

# **Consultation Document – Alignment Options Melgarve Cluster January 2023**

**REF: LT218, LT287, LT419**



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## GLOSSARY

Term	Definition
Alignment	A centre line of an overhead line OHL or underground cable (UGC), along with location of key angle towers (OHL only) or angles of deviation (UGC Only).
Alignment (preferred)	An alignment taken forward to stakeholder consultation following a comparative appraisal of alignment options.
Alignment (proposed)	An alignment taken forward to consent application. It comprises a defined centre line and includes an indicative support structure (tower or pole) schedule, also specifying access arrangements and any associated construction facilities.
Amenity	The natural environment, cultural heritage, landscape and visual quality. Also includes the impact of SSEN Transmission's works on communities, such as the effects of noise and disturbance from construction activities.
Ancient Woodland Inventory (AWI)	The Ancient Woodland Inventory (AWI) is a provisional guide to the location of Ancient Woodland. It contains three main categories of woodland, all of which are likely to be of value for their biodiversity and cultural value by virtue of their antiquity: Ancient Woodland (1a and 2a); Long-established woodlands of plantation origin (LEPO) (1b and 2b); and Other woodlands on 'Roy' woodland sites (3).
Biodiversity Net Gain (BNG)	A process intended to leave nature in a better state than it started using good practice principles established by the Business and Biodiversity Offset Programme (BBOP) and organisations including CIRIA, CIEEM and IEMA.
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.
CNP	Cairngorm National Park
Environmental Appraisal (EA)	Environmental Appraisals are carried out when a proposed development may give rise to some environmental effects. When a formal EIA is not required for a project, an EA can be undertaken, analysing a number of specialist environmental studies.
Environmental Impact Assessment (EIA)	Environmental Impact Assessment. A formal process codified by EU directive 2011/92/EU, and subsequently amended by Directive 2014/52/EU. The national regulations are set out in The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. The EIA process is set out in Regulation 4(1) of the regulations and includes the preparation of an EIA Report by the developer to systematically identify, predict, assess and report on the likely significant environmental impacts of a proposed project or development.
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).

<b>Term</b>	<b>Definition</b>
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.
Ordnance Datum (OD)	Ordnance Datum or OD is a vertical datum used by an ordnance survey as the basis for deriving bathymetric levels on charts. A spot height may be expressed as AOD for "above ordnance datum" or BOD for "below ordnance datum".
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.
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.
Route (preferred)	A route for the overhead line taken forward to stakeholder consultation following a comparative appraisal of route options.
Route (proposed)	A route taken forward following stakeholder consultation to the alignment selection stage of the overhead line routeing process.
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.
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 Landscape Quality (SLQ)	A key landscape characteristic identified for the Cairngorm National Park or Wild Land Area identified by NatureScot.
Stakeholders	Organisations and individuals who can affect or are affected by SSEN Transmission works.
Study Area	The area within which the Corridor, route and alignment study takes place.
The National Grid	The electricity transmission network in the Great Britain.
Underground Cable (UGC)	An electric cable installed below ground, protected by insulating layers and marked closer to the surface to prevent accidental damage through later earthworks.

<b>Term</b>	<b>Definition</b>
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 or underground cable is to be constructed and SSEN Transmission.
WLA	Wild Land Area as identified by NatureScot
Zone of Theoretical Visibility (ZTV)	The computer-generated theoretical visibility of an object in the landscape

## PREFACE

This Consultation Document has been prepared by ASH design+assessment Limited on behalf of Scottish and Southern Electricity Networks Transmission (herein referred to as 'SSEN Transmission'), operating under licence as Scottish Hydro Electric Transmission plc (herein referred to as 'SHE Transmission'). The document has been prepared to seek comments from all interested parties on the Preferred Alignment identified for a new 132 kV connection from Dell Wind on-site substation and Cloiche Wind Farm on-site substation to Melgarve substation, near Laggan.

The Consultation Document is available online at the project website:

<https://www.ssen-transmission.co.uk/projects/project-map/melgarve-cluster/>

Given the easing of COVID-19 restrictions, in-person consultation events will take place for this project at the following time:

- 8 February 2023 2-7pm, Laggan Community Hall; and
- 9 February 2023 2-7pm, Fort Augustus Village Hall.

Comments on this Consultation Document should be sent to:

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All comments are requested by **10 March 2023**.



## EXECUTIVE SUMMARY

There are two proposed wind farms which require connection to the electricity transmission network at Melgarve substation via new 132 kV single circuit connections associated with this project. These are the proposed Cloiche Wind Farm, which consists of up to 29 turbines of a maximum height of 149.9 metres with an installed capacity of between 150 MW and 200 MW, and the proposed Dell Wind Farm, which consists of up to 10 turbines with a maximum height of up to 200 m to blade tip and with an installed capacity of up to approximately 50 MW. A combination of overhead line (OHL) and underground cable (UGC) is anticipated to be required for these connections. This Consultation Document invites comments from all interested parties on the preferred grid connection alignments identified for connecting the two proposed wind farms to the grid.

Initially, a Corridor was identified within which the identification and assessment of route options were established. The Corridor was developed to encompass a range of feasible route options between Cloiche Wind Farm on-site substation and Melgarve substation and Dell Wind Farm on-site substation and Melgarve substation (see Figure 1).

A Route Selection process was then carried out between September 2021 and May 2022. Indicative route options were defined with approximately 1 - 2 km widths to allow for subsequent identification of alignments during Stage 3 (Alignment Selection) of the project. A Proposed Route for each connection, based on comparative route appraisals and subsequent consultation with statutory consultees and other stakeholders was then selected to progress to the alignment selection stage.

Alignment options were established within the Proposed Route. When establishing the alignment options, the constraints of the area had to be accounted for. Most significantly, throughout the Proposed Route, there are the existing Stronelairg Wind Farm wind turbines and the existing 132 kV UGC connecting Stronelairg Wind Farm to Melgarve substation, as well as the proposed wind turbines of Cloiche Wind Farm and Dell Wind Farm. The alignment options identified are displayed on **Figure 1**. A Preferred Alignment for connecting the two proposed wind farms to the grid has been selected to provide an optimum balance of environmental and technical factors, is displayed on **Figure 10**.

It is anticipated that an application for consent for a proposed alignment will be submitted in Autumn 2023.

When providing comments and feedback on this Consultation Document, SSEN Transmission would be grateful for your consideration of the questions below:

- Have we explained the need for this Project adequately?
- Have we explained the approach taken to select the Preferred Alignment adequately?
- Are there any factors, or environmental features, that you consider may have been overlooked during the preferred alignment selection process?
- Do you feel, on balance, that the Preferred Alignment selected is the most appropriate for further consideration at the EA/EIA and Consenting stage?

# 1. INTRODUCTION

## 1.1 Purpose of Document

- 1.1.1 This Consultation Document invites comments from all interested parties on the preferred alignment identified for the proposed 132 kV overhead line (OHL) between Dell Wind Farm on-site substation and Cloiche Wind Farm on-site substation to Melgarve substation, near Laggan.
- 1.1.2 This Consultation Document describes the alignment options appraisal undertaken, the alternatives considered during the selection of alignment<sup>1</sup> options, and the identification of a Preferred Alignment. Comments are now sought from statutory authorities, key stakeholders, elected representatives and the public on the alignment selection process and the Preferred Alignment identified.
- 1.1.3 All comments received will inform further consideration of the Preferred Alignment. This will then form the basis of a Proposed Alignment to take forward into the Environmental Appraisal (EA)/ Environmental Impact Assessment (EIA) and Consenting stage.

## 1.2 Document Structure

- 1.2.1 This report is comprised of eight sections as follows:

- 1: Introduction – setting out the purpose of the Consultation Document;
- 2: The Proposals – describes the need for the proposals, the proposed technology solution and the typical construction methods;
- 3: Alignment Selection Process – sets out the alignment selection process and methodology that has been applied to date;
- 4: Consultation to Date – summarises the consultation feedback received at Route Selection stage;
- 5: Description of Alignments – describes the alignment options that have been identified;
- 6: Environmental Baseline – describes the local context and baseline environmental and engineering context;
- 7: Comparative Appraisal – analyses each alignment option against a series of environmental and technical considerations to arrive at a Preferred Alignment; and
- 8: Consultation on the Proposals – invites comments on the alignment assessment process and identification of preferred alignment and outlines the next steps.

- 1.2.2 The main body of this document is supported by a series of figures.

## 1.3 Next Steps

- 1.3.1 As part of the consultation exercise, comments are sought from members of the public, statutory consultees and other key stakeholders on the Preferred Alignment option put forward in this report.
- 1.3.2 A Report on Consultation will be produced which will document the consultations received, and the decisions made in light of these responses.
- 1.3.3 Following the identification of a Preferred Alignment, the project will move on to the EA/EIA and consenting stage. The Preferred Alignment will become the Proposed Alignment for which consent would be sought for installation and operation of the connections.

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<sup>1</sup> A centre line of an overhead line, along with the location of key angle structures.

## 2. THE PROPOSALS

### 2.1 The Need for the Project

- 2.1.1 SSEN Transmission is a part of the SSE plc group of companies. SSEN Transmission owns and maintains the electricity transmission network across the north of Scotland and holds a license under the Electricity Act 1989 to develop and maintain an efficient, co-ordinated and economical system of electricity transmission.
- 2.1.2 There are two wind farm connections associated with this project. The proposed Cloiche Wind Farm consists of up to 29 turbines of a maximum height of 149.9 metres with an installed capacity of between 150 MW and 200 MW. To connect the wind farm to the grid, a new 132 kV single circuit connection to Melgarve substation is proposed. The proposed Dell Wind Farm consists of up to 10 turbines with a maximum height of up to 200 m to blade tip and with an installed capacity of up to approximately 50 MW. To connect the wind farm to the grid, a new 132 kV single circuit connection to Melgarve substation is required.
- 2.1.3 The new connection would be routed between the proposed on-site substations and Melgarve substation (see **Figure 1**). It is anticipated that the connections to Dell Wind Farm on-site substation (approximately 14.6 km in length) and Cloiche Wind Farm on-site substation (approximately 9.6 km in length) would be by a combination of underground cable (UGC) and overhead line (OHL). The overall connection project is known as the Melgarve Cluster Project.

### 2.2 Alignment Options Assessed

- 2.2.1 A Route Selection process was carried out between September 2021 and May 2022, where indicative route options were defined with approximately 1 – 2 km widths. A Proposed Route was then established through this process as described in **Section 3**.
- 2.2.2 Alignment options were then established within the Proposed Route. When establishing the alignment options, the constraints of the area had to be accounted for. Most significantly, throughout the Proposed Route, are the existing Stronelairg Wind Farm wind turbines and the existing 132 kV UGC connecting Stronelairg Wind Farm to Melgarve substation, as well as the proposed wind turbines of Cloiche Wind Farm and Dell Wind Farm. Further to this, the land is undulating with some steep sections. Peat is also present, including peat hags, wet ground and lochans. Several alignment options were therefore established to account for these constraints, some as OHL, some as UGC and some anticipated to utilise a mix of the two technologies.
- 2.2.3 The alignment options identified are displayed on **Figure 2** and are described further in **Section 3.5** and in **Section 5**.

### 2.3 Preferred Technology Solution

#### *Cloiche Wind Farm Connection*

- 2.3.1 While both UGC and OHL alignment options have been considered, use of steel lattice towers is the preferred engineering solution for the OHL sections. Sections of UGC would be required through the proposed wind farm and on the final approach to Melgarve substation to cross the existing Beauly – Denny OHL. Melgarve substation has been selected as the preferred connection point for Cloiche Wind Farm to the National Grid, due to it being the closest transmission substation, at approximately 8 km, and thus providing the most cost-effective and least environmentally impactful point of connection.

#### *Dell Wind Farm Connection*

- 2.3.2 While both UGC and OHL alignment options have been considered, use of steel lattice towers is the preferred engineering solution for the OHL sections. Sections of UGC would be required through the proposed wind farm and on the final approach to Melgarve substation to cross the existing Beauly – Denny OHL. Melgarve

substation has been selected as the preferred connection point for Dell Wind Farm to the National Grid. Fort Augustus substation only has a small comparable difference in distance, however Melgarve substation was chosen as the preferred connection point for Dell Wind Farm to the National Grid due to environmental factors including the presence of the Glendoe reservoir and the Caledonian Canal Scheduled Monument, land, designations for landscape and ecological/ornithological value, sensitive habitats, native woodland, proposed Habitat Management Plans and established recreational routes.

## 2.4 Alternative Technology Options Considered

2.4.1 While SSEN Transmission has determined that steel lattice towers are the preferred technological solution for this project and would make use of this support structure for the OHL where possible, some sections are unsuitable for OHL, including through areas of existing and proposed wind turbines. SSEN Transmission have a policy to avoid encroaching on a clearance zone from wind turbines that is equal to three times the magnitude of the rotor diameter with an OHL. This is because the 'wake effect' of the wind turbines within this clearance zone can cause excessive vibration on the OHL components. While the impact of the wake effect can vary depending on wind turbine height, local topography and specific OHL arrangements, the vibrations can lead to premature fatigue and failure of the OHL. It is not possible to achieve an OHL alignment through the existing and proposed turbines that does not encroach on the three-rotor diameter clearance. As a result, an UGC will be used at higher elevations through the existing and proposed wind farms. An UGC would be required for the final approach to Melgarve substation in order to cross the Beauly-Denny 400 kV line and enter the substation.

2.4.2 Where possible the connection would run in close proximity and parallel to the existing and proposed access tracks. This would utilise construction / operational corridors that would be or have already been disturbed, potentially reducing some of the environmental effects normally associated with construction through undisturbed areas.

2.4.3 Details of the above options are provided below. More detailed assessments and further consultation are required to identify the specific combination of technology options for the connection, however at this stage it is understood that steel lattice towers would be used for the majority of the connection, and UGC would be used at higher elevations through the existing and proposed wind farms and for the last section connecting into Melgarve substation.

## 2.5 Proposals Overview

### *Overhead Line General Construction Activities*

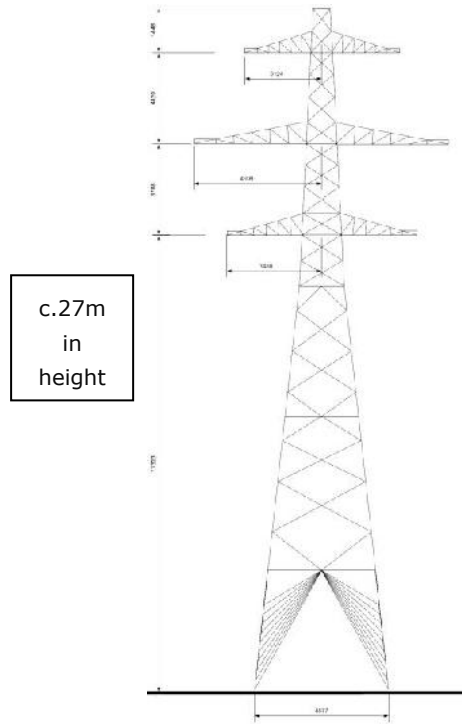
2.5.1 To facilitate the construction of the OHL components of the connections, the main tasks are anticipated to include:

- establishment of one or more construction compounds;
- establishment of suitable laydown areas for materials;
- construction of stone tracks (both temporary and permanent) and other temporary access solutions as necessary;
- delivery of structures and materials to site;
- excavation and construction works associated with foundations, as necessary;
- assembly and erection of OHL towers;
- stringing of conductors using hauling ropes and winches;
- sealing end compounds (to facilitate transition from OHL to UGC); and
- inspections and commissioning.

2.5.2 It is currently anticipated that the steel lattice structures would be of the L7 suite of towers with a height range of between 22 m and 39 m tall and have an average span length of 250 m.

2.5.3 Plate 2.2 shows a photograph of a typical steel lattice tower for illustrative purposes.

**Plate 2.2: Example Steel Lattice Tower OHL Structure**



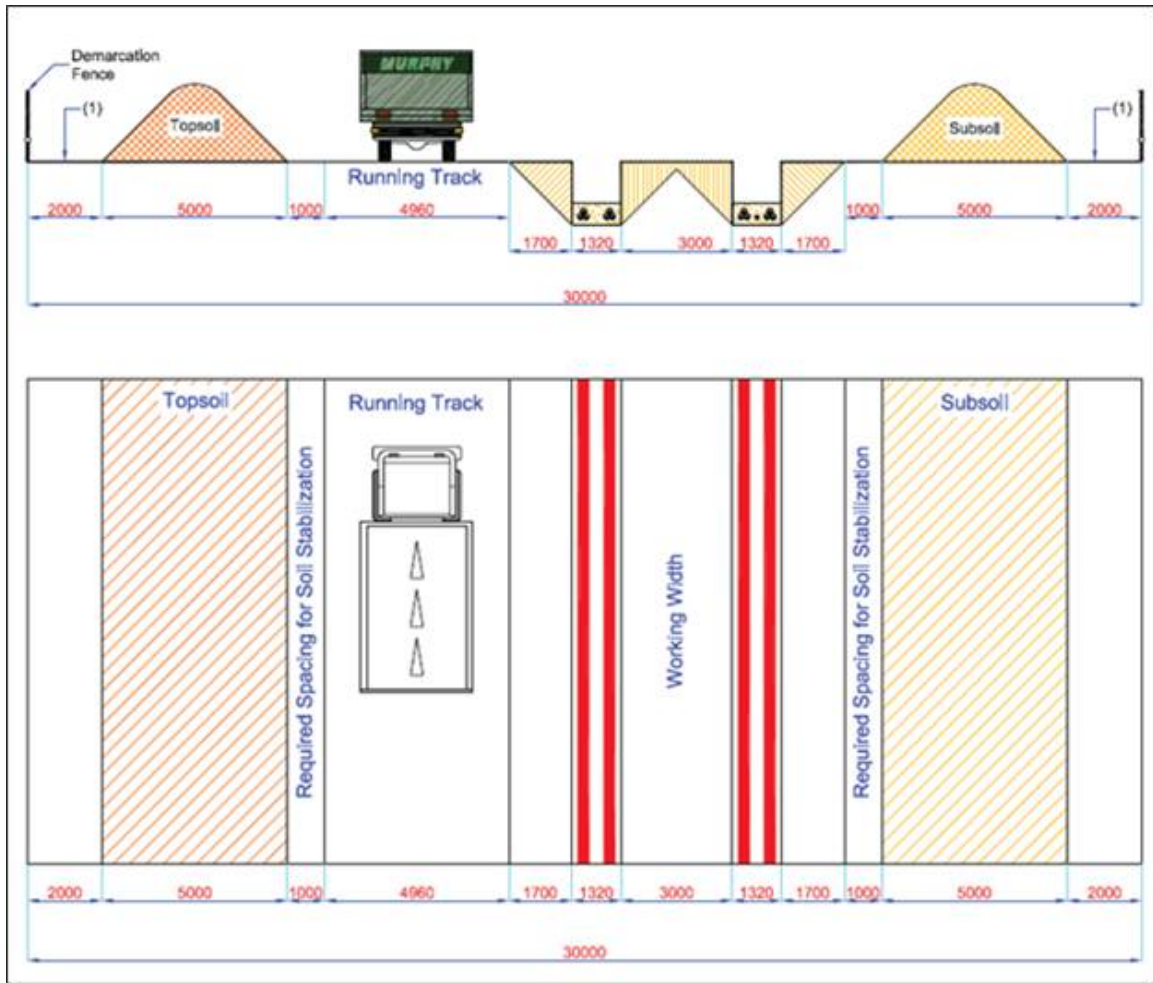
*Underground Cable General Construction Activities*

2.5.4 It is anticipated that installation of the UGC would involve the following tasks:

- establish a working corridor approximately 30 m wide, centred on the cable centreline;
- excavate a trench up to 2 m in depth and 1 m wide, widening through benching and battering where stability and safety concerns arise;
- clear out all materials likely to damage cable ducts, e.g. clods, rocks, stones and organic debris, and employ use of pumps to remove any water;
- place cabling within the trench, surrounded by engineered backfill in suitable layers for protection, with marker boards placed above the cable line; and
- reinstate excavated surface layers in reverse order.

2.5.5 **Plate 2.3** shows a diagram of a typical UGC construction corridor.

**Plate 2.3: Example of a typical UGC Construction**



*Forestry Removal*

2.5.6 Construction of the project is unlikely to require the removal of commercial forest. Any removal would be undertaken in consultation with affected landowners. Scottish Forestry would also be consulted as required and the project would seek to adhere to the Scottish Government’s Control of Woodland Removal Policy.<sup>2</sup>

*Access during Construction*

2.5.7 It is anticipated that traffic for the construction and operation of these projects would reach the site via two main access routes. The first would be to the plateau of higher ground, currently occupied by the Glendoe Reservoir and Stronelaig Wind Farm. Construction traffic would most likely reach this via the A82 onto the B862, then onto the existing Glendoe access track which stems off the B862 approximately 2 km east of Fort Augustus. This existing access track was constructed to carry heavy-duty construction vehicles and has been maintained for the Glendoe Hydro Scheme and Stronelaig Wind Farm, presenting a suitable and obvious choice. The existing access track network for Stronelaig Wind Farm would be expanded as part of the other proposed wind farms associated with the Melgarve Cluster project, and these would be utilised as far as practicable to limit new access construction.

2.5.8 The second would be to the lower ground around Melgarve substation and along General Wade’s Military Road. Access to this area would most likely be from the A86, then a series of unnamed tracks starting from the Wolfrax junction, and finally along the existing access road constructed for the Beauly – Denny OHL and

<sup>2</sup> Forestry Commission Scotland (2009) Control of Woodland Removal Policy

Melgarve substation which runs east – west to the north of the River Spey. As for works on the higher ground, the existing access network in this area would be used as far as practicable, however there is likely to be a requirement to extend it.

- 2.5.9 At present the project is developing an access strategy to understand whether stone tracks installed for construction would be retained for operational maintenance access or whether they would be removed after completion. This is on-going, and will be informed by further design development and stakeholder consultation in advance of detailed assessments required for any forthcoming EA/EIA and application for s37 consent and/or planning permission.

#### *Programme*

- 2.5.10 It is anticipated that construction time required for each connection would vary, but an average of 24 months would be required, following the granting of consents, although detailed programming of the works would be the responsibility of the Contractor in agreement with SSEN Transmission.
- 2.5.11 Every effort would be made to minimise disturbance to landowners, local residents and other stakeholders during construction by providing regular updates on works and restrictions via the site manager, community liaison manager and corporate affairs team.

## **2.6 Biodiversity Net Gain**

- 2.6.1 Biodiversity Net Gain (BNG) is a process which leaves nature in a better state than it started. Although it is an internationally recognised process and tool within the development industry, it is not a term that is widely used or implemented in Scotland<sup>3</sup>. A small handful of businesses are making voluntary commitments to incorporating BNG into their projects, including SSEN Transmission.
- 2.6.2 SSEN Transmission has developed a BNG toolkit based upon the Natural England metric<sup>4</sup>, which aims to quantify biodiversity based upon the value of habitats for nature. It is an efficient and effective method for demonstrating whether development projects have been able to maintain or increase the biodiversity value of a development site after construction works.
- 2.6.3 For BNG to be used appropriately and to generate long-term gains for nature, the good practice principles established by the Business and Biodiversity Offset Programme (BBOP)<sup>5</sup> should be followed. These principles have been established in the context of UK development by the Construction Industry Research and Information Association (CIRIA), the Chartered Institute for Ecology and Environmental Management (CIEEM) and the Institute of Environmental Management and Assessment (IEMA)<sup>6</sup>.
- 2.6.4 BNG does not apply to statutory designated sites or irreplaceable habitats (e.g. ancient woodland<sup>6</sup>, blanket bog)<sup>7</sup>.

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<sup>3</sup> CIEEM. 2019. Biodiversity Net Gain in Scotland. CIEEM Scotland Policy Group. <https://cieem.net/wp-content/uploads/2019/06/Biodiversity-Net-Gain-in-Scotland-CIEEM-Scotland-Policy-Group.pdf>

<sup>4</sup> Natural England Biodiversity Metric 2.0 <http://publications.naturalengland.org.uk/publication/5850908674228224>

<sup>5</sup> Guidance Notes to the Standard on Biodiversity Offsets (2012). Business and Biodiversity Offsets Programme (BBOP). [https://www.forest-trends.org/wp-content/uploads/imported/BBOP\\_Standard\\_Guidance\\_Notes\\_20\\_Mar\\_2012\\_Final\\_WEB.pdf](https://www.forest-trends.org/wp-content/uploads/imported/BBOP_Standard_Guidance_Notes_20_Mar_2012_Final_WEB.pdf)

<sup>6</sup> Categories 1a and 2a.

<sup>7</sup> CIRIA, CIEEM, IEMA (2019). Biodiversity Net Gain: Good practice principles for development, A Practical Guide. <https://cieem.net/wp-content/uploads/2019/02/C776a-Biodiversity-net-gain.-Good-practice-principles-for-development.-A-practical-guide-web.pdf>

*SSEN Transmission's Biodiversity Ambition*

2.6.5 SSEN Transmission is committed to protecting and enhancing the environment by minimising the potential impacts from their construction and operational activities. As part of this approach, SSEN Transmission plc has made commitments within its Sustainability Strategy (2018)<sup>8</sup>, Sustainability Plan (2019)<sup>9</sup> and RIIO-T2 Business Plan, for new infrastructure projects to:

- Ensure natural environment considerations are included in decision making at each stage of a project's development;
- Utilise the mitigation hierarchy to avoid impacts by consideration of biodiversity in project design;
- Positively contribute to the UN and Scottish Government Biodiversity strategies by achieving an overall 'No Net Loss' on new infrastructure projects gaining consent in 2020 onwards and achieving Net Gain on projects gaining consent in 2025 onwards; and
- Work with their supply chain to gain the maximum benefit during asset replacement and upgrades.

2.6.6 The design and evolution of this project will be carried out in line with these commitments.

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<sup>8</sup> Delivering a smart, sustainable energy future: The Scottish Hydro Electric Transmission Sustainability Strategy (2018) <https://www.ssen-transmission.co.uk/media/2701/sustainability-strategy.pdf>

<sup>9</sup> Our Sustainability Plan: Turning Ambition into Action. (2019) SHE Transmission. <https://www.ssen-transmission.co.uk/media/3215/our-sustainability-plan-consultation-report.pdf>



### 3. ALIGNMENT SELECTION PROCESS

#### 3.1 Guidance Document

3.1.1 The approach to alignment selection was informed by SSEN Transmission's guidance 'Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above'. The guidance sets out SSEN Transmission's approach to selecting a route for an OHL and UGC. This document helps SSEN Transmission to meet its obligations under Schedule 9 of the Electricity Act 1989, which requires transmission license holders:

- to have a 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 interests; and
- to do what they reasonably can to mitigate any effect that the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.

3.1.2 The guidance develops a process which aims to balance these environmental considerations with technical and economic considerations throughout the route options process.

3.1.3 The guidance splits a project into six stages, as follows:

- Pre-Routeing Activities: Selection of proposed connection option;
- Stage 0: Routeing strategy development;
- Stage 1: Corridor Selection;
- Stage 2: Route Selection;
- Stage 3: Alignment Selection; and
- Stage 4: EA/EIA and consenting.

3.1.4 The stages that are carried out can vary depending on the type, nature and size of a project and consultation is carried out at each stage of the process as appropriate. This project is currently at Stage 3: Alignment Selection, the objective of which is to identify a Preferred Alignment to be taken forward for consultation prior to selection of a Proposed Alignment and commencement of the EA/EIA and consenting stage.

3.1.5 In consideration of the principles outlined in the guidance document, the method of identifying a Preferred Alignment in this study has involved the following four key tasks:

- Review and update, where required, of the baseline situation established at Stage 2;
- Identification of alignment options;
- Environmental and technical analysis of alignment options; and
- Identification of an environmentally preferred alignment.

