and Glen Fyne SPA, before the Study Area passes into commercial forestry plantation, this area is c. 1.8 km (linear). Areas of Class 2 peat are illustrated on **Figure 1.3**.

5.4.3 Hydrology and hydrogeology

The River Aray forms part of the Loch Fyne coastal catchment. Loch Fyne coastal catchment covers 718 km² around the shores of Loch Fyne from the Kyles of Bute around to almost Claonaig at the mouth of the loch. The main land-uses and water uses associated with catchment are forestry and hydropower generation. The River Aray is classified as in Good Ecological Status (ES). Watercourse within and adjacent to the Study Area form part of this catchment including (but not limited to);

- Lochan Cruaiche Bige
- Allt na h-Airigh
- Allt Creag nan-Airigh
- Allt a'Mhaga
- Alltan Ruithe
- Allt Blarghour
- Loch nan Car
- Loch an Dhubh
- River Aray
- Archan River
- Allt Barain

Many unnamed watercourses also pass through the Study area, mainly associated with the steeper slopes leading down into Glen Aray.

Flood risk is limited within the Study Area (up to 10% chance) mainly associated with the following rivers;

- Alltan Airigh Mhic Choinnich
- Allt Barain; and
- River Aray.

Small discrete areas of surface water flooding are present throughout the Study Area, with slightly greater concentrations in the north and south of the Study Area around both proposed substation locations.

There are three private water supplies directly within the Study Area:

- West Drimfern;
- Druimbreac; and
- North Tullich.

There are five private water supplies within 2 km of the Study Area:

- Keppochan Farmhouse (1.5 km north);
- Ardbrecknish House Supply (1.5 km north);

⁴ Class 2 peat is nationally important carbon-rich soils, deep peat and priority peatland habitat and areas of potentially high conservation value and restoration potential (NatureScot, 2017. <https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/>)

- Three Bridges (1.7 km south);
- Stronmagachan (1.8 km south); and
- Salachry East (1.5 km south).

The groundwater classification for the sub basin district of Argyll is Good.

The geology⁵ of the Study Area predominantly includes;

- Tayvallich Slate and Limestone Formation - Pelite, graphitic.
- Tayvallich Volcanic Formation – Metalava and metatuff.
- With strata including the following at cliffs or steeper ground;
- Crinan Grit Formation - Quartzite.
- Dalradian Supergroup – Metagabbro and metamicrogabbro.
- Argyll Group - Quartzite, metalimestone and phyllitic semipelite.

5.5 Cultural Heritage

5.5.1 Designations and Cultural Heritage Assets

There are no designated assets within the Study Area.

There are three designated heritage assets within 2.5 km of the Study Area (**Table 4.1; Figure 1.3**).

- One listed Building;
- One scheduled monument; and
- One Garden and Designated Landscape (GDL).

Table 4.1 Designated Assets within 2.5 km of the Study Area

Designation	Name	Key Features	Distance
Scheduled Monument	Cup marked stone 600m ESE of Keppochan, SM4186	Prehistoric ritual and funerary: cupmarks or cup-and-ring marks	2482m
Garden and Designed Landscape	Inveraray Castle, GDL00223	Inveraray is a designed estate landscape with castle focal point incorporating an 18th-century improvement landscape (parklands, garden buildings and vast woodland plantations) and planned town.	2457m
Listed Building	Glen Aray School and Outhouse, LB11523;	Category B: Late 18th century. 'Gothick'. Ruins. Built for Society for Propagation of Christian Knowledge.	1599m

5.5.2 Non-Designated Assets

There are no known non-designated assets directly within the Study Area, however portions of the historic Military Road from Tyndrum to Inveraray (now mostly aligned to the A819), and four other assets are located within 250 m (**Table 4.2**). Both the historical rural townships of Tullich and Drimfern are also located within the Study Area. These consist of six to nine historic buildings, with an association to the adjacent connected field system and enclosures.

There remains the potential for unknown buried archaeological material, based on the archaeological context of the area and known assets.

⁵ https://geologyviewer.bgs.ac.uk/?_ga=2.126411278.2067676118.1687437675-123841399.1687437675

Table 4.2 Non-Designated Assets within 2.5 km of the Study Area

Site Name	Site Type	HER (WOSAS PIN / Canmore ID)	Distance
Dumbarton - Tarbet - Inveraray - Tyndrum Military Road	Military road	Wosas pin 21741 / Canmore 127139	146 m
Carness	Settlement	Wosas pin 1568	234 m
Taynafead	Shieling-huts (possible)	Wosas pin 44126 / Canmore 153671	192 m
Allt an Buidhe	Sheepfold; farmstead (possible)	Wosas pin 53148	7 m
Tullich, Glen Aray	Findspot, Armlet (Gold), Torc(S) (Gold)	Canmore 23415	221 m
Tullich, Glen Aray	Military Road (18th Century)	Canmore 127139	219 m
Creag Bhalgach	Field Boundary(S) (Period Unassigned), Rig And Furrow (Medieval) - (Post Medieval)	Canmore 311282	135 m

5.6 People

5.6.1 Settlements

The Study Area does not pass adjacent to any large settlements. There are scattered residential and isolated properties present along the Study Area.

The Study Area is likely to be visible from a number of settlements including Inveraray, Drimfern, South Tullich and Cladich, and Ardanaiseig. Isolated properties located along the road corridor of the A819 may also have views of the Study Area.

5.6.2 Potential Visual Receptors

Visual receptors comprise three different types:

- Views from built properties including residential areas and places of work;
- Views from alignments including roads and recreational routes; and
- Views from other outdoor locations where the view is considered of recreational importance.

The Study Area is likely to be visible from a number of settlements including Inveraray, Drimfern, South Tullich and Cladich, and Ardanaiseig. Isolated properties located along the road corridor of the A819 may also have views of the Study Area.

Roads

The Study Area may be visible from the local road network, with potential visibility from the A819 to the east and south east. Areas of commercial forestry to the north east of the Study Area, may reduce visibility from the A819.

