Scottish & Southern Electricity Networks

TRANSMISSION

Consultation Document

Melgarve Cluster

LT218 Cloiche, LT280 Glenshero & LT287 Dell

November 2021

Scottish & Southern Electricity Networks

TRANSMISSION

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CONTENTS

Appendices

Figures

GLOSSARY

Term	Definition
Alignment	A centre line of an overhead line OHL, along with location of key angle structures.
Alignment (preferred)	An alignment for the overhead line 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 for the overhead 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 SHE Transmission plc's works on communities, such as the effects of noise and disturbance from construction activities.
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.
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.
Habitat Management Plan	A plan outlining measures for preserving or managing wildlife within a given area. In the context of development, the plan often comprises part of the scheme of mitigation measures to control environmental impacts.
Jumper Sampling	An OHL jumper is a piece of conductor which is used on OHL tension towers to bridge across "or jump" the electrical insulators. Jumper sampling is where the jumper is removed and replaced with a new one. The removed jumper is then tested to give an indication of conductor condition.
Kilovolt (kV)	One thousand volts.
Listed Building	Building included on the list of buildings of special architectural or historic interest and afforded statutory protection under the 'Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997' and other planning legislation. Classified categories A – C(s).
Micrositing	The process of positioning individual structures to avoid localised environmental or technical constraints.

Term	Definition
Mitigation	Term used to indicate avoidance, remediation or alleviation of adverse impacts.
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.
Stakeholders	Organisations and individuals who can affect or are affected by SHE Transmission plc 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.
Volts	The international unit of electric potential and electromotive force.
Wayleave	A voluntary agreement entered into between a landowner upon whose land an overhead line is to be constructed and SHE Transmission plc.

PREFACE

This Consultation Document has been prepared by ASH Design and Assessment Ltd. on behalf of Scottish and Southern Electricity Networks Transmission (SSEN Transmission), operating under licence as Scottish Hydro Electric Transmission plc (SHE Transmission plc), to seek comments from all interested parties on the preferred routes identified for the three wind farm developments within the Melgarve Cluster project. These are the Cloiche Wind Farm connection to Melgarve substation, the Dell Wind Farm connection to Melgarve substation, and the Glenshero Windfarm connection to Melgarve substation.

The Melgarve Cluster project also consists of the extension of Melgarve substation to accommodate the three new connections. However, this Consultation Document only seeks comments on the grid connections for the three wind farm developments that are presented herein. The extension of Melgarve substation will be consulted upon and detailed further in separate consultation.

The Consultation Document is available online at the project website:

https://www.ssen-transmission.co.uk/projects/melgarve-cluster

To engage stakeholders on the project, SSEN Transmission will be undertaking face to face consultation, and online consultation via a virtual consultation platform to enable the local community to experience the full exhibition from home on a computer, tablet or mobile device. The online exhibition has been designed to look and feel like a real consultation in a community hall, with exhibition boards, maps, interactive videos and the opportunity to share views on the proposals.

Visitors will be able to engage directly with the project team where they can ask any questions they might have about the project and share their feedback on the current proposals.

The consultation events will be taking place at the following times:

- 8th December 2021: Virtual Consultation via the project website: 13:00 – 15:00 and 17:00 – 19:00.
- 10th January 2022: Fort Augustus Village Hall 14:00 – 19:00.
- 11th January 2022: Laggan Village Hall 14:00 – 19:00.

Comments on this Consultation Document should be sent to:

Louise Anderson
Community Liaison Manager
Scottish Hydro Electric Transmission PLC
T: +44(0)1738 457495
M: +44(0)7384 454233
E: louise.anderson@sse.com
200 Dunkeld Road, Perth, PH1 3AQ

All comments are requested by **28th January 2022**.