3.1.6 An initial BNG appraisal to determine the biodiversity baseline of alignment options and the potential biodiversity impacts of each option has also been undertaken, building on the BNG study carried out at Route Selection stage, to inform the consideration of alignment options.

#### 3.2 Selection of a Corridor

3.2.1 A Corridor was identified within which the identification and assessment of route options could be completed (see **Figure 1**). The Corridor was developed to encompass a range of feasible route options between the connection points between:

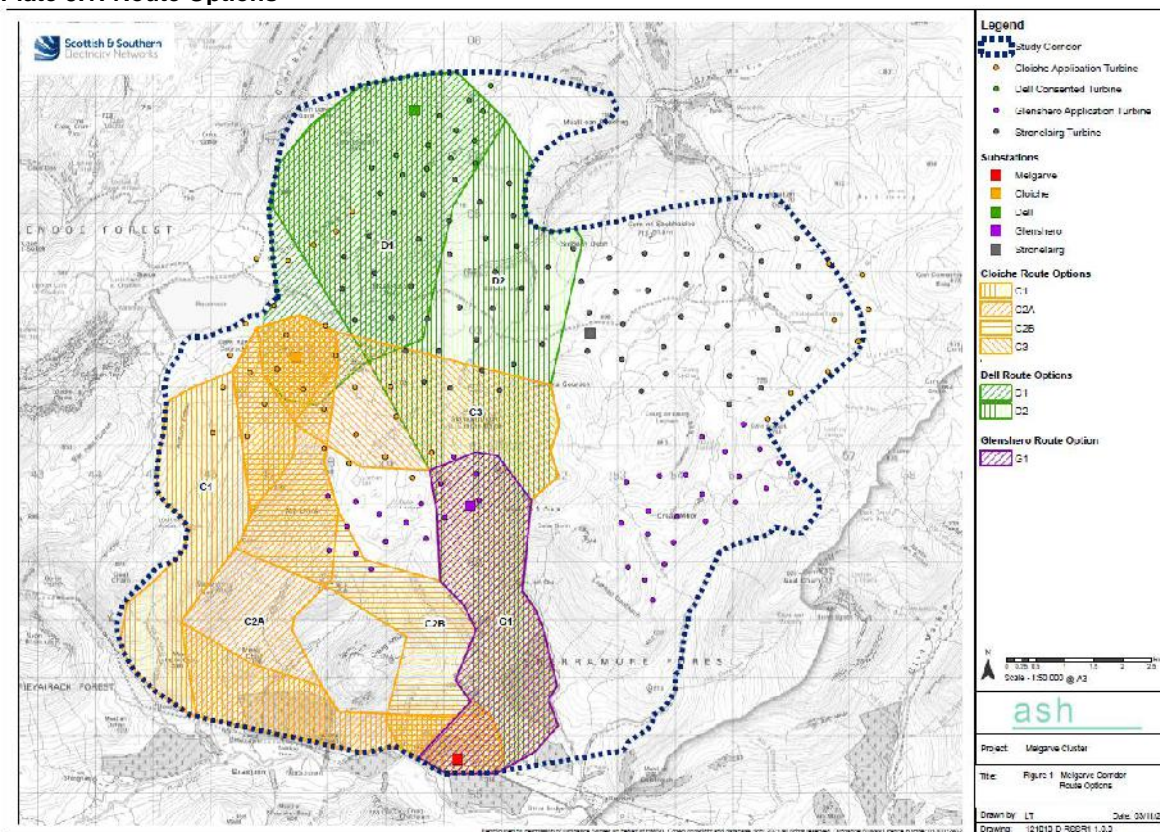
- Clochie Wind Farm on-site substation and Melgarve substation;
- Dell Wind Farm on-site substation and Melgarve substation; and
- Glenshero Wind Farm on-site substation and Melgarve substation.

3.2.2 The application for consent for Glenshero Wind Farm has since been refused and the requirement for connection therefore withdrawn.

### 3.3 Selection of a Proposed Route

3.3.1 As noted earlier in Section 2, the Route Selection process was carried out between September 2021 and May 2022. Indicative route options were defined with approximately 1 - 2 km widths to allow for subsequent identification of alignments during Stage 3 (Alignment Selection) of the project. A Proposed Route for each connection, based on comparative route appraisals and subsequent consultation with statutory consultees and other stakeholders was then selected to progress to the alignment selection stage. **Plate 3.1** below indicates the route options considered.

**Plate 3.1: Route Options**



3.3.2 The Preferred Route for the Cloiche Wind Farm connection was considered to be Route Option C3. The environmental and engineering appraisals both identified Route Option C3 as the overall preference. The route stage economic appraisal identified Route Option C2B as the overall preference, however it was noted to be marginal and generally comparable with Route Option C3. Following the routing consultation process, taking into account consultee feedback, Route Option C3 was then brought forwards as the Proposed Route into the alignment selection stage of the Routeing Process.

3.3.3 The Preferred Route for the Dell Wind Farm connection was considered to be Route Option D1. All appraisals (environmental, engineering and economic) identified only marginal differences overall between the two route options, with the environmental appraisal identifying a slight preference for Route Option D1 and the engineering appraisal and the high-level route stage economic appraisal identified a slight preference for Route Option D2. Following the routing consultation process, taking into account consultee feedback Route Option D1 was then brought forwards as the Proposed Route into the alignment selection stage of the Routeing Process.

- 3.3.4 Although the requirement for the Glenshero Wind Farm connection has since been withdrawn, it was still active at the routeing stage and was therefore included. Due to the relatively short distance (c.4.4 km) and difficult terrain only one viable route option was identified at the routeing stage. As such, a comparative assessment was not required and instead a summary appraisal was undertaken to provide a baseline for further investigation into the alignment selection stage of the Routeing Process.
- 3.3.5 The overall Proposed Route that was brought forwards into the alignment selection stage of the Routeing Process is shown on **Figure 1**.
- 3.3.6 Section 4 of this Report provides a summary of the consultation responses received for the route options appraised, along with information on other consultations carried out to date.

### 3.4 Baseline Conditions

3.4.1 A baseline desktop study was carried out as part of Stage 2: Route Selection to identify a broad range of potential constraints and opportunities within the Corridor, and its adjacent context. These baseline studies have been refined as part of the alignment options appraisal presented within this Report. Establishment of the baseline involved the following activities:

- Identification of environmental designated sites and other constraints, utilising GIS datasets available via NatureScot<sup>10</sup> Site Link<sup>11</sup>;
- Review of the Habitat Map of Scotland (HabMos)<sup>12</sup>;
- Identification of archaeological designations and other recorded sites, utilising GIS datasets available via Historic Environment Scotland<sup>13,14</sup> and Highland Historic Environment Record (HER)<sup>15</sup>;
- Scottish Environmental Protection Agency (SEPA) interactive Flood Risk Mapping<sup>16</sup>;
- Review of the Scotland Carbon and Peatland Map<sup>17</sup>;
- Review of the Highland-wide Local Development Plan (2012)<sup>18</sup> and the Inner Moray Firth Local Development Plan (2015)<sup>19</sup> and West Highland and Islands Local Development Plan (2019)<sup>20</sup> to identify further environmental constraints and opportunities, such as regional level designations or other locations important to the public;
- Review of landscape character assessments of relevance to the Corridor<sup>21</sup>;
- Review of Native Woodland Survey of Scotland and Ancient Woodland Inventory data sets<sup>22</sup>;
- Review of Ordnance Survey (OS) mapping (1:50,000 and 1:25,000 and online GIS data sources from OS OpenData) and aerial photography (where available) to identify other potential constraints such as settlement, properties, walking routes, cycling routes, habitats, etc.;
- Extrapolation of OS GIS data to identify further environmental constraints including locations of watercourses and waterbodies, roads classifications and degree of slope;
- Review of environmental information relating to the wind farm developments across the site, namely Stronelaig Wind Farm, Cloiche Wind Farm, Dell Wind Farm and Glenshero Wind Farm; and

<sup>10</sup> Scottish Natural Heritage (SNH) became NatureScot on 24 August 2020

<sup>11</sup> SNH. SNHi Site Link. [online] Available at: <https://sitelink.nature.scot/home>

<sup>12</sup> Habitat Map of Scotland [online] Available at: <https://www.environment.gov.scot/our-environment/habitats-and-species/habitat-map-of-scotland/>

<sup>13</sup> Historic Environment Scotland Data Services. Portal. [online] Available at: <http://portal.historicenvironment.scot/>

<sup>14</sup> Royal Commission on Ancient and Historical Monuments of Scotland. Canmore. [online] Available at: <http://canmore.rcahms.gov.uk/>

<sup>15</sup> Highland Council Archaeology Service. Highland Historic Environment Record. [online] Available at: <https://her.highland.gov.uk/>

<sup>16</sup> Scottish Environmental Protection Agency. SEPA Flood Maps [online] Available at: <http://map.sepa.org.uk/floodmap/map.htm>

<sup>17</sup> Scotland Carbon and Peatland Map [online] Available at: <https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/>

<sup>18</sup> Highland Council (2012), Highland-wide Local Development Plan

<sup>19</sup> Highland Council (2015), Inner Moray Firth Development Plan

<sup>20</sup> Highland Council (2019), West Highland and Islands Local Development Plan

<sup>21</sup> NatureScot. (2019). Scottish Landscape Character Types Map and Descriptions [online] Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

<sup>22</sup> Available at [data.gov.uk](https://data.gov.uk)

- Review of other local information through online and published media such as tourism sites and walking routes.<sup>23,24,25</sup>

3.4.2 Desk-based studies were supplemented by high-level walkover assessments and site surveys by specialist consultants during June and July 2021, Spring / Summer 2022 and October 2022. These walkover surveys obtained further site data and observations of localised constraints, such as ornithology, terrestrial ecology, cultural heritage features and composition of forestry. The results of these walkover surveys have informed the assessments presented herein.

### 3.5 Alignment Identification and Selection Methods

3.5.1 As mentioned in Section 2, alignment options were established within the Proposed Route based on the key environmental and engineering constraints identified during Stage 2: Route Selection.

3.5.2 When establishing the alignment options, the constraints of the area had to be accounted for. Most significantly, throughout the Proposed Route, there are the existing Stronelairg Wind Farm wind turbines and the existing 132 kV UGC connecting Stronelairg Wind Farm to Melgarve substation, as well as the proposed wind turbines of Cloiche Wind Farm and Dell Wind Farm. Further to this, the land is undulating with some steep sections. Peat is also present, including peat hags, wet ground and lochans. Several alignment options were therefore established to account for these constraints, some as OHL, some as UGC and some anticipated to utilise a mix of the two technologies.

3.5.3 The steps outlined in the Holford Rules<sup>26</sup> and SSEN Transmission's guidance 'Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above', observed at Stage 2 for selection of a Proposed Route, were taken into account as far as is practicable in establishing the alignment options:

- 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 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.

3.5.4 A series of alignment options were established within the Proposed Route according to these steps outlined in the Holford Rules and SSEN Transmission's guidance. The alignment options identified within the Proposed Route are displayed on **Figure 2**. A total of 20 alignment options have been included in this Consultation Document, with differing start and end points. Initially, a total of 26 alignment options were appraised, however, these were refined to allow for clearer comparison of viable options. Each of the connections would require a combination of at least three of these alignment options. To aid with distinguishing the alignment options from one another, 3 'junction points' have been identified (as shown on Figure 2), and the alignment further split

<sup>23</sup> Munro Magic [online] Available at: <http://www.munromagic.com/>

<sup>24</sup> Walk Highlands [online] Available at: <http://www.walkhighlands.co.uk/>

<sup>25</sup> Scotways [online] Available at: <https://www.scotways.com/>

<sup>26</sup> Scottish Hydro Electric Transmission Limited (SHETL). (October 2004). The Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines with NGC 1992 and SHETL 2003 Notes; Revision 1.01

down into four key sections. These are Section 1A, Section 1B, Section 2 and Section 3 and their descriptions are below.

- 3.5.5 It is highlighted that SSEN Transmission have a licence and regulatory obligation to deliver the most economic and efficient solution to facilitate the connection that is in the best interest of the wider consumer, which in this case is, for the most part, an OHL. The only other mechanism to permit the use of cabling requires the developer makes a contractual request for a different type of connection, which would result in the developer paying the additional costs. It is noted the environmental impact of cabling could potentially be worse due to the invasive construction methods required compared to OHL construction.

### 3.6 Appraisal Method

- 3.6.1 Appraisal of alignment options has involved systematic consideration against the environmental and engineering topic areas included in **Table 3.1**. Costs were not assessed in detail as part of this alignment selection process but were considered during development design meetings in which the alignment options were discussed.


**Table 3.1: Environmental and Engineering Topic Areas Considered**

	Category	Sub-Topic
Environmental	Natural Heritage	Designations
		Protected Species
		Habitats
		Ornithology
		Geology, Hydrology and Hydrogeology
	Cultural Heritage	Designations
		Cultural Heritage Assets
	People	Proximity to Dwellings
	Landscape and Visual	Designations
		Character
		Visual
	Land Use	Agriculture
		Forestry
		Recreation
	Planning	Policy
		Proposals
Engineering	Infrastructure Crossings	Major Crossings (132kV, 275kV, Rail, 200+m wide river, navigable canal, gas or hydro pipeline)
		Road Crossings
	Environmental Design	Elevation
	Ground Conditions	Terrain
		Rock (UGC Only)
		Peat
	Construction / Maintenance	Access
		Angle Towers (OHL Only)
		Angles of Deviation (UGC Only)
		Cable Haul Road (UGC Only)
	Proximity	Clearance Distance, Wind Farms, Communication Masts. Urban Environments, Metallic Pipelines
	Design	Joint Bays and Link Box Chambers (UGC Only)

### *Rating of Alignment Options*

- 3.6.2 At Stage 2: Routeing, a Red, Amber, Green (RAG) rating was applied to each topic area within each section, indicating potential constraint to development. The RAG rating approach is typically considered too broad at Stage 3: Alignment as it could generally result in similar ratings for all options. Therefore, a more descriptive appraisal has been adopted for the environmental constraints, allowing for more detailed considerations of the differences in constraint to development between each option.
- 3.6.3 Given that there is less detailed engineering information available at this stage, RAG ratings were applied alongside descriptive text for the relevant topic areas. A high-level convention for assigning RAG ratings is shown in **Plate 3.1** below. More detailed guidance for topic specific considerations is included in Annex 9 and 10 of SSEN Transmission's guidance 'Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above'.

**Plate 3.2: RAG Ratings**

Performance	Comparative Appraisal
<b>Most Preferred</b>  <b>Least Preferred</b>	Low potential for the development to be constrained
	Intermediate potential for the development to be constrained
	High potential for the development to be constrained

### *Identification of a Preferred Alignment*

- 3.6.4 The overall objective throughout the appraisal of alignment options has been to take full consideration of all factors to minimise any potential adverse impacts on the environment whilst taking into account technical considerations. Following review and consideration of the potential alignment options, a Preferred Alignment was arrived at, as discussed in this Report.

## 4. CONSULTATION TO DATE

### 4.1 Introduction

4.1.1 Formal consultation was carried out during Stage 2 of this project in order to obtain comments from statutory and non-statutory consultees, including members of the public. Virtual public consultation events were held on 10<sup>th</sup> and 11<sup>th</sup> January 2022 to present the route options to members of the public local to the area and invite questions and comments.

4.1.2 Further direct consultation was also carried out with principal landowners.

### 4.2 Route Stage Consultation Summary

#### Statutory and Non-Statutory Consultation

4.2.1 A summary of key consultation responses at route selection stage is described in the following paragraphs.

4.2.2 The consultation process for the grid connections associated with the project at routing largely related to the design evolution of the connections. It was outlined that the development proposals must demonstrate sensitivity and respect towards the local distinctiveness of the landscape. The natural heritage of the area was raised as a key issue, in particular the River Spey SAC, which is protected for salmon, freshwater pearl mussel, sea lamprey and otter.

4.2.3 The need for supporting landscape and visual assessment material such as zones of theoretical visibility (ZTVs) or visualisations was outlined and advice was given on the Special Landscape Qualities (SLQs) of the Cairngorms National Park and on WLA 19 - Braeroy - Glenshirra - Creag Meagaidh and WLA 20 – Monadhliath. It was recommended that the choice of route and connection type should be informed by further landscape and visual assessment

4.2.4 In relation to habitats, it was stated that the route selection process should be informed by surveys and assessments and that appropriate assessments should be undertaken to ensure suitable mitigation is provided to avoid disturbance impacts. Attention was also given to likely presence of Annex 1 habitat types including blanket bog and alpine heath.

4.2.5 In relation to ornithology, it was recommended that potential impacts to birds were assessed against the relevant Natural Heritage Zone (NHZ) population. Attention was brought to the potential for the connection proposals to impact on the NHZ golden eagle population, both on their own and in combination with the other developments in the area. It was recommended that available information from surveys and assessments for other proposals in this area, is used to inform the route selection process so that it minimises potential impacts to golden eagles.

4.2.6 Advice also focussed on transport and access. It was noted that a Transport Assessment (TA) should accompany the applications and that it should include a Framework Construction Traffic Management Plan (CTMP) aimed at minimising the impact of the construction-related traffic on all other users of the local public roads, including any measures deemed necessary to protect the safety of cyclists and pedestrians

4.2.7 The community consultation responses from the virtual public exhibition events raised a number of comments querying the rationale behind the use of OHL rather than UGC for the Dell and Cloiche connections due to Glenshero and Stronelaing wind farms opting for an UGC connection. These comments were echoed by The Highland Council, who also suggested a need to revisit the rationale regarding OHL rather than UGC or, if this is not practicable, rationalise the connections as far as possible with previously provided mitigation respected. Also raised by consultees was the need to consider the use of single circuit lattice towers against the use of double circuit lattice towers in more detail.

- 4.2.8 Concern for the potential for adverse effects on the operation of existing and proposed wind farms in the areas and interference with users of the access tracks was also raised in consultee comments. The main points raised related to the connection for Cloiche and Dell both passing through or adjacent to Stronelairg Wind Farm and access roads. In contrast, comments raised by statutory consultees requested that existing infrastructure and already disturbed ground be utilised as far as possible to minimise disruption to as-yet undisturbed areas.
- 4.2.9 Concerns were raised in relation to potential disruption of the community and tourism in the area as a result of the project. This related to the local community's sensitivity to transport disruption. SSEN Transmission will provide a Design and Access Statement addressing these concerns if appropriate. An appropriate Transport Assessment was also requested, which should detail any and all abnormal loads requiring to be transported and how existing structures along the route(s) would be affected.
- 4.2.10 Potential impacts on sporting activities within the Stronelairg estate (namely shooting) were mentioned, as well as potential impacts on long distance walking routes. The potential for adverse effects on the scenic qualities of the area by new OHLs was raised, in particular on the SLQs of the Cairngorms National Park and on Wild Land Area (WLA) 19 - Braeroy - Glenshirra - Creag Meagaidh and WLA 20 – Monadhliath. Comments from consultees also related to protected species, given the rural nature of the area, in close proximity to native woodland and watercourses which is likely to be home to or foraging ground for several protected species.
- 4.2.11 Potential adverse effects on designated natural heritage sites, sensitive habitats, including peat soils, and sensitive bird species, including Golden Eagle, were raised. A particular request was made for a dedicated collision risk assessment for Slavonian grebe as part of assessments. Concerns were raised in relation to woodland impacts, requesting that a woodland survey and subsequent Arboricultural Impact Assessment be carried out if appropriate. A number of comments were also raised in relation to flooding and drainage, with an emphasis on designing the developments to accommodate a 1 in 200 year storm event; a Drainage Impact Assessment was requested to address these concerns.
- 4.2.12 Several requests for additional direct consultation on various elements of the development design were made during consultation, including with SSE Generation, who operate the Glendoe Hydro Scheme assets and with SSE Renewables for Cloiche Wind Farm, and further consultation with the public and local community councils.

### 4.3 Project Responses

- 4.3.1 To address these points, the following actions have been or are being undertaken in relation to all aspects of the project:
- The reasons for the preference for the use of OHL rather than UGC at routeing stage included:
    - SSEN Transmission was contracted by the developers of Cloiche and Dell wind farms to provide OHL connections. While potential for UGC connections is explored, this is mostly in the event that OHL solutions would not be viable for engineering, environmental or other developmental reasons.
    - Installation of UGC requires a larger footprint than an OHL. The construction of a steel lattice tower typically requires a temporary compound of 50 m by 50 m, with associated temporary access linking towers to the nearest permanent track or road. In comparison a typical UGC installation requires a trench, approximately 6 m wide and 1.5 m deep, to be excavated along the entire route for each circuit installed. This would sit within a construction corridor at least 30 m wide which includes a haul road and storage areas for topsoil and subsoil which are excavated and then backfilled into the trench once the cable is installed. This could potentially increase disturbance to landowners and the local environment during construction.
  - The design of the proposals is still progressing at this stage and alternative options, including use of UGC connections, are being explored further as the project design progresses. Rationalisation of the two OHL connections is a key element of the design development under review, and opportunities to consolidate connections to minimise development footprint are being progressed alongside further



technical and environmental studies. Subject to further design development this should eliminate the need for parallel towers and lines.

- OHL towers will be designed and positioned so as not to interfere with the operation or output of any wind farm or the Glendoe Hydro Scheme. A minimum of three rotor diameters will be maintained between any turbines and OHL towers. SSEN Transmission will continue to discuss the development design further with the appropriate consultees and stakeholders to arrive at a design solution which suits and accommodates all parties while making best use of existing infrastructure and already disturbed ground.
- Transport assessments and Construction Traffic Management Plans will be implemented during the construction period to limit the impact on residents and road users. SSEN Transmission will set up a Community Liaison Group prior to commencement of construction in order to keep the local community and businesses up to date with construction activities regularly during the construction period. SSEN Transmission will also look to coordinate with wind farm developers to ensure impacts are managed. Care will be taken to ensure that existing paths and rights of way are not blocked and that disruption to recreational and / or tourism interests are minimised.
- Full LVIA's will be carried out as part of the EA/EIA for each development and supporting information, including ZTV figures and visualisations, included with the EA/EIA Reports. Landscape and visual impacts have been considered further as part of the alignment selection stage to select alignments with minimal potential impacts on the landscape and visual receptors in the vicinity, on balance with other environmental considerations. The potential impacts of the development on the nearby WLAs will be considered as part of the LVIA for each development.
- Assessments will be undertaken as part of the EA/EIA process to determine potential impacts on designated natural heritage sites and their qualifying interests, woodland areas, sensitive terrestrial and bird species and sensitive habitats, including peat soils and heathland, and ensure suitable mitigation is provided to avoid any significant impacts arising.
- A Design and Access Statement will be considered for inclusion in submission for the connections.
- The developments are being designed with flooding and drainage in mind, as well as potential impacts upon the Glendoe Reservoir catchment. A Drainage Impact Assessment will be prepared to assess these impacts and ensure the developments do not result in any significant impacts on the water environment or adversely affect the catchment area.
- Further consultation will be organised with key statutory and non-statutory consultees, local councillors and local communities to provide updates on the project during subsequent project stages. Formal consultation will be organised to enable comments to be sought on the preferred alignment identified. However, additional consultation will continue to be carried out with a number of stakeholders who have requested further input, including the owners and operators of Glendoe Hydro Scheme and Stronelaig Wind Farm and the Laggan Community Council.

4.3.2 All comments and considerations to date will be taken forward into assessments which will be carried out for all relevant environmental aspects. This process will remain inclusive, seeking further consultation where appropriate.

#### **4.4 Routeing Stage Consultation Conclusions**

4.4.1 The programme of consultation undertaken for the project between November 2021 and February 2022 was designed to engage with stakeholders including statutory and non-statutory consultees, local communities, landowners and individual residents in order to invite feedback on the rationale for and approach to, the selection of the preferred route options.

4.4.2 The consultation process largely confirmed that for the Cloiche connection and the Dell connection, Route Option C3 and Route Option D1 remained the preferred route options, respectively. It is noted, however, that a number of comments were raised in relation to use of OHL rather than UGC for the Cloiche and Dell

connections, requesting that the rationale be revisited. The use of OHL for the Cloiche and Dell connections is SSEN Transmission's contracted position with the wind farm developers; however, this is the usual starting point for any connection and it is acknowledged that for the Melgarve Cluster further detailed environmental and engineering work will be undertaken to find acceptable OHL alignments and design solutions, which could result in use of appropriate localised mitigation methods, such as UGC. The lattice tower design process and opportunities for rationalisation of the Cloiche and Dell connections are also ongoing and are key factors in how the alignment options will be viewed by consultees.

4.4.3 The preferred route options are displayed on **Plate 3.1**.

4.4.4 These preferred routes were selected on the basis that they are considered to provide an optimum balance of environmental and technical factors.

## 5. DESCRIPTION OF ALIGNMENTS

### 5.1 Identification of Alignment Options

5.1.1 This section of the Report describes each of the alignment options identified for appraisal, which are displayed on **Figure 1**. Alignment options have been defined as centrelines; however, it is assumed that Limits of Deviation (LOD) of approximately 100 m either side of the alignment centreline would be applied to the Proposed Alignment at Stage 4, and this has been considered where relevant through the appraisal.

5.1.2 A combination of at least 3 of the alignment options listed below would be required for each connection.<sup>27</sup> To aid with distinguishing the alignment options from one another, they have been split into four key sections. These are Section 1A, Section 1B, Section 2 and Section 3.

5.1.3 The alignment options per section are listed below:

- Section 1A: On-site substation to edge of plateau (Junction B) UGC and OHL Options via Junction A
  - S1A Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)
  - S1A Dell UGC-OHL Alignment Option 1 (S1A-D-1)
  - S1A OHL Alignment Option 1 (S1A-OHL-1)
  - S1A OHL Alignment Option 2 (S1A-OHL-2)
- Section 1B: On-site substation to edge of plateau (Junction B) UGC Options
  - S1B Cloiche UGC Alignment Option 1 (S1B-C-1)
  - S1B Cloiche UGC Alignment Option 2 (S1B-C-2)
  - S1B Cloiche UGC Alignment Option 3 (S1B-C-3)
  - S1B Cloiche UGC Alignment Option 4 (S1B-C-4)
  - S1B Cloiche UGC Alignment Option 5 (S1B-C-5)
  - S1B Dell UGC Alignment Option 1 (S1B-D-1)
  - S1B Dell UGC Alignment Option 2 (S1B-D-2)
  - S1B Dell UGC Alignment Option 3 (S1B-D-3)
  - S1B Dell UGC Alignment Option 6 (S1B-D-6)
- Section 2: Approx. Junction B to Junction C
  - S2 UGC Alignment Option 3 (S2-UGC-3)
  - S2 OHL Alignment Option 1 (S2-OHL-1)
  - S2 OHL Alignment Option 2 (S2-OHL-2)
- Section 3: Approx Junction C to Melgarve substation (including OHL and UGC sections)
  - S3 UGC Alignment Option 1 (S3-UGC-1)
  - S3 UGC Alignment Option 2 (S3-UGC-2)
  - S3 OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)
  - S3 OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)

5.1.4 The alignment options assessed are described in the following Sections.

<sup>27</sup> As stated in Section 3.5, a total initially a total of 26 alignment options were generated, however, these were refined to 20. This has resulted in the names of alignment options in some of the Sections not following on or starting in an ongoing numerical order, i.e., where an option has been eliminated a gap in numerical naming may be apparent.

## Section 1A

### 5.2 S1A Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)

5.2.1 Alignment Option S1A-C-1 is the shortest of the Section 1 alignment options. It would commence at the proposed Cloiche Wind Farm on-site substation, departing from the substation's eastern side. It would travel approximately 1.4 km in a south-easterly direction through the turbines of the proposed Cloiche Wind Farm, to **Junction A** where it would terminate. Alignment Option S1A-C-1 would be UGC.