Recreational Routes

There is very little tourism infrastructure within the Study Area. More informally, the area is used for walking, fishing, cycling and country / outdoor recreation in the landscape.

5.7 Landscape

5.7.1 Designated and Protected Landscapes

National Designations

National Scenic Areas (NSAs)

There are no National Scenic Area's (NSA) within 15 km of the Study Area (**Figure 1.3**)

Other Nationally Important Landscapes

A small section of the northern part of the Study Area is located within the North Argyll Area of Panoramic Quality (APQ). There are two further APQ's within 15 km of the Study Area including:

- West Loch Fyne (Coast) APQ (approximately 6.3 km south east); and
- East Loch Fyne (Coast) APQ (approx. 9.5 km south east).

Wild Land Areas (WLAs)

Wild Land Areas (WLAs) have been defined by NatureScot as those areas comprising the greatest and most extensive areas of wild characteristics within Scotland. Although not a designation, these are given protection within the Planning System through Scottish Planning Policy (SPP).

Ben Lui WLA (WLA 6) is approximately 4.5 km east of the Study Area at the proposed Creag Dhubh Substation. Loch Etive Mountains WLA (WLA 9) is approximately 8.5 km north of the Study Area.

Inventory Gardens and Designed Landscapes (GDLs)

The Inventory of Gardens and Designed Landscapes lists those GDLs which are considered by a panel of experts to be of national importance. Whilst not a statutory designation, inclusion on the Inventory is a material planning consideration.

The Inveraray Castle Garden and Designed Landscape is situated 1.5 km south of the Study Area.

5.7.2 Landscape Character

Landscape Context

The Study Area is located within an area of craggy upland / open plateau moorland with extensive commercial conifer plantations within North Argyll, with Loch Awe situated to the north and west, and Glen Aray to the east. Settlement is sparse within the moorland, and typically associated with the A819 road corridor, within Glen Aray. The coastline is a smaller scale landscape, with steep wooded cliffs to the plateau moorland inland. There is an operational wind farm south of the Study Area (An Suidhe Wind Farm), within the craggy upland of North Argyll.

Landscape Character Types

The Study Area is located within both the Craggy Upland - Argyll Landscape Character Type (LCT) 40, and the Plateau Moorland & Forest – Argyll LCT 39. The Craggy Upland - Argyll LCT is typically characterised by:

- Upland moor with irregular, rather amorphous landform;
- Rounded knolls, rock outcrops and numerous lochs in low-lying hollows and glens;
- Open moorland predominates, but extensive conifer plantations camouflage the landscape pattern in some areas;
- Oak-birch woodland on lower slopes;
- Stone walls enclose an irregular patchwork of pastures within glens on margins of moorland;
- Isolated farmsteads and small villages in sheltered sites within glens;
- Numerous archaeological remains, often concentrated on rounded knolls on lower slopes; and
- Historic intricate, irregular landscape pattern in glens.

The Plateau Moorland & Forest – Argyll LCT is typically characterised by:

- Upland plateau with rounded ridges, craggy outcrops and an irregular slope profile;
- Upland lochs;
- Winding narrow glens and wider glens with rivers;
- Extensive, large-scale mosaic of open moorland and forestry;
- No field boundaries;
- Very few buildings; occasional isolated dwellings on edges of moor;

- Small enclosed pastures and occasional farms and houses on lower hill slopes at the transition with adjacent character types and within the narrow glens which dissect these uplands; and
- Little access; roads follow shorelines.⁶

The key characteristics are taken from the NatureScot LCT descriptions. The main considerations with regards to development within the Craggy Upland LCT includes guidance for the conservation of the natural character of sensitive, undeveloped shoreline landscapes, and the consideration that any new development should be strictly controlled in upland valleys and along coastlines. Conservation of the setting of archaeological sites is important. Utilisation of existing woodland, and incorporation of new broadleaf planting into the development is welcomed to assist the integration of the development within the landscape.⁷

5.8 Land Use and Recreation

Land Use

Forestry

The Study Area passes through areas of commercial forestry primarily the northern 1.1 km at the proposed Creag Dhubh Substation at Keppochan East and Tullich Forest.

Agriculture

The Study Area has varied land capability for agriculture (LCA) ratings. The land has a LCA rating of 5.1 (land capable of use as improved grassland. Few problems with pasture establishment and maintenance and potential high yields), 5.3 (land capable of producing a narrow range of crops, primarily on grassland with short arable breaks of forage crops), 6.1 (land capable of use as rough grazing with a high proportion of palatable plants) and 6.3 (land capable of use as rough grazing with low quality plants)⁸.

Recreation

There are core paths⁹ within 5 km of the Study Area, near Inverary and west side of Loch Awe. There are no national cycle paths within or adjacent to the Study Area (**Figure 1.3**).

5.9 Technical Baseline

The initial assessment of the Study Area utilised the available information including mapping showing significant areas of peatland. Due to the known challenges of construction in areas of peat and the unknown depths within these areas it is a significant factor when considering alignment option(s). The existing access tracks were also taken into consideration as these could prove beneficial if it were possible to utilise these for construction. The location of the wind farm, presence of the Aray River and its tributaries, Cruach Mhor, difficult terrain in the region, the presence of the existing 132 kV OHL and the proposed Creag Dhubh to Inveraray 275 kV OHL all factor into identification of alignment options.

5.10 Economic Baseline

The preferred technology solution is a new 132 kV single circuit OHL supported on a trident wood pole. From a capital cost perspective this option reduces costs when compared to other technologies. This is largely due to the reduced foundation and access requirements.

Underground cable would be utilised for approximately 350 m to connect into Creag Dhubh substation. Underground cable is notably more expensive than OHL solutions for any given distance, and generally used only in instances where an OHL is unsuitable.

⁶ NatureScot (2019) Scottish Landscape Character Types Map & Descriptions. Available online at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>.