EXECUTIVE SUMMARY

Three proposed wind farm grid connections of the Melgarve Cluster Project in the Highland Council area require connection to the electricity transmission network at Melgarve substation. These three wind farm developments are the Glenshero Wind Farm, the Cloiche Wind Farm, and the Dell Wind Farm, which require connection by the following dates:

- Glenshero Wind Farm: by Autumn 2024.
- Cloiche Wind Farm: by Summer 2025.
- Dell Wind Farm: by Spring 2026.

The Melgarve Cluster project also consists of the extension of Melgarve substation to accommodate the three new connections. However, this Consultation Document seeks comments on the grid connections for the three wind farm developments only. The extension of Melgarve substation will be consulted upon and detailed further in a separate consultation exercise.

It is anticipated that the three wind farm connections would be achieved via the construction and operation of new 132 kV single circuit connections to Melgarve substation. The preferred engineering solution for the Dell and Cloiche connections are for an overhead line (OHL) and the Glenshero is proposed as an underground cable (UGC), which is the wind farm developer's choice. This Consultation Document invites comments from all interested parties on the preferred grid connection routes identified for each of the three connections.

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 at Cloiche, Dell and Glenshero wind farms to Melgarve substation.

The Preferred Route for each connection has been selected to provide an optimum balance of environmental, technical and economic factors. Moving forward, confirmation of each Proposed Route and of potential OHL and / or UGC alignments within them will be informed by this consultation exercise and through detailed surveys, which may identify any as yet unknown engineering, environmental or land use constraints.

Further public consultation on preferred alignments (and their associated Limit of Deviation of approximately 200 m width depending on constraints) for each of the connections will take place during Spring 2022.

It is anticipated that applications for consent under section 37 of the Electricity Act 1989, as amended, (s37 consent) for the proposed Cloiche and Dell connections are anticipated to be submitted in Winter 2022 and Spring 2023 respectively.

The Glenshero connection can be progressed via SSEN Transmission's rights as a Statutory Undertaker via the Town & Country Planning (General Permitted Development) (Scotland) Order 1992, as amended. Such developments are considered as Class 40 (Electricity undertakings) as they do not require s37 consent and are outwith national scenic areas and sites of special scientific interest.

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

- Has the need for the project been clearly explained?
- Are there any additional factors, or environmental features, that you consider important and should be brought to the attention of the project team?
- Do you have any other comments regarding the route options and layout?
- Following review of the provided information, how would you describe your understanding of the Melgarve Cluster project?
- Overall, how do you feel about the Melgarve Cluster project?

- And finally, from your experience to date, can you rate the quality of consultation undertaken on the Melgarve Cluster project?

1. INTRODUCTION

1.1 Purpose of Document

1.1.1 This Consultation Document invites comments from all interested parties on the preferred routes and technologies identified for the three wind farm development connections required as part of the Melgarve Cluster project.

1.1.2 The Melgarve Cluster project comprises the grid connections for three wind farm developments and consists of four components. These are: the Cloiche Wind Farm connection to Melgarve substation; Dell Wind Farm connection to Melgarve substation; Glenshero Wind Farm connection to Melgarve substation; and the extension of Melgarve substation. Only the grid connections for the three wind farm developments are presented herein. The extension of Melgarve substation will be detailed further in separate consultation conducted by SSEN Transmission.

1.1.3 This Consultation Document describes the route options appraisal undertaken, the alternatives considered during the selection of route[1] options, and the identification of a Preferred Route for each of the grid connections associated with the Melgarve Cluster project. Comments are now sought from statutory authorities, key stakeholders, elected representatives and the public on the route selection process and the preferred routes identified.

1.1.4 All comments received will inform further consideration of the preferred routes, and subsequent alignment.[2] options therein.

1.2 Document Structure

1.2.1 This report is comprised of 10 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 solutions and the typical construction methods.

3: Route Selection Process – sets out the route selection process and methodology that has been applied to date.

4: Description of Routes – describes the route options that have been identified for each connection.

5: Environmental Baseline – describes the local context and baseline environment within the Corridor.

6: Summary of Comparative Appraisal: Cloiche – analyses each route option for the Cloiche Wind Farm connection against a series of environmental, technical and economic considerations to arrive at a Preferred Route.