### 5.3 S1A Dell UGC-OHL Alignment Option 1 (S1A-D-1)

5.3.1 Alignment Option S1A-D-1 is approximately 6.4 km in length and would commence at the proposed Dell Wind Farm on-site substation, departing from the substation's eastern side. It would initially travel in a southern direction, moving slightly southeast through the turbines of the proposed Dell Wind Farm. After crossing the Allt a' Chòire Odhair, but prior to reaching the already existing turbines of Stronelairg Wind Farm, it would turn in a southwestern direction. To cross the Stronelairg Wind Farm spine road, Alignment Option S1A-D-1 would turn more directly south and travel into the area of the turbines of the proposed Cloiche Wind Farm. It would pass by the eastern side of the proposed Cloiche onsite substation without connecting into it, before turning in a more south-easterly direction, through the turbines of the proposed Cloiche Wind Farm, to **Junction A** where it would terminate. Alignment Option S1A-D-1 would be UGC.

### 5.4 S1A OHL Alignment Option 1 (S1A-OHL-1)

5.4.1 Alignment Option S1A-OHL-1 is approximately 3.4 km in length and would commence at **Junction A**. It would travel to the southeast and cross the Allt Creag Chomaich. Continuing southeast, it would pass approximately 1 km to the east of Lochan Iain and approximately 0.75 km to the east of Dubh Lochan. After passing approximately 1 km to the west of Meall na h-Aisre, Alignment Option S1A-OHL-1 would turn more directly south towards **Junction B** where it would terminate. Alignment Option S1A-OHL-1 would be OHL only.

### 5.5 S1A OHL Alignment Option 2 (S1A-OHL-2)

5.5.1 Alignment Option S1A-OHL-2 is approximately 4.4 km in length and would commence at **Junction A**. It would initially travel to the southeast for approximately 1.5 km. Immediately after crossing the Allt Creag Chomaich, it would turn more to the east, traveling to the south of Sithean Dubh na Cloiche Bàine. As it would pass to the south of Loch nan Si' dhean, it would turn in a more southern direction, heading towards Meall na h-Aisre. Approximately 0.25 km to the northwest of Meall na h-Aisre though, Alignment Option S1A-OHL-2 would turn southwest and travel for approximately 1.5 km towards **Junction B** where it would terminate. Alignment Option S1A-OHL-2 would be OHL only.

## Section 1B

### 5.6 S1B Cloiche UGC Alignment Option 1 (S1B-C-1)

5.6.1 Alignment Option S1B-C-1 is approximately 6 km in length and would commence at the proposed Cloiche on-site substation, departing from the substation's northern side. Alignment Option S1B-C-1 would then travel north for approximately 0.25 km before turning to the east to curve around the northern and eastern sides of Meall Caca while traveling through the turbines of the proposed Cloiche Wind Farm. After curving around Meall Caca, Alignment Option S1B-C-1 would then turn to travel directly south for approximately 1.5 km. It would pass to the west of Sithean Dubh na Cloiche Bàine and cross the Allt Creag Chomaich. Turning more southeast, it would then pass approximately 2.5 km to the east of Lochan Iain and approximately 1.5 km to the east of Dubh Lochan before reaching **Junction B** where it would terminate. Alignment Option S1B-C-1 would be UGC only.

## 5.7 S1B Cloiche UCG Alignment Option 2 (S1B-C-2)

5.7.1 Alignment Option S1B-C-2 is the most eastern alignment option in consideration. It is approximately 8.8 km in length and would commence at the proposed Cloiche on-site substation, departing from the substation's northern side. Alignment Option S1B-C-2 would travel north for approximately 0.5 km before turning to the northeast heading in the direction of Stronelairg Wind Farm spine road. It would follow the track to the east then southeast for approximately 2.5 km. Before turning directly south and passing to the west of Carn na Gourach, by the east of Sithean Dubh na Cloiche Bàine and Loch nan Si' dhean. It would curve slightly southwest to pass by the western side of Meall na h-Aisre before reaching **Junction B** where it would terminate. Alignment Option S1B-C-2 would be UGC only.

## 5.8 S1B Cloiche UCG Alignment Option 3 (S1B-C-3)

5.8.1 Alignment Option S1B-C-3 is approximately 7 km in length and would commence at the proposed Cloiche on-site substation, departing from the substation's northern side. Alignment Option S1B-C-3 would then travel north for approximately 0.25 km before turning to the east to curve around the northern and eastern sides of Meall Caca while traveling through the turbines of the proposed Cloiche Wind Farm. After curving around Meall Caca, Alignment Option S1B-C-3 would then turn southeast to cross the Allt Creag Chomaich and pass to the north of Sithean Dubh na Cloiche Bàine. It would then turn more to the south, passing Loch nan Si' dhean's east side. It would curve slightly southwest to pass by the western side of Meall na h-Aisre before reaching **Junction B** where it would terminate. Alignment Option S1B-C-3 would be UGC only.

## 5.9 S1B Cloiche UCG Alignment Option 4 (S1B-C-4)

5.9.1 Alignment Option S1B-C-4 is approximately 4.7 km in length and would commence at the proposed Cloiche on-site substation, departing from the substation's southern side. It would travel southeast through the turbines of the proposed Cloiche Wind Farm, west of Meall Caca. It would cross the Allt Creag Chomaich and pass approximately 0.5 km to the east of Lochan Iain and approximately 0.25 km to the east of Dubh Lochan. It would continue in a southeastern direction, curving around the slightly steeper ground towards **Junction B** where it would terminate. Alignment Option S1B-C-4 would be UGC only.

## 5.10 S1B Cloiche UCG Alignment Option 5 (S1B-C-5)

5.10.1 Alignment Option S1B-C-5 is approximately 5.2 km in length and would commence at the proposed Cloiche on-site substation, departing from the substation's southern side. It would travel southeast through the turbines of the proposed Cloiche Wind Farm, west of Meall Caca. It would not cross the Allt Creag Chomaich as it would pass approximately 0.25 km to the west of Lochan Iain and approximately 0.25 km to the west of Dubh Lochan. It would then curve around the southern side of Dubh Lochan and then continue in a southeastern direction, curving around the slightly steeper ground towards **Junction B** where it would terminate. Alignment Option S1B-C-5 would be UGC only.

## 5.11 S1B Dell UCG Alignment Option 1 (S1B-D-1)

5.11.1 Alignment Option S1B-D-1 is approximately 9.7 km in length and would commence at the proposed Dell on-site substation, departing from the substation's eastern side. It would initially travel in a southern direction, moving slightly southeast through the turbines of the proposed Dell Wind Farm. After crossing the Allt a' Chòire Odhair, but prior to reaching the existing Stronelairg Wind Farm turbines, it would turn in a southwestern direction. To cross the Stronelairg Wind Farm spine road, Alignment Option S1A-D-1 would then turn more directly south. After crossing the Stronelairg Wind Farm spine road, Alignment Option S1B-D-1 would travel southeast to pass between the turbines of the proposed Cloiche Wind Farm and the existing Stronelairg Wind Farm turbines. It would curve around Meall Caca and then turn to travel directly south for approximately 1.5 km. It would pass to the west of Sithean Dubh na Cloiche Bàine and cross the Allt Creag Chomaich. Turning more southeast, it would then pass approximately 2.5 km to the east of Lochan Iain and approximately 1.5 km to the east of Dubh Lochan before reaching **Junction B** where it would terminate. Alignment Option S1B-D-1 would be UGC only.

### 5.12 S1B Dell UCG Alignment Option 2 (S1B-D-2)

5.12.1 Alignment Option S1B-D-2 is approximately 12 km in length and would commence at the proposed Dell on-site substation, departing from the substation's eastern side. It would initially travel in a southern direction, moving slightly southeast through the turbines of the proposed Dell Wind Farm. After crossing the Allt a' Chòire Odhair, but prior to reaching the existing Stronelairg Wind Farm turbines, it would turn in a southwestern direction. To approach the Stronelairg Wind Farm spine road, Alignment Option S1B-D-2 would then turn more directly south. Immediately after crossing it, Alignment Option S1B-D-2 would follow the Stronelairg Wind Farm spine road to the east then southeast for approximately 2.5 km. Before turning directly south and passing to the west of Carn na Gourach, but the east of Sithean Dubh na Cloiche Bàine and Loch nan Si' dhean. It would curve slightly southwest to pass by the western side of Meall na h-Aisre following the route of the existing Stronelairg UGC before reaching **Junction B** where it would terminate. Alignment Option S1B-D-2 would be UGC only.

### 5.13 S1B Dell UCG Alignment Option 3 (S1B-D-3)

5.13.1 Alignment Option S1B-D-3 is approximately 10.7 km in length and would commence at the proposed Dell on-site substation, departing from the substation's eastern side. It would initially travel in a southern direction, moving slightly southeast through the turbines of the proposed Dell Wind Farm. After crossing the Allt a' Chòire Odhair, but prior to reaching the already existing turbines of Stronelairg Wind Farm, it would turn in a southwestern direction. To approach the Stronelairg Wind Farm spine road, Alignment Option S1B-D-3 would then turn more directly south. After crossing the Stronelairg Wind Farm spine road, Alignment Option S1B-D-3 would travel southeast to curve around the northern and eastern sides of Meall Caca while traveling through the turbines of the proposed Cloiche Wind Farm. After curving around Meall Caca, Alignment Option S1B-D-3 would then turn southeast to cross the Allt Creag Chomaich and pass to the north of Sithean Dubh na Cloiche Bàine. It would then turn more to the south, passing Loch nan Si' dhean's east side. It would curve slightly southwest to pass by the western side of Meall na h-Aisre following the existing Stronelairg UGC before reaching **Junction B** where it would terminate. Alignment Option S1B-D-3 would be UGC only.

### 5.14 S1B Dell UCG Alignment Option 6 (S1B-D-6)

5.14.1 Alignment Option S1B-D-6 is approximately 5.7 km in length and would commence at the proposed Dell on-site substation, departing from the substation's western side. It would initially travel in a southern direction, moving slightly southeast through the turbines of the proposed Dell Wind Farm. After crossing the Allt a' Chòire Odhair, but prior to reaching the existing Stronelairg Wind Farm turbines, it would turn in a southwestern direction. For approximately 0.25 km it would follow the north side of the Stronelairg Wind Farm spine road, west then north before turning west and crossing the track. It would then travel south to terminate at the proposed Cloiche on-site substation. Alignment Option S1B-D-6 would be UGC only.

## Section 2

### 5.15 S2 UGC Alignment Option 3 (S2-UGC-3)

5.15.1 Alignment Option S2-UGC-3 is approximately 3.9 km in length, and travels south from the west side of **Junction B** mirroring the route of the existing Stronelairg UGC up to **Junction C**. Alignment Option S2-UGC-3 would be UGC only.

### 5.16 S2 OHL Alignment Option 1 (S2-OHL-1)

5.16.1 Alignment Option S2-OHL-1 is approximately 3.2 km in length, and travels south from a central point of **Junction B**. It commences to the west of the existing Stronelairg UGC, though, shortly after its origin, Alignment Option S2-OHL-1 crosses Stronelairg UGC. It then crosses back to the west side of Stronelairg UGC and remains there, maintaining a distance of between approximately 0.1 km and 0.5 km. It would cross the Allt Gilbe as it passes to the west of Sherramore Forest. It would then continue southwards to **Junction C**. Alignment Option S2-OHL-1 would be OHL only.

### 5.17 S2 OHL Alignment Option 2 (S2-OHL-2)

5.17.1 Alignment Option S2-OHL-2 is approximately 3.3 km in length, and travels south from a central point of **Junction B** passing to the west side of the existing Stronelairg UGC. It would maintain a distance of between approximately 0.1 km and 0.5 km from the Stronelairg UGC. It would cross the Allt Gilbe as it passes to the west of Sherramore Forest. It would then continue southwards to **Junction C**. Alignment Option S2-OHL-2 would be OHL only.

#### Section 3

### 5.18 S3 UGC Alignment Option 1 (S3-UGC-1)

5.18.1 Alignment Option S3-UGC-1 is approximately 1 km in length, and travels southeast from **Junction C**. It would remain to the west of the existing Stronelairg UGC, passing over the higher ground to approach Melgarve substation from the north. Alignment Option S3-UGC-1 would travel south across the steep ground and cross the existing Beauly – Denny 400 kV OHL and the Melgarve substation access track before connecting into the substation. Alignment Option S3-UGC-1 would be UGC only.

### 5.19 S3 UGC Alignment Option 2 (S3-UGC-2)

5.19.1 Alignment Option S3-UGC-2 is approximately 1.3 km in length, and travels southeast from **Junction C**. It would initially lie slightly to the west of the route of the existing Stronelairg UGC, then approximately 0.25 km to the northeast of Melgarve substation, it would pass over the route of Stronelairg UGC. It would follow the Stronelairg UGC route to cross the existing Beauly – Denny 400 kV OHL and the Melgarve substation access track. It would curve around the south side of Melgarve substation before connecting into it. Alignment Option S3-UGC-2 would be UGC only.

### 5.20 S3 OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)

5.20.1 Alignment Option S3-OHL-UGC-1 is approximately 1 km in length, and travels southeast of **Junction C**. It would remain to the west of the existing Stronelairg UGC, passing over the higher ground to approach Melgarve substation from the north. Alignment Option S3-OHL-UGC-1 would travel south across the steep ground before switching to UGC to cross the existing Beauly – Denny 400 kV OHL and the Melgarve substation access track and connecting into the substation. Alignment Option S3-OHL-UGC-1 would be a combination of both OHL and UGC.

### 5.21 S3 OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)

5.21.1 Alignment Option S3-OHL-UGC-2 is approximately 1.2 km in length, and travels southeast from **Junction C**. It would initially lie slightly to the west of the route of the existing Stronelairg UGC, then approximately 0.25 km to the northeast of Melgarve substation, it would pass over the route of Stronelairg UGC. It would transition to UGC and follow the Stronelairg UGC route to cross the existing Beauly – Denny 400 kV OHL and the Melgarve substation access track. It would curve around the south side of Melgarve substation before connecting into it as the Stronelairg UGC does. Alignment Option S3-OHL-UGC-2 would be a combination of both OHL and UGC.

## 6. ENVIRONMENTAL BASELINE

6.1.1 This Section of the Report describes the environmental baseline and key constraints within the Proposed Route, with a particular focus on those constraints relevant to the alignment options under consideration. This Section makes reference to **Figures 2 to 8** which display the various designations and environmental features discussed throughout.

### 6.2 Introduction

6.2.1 The Proposed Route is located within the local authority area of The Highland Council, to the east of Fort Augustus. The Cairngorms National Park Authority lies to the east, General Wade's Military Road and the Beauly – Denny OHL to the south, Glendoe Reservoir to the west, and Glen Brein and Glen Markie to the north.

6.2.2 The Proposed Route largely consists of a high-level mountainous plateau with land uses including hydro and wind farm projects, livestock grazing and estate management for shooting (largely grouse and red deer). Towards the south of the Proposed Route, in areas with low lying glens and rivers, land use includes agriculture and commercial forestry.

6.2.3 The Proposed Route comprises a number of sensitive habitats, principally upland heath and blanket bog at higher altitudes, much of which is in a degraded condition providing opportunities for restoration and improvement. At lower altitudes and where the terrain is steeper, dry heath and acid grassland mosaics tend to dominate. Water vole is abundant throughout the area as well as otter.

6.2.4 Within the Proposed Route there is no settlement. The closest settlements are primarily located to the low-lying areas of glens and river valleys adjacent to the A86 to the east and B862 to the west and south (General Wade's Military Road) beyond the Proposed Route. These include Fort Augustus, set at the end of Loch Ness in the Great Glen and Newtonmore in the upper Strathspey. Smaller settlements within the wider area comprise Laggan, Invergarry and Invermoriston.

6.2.5 A long-established long-distance hill track extends from Killin through Glen Markie, and the Monadhliath Trail has been established across the area following the Glendoe Hydro Scheme access track, through both Glendoe and Garrogie Estates, to create a long circular route, popular with walkers and cyclists.

6.2.6 The Proposed Route is largely devoid of cultural heritage interest, however, General Wades Military Road Scheduled Monument is located towards the south of the Proposed Route, along with a small number of associated listed buildings.

6.2.7 The main access tracks within the west of the Proposed Route, are the Glendoe Hydro and Stronelairg Wind Farm access tracks. The entry to these access tracks is along the B862 near Fort Augustus.

6.2.8 Other electrical infrastructure and renewable energy generation within the Proposed Route includes the operational Glendoe Hydro Scheme, the operational Stronelairg Wind Farm, and the operational Melgarve substation. A 132 kV UGC connects Stronelairg on-site substation to Melgarve substation.

### 6.3 Environmental Designations

6.3.1 The following environmentally designated sites or areas afforded recognition or protection within planning policy are present within the vicinity of the Proposed Route (see **Figures 2 and 3**).

6.3.2 Within the Proposed Route, one area is afforded recognition or protection within planning policy. This is the River Tarff water catchment, which is designated as a Drinking Water Protection Area (DWPA) and includes the Glendoe Reservoir and its tributaries. This can be seen in **Figure 4**.



6.3.3 Further to this, several environmentally designated sites or areas are outwith the Proposed Route, but within close proximity (see **Figure 3**) including:

- The River Spey Special Area of Conservation (SAC) (site code: 8365) and Site of Special Scientific Interest (SSSI) (site code: 1699) located to the south of the Proposed Route;
- Creag Meagaidh SSSI (site code: 457), SAC (site code: 8235), Special Protection Area (SPA) (site code: 8487) and National Nature Reserve (NNR) (site code: 5021) located approximately 1.3km south of the Proposed Route;
- Monadhliath SAC (site code: 8324) and SSSI (site code: 1180) located east of the Proposed Route;
- Glendoe Lochans SSSI, located approximately 3 km west of the Proposed Route, forms part of the Loch Knockie and nearby Lochs SAC (396.4 ha);
- Glen Tarff SSSI (site code: 725) is located approximately 4.5 km west of the Proposed Route and forms part of the Ness Woods SAC (site code: 8337);
- Parallel Roads of Lochaber SSSI (site code: 1272) located approximately 3 km south-west of the Proposed Route designated for its quaternary geology and fluvial geomorphology features;
- The nearest AWI (ancient- of semi natural origin) is located at NH531061 north-east of the site following the Allt Odhar. Several other areas listed on the AWI are located along the River Killin north of the site. Further south of the alignment options (approximately 1.1km) at NN498944 Coill Bheag and at NN510940 Coill Coire A Bhein AWI are located both classed as ancient- of semi natural origin;
- The Cairngorms National Park is situated to the east of the Proposed Route, approximately 2.5 km from the nearest point; and
- Wild Land Area (WLA) 19: Braeroy, Glenshirra and Creag Meagaidh to the south of the Proposed Route.

## 6.4 Natural Heritage

6.4.1 The Proposed Route generally comprises a mosaic upland moorland and of woodland. Woodland areas are dominated by conifer plantations, but there are numerous fragments of broadleaved and mixed woodland associated with riparian zones, field boundaries, road sides and around settlements. Some areas of woodland are categorised as Ancient Woodland. **Figure 2** shows those areas of Ancient Woodland classified as 1A and 2A, interpreted as semi-natural woodland from maps of 1750 (1A) or 1860 (2A) and continually wooded to the present day.

6.4.2 At higher altitudes, habitats are dominated by blanket bog and wet heath habitats and at lower altitudes, where the terrain is steeper, dry heath and acid grassland mosaics tend to dominate.

6.4.3 Small lochans and water bodies and tributaries and various sizes are common within the study area and small areas of both semi-natural woodland and commercial plantation are present at lower altitudes.

6.4.4 The following Annex 1 habitats have been recorded and are likely to be present within the Proposed Route:

- 4060 Alpine & Boreal Heath;
- 4030 European Dry Heath;
- 6150 Siliceous alpine and boreal grasslands\*;
- 7230 Alkaline Fens;
- 4010 Northern Atlantic wet heaths with *Erica tetralix*;
- 7140 Transition mires and quaking bogs; and
- 7130 Blanket Bog\*.

*\*\* indicates 'priority habitat' which are afforded a higher level of protection due to their conservation importance.*

- 6.4.5 Alpine and Boreal Heath (Montane Heath) is a sensitive upland habitat likely to be present at high altitudes exceeding 600 m Above Ordnance Datum (AOD). Areas exceeding 600 m AOD are found in the north of the Corridor area at Carn Easgann Bann, the central area surrounding Meall Caca, Gairbeinn and Meall na h-Aisre and in the south surrounding Creag Mhor. This habitat is fairly discrete in its distribution.
- 6.4.6 The carbon and peatland map 2016 indicates that Class 1 and Class 2 peatland habitats are abundant within the Proposed Route – particularly across the higher altitude plateaux areas in the north (**Figure 3**). Potential Class 1 peatland coverage extends across much of the area in the northern half of the Proposed Route. Information available from Dell, Cloiche, Stronelairg and Glenshero Environmental Statements (ES) / EIAs, indicates that this is likely to be the case with a high proportion of habitats either being classified as blanket bog, wet-modified bog or wet heath (**Figure 3**). Class 1 peatland coverage is more patchily distributed in the southern half of the corridor. Class 2 peatland coverage is concentrated in the south-western, south-eastern and central eastern areas as shown on **Figure 3**.
- 6.4.7 Habitat survey information from the wind farm developments all mention that the peatland is degraded to some extent within the various survey areas, and this is also apparent from aerial imagery, which indicates that many areas of Class 1 peatland may fall within the Class 2 category and that opportunities for restoration exist.
- 6.4.8 Protected species such as otter, pine marten, badger, bat species, mountain hare, water vole, common lizard, adder, slow worm, common frog, Atlantic salmon, brown trout, lamprey European eel and freshwater pearl mussel are either known, or likely, to be present within the Proposed Route based on the presence of suitable habitat or being a qualifying feature of a nearby designated site.
- 6.4.9 The habitat throughout the area will support a range of breeding bird species. To the west of the Proposed Route lies Loch Knockie and nearby Lochans SPA, as shown on **Figure 3**. This SPA is designated for supporting populations of Slavonian Grebe (*Podiceps auratus*). These lochans also support breeding divers (Red-throated and Black-throated), as well as breeding Common Scoter (*Melanitta nigra*). Schedule 1 bird species such as Greenshank are also present.
- 6.4.10 The Proposed Route falls within the foraging ranges for potentially up to three pairs of Golden Eagle (*Aquila chrysaetos*). Other Schedule 1 bird species present include White-tailed Eagle (*Haliaeetus albicilla*), Red Kite (*Milvus milvus*), Osprey (*Pandion haliaetus*), Merlin (*Falco columbarius*) and Peregrine (*Falco peregrinus*). Important wader species which nest within the Proposed Route include Golden Plover (*Pluvialis apricaria*), Dunlin (*Calidris alpina*) and Greenshank (*Tringa nebularia*). Red Grouse (*Lagopus lagopus*) are present in large numbers, with the area managed for this species. Smaller numbers of Ptarmigan (*Lagopus muta*) are present during the winter months on the higher tops. Breeding waterfowl consist of Teal (*Anas crecca*), with wintering waterfowl including migrating geese species and Whooper Swan (*Cygnus cygnus*) utilising the lochans but within and outwith the study area. A host of more common species, such as Meadow Pipit (*Anthus pratensis*) and Skylark (*Alauda arvensis*) are also present in large numbers.
- 6.4.11 For the purposes of determining the biodiversity, the assessment was based upon collation and analysis of data from publicly available datasets provided by NatureScot. European Nature Information System (EUNIS) high level classifications were generated from the online HabMoS Scotland Habitat and Land Cover Map 2020 dataset and translated to Phase 1 habitat types.<sup>28</sup>
- 6.4.12 The Biodiversity Units (BU) were calculated using SSEN Transmission's Site Optioneering biodiversity toolkit V1, which is based on the DEFRA metric v2. Irreplaceable habitats, including blanket bog, are not generally included in the BNG assessment, as they are not adequately measured by the metric; however, Defra metric v3.1 guidance advises that the data can be entered into the metric to give an indication of the biodiversity value of the habitats present on a site (the baseline). As this assessment was carried out at the alignment options

<sup>28</sup> JNCC (2010) Handbook for Phase 1 Habitat Survey. A technique for environmental audit.

stage, with a purpose to aid decision making in selecting options that have the least environmental impact, blanket bog areas have been included.

## 6.5 Water and Soils Environment

- 6.5.1 There are numerous watercourses and lochs within the Proposed Route, including tributaries of the River Tarff, River Fechlin and River Spey to the north, west and south of the study area respectively, as shown on **Figure 4**. The River Spey is an important fishery and is also designated as a SSSI and SPA for Atlantic salmon, freshwater pearl mussel, otters, and sea lamprey. SEPA floodplain mapping shows floodplains associated with the larger watercourses, although flood extents are generally confined to the watercourse channels. A wider flood extent is noted immediately east of Glendoe reservoir within the western boundary of the Proposed Route.
- 6.5.2 Review of The Highland Council private water supplies (PWS) dataset indicates that one PWS is located within the Proposed Route. This PWS is recorded as a groundwater borehole at Stronelairg Wind Farm. SEPA has records of several CAR licences within the study area, generally associated with Stronelairg Wind Farm and substation to the north and Melgarve substation to the south-east.
- 6.5.3 Superficial deposits within the study area mostly comprise of Glacial Till and peat. Alluvium is recorded adjacent to larger watercourses and no superficial deposits are recorded on the hill tops. Much of the study area, especially within the northern extent, is classified by NatureScot as Class 1 or Class 2 peatland. The distribution and depth of peat has been confirmed by a programme of peat depth probing undertaken in August 2022.
- 6.5.4 The bedrock geology is characterised by psammites and semipelites to the west and south and grandiorite with rafts of the adjacent psammites to the north and east. With the exception of peat, neither the superficial or solid geology are rare, and neither are considered to pose a development constraint. Measures will be required to safeguard deposits of peat.

## 6.6 Cultural Heritage

- 6.6.1 Baseline information on known cultural heritage assets recorded within the vicinity of the Proposed Route was obtained from datasets curated by Historic Environment Scotland and the Highland Historic Environment Record (HER) and from the results of survey work carried out in advance of the Beauly – Denny OHL replacement in 2004 – 2005 and the Stronelairg Wind Farm UGC connection in 2014.
- 6.6.2 The upper reaches of the Spey provided little opportunity for cultivation and there is no evidence for year-round settlement west of Garva Mor and Garva Beg facing each other across the Spey with arable ground west to the Garva Bridge. However, the extensive uplands provided important seasonal grazing for the townships of the Upper Spey. The successful system of transhumance depended on the careful utilisation of near, mid and remote shielings, these last being many miles from the home township.
- 6.6.3 The Corrieyairack Pass, which lies outside of and to the south-west of the Proposed Route, provided an important drove route for cattle coming from the Western Isles and was in use long before General Wade built the military road through it in 1731. With the introduction of commercial sheep farming, fanks were built at Melgarve and Garvabeg, with stells west of Melgarve, at Creag Bheag and on the Allt a' Gamhna. A shepherd's cottage was built at Melgarve, later joined by a gamekeeper's house as the emphasis of the estate's activities shifted from sheep to sport.

### *Designated Cultural Heritage*

- 6.6.4 Designation is the legal recognition of some of Scotland's most important historic sites, buildings, and places. It ensures that these assets are protected by law through the planning system and other regulatory processes. Designation includes Scheduled Monuments (SM) and Listed Buildings. The level of protection and how a site or place is managed can vary, depending on the type of designation.