⁷ Ibid No.3, page 4

⁸ NatureScot, 2017. National scale land capability for agriculture <https://soils.environment.gov.scot/maps/capability-maps/national-scale-land-capability-for-agriculture/>

⁹ Argyll and Bute Council, 2015. Argyll and Bute Local Development Plan – Supplementary Guidance Transport (including core paths) <https://www.argyll-bute.gov.uk/moderngov/documents/s182570/Appendix%209%20SG%20LDP%20Trans%204.pdf>

Tree felling and associated compensatory planting would be a particular consideration for this development due to the presence of woodland along the north section of the alignment options.

Operational costs relate to inspections and maintenance. Compared to other overhead line technologies a single circuit OHL supported on a trident wood pole is relatively straight forward technology to inspect and maintain. As noted previously, underground cables entail higher maintenance costs than OHLs.

6. ALIGNMENT SELECTION

6.1 Preferred Alignment

The Preferred Alignment is identified as illustrated on **Figure 1.1** and described below.

Due to technical and safety constraints associated with existing OHL infrastructure and the proposed Creag Dhubh to Inveraray 275 kV OHL (**Figure 1.2**), there is only one viable alignment option to be considered for both the OHL and UGC sections. Safety of the line during the operation and maintenance phase (post construction) prevents SSEN Transmission designing multiple crossing points between transmission OHLs, further to this, the location of an existing Inveraray to Taynuilt West OHL running parallel to the A819, requires adequate safety clearance such that when the steel lattice towers are removed the work force and surrounding infrastructure are not put at risk. Additionally, the topography of the site immediately adjacent to steep ground and cliffs, for the most part, prevents lateral movement of the OHL to the west.

6.1.1 OHL Alignment (Preferred Alignment)

The OHL Alignment heads south east out of Blarghour Wind Farm Substation for c. 700 m before diverting north east, for approx. 4 km, towards Drimfern. From Drimfern the OHL Alignment heads north, in parallel to the A819 toward Taynafead, prior to terminating at a terminal wood pole structure where the OHL Alignment will underground.

6.1.2 UGC Alignment (Preferred Alignment)

The UGC Alignment will commence from the terminal wood pole structure located immediately adjacent to a forestry track within Keppochan East and Tullich Forest. From here the UGC Alignment crosses the track and follows the opposite verge in a north easterly direction for approx. 350 m before passing north into the proposed Creag Dhubh Substation.

7. ENVIRONMENT, ENGINEERING AND ECONOMIC APPRAISAL

7.1 Introduction

This section presents an appraisal of the alignment option(s) and should be read in conjunction with **Figure 1.4**.

7.2 Environment Appraisal

7.2.1 OHL Alignment

Landscape and Visual Context

The OHL Alignment would result in direct effects on the Craggy Upland Landscape Character Type (LCT), and the Plateau Moorland & Forest – LCT. The effects would be relatively localised and with sparse settlement associated with the A819 road corridor within Glen Aray. There would be a direct effect on the North Argyll APQ and indirect effects to the two coastal Area of Panoramic Quality (APQ) situated over 5 km south east of the OHL Alignment. The Wild Lands Area (WLA) and Inveraray Castle Garden and Designed Landscape (GDL) would be directly affected by the OHL Alignment, however, neither are statutory designations.

Potential visual effects would be primarily experienced by residents in isolated properties along the route of the A819 road.

Natural Heritage Context

The OHL Alignment has no direct interaction with internationally designated sites. The Glen Etive and Glen Fyne SPA is located c. 150 m to the west at the closest point. Breeding populations of golden eagle associated with Glen Etive and Glen Fyne SPA may be impacted due to disturbance during construction works and risk of collision during operation.

Populations of European and nationally protected bird species likely to be present may be impacted due to disturbance during construction and risk of collision during operation.

Within the southern section of the OHL Alignment, between the proposed Blarghour Wind Farm Substation and just before Drimfern, overall the habitats are dominated by blanket bog (Annex 1¹⁰ (Irreplaceable) habitat when in moderate or good condition), degraded blanket bog and upland acid grassland. Other habitats found in the locality of the OHL Alignment include alpine and subalpine heaths, continuous bracken, purple moorgrass and rush pastures, upland flushes, fens and swamps and running and standing water bodies. The OHL Alignment may pass through Ground Water Dependent Terrestrial Ecosystem (GWDTE) habitats.

The remainder of the OHL Alignment hosts agricultural pasture, mainly used for sheep grazing, improved and semi-improved grassland, adjacent to the A819 road between Taynafead and Drimfern, often on a steep undulating topography. Cliff and scattered scrub woodland are also present within this central part of the OHL Alignment. Further to this commercial conifer plantation is the predominant habitat in the northern most 1.2 km of the OHL Alignment.

The OHL Alignment avoids any woodland blocks listed on the Ancient Woodland Inventory (AWI), considered to be irreplaceable habitats when identified as semi-natural woodlands.

There are large areas of Class 2 peat present within the OHL Alignment (no areas of Class 1 peat). The most southerly c. 2.2 km (linear) of the OHL alignment passes through Class 2 peat up to where the OHL Alignment starts to peak and descend into Glen Aray. An area of c. 500 m (linear) peat is located within the OHL Alignment west of Drimfern, located where the land flattens out following steeper slopes into the glen. The final area of Class 2 peat is located within the OHL Alignment adjacent to the Glen Etive and Glen Fyne SPA, before passing into commercial forestry plantation, this area is c. 240 m (linear). Peat may be damaged during construction, through exposure of peat leading to erosion or compaction of peat through vehicles or access tracks passing over it.

¹⁰ Habitats (listed on Annex I) and species (listed on Annex II) of the Habitats Directive which occur in Scotland and for which Special Areas of Conservation are selected.

Cultural Heritage Context

There is the potential for direct effects on currently unknown buried archaeology to be encountered within the OHL Alignment. As the significance of the potential buried archaeological remains cannot be assessed, the possibility remains that the significance may range from low to high. There remains the potential for indirect effects such as to setting for designated assets as a result of visual impacts.