6.6.5 Adjacent to the Proposed Route, is one SM covered by two schedulings as well as three listed buildings. These are as follows:

- Corrieyairack Pass Military Road SM 6129 Melgarve to Allt Ruadh (becoming Corrieyairack Pass Military Road SM 6128 Allt Ruadh to watershed further west);
- Corrieyairack Pass, Drummin Bridge Over Caochan Riabhach Burn, Melgarve LB6895 Category 'B';
- Melgarve, Corrieyairack Pass, Bridge over Allt Feith a Mhoraire LB12373 Category 'B'; and
- Garvamore, Garva Bridge over River Spey (St George's Bridge) LB6900 Category 'A'.

#### *Cultural Heritage Assets*

6.6.6 In addition to these designated assets, the Highland HER contains details a small number of non-designated assets of archaeological and cultural heritage interest demonstrating the sparse land use in the prehistoric and historic periods. None of these lie within the Proposed Route. One further site was located during fieldwork: a fence line probably dating to the late 19th century and marking the boundary between estates. This linear feature, of Local significance and low sensitivity, is crossed by all of the proposed route alignments.

### **6.7 People**

#### *Proximity to Dwellings*

6.7.1 Within the Proposed Route itself, there are no dwellings. Key settlement centres within the wider area are located within valleys including Fort Augustus, set at the end of Loch Ness in the Great Glen, approximately 11 km to the north-west from the Proposed Route, and Newtonmore in the upper Strathspey, which is approximately 14 km to the east. Smaller settlements within the wider area comprise Laggan in Strath Mashie, and Invergarry and Invermoriston at the meeting points of their respective glens with the Great Glen. Strath Errick to the north of the Proposed Route is a broader, more elevated and undulating valley with scattered settlement, focussed on Whitebridge and Foyers. Further properties are scattered throughout these straths and glens and a few isolated lodge properties set deeper into the hills.

### **6.8 Landscape Character and Visual Amenity**

6.8.1 Landscape character within the Proposed Route and surrounding area<sup>29</sup> is characterised by a broad and expansive upland plateau of sweeping moorland, featuring open, loosely defined, scooped valleys and rounded hills with no clear landform focal points or summits. A more distant backdrop of mountains is seen from higher ground within the wider setting to the south, east and west. This upland plateau is currently characterised by the turbines of the Stronelairg Wind Farm and this characterisation would be expanded over a wider area throughout the northern and central parts of the Proposed Route if the proposed Dell and Cloiche Wind Farms were also constructed. In the southern parts of the Proposed Route, a ridgeline of small, steep rounded hills, defined by narrow, steep-sided glens, separates the upland plateau from the wide valley of the upper River Spey. This valley is characterised by rough grassland and small squared coniferous forest plantations with a wide, sinuous river flowing through the base fed by smaller streams which rush down the narrow side glens. Existing electricity transmission infrastructure is present comprising the existing Melgarve substation and the Beaully – Denny 400 kV OHL which is routed along the length of the valley. Various tracks and a narrow road are also present leading through the valley and into the adjacent hills. Despite the presence of these features, there is a sense of remoteness within the valley with few buildings present and a long journey up a single-track road to reach it. This sense increases when moving further to the west and south-west beyond the study area as the roads and tracks deteriorate in structure and the more remote mountainous landscape becomes more influential.

#### *Designations*

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<sup>29</sup> In discussing landscape character (and visual amenity), it is important to consider the wider context as opposed to only the localised areas within the Proposed Route itself, since the experience of the landscape character is influenced by features in the surrounding area.

6.8.2 No designated or protected landscapes are present within the Proposed Route. However, the following areas lie in the surrounding area, as shown in **Figure 6**:

- Cairngorm National Park (CNP);
- Wild Land Area (WLA) 19: Braeroy - Glenshirra - Creag Meagaidh; and
- WLA 20: Monadhliath.

6.8.3 The CNP lies to the east of the Proposed Route. The CNP extends to the east covering over 186,000 ha of remote mountains and glens and wide straths accommodating small settlements and transport routes. A National Park is a national, statutory designation allocated to landscapes of substantially high quality in which the primary objective is the conservation and enhancement of natural and cultural heritage. Selected Special Landscape Qualities of the CNP<sup>30</sup> of potential relevance to the Proposed Development are listed in **Table 5.1**.

6.8.4 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 areas are given protection within the Planning System through Scottish Planning Policy (SPP). There are two WLAs within close proximity to the Proposed Route: WLA 20: Monadhliath lies within 500 m to the east whilst WLA 19: Braeroy – Glenshirra – Creag Meagaidh lies approximately 1 km to the south.

#### *Landscape Character Types (LCTs)*

6.8.5 The Landscape Character Assessment of Scotland, undertaken by NatureScot<sup>31</sup> identifies two Landscape Character Types within the Proposed Route, as illustrated on **Figure 6**: the northern plateau area and ridgeline of rounded hills falls within the Rolling Uplands – Inverness LCT and the glen of the upper River Spey falls within the Upland Glen – Inverness LCT.

#### *Potential Visual Receptors*

6.8.6 Visual receptors within and around the Proposed Route comprise individuals obtaining views from building locations, routes and other popular and promoted outdoor viewing locations.

6.8.7 The Proposed Route itself is not populated. The nearest population is a small group of cottages at Garvabeg to the south-east. In addition, two recreational mountain bothies are present in Glen Spey to the south-west of the Proposed Route at Melgarve and Shesgnan.

6.8.8 There are a number of recorded and publicised recreational routes passing through and close to the Proposed Route with potential for views to be obtained of any new development. These include: Scottish Hill Tracks<sup>32</sup> 236 (Laggan to Fort Augustus by the Corrieyairack Pass) and 237 (Laggan to Roybridge or Glenfintaig Lodge (Spean Bridge)), both passing along the glen just to the south of the Proposed Route. In addition, the main spine road of the Stronelaig Wind Farm is promoted by the South Loch Ness Access Group as part of the Monadhliath Trail between Fort Augustus and Whitebridge. These routes are largely located within the glens around the Proposed Route with views directed along the glens by the surrounding hills. The Monadhliath Trail also passes across the plateau, with more elevated views but with existing wind turbines often forming a visual focus.

6.8.9 Other popular viewing locations in the area include the summits Meall na h-Aishre (Corbett) and (Geal Charn (Munro). These summits are all typically accessed from the River Spey valley to the south of the Proposed Route. A small public car park at Garva Bridge, just to the south-east of the Proposed Route, also forms a popular viewing location as it marks the end of the public road and is sited on the boundary of the CNP.

<sup>30</sup> Scottish Natural Heritage (2010). Commissioned Report No. 375 - The Special Landscape Qualities of the Cairngorms National Park.

<sup>31</sup> Scottish Natural Heritage. (2019). Scottish Landscape Character Types Map and Descriptions [online] Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

<sup>32</sup> Scottish Rights of Way and Access Society (2012). Scottish Hill Tracks, 5th Edition. Scottish Mountaineering Club

6.8.10 Recreation is discussed further in Section 6.9 below.

## 6.9 Land Use and Recreation

### *Forestry*

6.9.1 Forestry is not a common land use within the Proposed Route. **Figure 7** shows the distribution of the few forest areas, all of which are to the south, close to Melgarve substation. Some small areas of Native Woodland are identifiable in these southern areas.

6.9.2 Native Woodland is defined as woodlands where the canopy cover is composed mainly of native species (i.e. over 50 %). Native woodland is identified through the Native Woodland Survey of Scotland (NWSS): a survey of all native woodlands, nearly native woodlands and non-native Plantations on Ancient Woodland Sites (PAWS) in Scotland. This spatial data shows the type, extent and attributes of these woodland areas.

6.9.3 In Scotland, Ancient Woodland is defined as land that is currently wooded and has been continually wooded since at least 1750. There are no areas of Ancient Woodland identified in the study area.

### *Agriculture*

6.9.4 Areas of agricultural land are classified by The Macaulay System of Land Capability for Agriculture.<sup>33</sup> Based on this data the majority of the land within the Proposed Route is Class 6.3, land of very limited agricultural value. To the southern edge of the Proposed Routes, in the vicinity of Melgarve substation, there is a section of Class 5.3, land capable of use as improved grassland. Agricultural land classifications are displayed on **Figure 7**.

### *Recreation*

6.9.5 The Proposed Route comprises a vast area of upland moorland which is managed for sporting activities (mainly grouse shooting and deer stalking), as well as some trout fishing. The Proposed Route area is also popular for activities such as walking and cycling.

6.9.6 A long-established long-distance hill track extends from Killin through Glen Markie, and the recently established Monadhliath Trail which extends across the area following the Glendoe Hydro Scheme access track, through both Glendoe and Garrogie Estates, to create a long circular route, popular with walkers and cyclists (see **Figure 9**).

6.9.7 Scottish Hill track 236 travels from within the Cairngorms National Park westwards to Fort Augustus and runs near to the south boundary of the Proposed Route.

6.9.8 In terms of hill walking, there are several Munros in the surrounding area, however, none are within the Proposed Route. One Corbett (a mountain over 2,500 feet, but under 3,000 feet) called Meall na h'Aisre falls within the Proposed Route. The Corbett Gairbeinn, lies approximately 4 km to the west of the Proposed Route.

## 6.10 Planning

### *National Policy*

6.10.1 Scotland's third National Planning Framework (NPF3) was published by the Scottish Government on 23<sup>rd</sup> June 2014. NPF3 is a long-term strategy for Scotland and is the spatial expression of the Government's Economic Strategy and plans for development and investment in infrastructure.

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<sup>33</sup> The James Hutton Institute. (2020). Land Capability for Agriculture in Scotland. [online] Available at: <https://www.hutton.ac.uk/learning/exploringscotland/land-capability-agriculture-scotland> [Accessed 11 September 2020].

- 6.10.2 Further to this, a Draft National Planning Framework 4 (NPF4) was published for consultation on 10 November 2021, seeking views and comments on a wide range of topics, including National Developments, National Spatial Strategy and national planning policies. NPF4 will be the Scottish Government's new long-term spatial plan for Scotland.
- 6.10.3 A Revised Draft NPF4 was laid in the Scottish Parliament on 8 November 2022 and is required to be approved by the Scottish Parliament, then adopted and published by Scottish Ministers.
- 6.10.4 Scottish Planning Policy (SPP) was also published on 23<sup>rd</sup> June 2014. The SPP is a statement of Scottish Government policy on how nationally important land use planning matters should be addressed.

*Regional and Local Policy*

- 6.10.5 The Scottish Development Plan system is comprised of Strategic Development Plans (SDPs) and Local Development Plans (LDPs). SDPs cover the four largest city regions and provide strategic policy direction on the management of land use and new development. LDPs cover all local authority areas and provide detailed and site-specific planning policy for an area, in accordance with the SDP where applicable.
- 6.10.6 The current Development Plan for the area comprises the Highland-wide Local Development Plan (HwLDP) which was adopted in April 2012, the Inner Moray Firth Local Development Plan, adopted in July 2015, and the West Highland and Islands Local Development Plan, adopted in September 2019.
- 6.10.7 The HwLDP sets out both the broad strategic themes in its vision statement, as well as local planning matters. It updates / supersedes the "general policies" of the existing adopted Local Plans. In order to retain aspects of the local plans that had not been superseded, such as site allocations, settlement development areas and site-specific policies, a Parliamentary Order was laid before Scottish Parliament on 16<sup>th</sup> March 2012 to enable these elements to remain in force.
- 6.10.8 The HwLDP notes that "additional electricity transmission and distribution infrastructure will need to be developed in Highland in order to realise the region's potential contribution to renewable electricity generation and serve local needs" (pg. 121). Policy 69 of the HwLDP details Highland Council's policy on Electrical Transmission Infrastructure and states that the Council will support projects which do not have an unacceptable significant impact on the environment when considering their strategic significance. It also notes that in sensitive locations, mitigation should be considered as part of the preparation of proposals. The HwLDP contains policies regarding the protection of the natural and cultural heritage, residential amenity, flooding and other issues which are relevant for this project.
- 6.10.9 The Emerging Highland-wide Local Development Plan (EHwLDP) Main Issues Report was consulted upon in September 2015; however, progress was halted in summer 2016 to allow the emerging area Local Plans to progress. In December 2017 the Scottish Government published a Planning Bill outlining potential changes to the Scottish planning system. This includes possible changes to the content of Local Development Plans and how they are prepared, and a broadening of the issues covered by national policy, namely SPP. As such, Highland Council have postponed review of the HwLDP until the implications of the Planning Bill are more clearly understood.
- 6.10.10 The Inner Moray Firth Local Development Plan sets out a guide for development of the Inner Moray Firth area over a 20-year period from 2015 and includes a plan for Fort Augustus. For this settlement, the plan allocates areas for housing, mixed use, community and business to best capitalise on trade passing along its trunk road, canal and long-distance trail corridors. Developments within Fort Augustus must take account of these allocations.
- 6.10.11 The West Highland and Islands Local Development Plan (WestPlan) focuses on where development should and should not occur in the West Highland and Islands over a 20-year period from 2019 and covers part of the

area within the study area. The nearest settlement covered by the plan is Invergarry, situated approximately 16 km west of the study area.

#### *Planning Proposals*

6.10.12 The identification of planning proposals has been limited to those within or adjacent to the alignment options under consideration, as applications outwith the alignment options are not likely to be affected by a new OHL or UGC.

#### Current Applications

6.10.13 There are very few current applications for planning permission identified within or adjacent to the alignment options.

6.10.14 The two proposed wind farm developments that are related to this Cluster project are the largest-scale current applications within or adjacent to the alignment options. These are the proposed Cloiche Wind Farm and the proposed Dell Wind Farm.

#### Consented Development

6.10.15 No recent consents have been identified within or adjacent to the alignment options.



## 7. COMPARATIVE APPRAISAL

7.1.1 This section provides a summary of the potential environmental and technical effects identified for each alignment option following the topic areas shown in **Table 3.1**. Reference should also be made to **Figures 2 to 8** which illustrate potential environmental baseline constraints identified under each topic.

### 7.2 Environmental Topic Areas

Natural Heritage

#### Designations

7.2.1 Most of the Section 1A and Section 1B alignment options would pass through the River Tarff water catchment which is designated as a Drinking Water Protected Area (DWPA). As Alignment Option S1A-OHL- 1 and Alignment Option S1A-OHL- 2 commence at **Junction A**, they would not be within the DWPA. All of the other Section 1A and Section 1B alignment options would pass through the DWPA for similar distances. However, the DWPA would not be considered a key constraint for any of the alignment options as they would all be in the catchment for the Glen Doe reservoir and not in direct connection to a water supply abstraction. The presence of the reservoir would also help to mitigate potential effects.

7.2.2 There are no other environmentally statutory designated sites within any of the alignment options. All Section 2 and Section 3 alignment options would cross watercourses that are hydrologically connected to the River Spey SAC and SSSI.

7.2.3 UGC options have greater potential to affect watercourses through pollution, silt or hydrological changes than OHL options which can span these habitats and watercourses. Minimising the number of watercourse crossings, and the adoption of mitigation measures, would minimise the potential effects downstream on the SAC and SSSI.

7.2.4 There are several other sites designated for their natural heritage within 5 km of the alignment options, as discussed in the baseline, however no connectivity pathways have been identified.

7.2.5 Therefore, there is not a preferred alignment option in relation to natural heritage designations as a constraint in any of the sections.

#### Protected Species

7.2.6 As described in the baseline, there is high potential for presence of water vole and otter along watercourses throughout the Proposed Route. Suitable habitat is also present for reptiles (common lizard, adder and slow worm), mountain hare and deer. At lower elevations, there is a possibility of badger, pine marten and bat roosts to be present. Brown trout are likely to be present in watercourses across the site and European eel may also be present in low numbers. Additionally, Atlantic salmon, lamprey and Fresh Water Pearl Mussels (FWPM) may be present in watercourses in the south of the site which are hydrologically connected to the River Spey via the Allt Coire Iain Ogg and Allt Gilbe (watercourses within the proposed Cloiche Wind Farm and Stronelaing Wind Farm sites are known to be impassable to migratory species, and within the site of the proposed Dell Wind Farm, there are not considered to be any suitable habitats for migratory fish due to the gradient and shallow channel depth of watercourses).

7.2.7 Direct effects on these protected species could include loss of life or injury, loss of key habitat, displacement from key habitat, barrier effects preventing movement to/from key habitats, and general disturbance. Indirect effects could include loss/changes of/to food resources, population fragmentation, degradation of key habitat e.g. as a result of pollution.

7.2.8 In terms of differences between the alignment options and the effects on protected species, those alignment options that make use of existing infrastructure/disturbed habitat are less likely to affect species. All alignment options interact with watercourses where otter, water vole and fish species may be present. Minimising the number of watercourse crossings will minimise the potential effects on the species. OHL alignment options would allow infrastructure to span watercourses and adjacent suitable habitat. Therefore, there could be a preference for utilising OHL options where possible.

7.2.9 In general, alignment options that minimise the loss and disturbance to habitats (and in particular riparian habitats) are also likely to minimise the effects on the species using them, and therefore the comparison of alignment options discussed in the Habitats section below is relevant to minimising impacts on protected species.

#### Habitats

7.2.1 All alignment options include an unavoidable impact on peatland habitats (including Class 1 priority peatland habitat), particularly blanket bog, given its extensive coverage throughout the site, although degradation of the peatland is evident from aerial imagery and has been noted in recent MacArthur Green field survey data.

7.2.2 All alignment options predominantly affect blanket bog habitat. Alignment options from **Junction B** southwards have some discrete areas of temperate shrub heathlands. Alignment options north of **Junction B** are primarily > 600 m elevation so there is potential for encountering sensitive Alpine and Boreal Heath Annex 1 habitat.

7.2.3 OHL alignment options would result in less ground disturbance, fewer drainage impacts and allow infrastructure to 'span' sensitive sections of peatland, watercourses and other sensitive habitat, this would not be possible with UGCs.

7.2.4 Where possible, infrastructure should overlap with existing infrastructure and previously disturbed ground to minimise impacts.

#### *Section 1A*

7.2.5 Between Dell on-site substation and **Junction A**, there is one UGC-OHL alignment option. S1A-D-1 follows the existing Stronelaig Wind Farm spine road and thereby minimises habitat disturbance.

7.2.6 Between Cloiche on-site substation and **Junction A**, the UGC-OHL alignment option, S1A-C-1, takes a direct route across blanket bog habitat.

7.2.7 From **Junction A** to **Junction B**, S1A-OHL-1 takes a direct route across blanket bog. S1A-OHL-2 takes a longer route, and therefore would result in a greater amount of habitat loss required for tower construction. In addition, S1A-OHL-2 option falls within a larger amount of Class 1 peatland habitat than S1A-OHL-1.

#### *Section 1B*

7.2.8 Alignment options S1B-C-1, S1B-C-2, S1B-C-3, S1B-C-4, and S1B-C-5 travel between the proposed Cloiche on-site substation and **Junction B**. S1B-C-2 follows the existing Stronelaig Wind Farm spine road and then the Stronelaig UGC route and is therefore likely to be less damaging in terms of habitat, when compared to alignment options S1B-C-1, S1B-C-3, S1B-C-4 and S1B-C-5 all of which cross new habitat, the majority of which is blanket bog. However, S1B-C-2 is the longest option of the five and therefore has the most land take of habitat (although this may change when factoring in new access tracks that would be required for the other options). Between options S1B-C-1, S1B-C-3, S1B-C-4 and S1B-C-5; S1B-C-3, S1B-C-4 and S1B-C-5 avoid more class 1 peatland areas, although S1B-C-3 does follow the existing Stronelaig UGC for some of the stretch and therefore makes use of existing disturbed ground and access track.

- 7.2.9 Alignment options S1B-D-1, S1B-D-2 and S1B-D-3 travel between Dell on-site substation and **Junction B**. Of these, S1B-D-2 most closely follows the Stronelaig Wind Farm spine road and the existing UGC, so although it is the longest option, it is likely to be the least damaging to habitats within this section. S1B-D-1 and S1B-D-3 follow existing infrastructure within the Stronelaig Wind Farm site and then cross undisturbed upland habitat (blanket bog) to **Junction B**. S1B-D-3 follows the Stronelaig UGC for a short section but is longer overall than S1B-D-1. All alignment options pass over tributaries of Allt Odhar (SEPA ID 20277) which was assessed as having high water quality, good overall quality, and high access for fish migration in 2014<sup>34</sup>.
- 7.2.10 Alignment Option S1B-D-6 travels between Dell on-site substation and Cloiche on-site substation. It minimises habitat disturbance by closely following the existing access tracks.

#### Section 2

- 7.2.11 Between **Junction B** and **Junction C**, there is one UGC option, S2-UGC-3. S2-UGC-3 would pass over the Allt Gilbe (a tributary to the River Spey SAC and SSSI) and fall within blanket bog and temperate shrub heath, including small areas of Class 1 and Class 2 peatland. S2-UGC-3 minimises habitat disturbance by closely following the Stronelaig Wind Farm UGC access track.
- 7.2.12 Between **Junction B** and **Junction C**, the two OHL alignment options (S2-OHL-1 and S2-OHL-2) only vary slightly at their northern extent and would likely not vary significantly in their potential effects on habitats. Both options fall within blanket bog and temperate shrub heath within this section, including small areas of Class 1 and Class 2 peatland. Both alignment options would also pass over the Allt Gilbe (a tributary to the River Spey SAC and SSSI).

#### Section 3

- 7.2.13 Between **Junction C** and Melgarve substation, of the two OHL-UGC alignment options, S3-OHL-UGC-2 follows the existing Stronelaig UGC, while option S3-OHL-UGC-1 takes a slightly shorter route across a slope in largely undisturbed habitat. Both options fall within blanket bog habitat.
- 7.2.14 Between **Junction C** and Melgarve substation, the two UGC alignment options, S3-UGC-1 and S3-UGC-2 fall within an area mapped as blanket bog and pass through an area of Class 1 peatland.

#### Biodiversity

- 7.2.15 A BNG assessment was carried out to quantify the potential biodiversity baseline, based upon the value of habitats for each alignment option and to allow for a high-level comparison between the options. The baseline biodiversity assessment area included a 100m buffer for each alignment option (200m corridor). The amount of Biodiversity Units (BU) present within this corridor for each alignment option were calculated using SSEN Transmission's Site Optioneering Biodiversity Toolkit V1, which is based upon version 2.0 of the Department for Environment, Food and Rural Affairs (DEFRA) BNG metric<sup>35</sup>. The assessment was based upon collation and analysis of data from publicly available datasets provided by NatureScot. The value of BUs per area (BU/ha) were also calculated which can be useful in determining the general habitat quality within each alignment option, and for comparing the quality of habitat between alignment options of different lengths.
- 7.2.16 As the assessment calculated the biodiversity value of the habitats present within a 100m buffer of each alignment option. it did not include assessment of potential impacts and therefore does not differentiate between the type of infrastructure (i.e. whether it is OHL or UGC). The potential impacts, such as habitat disturbance and loss, would be expected to differ between OHL and UGC options due to the construction methods. UGC would generally result in greater habitat loss, both direct and indirect, due to the land take

<sup>34</sup> <https://www.sepa.org.uk/data-visualisation/water-environment-hub/> [Accessed 01 Nov 2022]

<sup>35</sup> Natural England (2019) The Biodiversity Metric 2.0: auditing and accounting for biodiversity value. User Guide (Beta Version, July 2019).  
<http://publications.naturalengland.org.uk/file/5366205450027008>

required to excavate a continuous trench; where OHL can avoid impacts on habitats by spanning overhead. In addition, the assessment did not take into consideration the requirement for associated tracks, for which there would be less land take required where options fall closest to existing access infrastructure.

7.2.17 Keeping in mind that the lower BUs or lower BU/ha scores do not account for the type of infrastructure, options with a lower total indicate either that the option is shorter and therefore includes less habitat within the corridor or that the habitats in the vicinity of the option have a lower importance to biodiversity. These options may therefore be preferred to minimise impacts on the environment.

7.2.18 Blanket bog habitat is the most abundant habitat within all of the alignment options. Other habitats that are common to most alignment options, but have much less coverage include: dense scrub, acid grassland, improved grassland, montane heath, fen valley mire, rock exposure and waste (artificial) spoil, and built up areas. Section 1 generally has the highest BU/ha scores, reflecting the extensive blanket bog coverage and therefore the highest coverage of the most important/distinctive habitats. Section 2 also has relatively high BU/ha with blanket bog still predominant. In Section 3, the BU/ha scores drop, which is reflective of the greater areas of existing roads and improved grassland in this Section.

#### *Section 1*

7.2.19 Section 1A involves a combination of UGC with OHL between Cloiche and Dell substations and Junction B.<sup>36</sup> The assessment indicates that for Cloiche, the combination of S1A-C-1 with S1A-OHL-1 has the lowest total BU, but the combination of S1A-C-1 with S1A-OHL-2 has the lowest BU/ha. The assessment indicates that for Dell, the combination of S1A-D-1 plus S1-OHL-1 is the lowest total BU, and the combination of S1A-D-1 plus S1A-OHL-2 has the lowest BU/ha. However, the BU/ha scores are very close for all option combinations due to the similarity in habitats present and therefore there is no clear preference between options.

7.2.20 Section 1B comprises fully UGC options between Dell and Cloiche substations and Junction B. For Cloiche grid connection, S1B-C-4 has the lowest total BU, but option S1B-C-2 has the lowest BU/ha due to a larger area of lower value habitats, including the existing Stronelaig tracks and disturbed ground of the Stronelaig cable. For the Dell grid connection, option S1B-D-1 has the lowest total BU, but option S1B-D-2 has the lowest BU/ha, again due to the presence of lower value habitats. This demonstrates the benefit of utilising the existing tracks and disturbed ground; despite S1-B-C2 and S1-B-D2 having large total BU scores as the routes are longest, they have the lowest BU/ha for their sections due to the lower value of the habitat.

7.2.21 Although the Section 1A and Section 1B options cannot be directly compared due to the nature of calculations used<sup>36</sup> It should be noted that when types of infrastructure are accounted for there would likely be a preference for the combined UGC and OHL options in Section 1A.

#### *Sections 2 and 3*

7.2.22 For Section 2, S2-UGC-3 has both the lowest total BU and the lowest BU/ha. It most closely follows the existing Stronelaig cable and track and therefore has a lower BU/ha due to the presence of lower quality habitat in this disturbed ground. Once again it is important to note that this does not account for the potential benefits offered by an OHL option which could span over sensitive habitats.

7.2.23 For Section 3, options S3-OHL-UGC-2 and S3-UGC-2, which follow the same route, would have the lowest total BU and the lowest BU/ha, due to the presence of existing tracks for the Stronelaig cable. However, there is likely to be an overall preference for S3-OHL-UGC-2 as the OHL sections could span over sensitive habitats.

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<sup>36</sup> There is a limitation in the calculations for this, as the habitats are calculated from a 100m buffer of each alignment option; therefore, when combining alignment options, there would be an overlap in the areas at the end of each alignment buffer, so some habitats would have been included twice.

## Ornithology

### *Section 1A*

- 7.2.24 There would be a likely loss of at least one Golden Plover territory as a result of each of the Section 1A alignment options, and in some instances up to two and potentially three. However, suitable breeding habitat exists all around these territories so it is highly unlikely that these options will result in the permanent loss of these breeding pairs, displacement is more likely.
- 7.2.25 Cloiche on-site substation is located in the vicinity of a Dunlin territory (<100m) and will likely result in the loss of this territory. However, as with Golden Plover, suitable breeding habitat exists all around the area of Carn na Cloiche so it is highly unlikely that these options would result in the permanent loss of these breeding pairs, they are more likely to result in displacement.
- 7.2.26 For the OHL components within Section 1A (S1A-OHL-1 and S1A-OHL-2), Golden Eagle were regularly recorded in the area. However, the majority of flights were concentrated along the ridgelines to the east (around Meall na h-Aisre) and to the west (Min Choire). Commuting through the site was observed, with up to ten flights bisecting the Section 1A alignment options. However, the time spent at OHL collision risk height was small and unlikely to result in any significant collision risk. Of the two OHL options in Section 1A (S1A-OHL-1 and S1A-OHL-2), the preferred alignment option from an ornithological perspective is S1A-OHL-1 as this alignment option is further away from the ridgeline between Carn na Gourach and Meall na h-Aisre, where raptor species were regularly recorded.
- 7.2.27 Embedded mitigation such as bird flight deflectors and tower design, would also minimise any potential collision and electrocution risk.

### *Section 1B*

- 7.2.28 The majority of the alignment options within this Section 1B would result in the loss of one Golden Plover and one Dunlin territory. Alignment option S1B-C-4 and S1B-C-5 would only impact on one Dunlin territory. Alignment option S1B-D-6 terminates at Cloiche on site substation which would impact on one Dunlin territory. However, suitable breeding habitat exists all around these territories so it is highly unlikely that these options will result in the permanent loss of these breeding pairs, displacement is more likely.
- 7.2.29 Several raptor species have been recorded in Section 1B. These include; White-tailed Eagle, Golden Eagle and Hen Harrier. However, as all alignment options in Section 1B are UGC, there would be no collision risk. None of these species' nest in the Proposed Route survey area either.
- 7.2.30 The terminus for all the alignment options in Section 1B is **Junction B**. **Junction B** is located 1km from a known Merlin nest site, however this is outwith the recommended disturbance buffer of up to 500m. The topography of this area also means that there is no significant impact on this species.

### *Section 2*

- 7.2.31 All of the alignment options in this section are between 750m and 900m from the known Merlin nest site. This is outwith the recommended disturbance buffer of up to 500m. The topography of this area also means that no significant impact would be anticipated on this species.
- 7.2.32 For the OHL components within Section 2, Golden Eagle were regularly recorded. The majority of flights were concentrated along the ridgelines to the east (around Leathad Geothach) and to the west (Carn Dearg and Creag Mhor). However, the time spent at collision risk height through the proposed OHL alignment options would be small and it would be unlikely to result in any significant collision risk.

7.2.33 Embedded mitigation such as bird flight deflectors and tower design,, would also minimise any potential collision and electrocution risk.

7.2.34 Given the anticipated low impacts to ornithology, there is no real preferred alignment option within Section 2, although the UGC alignments would have less of a potential impact than OHL and are therefore preferred.

### *Section 3*

7.2.35 There are no ornithological constraints within Section 3.

7.2.36 Peregrine successfully bred at Creag Chathalain, 1.2km from Melgarve substation. This is outwith the recommended disturbance buffer of 500-750m.

7.2.37 Although there are no considered collision risks in this section, if an OHL option is selected, embedded mitigation such as bird flight deflectors and tower design, would be beneficial.

### Geology, Hydrology and Hydrogeology

7.2.38 Review of the geology, hydrology and hydrogeology confirms that all the alignment options are fairly similar, crossing virtually the same soils, geology and are located in comparable water catchments. With the exception of peat, neither the bedrock nor the superficial geology is rare or protected. Peat probing confirmed the presence of peat, which is shown on superficial geological mapping and on peatland classification mapping. Peat is absent on the highest ground such as on hilltops.

7.2.39 Watercourses within the alignment options are relatively small and their floodplains are typically close to the watercourse channels. Flooding would not, therefore present a development constraint for any of the alignment options. Most of the Section 1A and 1B alignment options form headwaters to the River Tarff Drinking Water Protected Areas (DWPA), and/or water dependant designated sites, in the case of the River Spey. Protection of water yields and quality, therefore, will be important considerations whichever alignment option is progressed.

7.2.40 There are no obvious preferred alignment options in terms of the geology, hydrology and hydrogeology. All alignment options are within the same or similar geological and hydrological setting. Depending which alignment options are chosen further peat depth probing is likely to be required to confirm peat depths and to allow micro-siting to avoid deeper areas of peat. This data will also be needed to complete a peat management plan and peat landslide hazard risk assessment which can be used to ensure peat deposits are safeguarded.

### Cultural Heritage

7.2.41 Sites of cultural heritage significance are displayed on **Figure 5**. All of the alignment options would be anticipated to have negligible direct and indirect impacts on cultural heritage assets.

### Cultural Heritage Designations

7.2.42 Of the two Scheduled monuments and three Listed Buildings (LB) that can be seen on **Figure 5**, none would be directly impacted by any of the alignment options. Intervening high ground would be anticipated to reduce visibility of the alignment options. This is with the possible exception of a small part of S2-OHL-1 and S2-OHL-2 in Section 2, immediately north of **Junction C**, which could have a degree of limited visibility from Garva Bridge LB. The bridge, as a designated asset, is considered to be sensitive to changes in its setting and considered sensitive to the visual impact of modern elements. However, this sensitivity is reduced by the functional nature of the structure as a feature of transport and communications, whose original setting was dictated purely by the practicalities of crossing the river. Visual appreciation of the bridge would not be likely to be impacted by the small degree of visibility of S2-OHL-1 or S2-OHL-2 at a distance of 1km.

### Cultural Heritage Assets

- 7.2.43 One cultural heritage asset, a linear feature representing an estate boundary, passes across the area between **Junction A** and **Junction B**. It would not be possible for the cultural heritage asset not to be crossed by the connection.
- 7.2.44 Within the Section 1A alignment options, S1A-OHL-1 would pass over the cultural heritage asset once, while S1A-OHL-2 would cross the asset at least twice and run over or closely by it for up to approximately 1 km. As the other two Section 1A alignment options terminate at **Junction A**, they would not cover the relevant area.
- 7.2.45 Within the Section 1B alignment options, all except S1B-D-6 would pass over the cultural heritage asset. S1B-D-6 terminates at Cloiche Wind Farm on-site substation so would not cover the relevant area. Of the Section 1B alignment options, S1B-C-5 would interact with the cultural heritage asset the most, crossing it at least twice and running over or closely by it for up to approximately 1 km.
- 7.2.46 With all alignment options though, only a small section of this long feature would be affected. This asset has been defined as being of local significance and low sensitivity and while no alignment option would be preferable; the potential impact would be negligible. S1A-OHL-2 and S1B-C-5 would be the least preferable alignment options in relation to cultural heritage assets though, due to them crossing the asset at least twice and running over or closely by it for up to approximately 1 km.

### People

#### Proximity to Dwellings

- 7.2.47 Proximity to dwellings is not an applicable constraint topic for a purely UGC alignment option. Therefore, only options that would be OHL or would have the potential to include some OHL in combination with UGC have been assessed.
- 7.2.48 There are no dwellings present within the Proposed Route, therefore it is anticipated that a 100 m separation buffer applied to all properties would be observed. There is therefore no preference between any of the alignment options in terms of proximity to dwellings.

#### *Landscape and Visual*

### Designations

- 7.2.49 None of the alignments would pass through any protected or designated landscapes. The Cairngorms National Park (CNP) is located approximately 2.3 km to the south-east from the nearest alignment at its closest point. WLA19 and WLA20 are located approximately 1.2 km to the south-west and 4.9 km to the north-east from the nearest alignments at the closest points respectively.
- 7.2.50 Although there may be some intervisibility from these landscape receptors, any indirect effects would be limited given the distances in question, presence of the existing and proposed wind turbines and the existing Beaulieu-Denny 400 kV OHL. The alignments would be associated with broadly similar indirect effects but with the following differences:
- The alignment options that would allow end to end construction using UGC only (all S1B alignment options, S2-UGC-3, S3-UGC-1 and S3-UGC-2) would result in temporary effects during construction rather than longer term operational effects.
  - The combined OHL and UGC options would result in longer-term but indirect effects within the wider landscape. The steel lattice towers would be experienced in context of existing vertical structures, including wind turbines and existing steel lattice towers. This would somewhat reduce sensitivity to this type of development within Section 1A and Section 3 but could result in cumulative effects including perceived overlapping of structures.

- The OHL options through Section 2, in particular (S2-OHL-1 and S2-OHL-2) would create a perceived connection between the turbines on the plateau and grid infrastructure in the glen.
- Within Section 3, options S3-UGC-2 and S3-OHL-UGC-2 have the potential to disrupt the agreed landscape mitigation to the south of Melgarve substation. It is assumed that this would be reinstated upon completion, but any work in the area will need to be cognisant of this and seek to minimise disruption as much as possible.

7.2.51 Overall a combination of the one of UGC options within Section 1B, Section 2 and S3-UGC-1 would be the preference in terms of potential indirect effects on protected and designated landscapes.

#### Landscape Character

7.2.52 All of the alignment options run through LCT 221: Rolling Uplands-Inverness. The Section 3 alignments also run through LCT 231: Upland Glens-Inverness.

7.2.53 Within the study area LCT221: Rolling Uplands is somewhat valued for recreational opportunities although it is strongly influenced by wind turbines, which would increase with the addition of either Dell Wind Farm or Cloiche Wind Farm. There is also potential for the influence of grid connection infrastructure to increase due to the proximity of the Beauly-Denny 400 kV OHL and Melgarve substation in the adjacent LCT.

7.2.54 LCT 231: Upland Glens-Inverness is popular for recreational opportunities and valued as an approach to the CNP. It's remote qualities, are susceptible to change of the type proposed, although existing electrical transmission infrastructure reduces this locally. Although direct effects would be localised, the presence of other grid infrastructure increases the potential for cumulative effects. Indirect effects would likely be experienced from hill tops in the surrounding area and lower level areas within adjacent LCTs.

7.2.55 Broadly speaking there is potential for these two LCTs to accommodate an OHL alignment assuming that appropriate pole locations are selected given the presence of other vertical features.

7.2.56 The UGC alignment options would help to reduce potential effects associated with an OHL overlapping with the turbines on the plateau and reduce potential cumulative effects with the existing grid infrastructure of the Beauly-Denny 400 kV OHL and Melgarve substation within the glen. As any effects would be temporary, limited to the construction period, they would also reduce the potential for an increased influence of grid infrastructure within the area.

7.2.57 The OHL alignment options within each of the sections would be associated with broadly similar landscape effects. However, S3-OHL-UGC-2 would likely disrupt landscape mitigation around Melgarve substation, although it is assumed that this would be reinstated upon completion of the works. S1A-OHL-1 would also be somewhat preferable to S1A-OHL-2 as it would more closely follow the natural descent of the landscape off of the plateau.

7.2.58 Overall a combination of one of the UGC options within Section 1B, S2-UGC-3 in Section 2 and S3-UGC-1 in Section 3 would be the preference in terms of potential effects on landscape character.

#### Visual

7.2.59 Visual effects from the UGC alignment options would be limited to temporary effects during construction as it is assumed that most disturbed areas would be reinstated. The UGC alignment options being considered would be associated with broadly similar visual effects through the different section, but with the following differences:

- On the plateau, the UGC alignments within Section 1A would transition to OHL making them less preferable when compared to those in Section 1B from and visual perspective.
- Within Section 1B, there is a slight preference for S1B-C-2 as it would more closely follow the existing access tracks rather than crossing previously undisturbed ground.



- Within Section 3, S3-UGC-1 is preferred over S3-UGC-2 to avoid disruption of Melgarve substation landscape mitigation which could be seen from the wider area.

- 7.2.60 Upon exiting the turbine wake zone, a number of OHL alignment options are also being considered. On the plateau alignment options S1A-OHL-1 and S1A-OHL-2 would be visible in the context of wind turbines of Stronelaig Wind Farm and Cloiche Wind Farm to the north and west from nearby hilltops including Meall na h' Aisre in particular. While relatively distant in views the alignments would be seen with the array of turbines, with potentially overlapping structures from Geal Charn and the Scottish Hill Track connecting Whitebridge and Laggan. The increased activity during the construction phase would be perceived as part of or as an extension to the construction of the adjacent wind turbines. There is also some potential for visual effects from lower ground as the alignments approach the edge of the plateau to the south-west of Meall na h'Aisre.
- 7.2.61 Alignment options S2-OHL-1 and S2-OHL-2 would be visible coming down off the plateau in the context of wind turbines of Stronelaig Wind Farm and Cloiche Wind Farm to the north and the Beaully-Denny 400 kV OHL to the south from nearby hilltops including Meall na h'Aisre in particular. While relatively distant in views the alignment would also likely be seen from Geal Charn and the recreational route leading to it. There is also potential for visual effects from receptors at lower elevations including users of the recreational routes along General Wade's Military Road as the alignment descends from the plateau creating a visual connection between the turbines and the existing grid infrastructure located within the glen.
- 7.2.62 The combined OHL and UGC alignment options within Section 3 (S3-OHL-UGC-1 and S3-OHL-UGC-2) would be seen in the context of the Beaully-Denny 400 kV OHL and Melgarve substation. Given that construction of these is complete, the increased activity during the construction phase would present a temporary but noticeable increase within the area. S3-OHL-UGC-2 in particular would result in disruption during the construction phase as it would require passing through the Melgarve substation landscape mitigation area. The OHL sections of these alignments have the potential to result in longer term visual effects from receptors at lower elevations including users of the recreational routes along General Wade's Military Road, particularly as they move away from Meall a' Ghiuhais. Although the UGC section would help to reduce some of the visual effects, the alignments would increase the influence of grid infrastructure located within the glen and may result in cumulative effects. While relatively distant in views, the OHL sections would also likely be seen from nearby hilltops including from within WLA19.
- 7.2.63 Overall a combination of S1B-C-2, S2-UGC-3 and S3-UGC-1 would be the preference in terms of potential effects on visual amenity.

#### *Land Use*

##### Agriculture

- 7.2.64 The agricultural land within the alignment options is identified as being of Class 5.3 or lower. As this is not a particularly sensitive or fertile category, any impacts on agriculture as a result of any of the alignment options is considered to be low. No grade 1, 2, 3 or 4 agricultural land is present in the vicinity of the alignment options. There is therefore no preference between any of the alignment options in terms of agriculture.

##### Forestry

- 7.2.65 There is limited forestry within the Proposed Route, and as such all of the alignment options would have minimal interaction with forestry. No areas of designated Ancient Woodland Inventory (AWI) are present within any of the alignment options.
- 7.2.66 Sherramore Forest, situated north-east of Melgarve substation, which includes pockets of native woodland would be avoided altogether by the alignment options in the western half of the Proposed Route. The native woodland west of Melgarve would also be avoided and only a patch of already felled woodland would be passed over by any of the alignment options.

7.2.67 There is therefore no preference between any of the alignment options in terms of forestry.

#### Recreation

7.2.68 There are few points of recreational interest within the Proposed Route. The following recreational assets fall within, or near to, the alignment options and may potentially be impacted:

- Meall na h-Aisre Corbett, situated to the northeast of **Junction B**, is of relevance to hill walking interests;
- Scottish Hill Track 236 which runs parallel to the southern boundary of the Proposed Route, near the Section 3 alignment options;
- the Monadhliath Trail running along the Stronelairg Wind Farm spine road; and
- sporting activities (shooting grouse and deer) occur throughout the estate land in the area.

7.2.69 Effects on these recreational assets from the UGC alignment options would be limited to temporary effects during construction as it is assumed that all disturbed areas would be reinstated. Effects on these recreational assets from the OHL alignment options would also be largely limited to disruption at the construction stage, with minimal adverse effects on recreational activities during operation.

7.2.70 There is therefore a slight preference for UGC alignment options over OHL alignment options, as no adverse effects on recreational activities during operation would exist for UGC alignment options, while minimal adverse effects on recreational activities during operation would exist for OHL alignment options.

#### *Planning Context*

7.2.71 Adherence to National, Regional and Local planning policy will in large part depend on avoiding or minimising potential constraints noted, particularly in relation to potential impacts on the natural environment given presence of designated sites and areas of landscape importance.

7.2.72 It is considered that opportunities exist to minimise potential impacts for all alignment options, through design, micro-siting of pole locations, or mitigation measures, and allow adherence with planning policy. As such, there is no clear preference for any option in planning policy terms.

7.2.73 At the current stage there do not appear to be any notable planning proposals within or adjacent to the Proposed Route that would present potential for constraint of any of the alignment options. Consequently, there is no clear preference for any option in relation to other planning proposals.

### **7.3 Engineering Topic Areas**

7.3.1 Given the similarities between the alignment options, many of the engineering constraints are comparable. As can be seen in Table 3.1, generally, the engineering topic areas across the two technology types (OHL and UGC) are the same, however, some that apply to OHL are not applicable to UGC and some that apply to UGC are not applicable to OHL. Where this is the case, it is explained in the commentary below. This approach is consistent with the Routeing Guidance referred to in section 3.1.1 above. The following section draws out where notable differences exist in constraints between alignment options, or otherwise identifies that options are similar and no preference has been identified. A RAG rating has been applied to each topic area to aid in differentiating a preference for each.

#### *Infrastructure Crossings*

7.3.2 Infrastructure creates constraints on OHLs often requiring additional clearance, enhanced reliability and protection provision to the infrastructure during construction and maintenance. Similar constraints apply to UGCs. Each crossing of infrastructure thus has the potential to constrain the alignments.

### Major Crossings

- 7.3.3 Major crossings for OHL assessment require specific solutions and can greatly constrain a design and include:
- other OHLs of 132kV and above;
  - railways;
  - rivers/loch 200m+;
  - navigable waterways;
  - motorways and other major roads;
  - major pipelines; and
  - other significant infrastructure.
- 7.3.4 Major Crossing for the UGCs are more widespread and include:
- crossings of any underground assets (cables, oil & gas pipelines or Hydro pipelines); and
  - crossings of bridges, rivers, canals, watercourses.
- 7.3.5 The differences between the criteria for Major Crossings for OHLs and UGCs are due to the requirement for UGCs to traverse these obstacles, whereas OHLs are able to span over them.
- 7.3.6 For OHL options, the only major crossing in the area is the existing Beaully-Denny 275kV/400kV overhead line. All of the connection options would need to cross the overhead line via short terminal underground cable connection.
- 7.3.7 For the UGC options, several watercourses have been identified along the alignment options which would need to be crossed. Depending on ground conditions, flow rates and environmental considerations various technical solutions would need to be considered for each of the crossing locations. These may include encasing the cable ducts in concrete through the watercourse or in case of deeper watercourses or rivers using HDD. The existing Stronelairg – Melgarve 132kV UGC also runs parallel with the Melgarve substation access track which is being considered as a route for the some of the alignment options into Melgarve substation including S3-UGC-1 and S3 OHL-UGC-1. Any of the alignment options from Dell on-site substation would likely also interact with the 33 kV cables associated with the existing Stronelairg Wind Farm.
- 7.3.8 Therefore, the RAG rating for all OHL options is Low (Green). In relation to the RAG rating for the UGC options in Section 1A, for S1A-D-1 is Intermediate (Amber), and for S1A-C-1, the RAG rating is Green (Low). The RAG ratings for the UGC options in Section 1B are High (Red) for S1B-C-3, S1B-D-2 and S1B-D-3, Intermediate (Amber) for S1B-C-1, S1B-C-2, S1B-C-4 and S1B-D-1, and Low (Green) for S1B-C-5 and S1B-D-6. The RAG rating for the UGC option S2-UGC-3 in Section 2 is Low (Green). The RAG rating for the UGC options in Section 3 are High (Red) for S3-UGC-1 and S3-OHL-UGC-1, and Low (Green) for S3-UGC-2 and S3-OHL-UGC-2.

### Road Crossings

- 7.3.9 Road crossings include all road crossing excluding those considered under major crossings. Private tracks and driveways may also be included where the need for access to be maintained is present or where relatively high traffic volumes are anticipated. Whilst the impact on OHL or UGC design is less for these crossings, mitigation measures are still required and collectively they can greatly constrain an alignment.
- 7.3.10 There are no road crossings in the area however some access tracks were installed for the construction of Melgarve substation, Stronelairg Wind Farm, and the Stronelairg – Melgarve 132kV UGC. As these roads are not accessible by the public they have not been classified as roads in this study, however the height of any overhead line would need to consider the height of maintenance vehicles and cranes. Any UGC would need to consider how to maintain access during the construction period.

7.3.11 Therefore, the RAG rating for all OHL and UGC options is Low (Green).

#### *Environmental Design*

7.3.12 The terrain, land features and atmosphere all have the potential to constrain the design of a connection. In particular the ease and safety of routeing, construction and maintenance can all be impacted. Furthermore, the environment can impose long term risk from pollution and flooding. Alignment options with multiple or significant environmental features have a large risk of constraint. Impacts on the environment from the alignment options are considered in **Section 6.2** above.

#### Elevation

7.3.13 High elevations increase wind and ice loading on the lines resulting in the need for shorter spans or stronger structures. This can constrain routeing options and increase cost. Additionally, access for construction and maintenance tends to be more difficult at altitude and the risk of severe weather is greater. For the UGCs, higher elevations present a greater risk for construction access and for maintenance teams checking the link boxes or any other site issues.

7.3.14 In accordance with the PR-NET-ENV-501, if >25% of an option above 200m AOD then the alignment option will be scored Red. Due the location / elevation of both wind farm on-site substations and the Melgarve substation (>372 m), all OHL and UGC alignment options will score High (Red).

#### Atmospheric Pollution

7.3.15 The atmospheric pollution has been checked based from the data gather from National Atmospheric Emission Inventory (NAEI: <https://naei.beis.gov.uk/emissionsapp/>). The NAEI provides information on the following pollutants that are deemed to affect the performance of overhead lines.

- Carbon dioxide;
- Nitrogen Dioxide;
- Nitrogen Oxide;
- Sulphur Dioxide; and
- Particulate matters (10um,2.5um, 1um & 0.1um).

7.3.16 Based upon the pollution maps, all the options present the same low level of pollution. Therefore, the RAG ratings for all alignment options are Low (Green).

#### Contaminated Land

7.3.17 Contaminated land poses a significant health risk to construction and maintenance operatives, and is potentially expensive to mitigate, dispose of or remediate. As such, the presence of contaminated land in an alignment option would be a significant constraint. For assessment purposes, the presence of unexploded ordnance, is also considered in this section as it has similar implications.

7.3.18 No known areas of contaminated land or evidence of a risk of contaminated land was identified in the assessment of any of the alignment options. Therefore, the RAG ratings given are Low (Green).

#### Flooding

7.3.19 Areas vulnerable to flooding pose a potential risk during construction, may prevent maintenance and can pose a physical risk to structures during flood events. As such, alignment options with large areas vulnerable to flooding would have a high risk of constraint.

7.3.20 Although there is the presence of many small rivers and the existing Glendoe reservoir, using the SEPA flood map, all the options are classified with the same RAG rating Low (Green).

### *Ground Conditions*

- 7.3.21 Ground topography and condition can directly impact the ease of routing, access, construction and maintenance. Options with large areas of difficult ground conditions are more likely to be significantly constrained.

### Terrain

- 7.3.22 Steep or mountainous slopes present a significant difficulty for routing, access, construction and maintenance. OHL or UGC alignment options with a large proportion of steep or mountainous slopes are more likely to be constrained and thus more difficult and costly to build and maintain.
- 7.3.23 For OHLs, the terrain has been assessed by reviewing the average gradient and maximum gradients of the terrain along the alignment options using Google Earth elevation profile. In Section 1A and Section 2, the alignment options have similar results. In Section 3, alignment option S3-OHL-UGC-1 would have a max slope of 11.8% comparing to option S3-OHL-UGC-2 with a gradient of 4.5%. All OHL alignment options however, are given an Intermediate (Amber) rating.
- 7.3.24 The topography on site consists largely of undulating areas with peaks surrounding lower lying plateaus. The topography generally trends steeply from north to South, as for Dell Wind Farm which sits at approximately 703m AOD with the topography sloping downwards to Stronelairg Wind Farm at approximately 650m AOD which causes high risk in terms of cable installation. It is for this reason that for the UGCs in Section 1A, all options would have a High (Red) RAG rating. The UGCs in Section 1B, S1B-C-1, S1B-C-3, S1B-D-1 and S1B-D-3 would have a High (Red) RAG rating, while S1B-C-2, S1B-C-4, S1B-C-5, S1B-D-2 and S1B-D-6 would have an Intermediate (Amber) RAG rating. Heading towards the south in the direction of Melgarve substation the topography trends steeply southwards towards the lowest point on site at Melgarve substation sitting approximately 320m AOD. As such, for the Section 2 UGCs, all options would have an Intermediate (Amber) RAG rating. S1B-C-2, S1B-C-4, S1B-C-5, S1B-D-2 and S1B-D-6 would be Intermediate (Amber). For the Section 2 UGCs, all options would have an Intermediate (Amber) RAG rating.
- 7.3.25 For the Section 3, option S3-UGC-2 would have an Intermediate (Amber) RAG rating, and S3-UGC-1 which would have a High (Red) rating.

### Rock

- 7.3.26 Rock is only an engineering topic for consideration in relation to UGCs. It is not an applicable constraints topic for OHLs and therefore OHLs have not been appraised in relation to it.
- 7.3.27 The presence of rock represents a risk for installation of UGCs due to the extent of earthworks required and because the rock cannot be used as a backfilling material to provide thermal stability to the cables to avoid overheating.
- 7.3.28 Based on GI studies carried out on behalf of SSEN Transmission shallow bedrock with minimal peat/superficial cover is expected across most of the study area, generally where there is steeply undulating topography, high peaks and valleys. Therefore, the RAG ratings given for the UGC alignments for all Section 1A, Section 1B and Section 2 options are Intermediate (Amber). Within Section 3, S3-UGC-2 and S3-OHL-UGC-2 would be Intermediate (Amber). S3-UGC-1 and the UGC parts of S3-OHL-UGC-1 would both be High (Red) where deep bedrock was found to the north of Melgarve substation.

### Peatland

- 7.3.29 Peat, particularly deep peat, represents a significant difficulty for access, construction and maintenance. Alignment options with a large proportion peatland are more likely to be constrained and thus more difficult and costly to build and maintain. Peatland is also an important habitat and construction can cause lasting damage.

- 7.3.30 The British Geological website and SLR Geotechnical & Environmental desk study have been used to determine peat areas along each route. The ratio of line route option within territory classed as “Class 1 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value” are around 50%. According to peat probing, peat was found to vary across the site in terms of thickness, surface slopes and apparent characteristics. It was also noted that peat thickness varies from zero to 3.6m across the site with an average depth of 0.6m.
- 7.3.31 Peat ratios will be similar for the alignment options within S1A, S2 and S3. Therefore, the RAG ratings given for all alignment options within these sections are Intermediate (Amber). Within Section 1B, from Cloiche substation, the majority of S1B-C-2, S1B-C-4 and S1B-C-5, and from Dell substation, the majority of S1B-D-2 and S1B-D-6 would sit within peatland and therefore be rated High (Red). The remaining alignment options within Section 1B, S1B-C-1, S1B-C-3, S1B-D-1 and S1B-D-3 would be rated Intermediate (Amber) as they would have less interaction with peatland.

#### *Construction / Maintenance*

- 7.3.32 Constructability is an important consideration for developments considering the wide-ranging terrain and multiple obstacles that are often encountered. Construction and maintenance of the choice of alignment option can have a significant impact on the safety and cost of the project throughout its lifetime. Therefore, giving some forethought to access routes and the number of critical angle masts to be used for OHL options is important for the construction and future maintenance requirements of the line.