Other Potential Environmental Constraints

Commercial forestry would need to be felled to create a clear space for the construction and operation of the OHL Alignment. Forestry removal to make way for the OHL would need to be permanent. Forestry clearance for access tracks and ancillary works may be temporary, with areas likely being restocked following construction.

Taking into consideration the environmental constraints detailed, RAG ratings have been applied as illustrated in **Table 6.1**.

Table 6.1: OHL Alignment Option Environmental RAG Rating Table

RAG Impact Rating - Environmental	OHL Alignment	
Natural Heritage	Designations	M
	Protected Species	L
	Habitats	H
	Ornithology	M
	Hydrology/geology	M
Cultural Heritage	Designations	M
	Assets	L
People	Dwellings	L
Landscape	Designations	M
	Character	L
	Visual	M
Land Use	Agriculture	L
	Forestry	M
	Recreation	L
Planning	Proposals	M
	Policy	M

7.2.2 UGC Alignment

Landscape and Visual Context

The UGC Alignment is located within the North Argyll APQ, however, any landscape effect will be limited to temporary construction works and limited loss of forestry plantation at woodland edges.

Natural Heritage Context

The UGC Alignment has no direct interaction with internationally designated sites.

Cultural Heritage Context

There would be the potential for direct effects on currently unknown buried archaeology to be encountered within the UGC Alignment. As the significance of the potential buried archaeological remains cannot be assessed, the possibility remains that the significance may range from low to high. Given the proposed location adjacent to an existing access track it is possible historic remains have previously been disturbed during construction of the track.

Other Potential Environmental Constraints

Commercial forestry would need to be felled to create a clear space for the construction and operation of the UGC Alignment. Forestry removal to make way for the UGC Alignment would be limited given it predominantly

follows an existing track. Felling would need to be permanent within the clearance zone of the UGC, with restocking (where necessary) up to this point. Given the proximity of the majority of the UGC Alignment to an existing track (and associated drainage) it is not anticipated that the UGC Alignment will affect local hydrology.

Taking into consideration the environmental constraints detailed above, RAG ratings have been applied as illustrated in **Table 6.2**.

Table 6.2: UGC Alignment Environmental Option RAG Rating Table

RAG Impact Rating - Environmental	UGC Alignment	
Natural Heritage	Designations	L
	Protected Species	L
	Habitats	L
	Ornithology	L
	Hydrology/geology	L
Cultural Heritage	Designations	L
	Assets	L
Landscape	Designations	L
	Character	L
	Visual	L
Land Use	Agriculture	L
	Forestry	M
	Recreation	L
Planning	Proposals	L
	Policy	L

7.3 Engineering Appraisal

7.3.1 OHL Alignment

In terms of infrastructure crossings the OHL Alignment does not make any major or minor crossings.

With regard to environmental design, approx. 80% of the OHL Alignment exceeds elevations of 200 m AOD. Generally, when wood poles are considered for an OHL it is less favourable for the alignment to exceed elevations of 300 m AOD. Approximately one third of the overall OHL Alignment exceeds an elevation of 300 m AOD, which will necessitate the use of alternative supports (steel pole or towers).

The OHL Alignment is not identified to be within a flood zone.

Significant areas of peatland have been identified along the OHL Alignment in particular on approach to the wind farm substation.

Although the OHL Alignment is not located near any existing accesses, it provides opportunity to utilise the new accesses for the proposed Creag Dhubh to Inveraray 275 kV OHL for approximately two-thirds of the OHL Alignment, this provides opportunity to allow the operation of the lines to be directly linked. In addition, it is expected that access can also be obtained from the proposed permanent access for the consented Blarghour Wind Farm.

Proximity to buildings / properties, wind farms and communication masks have all been reduced to low impact rating due to the OHL Alignment being micro sited away from constrains (where they exist).

Taking into consideration the engineering constraints detailed above, RAG ratings have been applied as illustrated in **Table 6.3**.

Table 6.3: OHL Alignment Option Engineering RAG Rating Table

RAG Impact Rating - Engineering	OHL Alignment	
Infrastructure Crossings	Major Crossings	L
	Minor Roads	L

RAG Impact Rating - Engineering	OHL Alignment	
Environmental Design	Elevation	H
	Flooding	L
Ground Conditions	Terrain	M
	Peatland	H
Construction and Maintenance	Access	M
	Angle Towers	M
Proximity	Clearance Distances	L
	Wind Farms	L
	Communications Masts	L

7.3.2 UGC Alignment

The main engineering challenges are centred on the elevation profile of the topography and the known peat in the area which would need to be fully assessed to understand the depth and resultant installation challenges.

Taking into consideration the engineering constraints detailed above, RAG ratings have been applied as illustrated in **Table 6.4**.

Table 6.4: UGC Alignment Option Engineering RAG Rating Table

RAG Impact Rating - Engineering	UGC Alignment	
Infrastructure Crossings	Major Crossings	M
	Minor Roads	M
Environmental Design	Elevation	H
	Contaminated Land	L
	Flooding	L
Ground Conditions	Terrain	H
	Peatland	H
Construction and Maintenance	Access	L
	Angle Towers	L
Proximity	Clearance Distances	L
	Wind Farms	L
	Communications Masts	L
Design	Joint bays and Link Boxes	L
Additional Cons	Route Length	L

7.4 Economic Appraisal

7.4.1 OHL & UGC

An illustrative RAG appraisal in terms of cost is provided in **Table 6.5**.

The approximate construction cost of the route has been calculated based on a standard per km rate derived from SHE Transmission's experience of similar projects.

Selected Alignment has Medium risk of constraints around land assembly due to steep slopes of the alignment option as well as a medium constraint of tree felling towards to the north of the alignment section.