#### Access

- 7.3.33 Construction of temporary access tracks for construction are a significant project cost and an alignment option that is remote from existing tracks and the public road network has the potential to incur large costs. Furthermore, access for inspection and maintenance is necessary throughout the life of the asset. An alignment option remote from existing access routes represents a significant risk and has a high potential to be constrained.
- 7.3.34 All alignment options are located at approximately 10km from any public roads. There are some access tracks to the existing Melgarve substation and Stronelairg Wind Farm that have been assumed will remain available for access to the construction and maintenance of the connections.
- 7.3.35 There are no existing access tracks in the proximity of the OHL sections of the S1A options. New access tracks would need to be built prior to, or in conjunction with, the new overhead line construction. These options have therefore been allocated a RAG rating of High (Red). Alignment options S1B-C-4 and S1B-C-5 follow a similar path and would also require new access tracks, and therefore also have been allocated a RAG rating of High (Red). Alignment options S1B-C-1, S1B-C-3, S1B-D-1 and S1B-D-3 all use the existing wind farm access tracks to some degree before diverting away from the existing track network. These alignment options are therefore allocated a RAG rating of Intermediate (Amber).
- 7.3.36 Alignment options S1B-C-2 and S1B-D-2 and Section 2 alignment options are in the proximity of Stronelairg Wind Farm and UGC access tracks. These alignment options are therefore allocated a RAG rating of Intermediate (Amber). S2-UGC-3 however is Low (Green) RAG rated as it would be adjacent to the existing Stronelairg UGC haul road.
- 7.3.37 In S3 alignment option S3-UGC-1 and S3-OHL-UGC-1 deviate from the existing access tracks and are therefore allocated RAG ratings of Intermediate (Orange). The remaining Section 3 alignment options follow alongside the existing Stronelairg UGC access track and are therefore allocated a RAG rating of Low (Green).

### Angle Towers

- 7.3.38 Angle towers are only an engineering topic for consideration in relation to OHLs. This is not an applicable constraints topic for UGCs and therefore UGCs have not been appraised in relation to it.
- 7.3.39 Angle towers are important components of an OHL as they are primarily used in 'stringing' operations and failure containment. Due to the nature of the angle towers, higher loads are required to be designed into the structures and larger foundations and more complex installations are often required.
- 7.3.40 OHLs with a high number of angle towers tend to be more difficult to construct, due to the number of angle pull throughs, and often require more extensive access. As such, an alignment option with a large number of angle towers is at a greater risk of being constrained.
- 7.3.41 The approximate number of angle towers has been assessed for each OHL alignment option, with S1A-OHL-1 S2-OHL-2 having the least number of angle towers. Therefore, the RAG ratings given for the OHL alignment options are Low (Green) for S1A-OHL1, S2-OHL and both Section 3 alignment options. S1A-OHL-2 and S2-OHL-2 are both given ratings of Intermediate (Amber)

### Angles of Deviation

- 7.3.42 Angles of deviation is only an engineering topic for consideration in relation to UGCs. It is not an applicable constraints topic for OHLs and therefore OHLs have not been appraised in relation to it.
- 7.3.43 A number of deviations exist along each of the UGC alignment options. The lower the number of deviations the lower the tensions required to pull the cable safely without risk of over tension or damage to the cable due to overbending. The greater the number of deviations the longer the cable route will be as well.
- 7.3.44 The RAG ratings for the Section 1A UGC alignment options are therefore Low (Green) for S1A-C-1 and Intermediate (Amber) for S1A-D-1. For Section 1B, all alignment options have a RAG rating of Intermediate (Amber), except for S1B-C-2, S1B-C-3 and S1B-D-2 which have a RAG rating of High (Red). In Section 2, all alignment options have a RAG rating of Intermediate (Amber). In Section 3, alignment options S3-UGC-2 and S3-OHL-UGC-2 have a RAG rating of Low (Green), while S3-UGC-1 and S3-OHL-UGC-1 which have a RAG rating of Intermediate (Amber).

### Cable Haul Road

- 7.3.45 Cable haul roads is only an engineering topic for consideration in relation to UGCs. It is not an applicable constraints topic for OHLs and therefore OHLs have not been appraised in relation to it.
- 7.3.46 A haul road is required to construct a UGC system. Some of the alignment options would be able to take advantage of sections of the existing Stronelaig UGC haul road, although it may require some enhancement or modifications. Other alignment options are located adjacent to the existing Stronelaig Wind Farm access tracks and would likely be able to make use of these. A new cable haul road would need to be constructed for the alignment options that are not adjacent to the existing haul road or access tracks. Permanent access requirements are subject to ongoing development.
- 7.3.47 The RAG ratings for the Section 1A UGC alignments are therefore High (Red) for S1A-C-1 which would need a new cable haul road, and Intermediate for S1A-D-1 which could utilise some of the existing Stronelaig Wind Farm access tracks. In Section 1B, almost all UGC alignment options would need a new cable haul road and are therefore High (Red) RAG rated, except for S1B-C-2 and S1B-D-1 which could utilise some of the existing Stronelaig Wind Farm access tracks so would have a RAG rating of Intermediate (Amber). In Section 2, S2-UGC-3 is Low (Green) RAG rated as it would be adjacent to the existing Stronelaig UGC haul road. In Section 3, S3-UGC-2 and S3-OHL-UGC-2 would be Low (Green) RAG rated as they would be adjacent to the existing

Stronelairg UGC haul road while the slightly further away S3-UGC-1 and S3-OHL-UGC-1 would have a RAG rating of Intermediate (Amber).

#### *Proximity*

- 7.3.48 The location of an OHL or UGC connection relative to structures and settlement of people is an important consideration when selecting a Preferred Alignment. Existing features can constrain an alignment option and often require the features to be avoided to reduce or avoid impact. These include properties, windfarms, telecommunications masts, urban area and metallic pipes. OHLs must be an adequate distance from buildings in order to ensure electrical clearance limits are achieved, but also in order to reduce the impact on households of the construction of a piece of key infrastructure in their vicinity. From an operability and maintenance viewpoint, wind turbines near OHLs have been found to potentially increase the occurrence of conditions suitable for aeolian vibration leading to the premature wear of the conductor through fatigue. Potential structural failure of wind turbines leading to collapse onto an OHL is also a consideration.

#### Clearance Distance

- 7.3.49 Dispersed buildings and properties are a common feature of the Scottish landscape. Placing alignment options in close proximity to these features is best avoided. Alignment options with numerous areas in close proximity to buildings and properties have significant risk of constraining routing. There are no residential or private properties and properties in proximity to the alignment options. All alignment options have therefore not been allocated a RAG rating for this topic area, as it has been deemed not applicable.

#### Proximity to Windfarms

- 7.3.50 Windfarms pose a particular risk to OHLs due to disruption of airflows and need to be routed around. Due to necessity, part of each of the connections will be within either the existing Stronelairg Wind Farm or proposed Dell Wind Farm or Cloiche Wind Farm sites. All connection options would therefore utilise a UGC option to navigate the wake zone (3x rotor diameter) of the turbines and are thus comparable. Other than this, there are no wind farms within 1 km of any of the alignment options. For UGC, the closer the cable option is to a windfarm, the higher the probability of crossing the array cables. Cable crossings are achievable but they will have an effect on the thermal calculation of the array cables and this should be considered in the design.
- 7.3.51 In accordance with the PR-NET-ENV-501, if any OHL route option is within '<750 m' of a windfarm then it should be scored High (Red). Both OHL alignment options in S1A section will be within this threshold due to the nature of the scheme, i.e., connecting wind farms to the grid. Therefore, although both OHL alignment options in S1A are located outwith the 3 x rotor diameter boundary they are given RAG ratings of High (Red). High (Red) RAG ratings are also given for the S1A and S1B alignment options, due to the high probability of the UGC crossing the wind farm array cables. RAG ratings for both Section 2 and 3 are Low (Green) given the distances from the turbines.

#### Communication Masts

- 7.3.52 OHLs can block existing line of sights for telecommunication masts and thus the line of sights from mast can constrain structure locations. The OS map and cell mapper website (<https://www.cellmapper.net/>) have been assessed to check if any communication masts are present near the proposed alignment options. No telecommunication masts are located within proximity of the alignment options. All alignment options have therefore not been allocated a RAG rating for this topic area, as it has been deemed not applicable.

#### Urban Environments

- 7.3.53 As with dispersed buildings and properties, urban areas represent a significant constraint that would need to be routed around. All alignment options have less than 10 % presence within urban environment as there are no buildings and properties in the study area. All alignment options have therefore not been allocated a RAG rating for this topic area, as it has been deemed not applicable.



### Metallic Pipes

7.3.54 Metallic pipes need to be avoided by individual OHL supports, as they are often expensive to reroute. Ideally alignment options should also avoid running parallel to metallic pipes, to avoid electrical impacts on the pipelines. As such they can represent a constraint on alignment options. No metallic pipelines are located in the proximity of the alignment options. All alignment options have therefore not been allocated a RAG rating for this topic area, as it has been deemed not applicable.

### *Other considerations*

### Joint Bays and Link Boxes

7.3.55 Joint Bays and Link Boxes are only an engineering topic for consideration in relation to UGCs. It is not an applicable constraints topic for OHLs and therefore OHLs have not been appraised in relation to it. Joint bays are normally bays where the cables get jointed together to achieve the required cable length to connect Melgarve substation and Wind Farms in this case. Each joint bay is accompanied with Link Box to have an earthing connection to the joints inside the joint bays

7.3.56 The joint bays normally require deep and wider excavation than the normal trench during construction and the location of the joint bay should be away from any running streams, rivers, water courses, peats.

7.3.57 The Link Box is installed at each joint bay in a link chamber, the location of the link chamber shall be close to any haul road or the existing access tracks to ease the access to the Link Box in case of maintenance or testing. That will represent a challenge in terms of earthworks or any geotechnical issue which may present on the site. As the joint bay locations & numbers are difficult to be determined at this stage, all the joint bays & Link boxes RAG will be considered as intermediate (Amber)

## **7.4 Other Topic Areas**

7.4.1 Costs were not assessed in detail as part of this alignment selection process but were considered during development design meetings in which the alignment options were discussed. The following provides an overview of the main considerations relating to costs.

7.4.2 Both UGC and OHL alignment options have been considered, with use of steel lattice towers being the preferred engineering solution for the OHL sections. The steel lattice solution provides reliable security of supply and is a cost-effective solution. Underground cable is notably more expensive than OHL solutions for any given distance, and generally used only in instances where an OHL is unsuitable. Sections of UGC would be required through the proposed wind farms and on the final approach to Melgarve substation to cross the existing Beaulay – Denny OHL.

7.4.3 Given the similarities and the necessity of UGC in some areas, all alignment options are considered comparable in terms of capital costs.

## **7.5 Comparative Analysis Summary**

### *Environmental Summary*

7.5.1 Similar environmental constraints were identified across all alignment options. The descriptive approach adopted for the appraisal allowed for a more nuanced consideration of the differences between each. The key environmental considerations in determining the Preferred Alignment are protected species, habitats, ornithology, and landscape and visual constraints. However it should be noted that while there are some slight preferences between the options across different environmental topics, due to the nature of the study area these differences are subtle. There is no preference for any of the alignment options in relation to natural

heritage designations, cultural heritage, proximity to dwellings, agriculture, forestry, planning context or planning proposals.

#### Protected Species

- 7.5.2 In terms of differences between the alignment options and the effects on protected species, all alignment options interact with watercourses where otter, water vole and fish species may be present. Minimising the number of watercourse crossings will minimise the potential effects on the species. OHL alignment options would allow infrastructure to span watercourses and adjacent suitable habitat. Therefore, there is a slight preference for utilising OHL options where possible.

#### Habitats

- 7.5.3 All alignment options include an unavoidable impact on peatland habitats (including Class 1 priority peatland habitat). All alignment options predominantly affect blanket bog habitat. Generally, OHL alignment options are preferable for habitats, as are alignment options that follow existing infrastructure and/or previously disturbed ground. Therefore, in Section 1, S1A-D-1 or S1B-D-6 and S1B-C-2 would be preferable. In Section 2, S2-OHL-1 or S2-OHL-2 are preferable as they are OHL. In Section 3, S3-OHL-UGC-1 or S3-OHL-UGC-2 are preferable as they would include sections of OHL.

#### Ornithology

- 7.5.4 Given the anticipated low impacts to ornithology, there is no real preferred alignment options within the sections, although the UGC alignments would have less of a potential impact than OHL and are therefore preferred. Of the two OHL options in Section 1A, the preferred alignment option from an ornithological perspective is S1A-OHL-1 as this alignment option is further away from the ridgeline between Carn na Gourach and Meall na h-Aisre, where raptor species were regularly recorded. If an OHL option were to be selected, embedded mitigation such as bird flight deflectors and tower design would be beneficial.

#### Landscape Designations and Character

- 7.5.5 None of the alignment options would pass through any protected or designated landscapes. A combination of one of the UGC options within Section 1B, S2-UGC-3 in Section 2 and S3-UGC-1 would be the preference in terms of potential indirect effects on protected and designated landscapes and landscape character. Effects from the UGC alignment options would be temporary in nature, occurring during the construction period with disturbed areas being reinstated upon completion.

7.5.6

#### Visual

- 7.5.7 Visual effects from the UGC options would be temporary in nature, occurring during the construction phase. Within Section 3, S3-UGC-1 would avoid disturbance of the landscape mitigation in place around Melgarve substation. As such, a combination of the S1B-C-2, S2-UGC-3 and S3-UGC-1 would be the preference in terms of potential effects on visual amenity.

#### Preferred Environmental Alignment Combination

- 7.5.8 As stated above, generally similar environmental constraints were observed across all options due to the nature of the area. Although there are some slight preferences, the difference between the alignment options within each section for environmental considerations are subtle. As such, the environmental preferences below are a finely balanced judgement call.
- 7.5.9 In Section 1, S1B-D-2 to connect from the proposed Dell Wind Farm on-site substation to **Junction B** and utilising S1B-C-2 to connect from the proposed Cloiche Wind Farm on-site substation is the preferred alignment option combination. This is on the basis of habitats, ornithology, landscape designations, landscape character,

visuals and recreation as constraints. In relation to habitats, S1B-D-2 and S1B-C-2 most closely follow the Stronelaig Wind Farm spine road and the existing UGC, so although they are among the longest options, they are likely to be the least damaging to habitats. They are also visually slightly preferable as they closely follow exiting access tracks rather than crossing previously undisturbed ground.

- 7.5.10 In Section 2, alignment option S2-UGC-3 is the preference on the basis of ornithology, landscape designations, landscape character, visuals and recreation as constraints. The OHL alignment options in Section 2, would be slightly less constrained in relation to protected species and habitats, as they would minimise habitat disturbance by going over head. However, on balance alignment option S2-UGC-3 is the preferred alignment on environmental grounds in Section 2.
- 7.5.11 In Section 3, Alignment Option S3-UGC-1 is the preference on the basis of ornithology, landscape designations, landscape character, visuals and recreation as constraints.
- 7.5.12 Therefore, from an environmental perspective, there is a slight preference for a Preferred Alignment that would be entirely UGC, as S1B-D-2 travelling south from the proposed Dell Wind Farm on-site substation to meet S1B-C-2 which would leave the proposed Cloiche Wind Farm on-site substation. From Junction B S2-UGC-3 would be utilised to Junction C and S3-UGC-1 would terminate at Melgarve substation.

#### *Engineering Summary*

- 7.5.13 As discussed in **Section 3**, RAG ratings were applied alongside descriptive text for the engineering topic areas. This allowed for clearer identification of the engineering preferences, particularly in terms of the technical feasibility of construction. The summary of RAG ratings for each alignment option by section are given in **Tables 6.2** through **Table 6.5** below.

#### Section 1A

- 7.5.14 Section 1A is located on high elevation ground which increase wind and ice loading on OHL lines. There are no existing accesses for construction and maintenance for large parts of the UGC sections or the OHL sections. S1A-OHL-1 has fewer angle points (2) than S1A-OHL-2 (5). However, the access tracks for the Stronelaig windfarm will provide good access for the cable route and fewer new crossing of the watercourses. Any options in S1A would require a UGC connection through the existing and proposed turbines and would have a section of the OHL alignment located close to some of the proposed Cloiche Wind Farm turbines even if out with the 3x rotor diameter boundary. As such S1A-OHL-1 combined with S1A-C-1 and S1A-D-1 would be the preferred connection within this section.

**Table 6.2: Section 1A Engineering RAG Ratings**

Category	S1A-C-1	S1A-D-1	S1A – OHL-1	S1A – OHL-2
<b>Infrastructure Crossing</b>				
Major Crossings	L	I	L	L
Minor Roads	L	L	L	L
<b>Environmental Design</b>				
Elevation	H	H	H	H
Atmospheric Pollution	L	L	L	L
Contaminated Land	L	L	L	L
Flooding	L	L	L	L
<b>Ground Condition</b>				
Terrain	H	H	I	I
Rock	I	I	N/A	N/A
Peatland	I	I	I	I
<b>Construction and Maintenance</b>				
Access	I	I	H	H

Category	S1A-C-1	S1A-D-1	S1A – OHL-1	S1A – OHL-2
Angle Towers	N/A	N/A	L	I
Angles of Deviation	L	I	N/A	N/A
Cable Haul Road	H	I	N/A	N/A
<b>Proximity</b>				
Clearance Distance	N/A	N/A	N/A	N/A
Wind Farms	L	H	H	H
Communication Masts	N/A	N/A	N/A	N/A
Urban Developments	N/A	N/A	N/A	N/A
Metallic Pipes	N/A	N/A	N/A	N/A
<b>Design</b>				
Joint Bays and Link Boxes	I	I	N/A	N/A

### Section 1B

- 7.5.15 Based on the RAG assessment the preferred engineering alignment for Section 1B is S1B-C-5 and S1B-D-6. Although these options showed high interaction with peat they had fewer crossing of water courses, avoided lochans and windfarm array cables and used the windfarm access tracks.
- 7.5.16 The other options scored high in interactions with peat and water course crossings, which represents a high risk of soil wash out causing the cables to be exposed as happened to the Stronelairg UGC.

**Table 6.3: Section 1B Engineering RAG Ratings**

Category	S1B-C-1	S1B-C-2	S1B-C-3	S1B-C-4	S1B-C-5	S1B-D-1	S1B-D-2	S1B-D-3	S1B-D-6
<b>Infrastructure Crossing</b>									
Major Crossings	I	I	H	I	L	I	H	H	L
Minor Roads	L	L	L	L	L	L	L	L	L
<b>Environmental Design</b>									
Elevation	H	H	H	H	H	H	H	H	H
Atmospheric Pollution	L	L	L	L	L	L	L	L	L
Contaminated Land	L	L	L	L	L	L	L	L	L
Flooding	L	L	L	L	L	L	L	L	L
<b>Ground Condition</b>									
Terrain	H	I	H	I	I	H	I	H	I
Rock	I	I	I	I	I	I	I	I	I
Peatland	I	H	I	H	H	I	H	I	H
<b>Construction and Maintenance</b>									
Access	I	I	I	H	H	I	I	I	I
Angle Towers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Angles of Deviation	I	H	H	I	I	I	H	H	I
Cable Haul Road	H	I	H	H	H	I	H	H	H
<b>Proximity</b>									
Clearance Distance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wind Farms	I	I	H	I	I	I	I	H	I
Communication Masts	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Urban Developments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metallic Pipes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Design</b>									
Joint Bays and Link Boxes	I	I	I	I	I	I	I	I	I

## Section 2

7.5.17 Option S2-OHL-2 is the preferred engineering OHL alignment within Section 2, as it better complements the alignment of the OHL as it transitions from Section 1 and there will be no requirement of an angle tower at Junction B. The preferred engineering UGC connection is S2-UGC-3 as it more closely follows the existing access track. Based on the RAG tables there would be a slight engineering preference for S2-UGC-3.

**Table 6.4: Section 2 Engineering RAG Ratings**

Category	S2-UGC-3	S2 – OHL-1	S2 – OHL-2
<b>Infrastructure Crossing</b>			
Major Crossings	L	L	L
Minor Roads	L	L	L
<b>Environmental Design</b>			
Elevation	H	H	H
Atmospheric Pollution	L	L	L
Contaminated Land	L	L	L
Flooding	L	L	L
<b>Ground Condition</b>			
Terrain	I	I	I
Rock	I	N/A	N/A
Peatland	I	I	I
<b>Construction and Maintenance</b>			
Access	L	I	I
Angle Towers	N/A	L	I
Angles of Deviation	I	N/A	N/A
Cable Haul Road	L	N/A	N/A
<b>Proximity</b>			
Clearance Distance	N/A	N/A	N/A
Wind Farms	L	L	L
Communication Masts	N/A	N/A	N/A
Urban Developments	N/A	N/A	N/A
Metallic Pipes	N/A	N/A	N/A
<b>Design</b>			
Joint Bays and Link Boxes	I	I	I

### Section 3

7.5.18 Alignment options S3-OHL-UGC-2 and S3-UGC-2 are preferred from an engineering perspective as they follow the existing access track and Stronelairg UGC into the substation. These options would also benefit from favourable slope gradients.

**Table 6.5: Section 3 Engineering RAG Ratings**

Category	S3-UGC-1	S3-UGC-2	S3 – OHL- UGC-1	S3 – OHL- UGC-2
<b>Infrastructure Crossing</b>				
Major Crossings	H	L	H	L
Minor Roads	L	L	L	L
<b>Environmental Design</b>				
Elevation	H	H	H	H
Atmospheric Pollution	L	L	L	L
Contaminated Land	L	L	L	L
Flooding	L	L	L	L
<b>Ground Condition</b>				
Terrain	H	I	I	I
Rock	H	I	H	I
Peatland	I	I	I	I
<b>Construction and Maintenance</b>				
Access	I	L	I	L
Angle Towers	N/A	N/A	L	L
Angles of Deviation	I	L	I	L
Cable Haul Road	H	L	H	L
<b>Proximity</b>				
Clearance Distance	N/A	N/A	N/A	N/A
Wind Farms	L	L	L	L
Communication Masts	N/A	N/A	N/A	N/A
Urban Developments	N/A	N/A	N/A	N/A
Metallic Pipes	N/A	N/A	N/A	N/A
<b>Design</b>				
Joint Bays and Link Boxes	I	I	N/A	N/A

### Conclusion

7.5.19 All the options in each section have very similar technical constraints. None would have technical constraints that would prevent the construction and maintenance of either an UGC or OHL. Therefore, based upon on the RAG ratings developed in accordance with the methodology given in PR-NET-ENV-501 options S1A-OHL-1 combined with S1A-C-1 and S1A-D-1, or S1B-D-6, S1B-C-5, S2-OHL-2 and S3-OHL-UGC-2 are the preferred engineering options.

7.5.20 However, all alignment options and their findings should be taken into consideration and feed into the future assessment which includes other aspects such environmental/consenting constraints to determine the preferred alignment option when considering all criteria.

## **7.6 Preferred Alignment**

7.6.1 Following the environmental and engineering appraisals that were carried out for the alignment options, as well as consideration of the feedback from the Routeing Stage Consultation and some limited high level economic consideration, a Preferred Alignment was arrived at. Given the somewhat conflicting preferences across environmental and engineering topic considerations the choice of the Preferred Alignment was not clear cut.

As stated in above, while there were some slight preferences for particular alignments from an environmental perspective, the differences between the options were subtle. Whereas there was often a clear engineering preference focused on the technical feasibility of constructing each of the options. This balance was taken into careful consideration when coming to an overall Preferred Alignment.

7.6.2 In Section 1, from an environmental standpoint a combination of the UGC options S1B-D-2 and S1B C-2 is the preferred alignment option on the basis that this would have less environmental impact on ornithology and

slightly less landscape and visual constraints. However, as this option is comprised entirely of UGC it has the disadvantage of potentially resulting in greater disturbance to sensitive peatland habitats and protected species (including watercourses). A combined UGC and OHL option could span over these and as such this preference is a finely balanced judgement call. However in engineering terms, the RAG ratings show that UGC options S1A-C-1 and S1A-D-1 combined with S1A-OHL-1 to be the preference based on major crossings and angles of deviation. The engineering Red RAG scores are considered to be more absolute than the environmental constraints, which are more subtle, each with benefits and disbenefits. Thus, the preferred alignment option combination for Section 1 is S1A-OHL-1 combined with S1A-C-1 and S1A-D-1.

- 7.6.3 In Section 2, from an environmental perspective the UGC alignment option S2-UGC-3 is preferred on the basis potentially lower impacts on ornithology and landscape and visual constraints. It would however, have the same disadvantage as identified above in terms of the potential disturbance to sensitive habitats from a UGC as compared to OHL making this a marginal preference. In engineering terms, the RAG ratings show S2-OHL-2 as the preferred alignment within Section 2 as it would better complement the alignment of an OHL as it transitions from Section 1, and there would be no angle tower required at Junction B. An OHL alignment would not face the constraints associated with UGC through this section including the presence of rock, angles of deviation and the need for a cable haul road in particular. Having identified combined UGC and OHL option as the preference for Section 1, its continuation is preferred, particularly given the more absolute engineering constraints the overall preferred alignment is S2-OHL-2.
- 7.6.4 In Section 3, from an environmental standpoint there is a slight preference for alignment option S3-UGC-1 (UGC) on the basis of potentially lower environmental impacts on ornithology and landscape and visual constraints. Again, there are some acknowledged disbenefits with an entirely UGC solution. In engineering terms, S3-OHL-UGC-2 is preferred as seen by the RAG ratings for major crossings, terrain, rock, access, angles of deviation and cable haul roads. As above the benefits of this option in terms of its constructability are more absolute than the subtle differences seen between the environmental constraints. Thus, despite the somewhat conflicting environmental and engineering conclusions, the preferred alignment for Section 3 is S3-OHL-UGC-2.
- 7.6.5 For all sections, from an economic perspective it is the case the OHL is a more cost-effective and reliable technology at this challenging elevation and topography (leading to reduced maintenance costs).
- 7.6.6 Therefore, taking the key consideration into account, on balance, the overall Preferred Alignment is **S1A-OHL-1** combined with **S1A-C-1** and **S1A-D-1**, followed by **S2-OHL-2** and **S3-OHL-UGC-2**.
- 7.6.7 The Preferred Alignment in context with the other options is shown on **Figure 9**, while **Figure 10** shows the Preferred Alignment only.
- 7.6.8 The Proposed Alignment will require careful consideration during the EA/EIA and Consenting stage of the project. Should further site and desk-based analysis at the EA/EIA and Consenting stage identify a particular constraint, a further review of alignment options may be required.



## 8. CONSULTATION ON THE ALIGNMENT OPTIONS

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

### 8.2 Questions for Consideration by Consultees

8.2.1 When providing your comments and feedback, SSEN Transmission would be grateful for your consideration of the questions below:

- Have we explained the need for this Project adequately?
- Have we explained the approach taken to select the Preferred Alignment adequately?
- Are there any factors, or environmental features, that you consider may have been overlooked during the preferred alignment selection process?
- Do you feel, on balance, that the Preferred Alignment selected is the most appropriate for further consideration at the EA/EIA and Consenting stage?

### 8.3 Next Steps

8.3.1 Consultation events will be held, as detailed in the preface of this document. The responses received from these consultation events, and those sought from statutory consultees and other key stakeholders, will inform further consideration of the alignment options going forwards, and the identification of a Proposed Alignment to take forward to the next stage in the routeing process (EA/EIA and Consenting).

8.3.2 All comments are requested by **10 March 2023**. A Report on Consultation will be produced which will document the consultations received, and the decisions made in light of these responses.

8.3.3 The subsequent identification and confirmation of an acceptable alignment will form the basis of a Proposed Alignment to take forward into Stage 4: EA/EIA and Consenting. Should further site and desk-based analysis at the EA/EIA and Consenting stage identify a particular constraint, a further review of the Proposed Alignment may be required.