Table 6.5: OHL & UGC Alignment Option Economic RAG Rating Table

RAG Impact Rating - Economic	
Capital	L
Diversions	L
Public Road Improvements	L
Tree Felling	M
Land Assembly	M
Consent Mitigations	L
Inspections	L
Maintenance	L
Total Cost	L

7.5 Summary and Selection of Preferred Alignment

7.5.1 Summary of OHL and UGC Alignment Options

OHL

From an environmental perspective, the OHL Alignment passes within c. 150 m of the Glen Etive and Glen Fyne SPA designated for breeding populations of golden eagle (*Aquila chrysaetos*). The OHL Alignment is considered likely to have connectivity with Glen Etive and Glen Fyne SPA (based on information collected during the ornithology surveys in 2021 / 2022). Breeding populations of golden eagle associated with Glen Etive and Glen Fyne SPA may be impacted due to disturbance during construction and risk of collision during operation.

Populations of European and nationally protected bird species likely to be present may be impacted due to disturbance during construction and risk of collision during operation.

There are large areas of Class 2 peat present within the OHL Alignment (no areas of Class 1 peat) that may be damaged during construction, through exposure of peat leading to erosion or compaction of peat through vehicles or access tracks passing over it.

Towards the south, the OHL Alignment predominantly crosses blanket bog an Annex 1 habitat when in moderate or good condition, and which may contain GWDTE habitats.

Commercial forestry would need to be felled to create a clear space for the construction and operation of the OHL Alignment. Forestry removal to make way for the OHL would need to be permanent.

The key engineering consideration is the topography of the site with the presence of steep slopes which restrict the available corridor for the OHL alignment. Another consideration is the altitude which exceeds the threshold for a wood pole on the most southern section of the OHL which will necessitate the use of alternative supports (steel pole or towers). Significant areas of peatland have been identified along the OHL Alignment in particular on approach to the wind farm substation.

Although the OHL Alignment is not located near any existing accesses, it provides opportunity to utilise the new accesses for the proposed Creag Dhubh to Inveraray 275 kV OHL for approximately two-thirds of the OHL Alignment, this provides opportunity to allow the operation of the lines to be directly linked. In addition, it is expected that access can also be obtained from the proposed permanent access for the consented Blarghour Wind Farm.

UGC

Commercial forestry would need to be felled to create a clear space for the construction and operation of the UGC Alignment. Forestry removal to make way for the UGC Alignment would be limited given it predominantly follows an existing track. Felling would need to be permanent within the clearance zone of the UGC, with restocking (where necessary) up to this point.

The main engineering challenges are centred on the elevation profile of the topography and the known peat in the area which would need to be fully assessed to understand the depth and resultant installation challenges.

7.5.2 Selection of Preferred Alignment

OHL Alignment

Due to the technical and safety constraints associated with existing OHL infrastructure, the proposed Creag Dhubh to Inveraray 275 kV OHL and the general topography / terrain in which the OHL is to be located there is only one viable OHL Alignment. Environmental, technical and economic appraisals of the Preferred OHL Alignment have been undertaken to inform future design stages and consenting.

UGC Alignment

Given the short UGC length required, only one potential alignment for the cable connection was established and as such this alignment is selected as the Preferred UGC Alignment.

8. CONSULTATION ON THE PROPOSALS

8.1 Questions for Consideration by Consultees

SSEN Transmission places great importance on, and is committed to, consultation and engagement with all parties and stakeholders likely to have an interest in proposals for new projects such as this. Stakeholder engagement is an essential part of an effective development process.

The proposals detailed in this report have been developed through environmental and technical analysis of alignment option(s). The potential for environmental effects remains and further assessment and design will be important in giving detailed consideration to the development and integration of mitigation measures to address significant environmental effects identified.

When providing comment and feedback, SSEN Transmission would be grateful for your consideration of the questions below. We are keen to receive your views and comments in regard to the following:

- Has the need for the project been adequately explained? What other information would you consider useful at this stage?
- Has the approach for selecting only one alignment been properly explained?
- Are there any additional factors, or environmental features, that you consider important and should be brought to the attention of the project team?
- Do you feel, on balance, that the Preferred Alignment selected is the most appropriate for further consideration?
- Do you have any other comments on our selected Alignment?

8.2 Next Steps

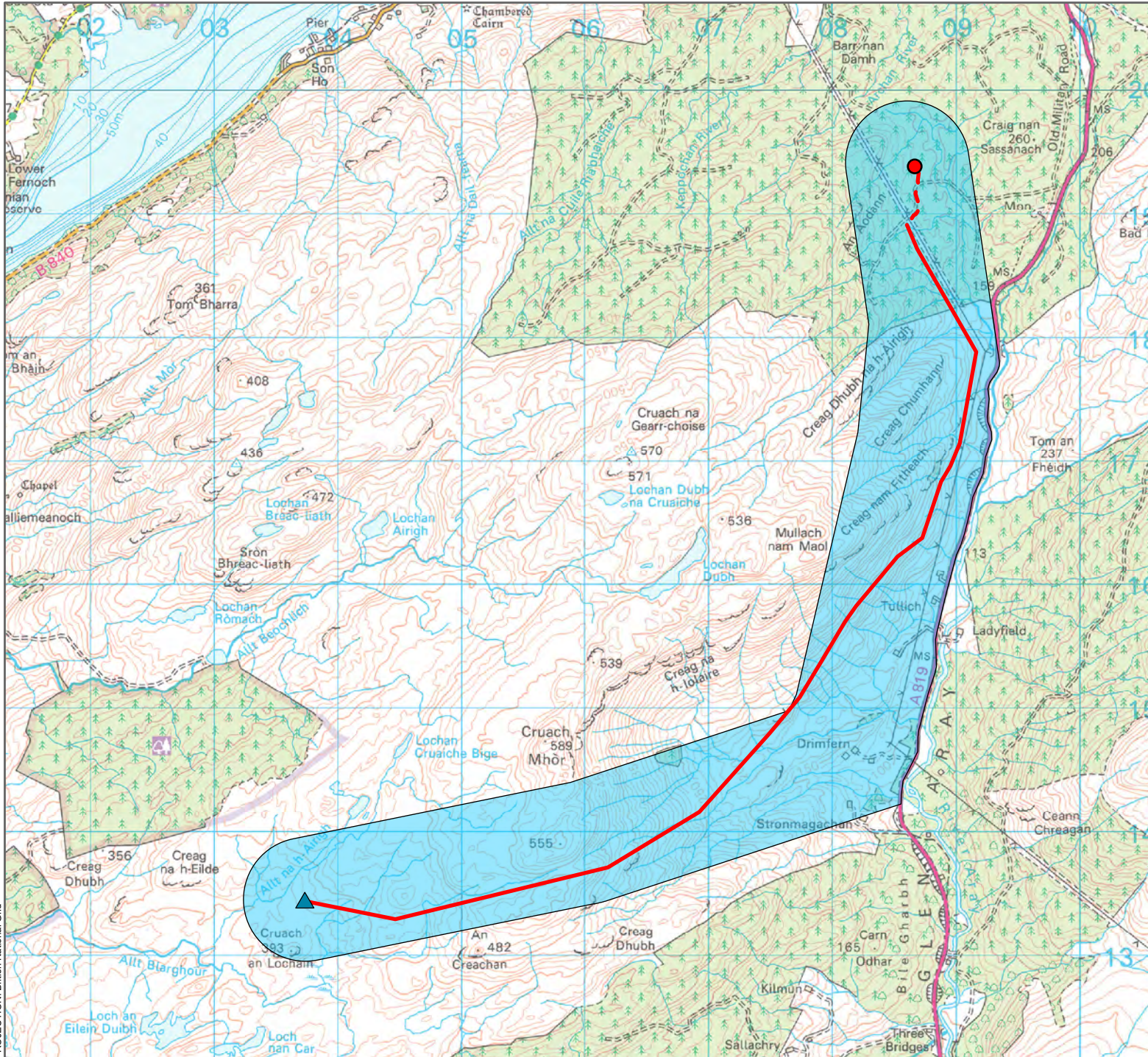
An in-person consultation event will be held in August 2023 (refer to Preface for details) and meetings will be offered with statutory and other stakeholders. The responses received, and those sought from statutory consultees and other key stakeholders will inform further consideration and design of the Preferred Alignment leading to the identification of a Proposed Alignment to take forward to the consenting stage.

All comments are requested by **18th August 2023**.

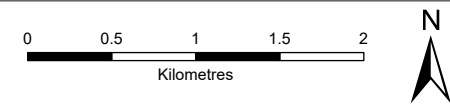
A Report on Consultation will be produced which will document the consultations received, and the decisions made considering these responses, prior to confirming the Proposed Alignment. Please submit your comments to Caitlin Quinn, Community Liaison Manager, Scottish & Southern Electricity Networks (SSEN) Transmission, 1 Waterloo Street, Glasgow, G2 6AY

Email: Caitlin.Quinn@sse.com, Mobile: 07901 135758.

APPENDIX A - FIGURES



- ▲ Blarghour Wind Farm Substation
- Creag Dhubh Substation
- Proposed Route
- Preferred Alignment
- OHL Alignment
- UGC Alignment