8.3.4 It is anticipated that an application for consent for a proposed alignment will be submitted in Autumn 2023.

## FIGURES

### Figures

Figure 1: Proposed Route and Alignment Options

Figure 2: Ecological Designations, Constraints and Peatland Classification

Figure 3: Geology Hydrology and Hydrogeology

Figure 4: Cultural Heritage

Figure 5: Landscape and Visual Constraints

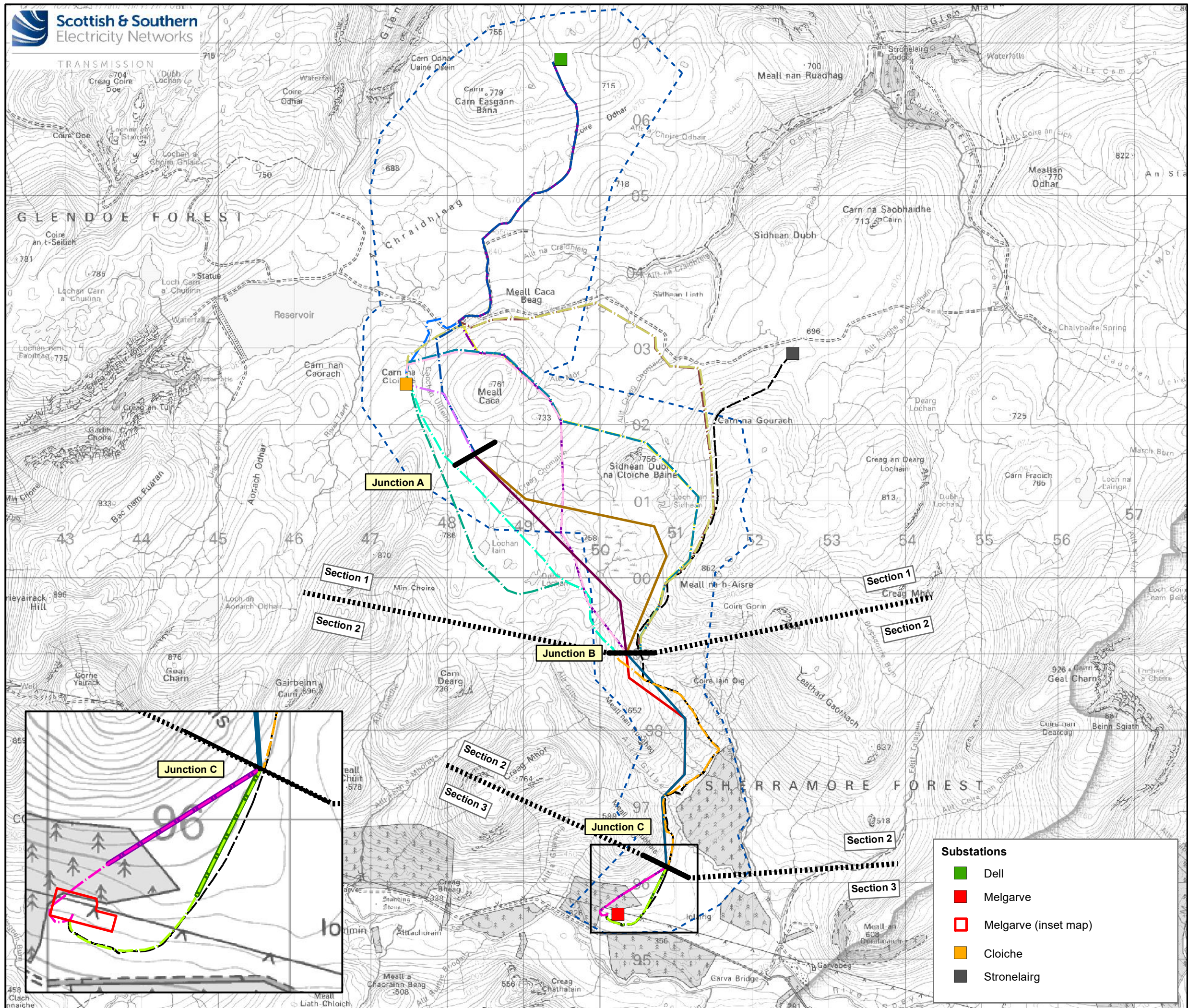
Figure 6: Landscape Character Types

Figure 7: Forestry and Agricultural Land Classification

Figure 8: Land Use and Recreation

Figure 9: Preferred Alignment with Alignment Options Context

Figure 10: Preferred Alignment



**Legend**

- Proposed Route
- Junction
- Stronelairg Underground Cable (UGC)

**S1A**

- S1A: Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)
- S1A: Dell UGC-OHL Alignment Option 1 (S1A-D-1)
- S1A: OHL Alignment Option 1 (S1A-OHL-1)
- S1A: OHL Alignment Option 2 (S1A-OHL-2)

**S1B**

- S1B: Cloiche UGC Alignment Option 1 (S1B-C-1)
- S1B: Cloiche UGC Alignment Option 2 (S1B-C-2)
- S1B: Cloiche UGC Alignment Option 3 (S1B-C-3)
- S1B: Cloiche UGC Alignment Option 4 (S1B-C-4)
- S1B: Cloiche UGC Alignment Option 5 (S1B-C-5)
- S1B: Dell UGC Alignment Option 1 (S1B-D-1)
- S1B: Dell UGC Alignment Option 2 (S1B-D-2)
- S1B: Dell UGC Alignment Option 3 (S1B-D-3)
- S1B: Dell UGC Alignment Option 6 (S1B-D-6)

**S2**

- S2: UGC Alignment Option 3 (S2-UGC-3)
- S2: OHL Alignment Option 1 (S2-OHL-1)
- S2: OHL Alignment Option 2 (S2-OHL-2)

**S3**

- S3: UGC Alignment Option 1 (S3-UGC-1)
- S3: UGC Alignment Option 2 (S3-UGC-2)
- S3: OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)
- S3: OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)

**Substations**

- Dell
- Melgarve
- Melgarve (inset map)
- Cloiche
- Stronelairg

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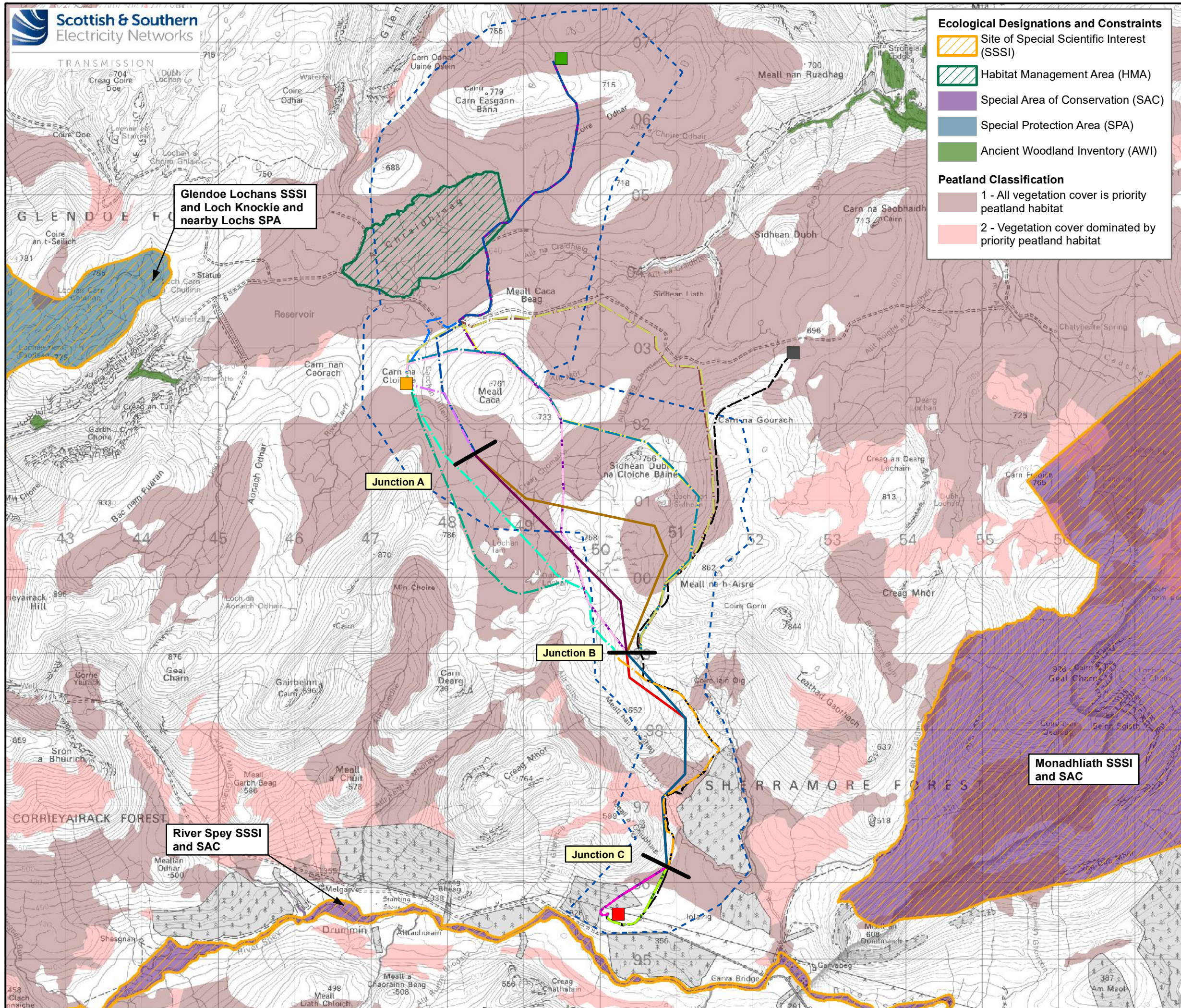
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Project: Melgarve Cluster - Consultation Document

Title: Figure 1 - Proposed Route and Alignment Options

Drawn by: LV Date: 20/01/2023

Drawing: 121010-D-CD1-1.0.0



Glendoe Lochans SSSI and Loch Knockie and nearby Lochs SPA

River Spey SSSI and SAC

Monadhliath SSSI and SAC

**Ecological Designations and Constraints**

- Site of Special Scientific Interest (SSSI)
- Habitat Management Area (HMA)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Ancient Woodland Inventory (AWI)

**Peatland Classification**

- 1 - All vegetation cover is priority peatland habitat
- 2 - Vegetation cover dominated by priority peatland habitat

**Legend**

- Proposed Route
- Junction
- Stronelairg Underground Cable (UGC)

**S1A**

- S1A: Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)
- S1A: Dell UGC-OHL Alignment Option 1 (S1A-D-1)
- S1A: OHL Alignment Option 1 (S1A-OHL-1)
- S1A: OHL Alignment Option 2 (S1A-OHL-2)

**S1B**

- S1B: Cloiche UGC Alignment Option 1 (S1B-C-1)
- S1B: Cloiche UGC Alignment Option 2 (S1B-C-2)
- S1B: Cloiche UGC Alignment Option 3 (S1B-C-3)
- S1B: Cloiche UGC Alignment Option 4 (S1B-C-4)
- S1B: Cloiche UGC Alignment Option 5 (S1B-C-5)
- S1B: Dell UGC Alignment Option 1 (S1B-D-1)
- S1B: Dell UGC Alignment Option 2 (S1B-D-2)
- S1B: Dell UGC Alignment Option 3 (S1B-D-3)
- S1B: Dell UGC Alignment Option 6 (S1B-D-6)

**S2**

- S2: UGC Alignment Option 3 (S2-UGC-3)
- S2: OHL Alignment Option 1 (S2-OHL-1)
- S2: OHL Alignment Option 2 (S2-OHL-2)

**S3**

- S3: UGC Alignment Option 1 (S3-UGC-1)
- S3: UGC Alignment Option 2 (S3-UGC-2)
- S3: OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)
- S3: OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)

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Scale - 1:47,500 @ A3

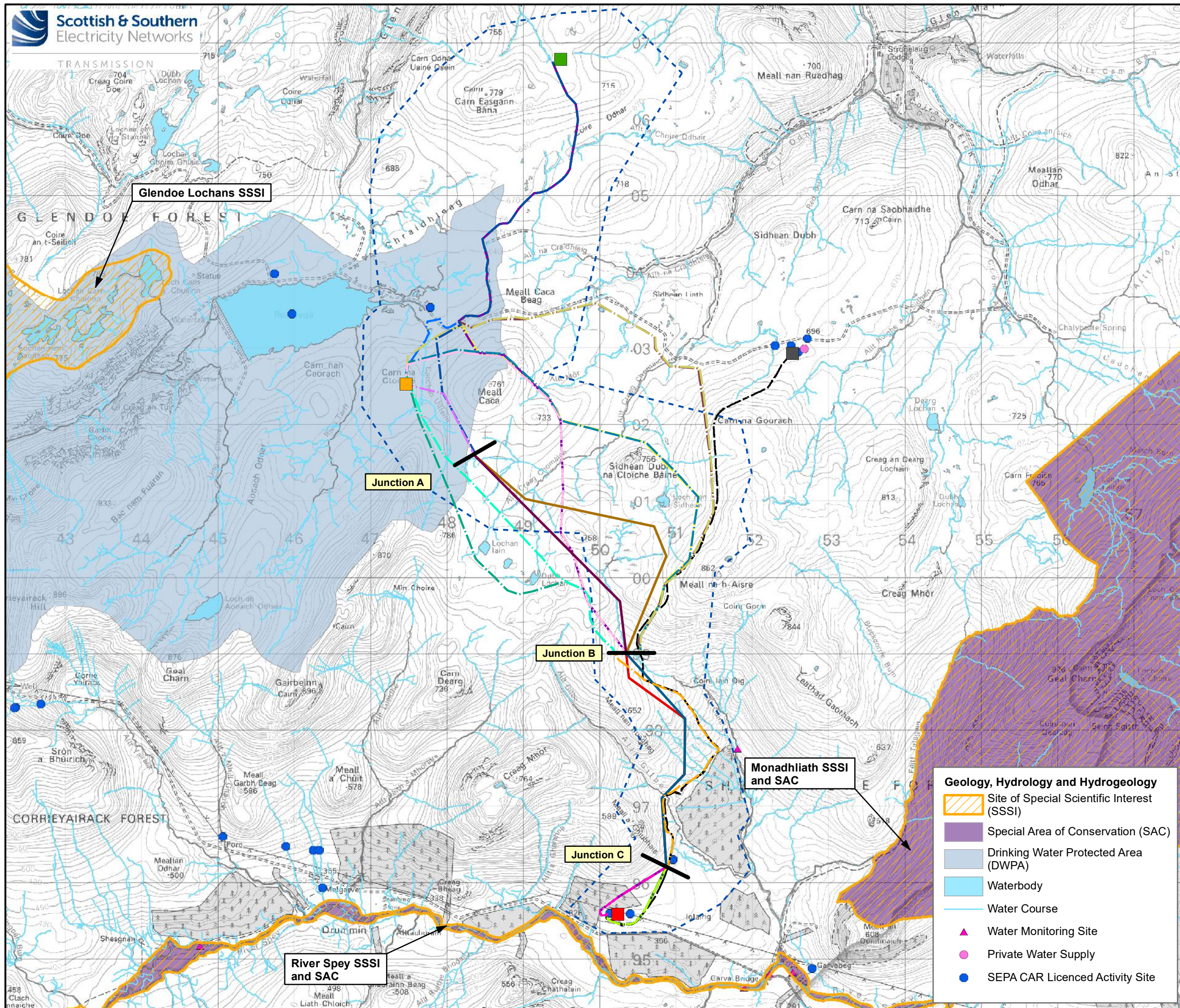
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Project: Melgarve Cluster - Consultation Document

Title: Figure 2 - Ecological Designations, Constraints and Peatland Classification

Drawn by: LV Date: 18/01/2023

Drawing: 121010-D-CD2-1.0.0



- Legend**
- Proposed Route
  - Junction
  - Stronelairg Underground Cable (UGC)

- S1A**
- S1A: Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)
  - S1A: Dell UGC-OHL Alignment Option 1 (S1A-D-1)
  - S1A: OHL Alignment Option 1 (S1A-OHL-1)
  - S1A: OHL Alignment Option 2 (S1A-OHL-2)

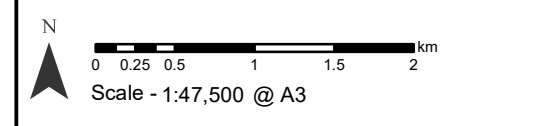
- S1B**
- S1B: Cloiche UGC Alignment Option 1 (S1B-C-1)
  - S1B: Cloiche UGC Alignment Option 2 (S1B-C-2)
  - S1B: Cloiche UGC Alignment Option 3 (S1B-C-3)
  - S1B: Cloiche UGC Alignment Option 4 (S1B-C-4)
  - S1B: Cloiche UGC Alignment Option 5 (S1B-C-5)
  - S1B: Dell UGC Alignment Option 1 (S1B-D-1)
  - S1B: Dell UGC Alignment Option 2 (S1B-D-2)
  - S1B: Dell UGC Alignment Option 3 (S1B-D-3)
  - S1B: Dell UGC Alignment Option 6 (S1B-D-6)

- S2**
- S2: UGC Alignment Option 3 (S2-UGC-3)
  - S2: OHL Alignment Option 1 (S2-OHL-1)
  - S2: OHL Alignment Option 2 (S2-OHL-2)

- S3**
- S3: UGC Alignment Option 1 (S3-UGC-1)
  - S3: UGC Alignment Option 2 (S3-UGC-2)
  - S3: OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)
  - S3: OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)

**Geology, Hydrology and Hydrogeology**

- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Drinking Water Protected Area (DWPA)
- Waterbody
- Water Course
- ▲ Water Monitoring Site
- Private Water Supply
- SEPA CAR Licenced Activity Site



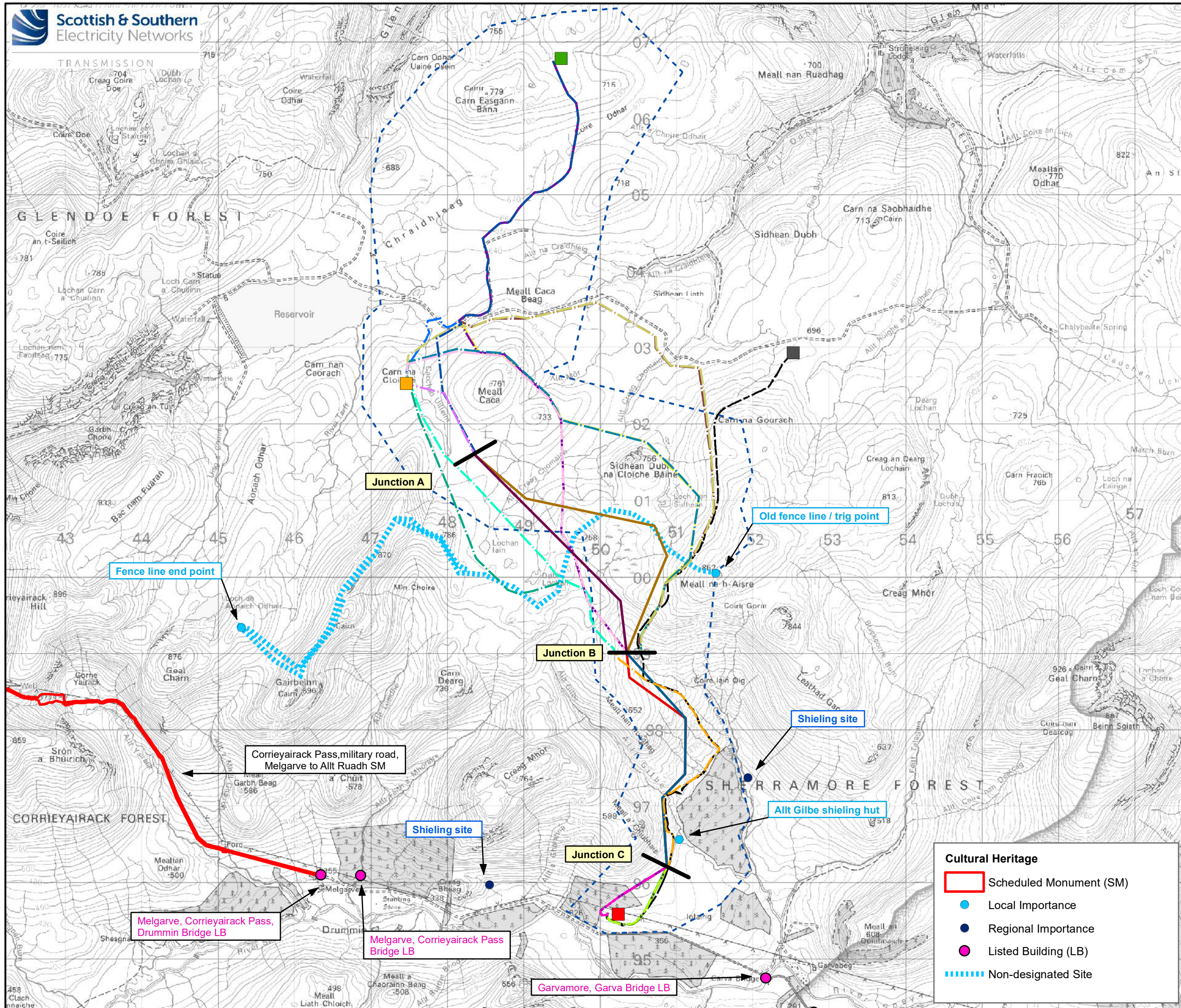
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Project: Melgarve Cluster - Consultation Document

Title: Figure 3 - Geology, Hydrology and Hydrogeology

Drawn by: LV Date: 18/01/2023

Drawing: 121010-D-CD3-1.0.0



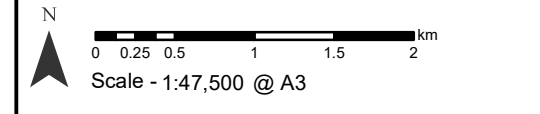
- Legend**
- Proposed Route
  - Junction
  - Stronelairg Underground Cable (UGC)

- S1A**
- S1A: Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)
  - S1A: Dell UGC-OHL Alignment Option 1 (S1A-D-1)
  - S1A: OHL Alignment Option 1 (S1A-OHL-1)
  - S1A: OHL Alignment Option 2 (S1A-OHL-2)

- S1B**
- S1B: Cloiche UGC Alignment Option 1 (S1B-C-1)
  - S1B: Cloiche UGC Alignment Option 2 (S1B-C-2)
  - S1B: Cloiche UGC Alignment Option 3 (S1B-C-3)
  - S1B: Cloiche UGC Alignment Option 4 (S1B-C-4)
  - S1B: Cloiche UGC Alignment Option 5 (S1B-C-5)
  - S1B: Dell UGC Alignment Option 1 (S1B-D-1)
  - S1B: Dell UGC Alignment Option 2 (S1B-D-2)
  - S1B: Dell UGC Alignment Option 3 (S1B-D-3)
  - S1B: Dell UGC Alignment Option 6 (S1B-D-6)

- S2**
- S2: UGC Alignment Option 3 (S2-UGC-3)
  - S2: OHL Alignment Option 1 (S2-OHL-1)
  - S2: OHL Alignment Option 2 (S2-OHL-2)

- S3**
- S3: UGC Alignment Option 1 (S3-UGC-1)
  - S3: UGC Alignment Option 2 (S3-UGC-2)
  - S3: OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)
  - S3: OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)



- Cultural Heritage**
- Scheduled Monument (SM)
  - Local Importance
  - Regional Importance
  - Listed Building (LB)
  - Non-designated Site

**ash**

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Project: Melgarve Cluster - Consultation Document

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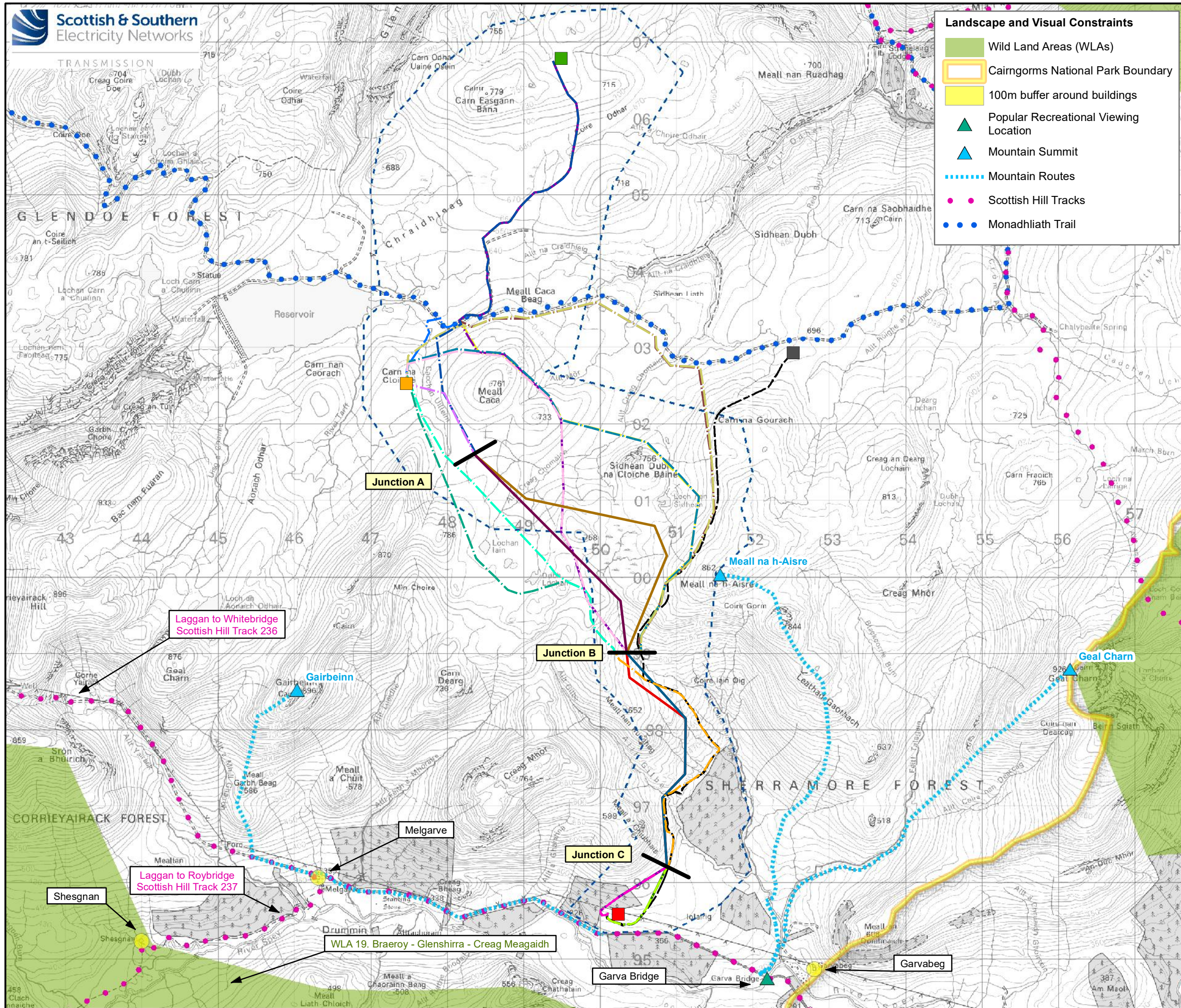
Title: Figure 4 - Cultural Heritage

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Drawn by: LV Date: 18/01/2023

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Drawing: 121010-D-CD4-1.0.0



**Landscape and Visual Constraints**

- Wild Land Areas (WLAs)
- Cairngorms National Park Boundary
- 100m buffer around buildings
- Popular Recreational Viewing Location
- Mountain Summit
- Mountain Routes
- Scottish Hill Tracks
- Monadhliath Trail

**Legend**

- Proposed Route
- Junction
- Stronelairg Underground Cable (UGC)