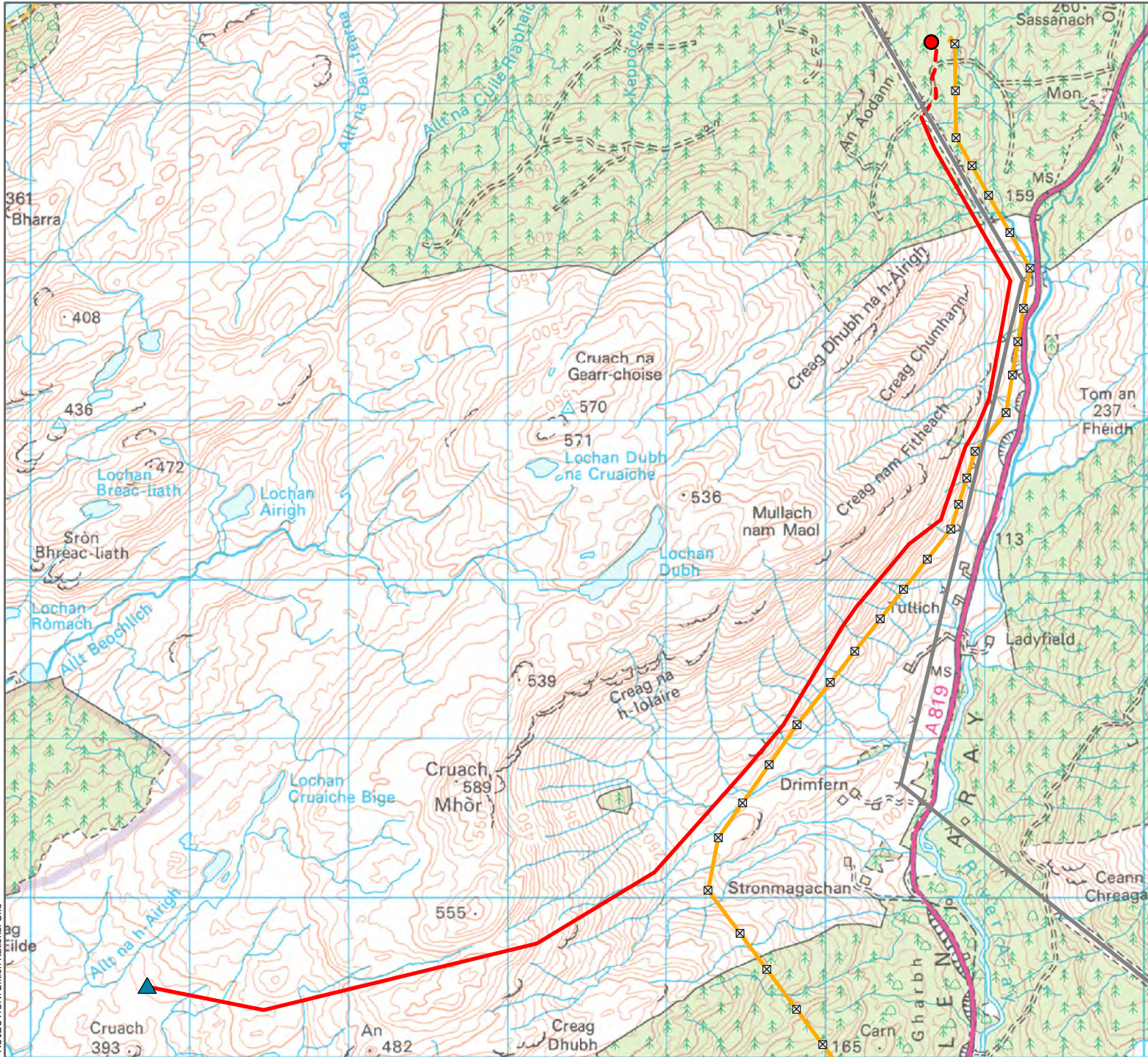


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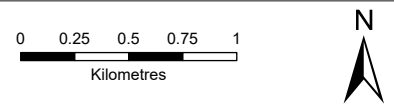
Figure 1.1
Proposed Development



PROJECTION: British National Grid



- ▲ Blarghour Wind Farm Substation
- Creag Dhubh Substation
- ⊗ Proposed Creag Dhubh 275 kV OHL
- Existing Inveraray to Taynuilt West OHL
- Preferred Alignment
- OHL Alignment
- - - UGC Alignment



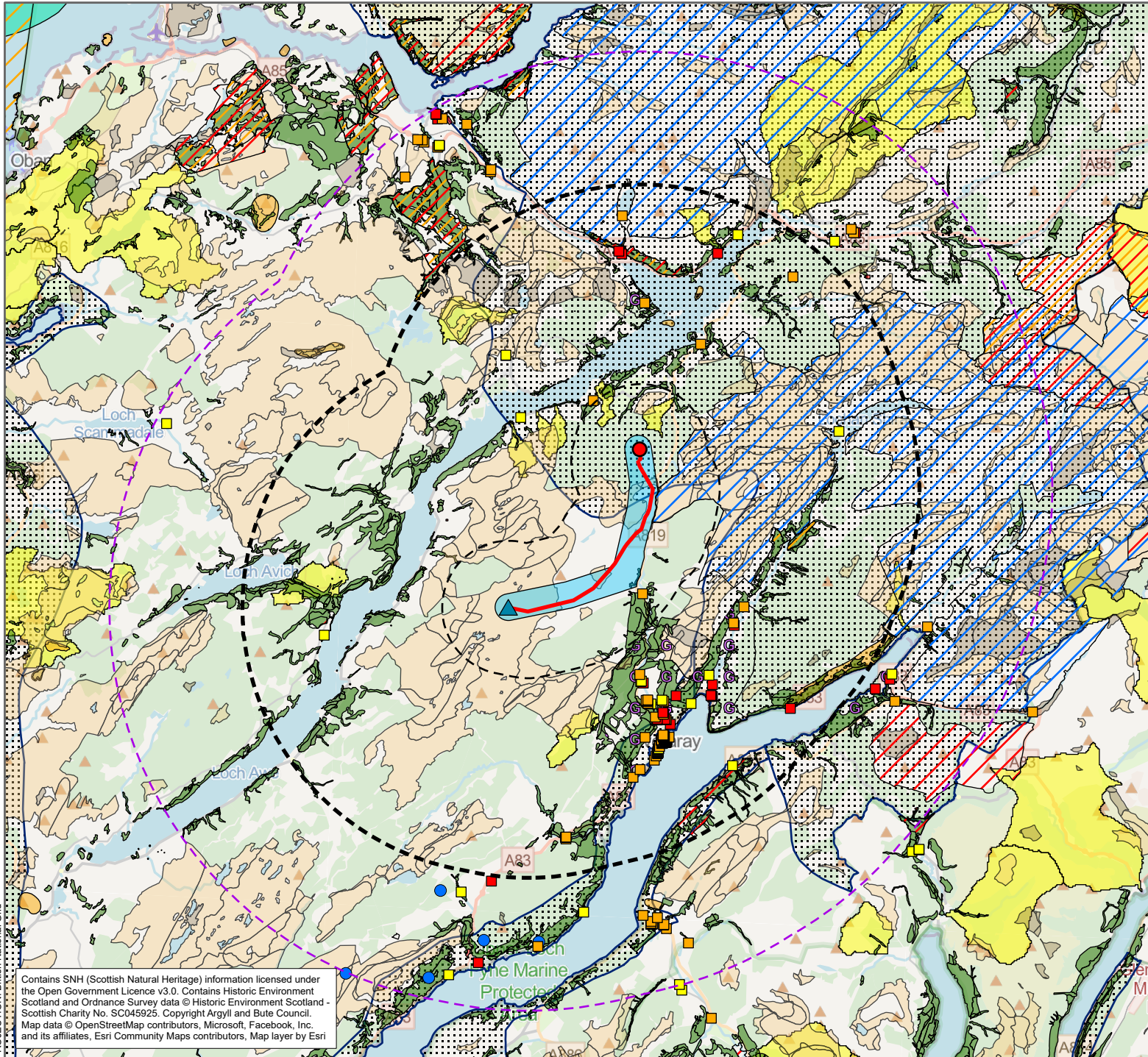
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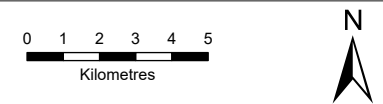
Figure 1.2
Proposed and Existing Infrastructure



PROJECTION: British National Grid



- Blarghour Wind Farm Substation
- Creag Dhubh Substation
- Proposed Route
- Cultural Heritage Study Area - 2.5 km Buffer of Alignment
- Natural Heritage Study Area - 10 km Buffer of Alignment
- Landscape Study Area - 15 km Buffer of Alignment
- Preferred Alignment**
- OHL Alignment
- UGC Alignment
- Natural Heritage Constraints:**
- Private Water Supply (PWS)
- Special Areas of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Special Protection Areas (SPA)
- Class 1 Importance Carbon and Peatland
- Class 2 Importance Carbon and Peatland
- Ancient Woodland Inventory (AWI)
- Heritage Constraints:**
- Listed Building - Category A
- Listed Building - Category B
- Listed Building - Category C
- Scheduled Monument
- Garden and Designed Landscape
- Drinking Water Protected Areas - Surface Water (SEPA)
- National Scenic Area
- Local Nature Conservation Site (LNCS)
- Areas of Panoramic Quality



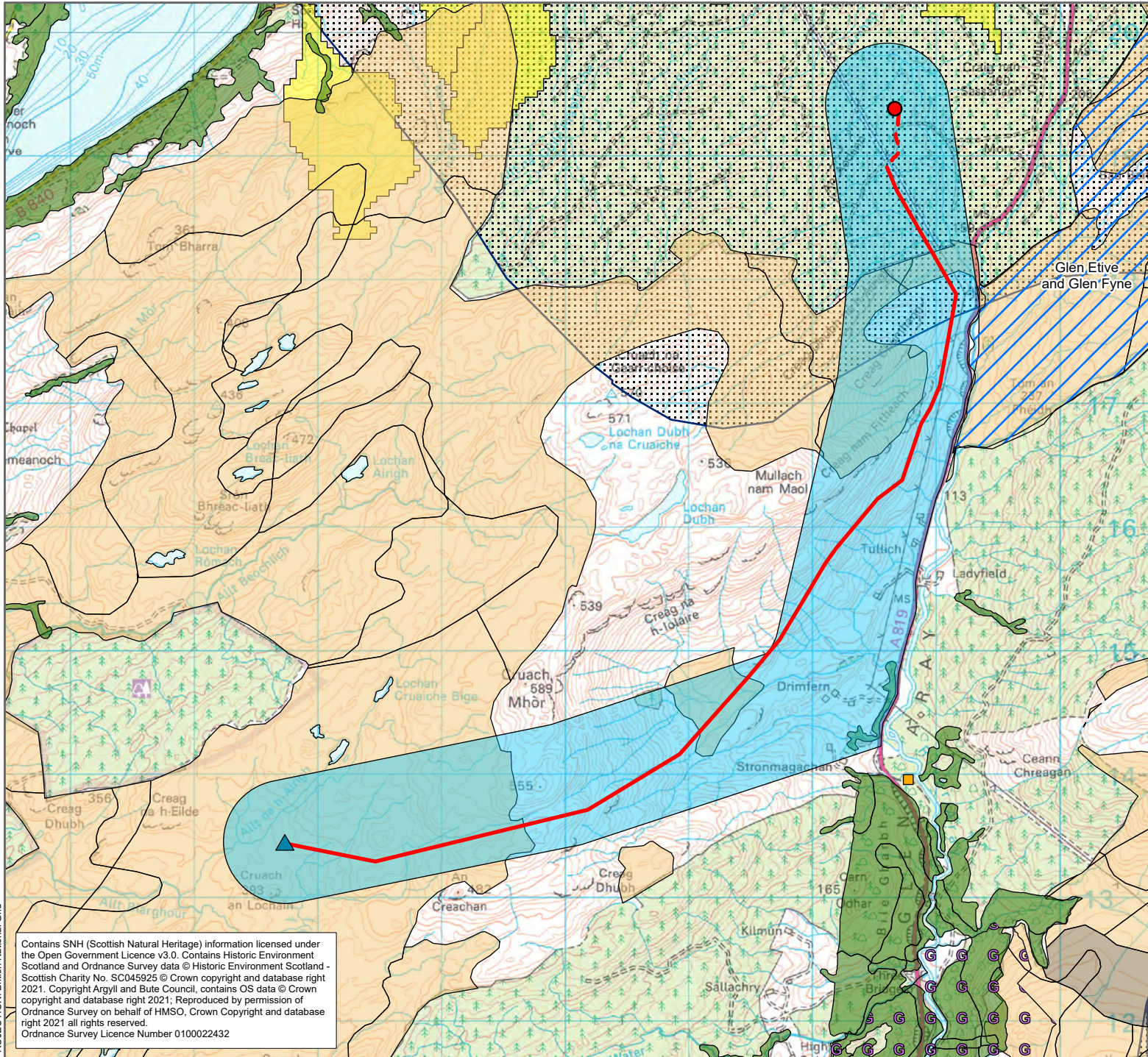
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Figure 1.3
Environmental Constraints in Wider Study Area

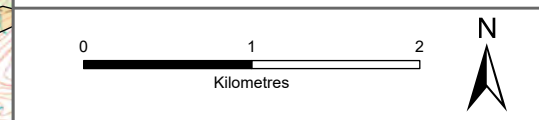


PROJECTION: British National Grid

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- Creag Dhubh Substation
- ▲ Blarghour Wind Farm Substation
- Proposed Route
- Preferred Alignment
- OHL Alignment
- - UGC Alignment
- Cultural Heritage Constraints:
- Listed Building - Category B
- Garden and Designed Landscape
- Environmental Constraints:
- Special Protection Area (SPA)
- Ancient Woodland Inventory (AWI)
- Carbon and Peatland Class 1
- Carbon and Peatland Class 2
- Drinking Water Protected Areas - Surface Water (SEPA)
- Areas of Panoramic Quality



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Figure 1.4
Environmental Constraints in Proximity to
Alignment Option



ERM



Scottish & Southern
Electricity Networks
TRANSMISSION

PROJECTION: British National Grid

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