**S1A**

- S1A: Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)
- S1A: Dell UGC-OHL Alignment Option 1 (S1A-D-1)
- S1A: OHL Alignment Option 1 (S1A-OHL-1)
- S1A: OHL Alignment Option 2 (S1A-OHL-2)

**S1B**

- S1B: Cloiche UGC Alignment Option 1 (S1B-C-1)
- S1B: Cloiche UGC Alignment Option 2 (S1B-C-2)
- S1B: Cloiche UGC Alignment Option 3 (S1B-C-3)
- S1B: Cloiche UGC Alignment Option 4 (S1B-C-4)
- S1B: Cloiche UGC Alignment Option 5 (S1B-C-5)
- S1B: Dell UGC Alignment Option 1 (S1B-D-1)
- S1B: Dell UGC Alignment Option 2 (S1B-D-2)
- S1B: Dell UGC Alignment Option 3 (S1B-D-3)
- S1B: Dell UGC Alignment Option 6 (S1B-D-6)

**S2**

- S2: UGC Alignment Option 3 (S2-UGC-3)
- S2: OHL Alignment Option 1 (S2-OHL-1)
- S2: OHL Alignment Option 2 (S2-OHL-2)

**S3**

- S3: UGC Alignment Option 1 (S3-UGC-1)
- S3: UGC Alignment Option 2 (S3-UGC-2)
- S3: OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)
- S3: OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)

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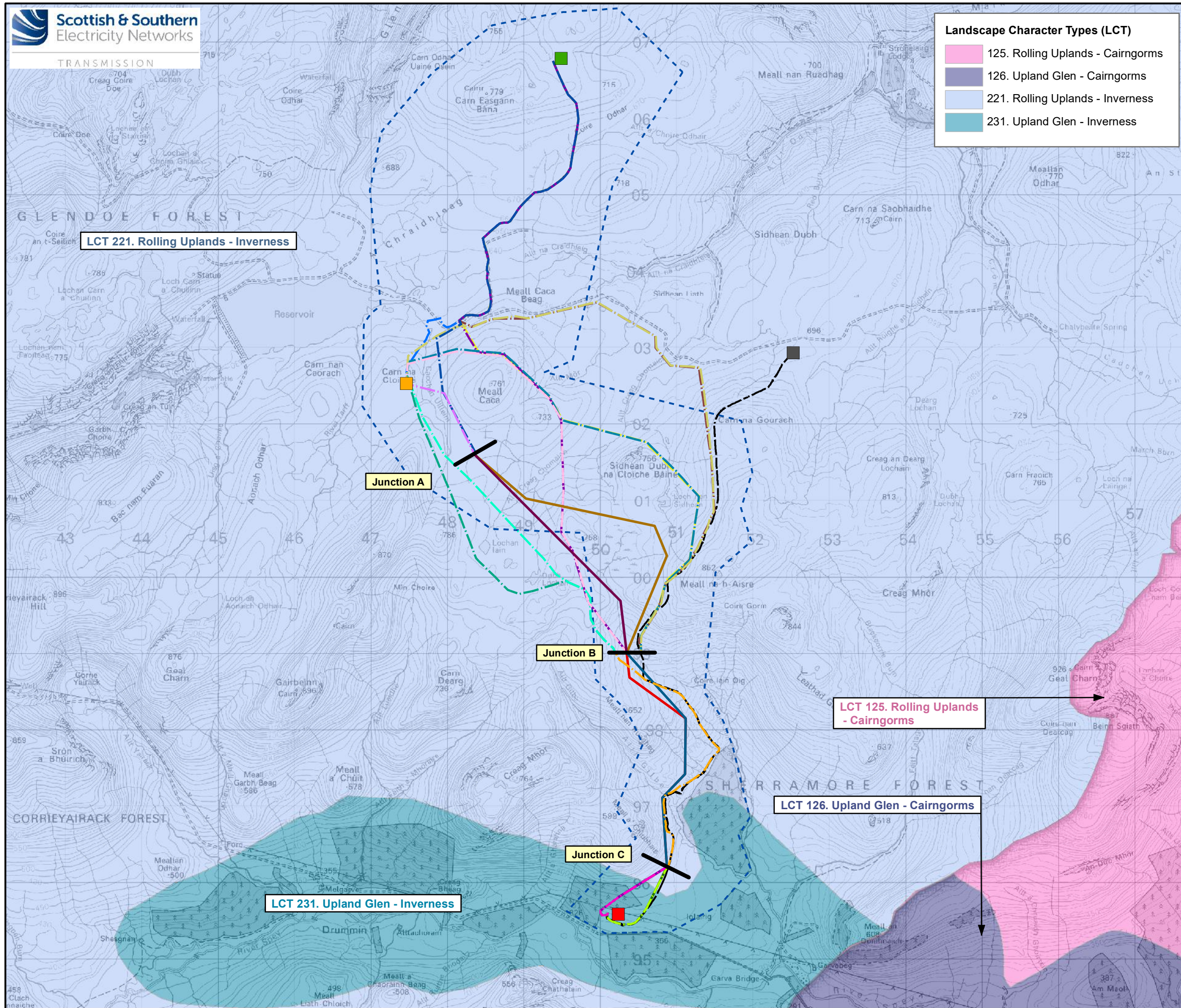


Project: Melgarve Cluster - Consultation Document

Title: Figure 5 - Landscape and Visual Constraints

Drawn by: LV Date: 18/01/2023

Drawing: 121010-D-CD5-1.0.0



**Landscape Character Types (LCT)**

- 125. Rolling Uplands - Cairngorms
- 126. Upland Glen - Cairngorms
- 221. Rolling Uplands - Inverness
- 231. Upland Glen - Inverness

**Legend**

- Proposed Route
- Junction
- Stronelairg Underground Cable (UGC)

**S1A**

- S1A: Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)
- S1A: Dell UGC-OHL Alignment Option 1 (S1A-D-1)
- S1A: OHL Alignment Option 1 (S1A-OHL-1)
- S1A: OHL Alignment Option 2 (S1A-OHL-2)

**S1B**

- S1B: Cloiche UGC Alignment Option 1 (S1B-C-1)
- S1B: Cloiche UGC Alignment Option 2 (S1B-C-2)
- S1B: Cloiche UGC Alignment Option 3 (S1B-C-3)
- S1B: Cloiche UGC Alignment Option 4 (S1B-C-4)
- S1B: Cloiche UGC Alignment Option 5 (S1B-C-5)
- S1B: Dell UGC Alignment Option 1 (S1B-D-1)
- S1B: Dell UGC Alignment Option 2 (S1B-D-2)
- S1B: Dell UGC Alignment Option 3 (S1B-D-3)
- S1B: Dell UGC Alignment Option 6 (S1B-D-6)

**S2**

- S2: UGC Alignment Option 3 (S2-UGC-3)
- S2: OHL Alignment Option 1 (S2-OHL-1)
- S2: OHL Alignment Option 2 (S2-OHL-2)

**S3**

- S3: UGC Alignment Option 1 (S3-UGC-1)
- S3: UGC Alignment Option 2 (S3-UGC-2)
- S3: OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)
- S3: OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)

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ash

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Project: Melgarve Cluster - Consultation Document

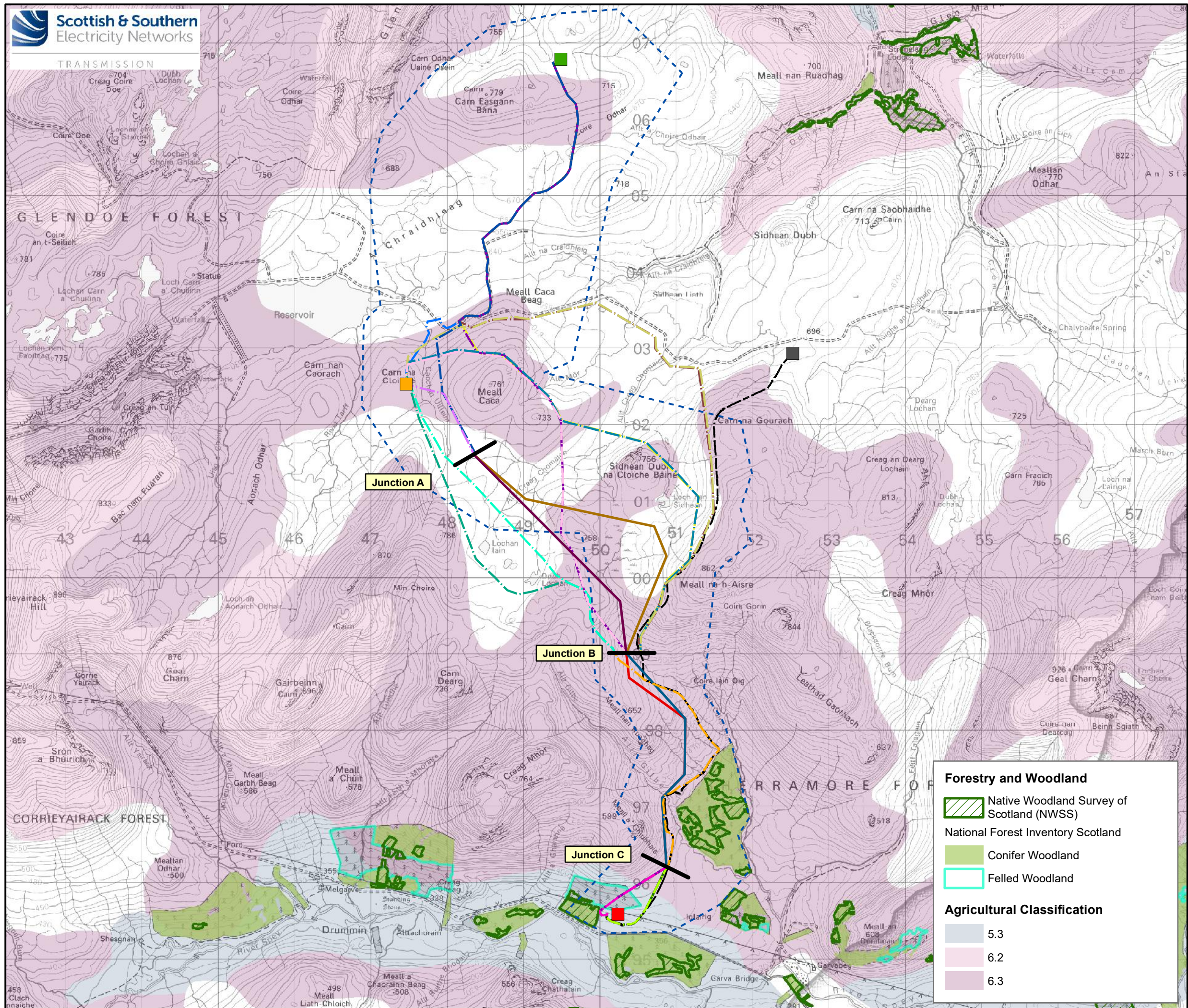
Title: Figure 6 - Landscape Character Types

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Drawn by: LV Date: 18/01/2023

Drawing: 121010-D-CD6-1.0.0





### Legend

- Proposed Route
- Junction
- Stronelairg Underground Cable

#### S1A

- S1A: Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)
- S1A: Dell UGC-OHL Alignment Option 1 (S1A-D-1)
- S1A: OHL Alignment Option 1 (S1A-OHL-1)
- S1A: OHL Alignment Option 2 (S1A-OHL-2)

#### S1B

- S1B: Cloiche UGC Alignment Option 1 (S1B-C-1)
- S1B: Cloiche UGC Alignment Option 2 (S1B-C-2)
- S1B: Cloiche UGC Alignment Option 3 (S1B-C-3)
- S1B: Cloiche UGC Alignment Option 4 (S1B-C-4)
- S1B: Cloiche UGC Alignment Option 5 (S1B-C-5)
- S1B: Dell UGC Alignment Option 1 (S1B-D-1)
- S1B: Dell UGC Alignment Option 2 (S1B-D-2)
- S1B: Dell UGC Alignment Option 3 (S1B-D-3)
- S1B: Dell UGC Alignment Option 6 (S1B-D-6)

#### S2

- S2: UGC Alignment Option 3 (S2-UGC-3)
- S2: OHL Alignment Option 1 (S2-OHL-1)
- S2: OHL Alignment Option 2 (S2-OHL-2)

#### S3

- S3: UGC Alignment Option 1 (S3-UGC-1)
- S3: UGC Alignment Option 2 (S3-UGC-2)
- S3: OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)
- S3: OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)

#### Forestry and Woodland

- Native Woodland Survey of Scotland (NWSS)
- National Forest Inventory Scotland
  - Conifer Woodland
  - Felled Woodland

#### Agricultural Classification

- 5.3
- 6.2
- 6.3

N

Scale - 1:47,500 @ A3

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Project: Melgarve Cluster - Consultation Document

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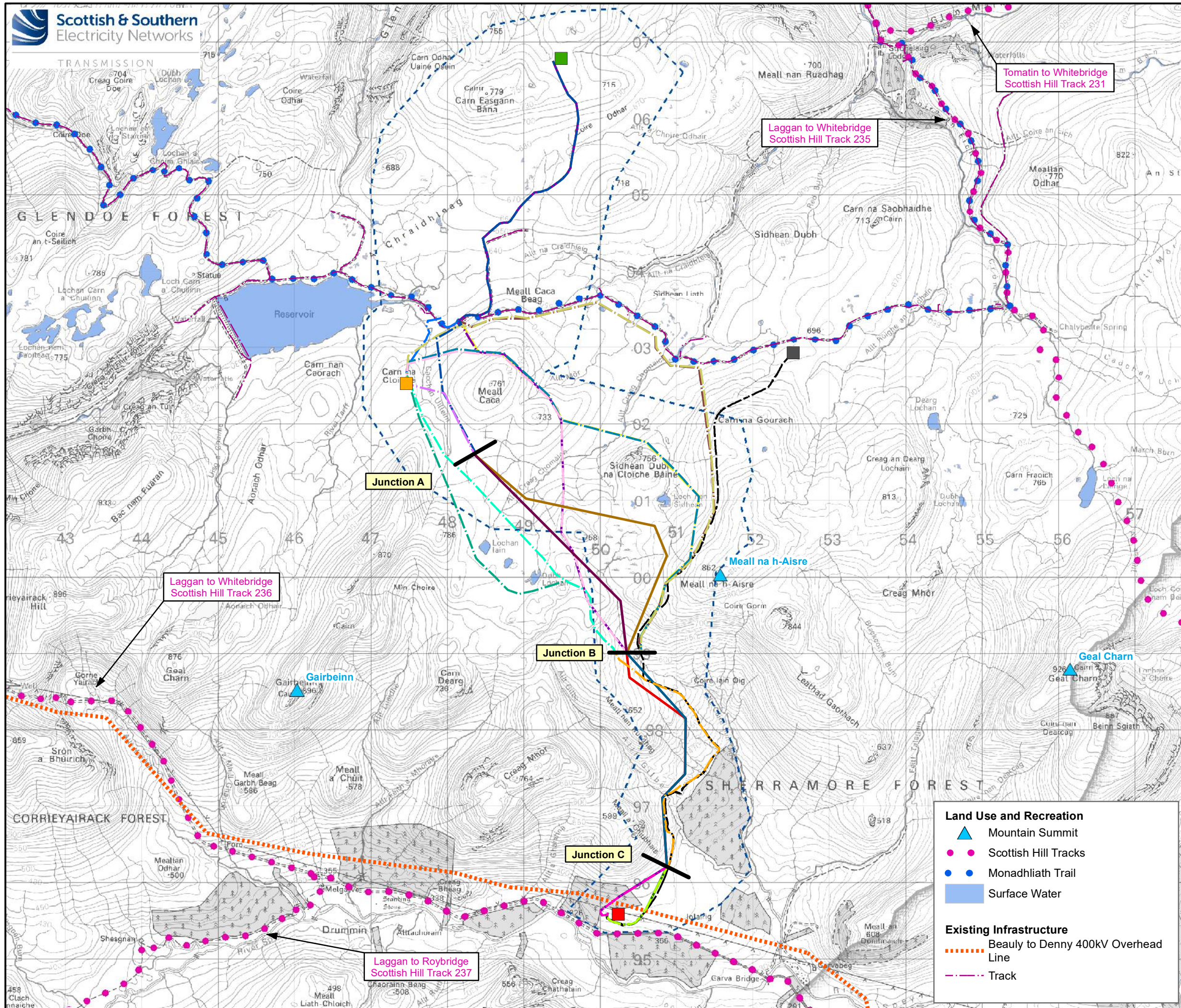
Title: Figure 7 - Forestry and Agricultural Land Classification

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Drawn by: LV Date: 18/01/2023

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Drawing: 121010-D-CD7-1.0.0



- Legend**
- Proposed Route
  - Junction
  - Stronelairg Underground Cable (UGC)

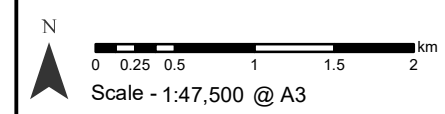
- S1A**
- S1A: Cloiche UGC-OHL Alignment Option 1 (S1A-C-1)
  - S1A: Dell UGC-OHL Alignment Option 1 (S1A-D-1)
  - S1A: OHL Alignment Option 1 (S1A-OHL-1)
  - S1A: OHL Alignment Option 2 (S1A-OHL-2)

- S1B**
- S1B: Cloiche UGC Alignment Option 1 (S1B-C-1)
  - S1B: Cloiche UGC Alignment Option 2 (S1B-C-2)
  - S1B: Cloiche UGC Alignment Option 3 (S1B-C-3)
  - S1B: Cloiche UGC Alignment Option 4 (S1B-C-4)
  - S1B: Cloiche UGC Alignment Option 5 (S1B-C-5)
  - S1B: Dell UGC Alignment Option 1 (S1B-D-1)
  - S1B: Dell UGC Alignment Option 2 (S1B-D-2)
  - S1B: Dell UGC Alignment Option 3 (S1B-D-3)
  - S1B: Dell UGC Alignment Option 6 (S1B-D-6)

- S2**
- S2: UGC Alignment Option 3 (S2-UGC-3)
  - S2: OHL Alignment Option 1 (S2-OHL-1)
  - S2: OHL Alignment Option 2 (S2-OHL-2)

- S3**
- S3: UGC Alignment Option 1 (S3-UGC-1)
  - S3: UGC Alignment Option 2 (S3-UGC-2)
  - S3: OHL-UGC Alignment Option 2 (S3-OHL-UGC-2)
  - S3: OHL-UGC Alignment Option 1 (S3-OHL-UGC-1)

- Land Use and Recreation**
- ▲ Mountain Summit
  - Scottish Hill Tracks
  - Monadhliath Trail
  - Surface Water
- Existing Infrastructure**
- Beauty to Denny 400kV Overhead Line
  - Track

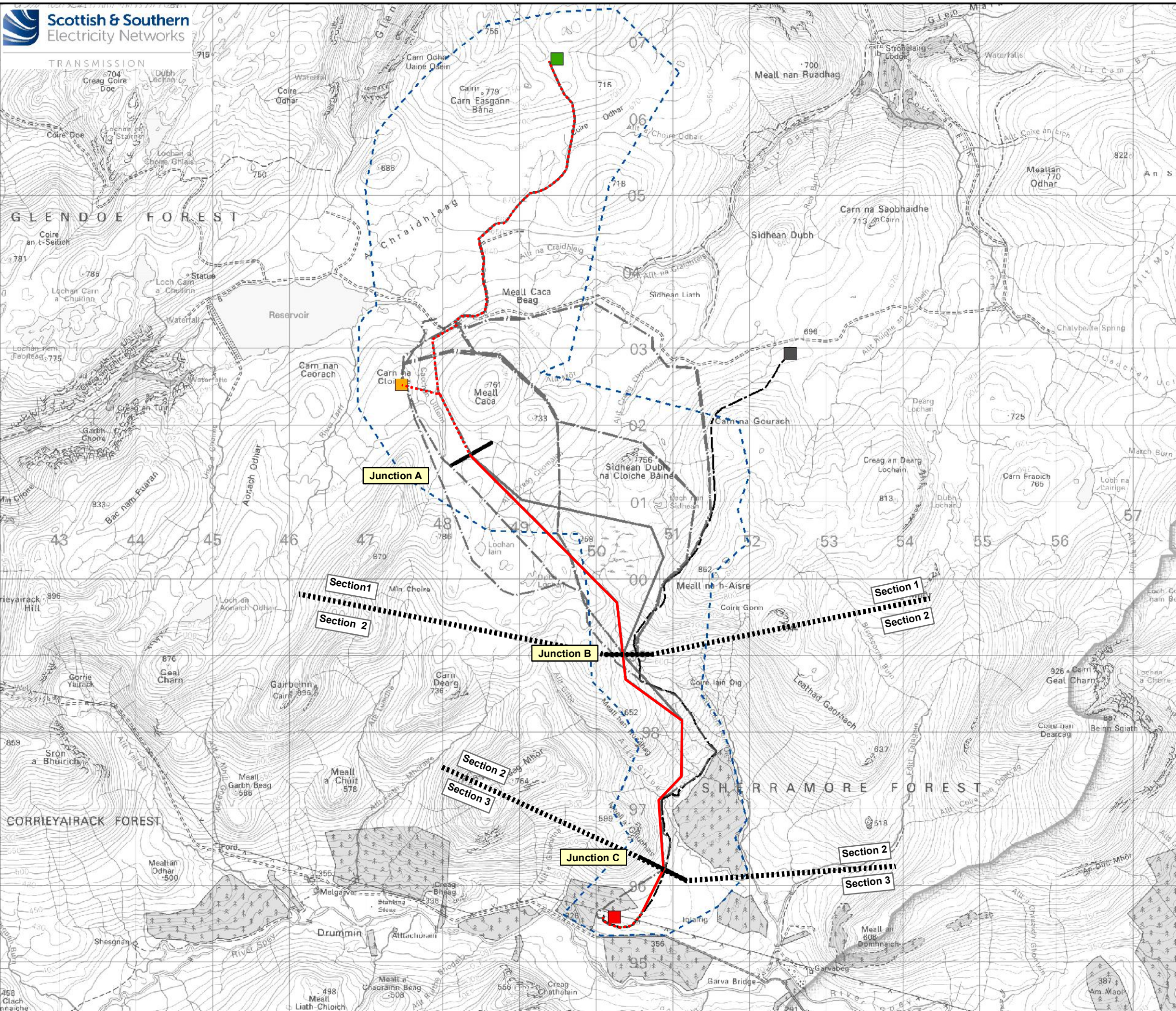


Project: Melgarve Cluster - Consultation Document

Title: Figure 8 - Land Use and Recreation

Drawn by: LV Date: 18/01/2023

Drawing: 121010-D-CD8-1.0.0

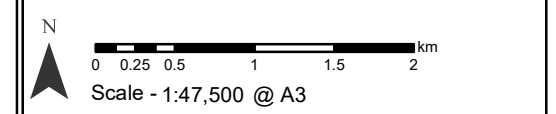


**Legend**

- - - Proposed Route
- Preferred Alignment Overhead Line (OHL)
- · - · - Preferred Alignment Underground Cable (UGC)
- Stronelairg Underground Cable (UGC)
- Junction
- - - Alternative Alignment Option
- Alternative Alignment Option

**Substations**

- Dell
- Melgarve
- Cloiche
- Stronelairg

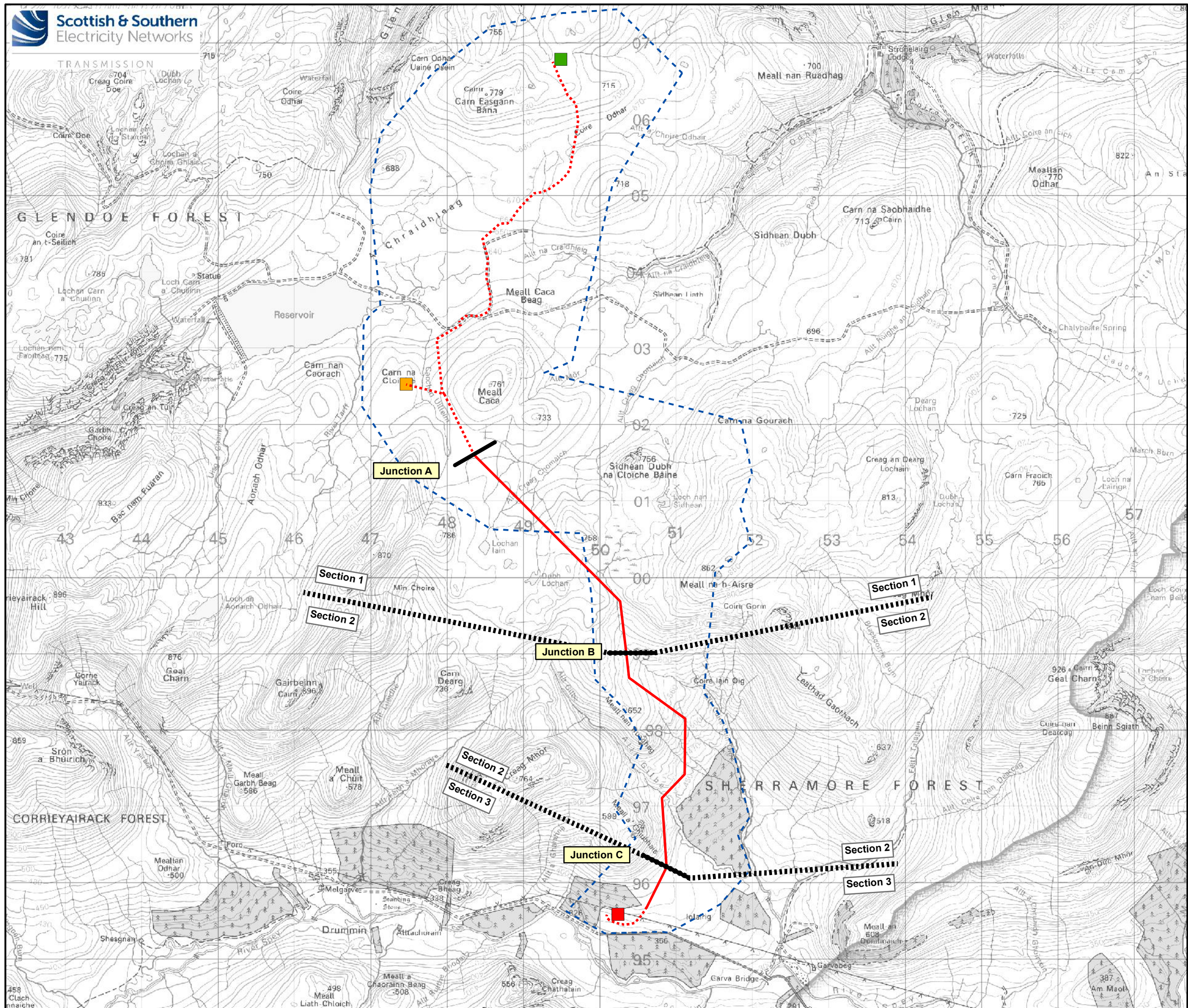


Project: Melgarve Cluster - Consultation Document

Title: Figure 9 - Preferred Alignment with Alignment Options Context

Drawn by: LV Date: 18/01/2023

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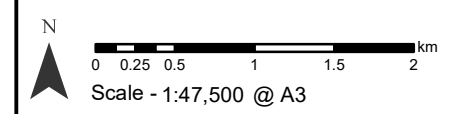


**Legend**

- Proposed Route
- Preferred Alignment Overhead Line (OHL)
- Preferred Alignment Underground Cable (UGC)
- Junction

**Substations**

- Dell
- Melgarve
- Cloiche



Project:	Melgarve Cluster - Consultation Document
Title:	Figure 10 - Preferred Alignment
Drawn by:	LV
Date:	18/01/2023
Drawing:	121010-D-CD10-1.0.0