7: Summary of Comparative Appraisal: Dell – analyses each route option for the Dell Wind Farm connection against a series of environmental, technical and economic considerations to arrive at a Preferred Route.

8: Summary of Appraisal: Glenshero – analyses the route option for the Glenshero Wind Farm connection against a series of environmental, technical and economic considerations to arrive at a Preferred Route.

9: Selection of Preferred Routes – describes the preferred route identified for each connection and summarises the reasons for this; and

[1] A linear area of approximately 1 km width (although this may be narrower/wider in specific locations in response to identified constraints), which provides a continuous connection between defined connection points.
[2] A centre line of an overhead line, along with the location of key angle structures.

10: Consultation on the Proposals – invites comments on the route assessment process and identification of preferred route for each connection and outlines the next steps.

1.2.2 The main body of this document is supported by a series of figures and three appendices.

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 Route option put forward for each grid connection in this Report.

1.3.2 A Report on Consultation will be produced which will document the consultation responses received and the decisions made in light of these responses.

1.3.3 Following the identification of a Proposed Route for each connection, further technical and environmental surveys will be undertaken to identify a Preferred Alignment for connection within each Proposed Route. Consultation on the preferred alignments will be undertaken in a similar manner to the identification of preferred routes, during Spring 2022.

2. THE PROPOSALS

2.1 The Need for the Project

2.1.1 SSEN Transmission is a wholly owned subsidiary 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 The new connections would be routed within a previously identified corridor, as defined in SSEN Transmission's Corridor Briefing Note - Melgarve Cluster (May 2021). The proposed Cloiche Wind Farm consists of up to 36 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 14 turbines with heights between 115.5 metres and 130.5 metres and with an installed capacity of up to 42 MW. To connect the Wind farm to the grid, a new 132 kV single circuit connection to Melgarve substation is required. The proposed Glenshero Wind Farm is in the southern part of the Melgarve Corridor and consists of up to 39 turbines with height between 149.9 metres, with an installed capacity of up to 168 MW. To connect the Wind Farm to the grid, a new 132 kV single circuit connection to Melgarve substation is proposed.

2.2 Preferred Technology Solution

2.2.1 As stated, the proposed Melgarve Cluster Project requires three grid connections. Details of the potential technology solution per connection are set out as follows.

Cloiche Wind Farm Connection

2.2.2 Use of steel lattice towers is the preferred engineering solution for OHL. A short section of UGC, approximately 0.4 km in length, would be required 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 point of connection.

Dell Wind Farm Connection

2.2.3 Use of steel lattice towers is the preferred engineering solution for OHL. A short section of UGC, approximately 0.4 km in length, would be required 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 grounds as set out within the aforementioned Corridor Briefing Note.

Glenshero Wind Farm Connection

2.2.4 The proposed engineering solution (customer choice) is to install an underground cable. Melgarve substation has been selected as the preferred connection point for the Wind Farm to the National Grid due to it being the closest transmission substation, at approximately 4.4 km.

2.2.5 Details of the above options are provided below; however, until a proposed route and alignment for the OHL has been identified and detailed assessments and consultation have been completed, the specific combination of technology options is not known.

2.3 Alternative Options Considered

2.3.1 As noted above, it is anticipated that the preferred solution would be achieved via the construction and operation of a new 132 kV OHL supported on steel lattice towers for Cloiche and Dell or UGC for Glenshero.

2.3.2 SSEN Transmission's New Suite of Transmission Structures (NeSTS) monopoles were also initially considered for use in parts of the connection. However, these have been deemed a less viable option for this connection given increased costs potentially required for design and testing, and uncertainty over the conductor options available. As such this tower option is not explored further in this Report. Trident wood poles were discounted at an early stage due to the elevation of the site rendering them unsuitable for use. Trident steel poles were also an initial consideration; however, these are at an early stage in the engineering design process which may continue for a number of years and not currently considered viable for use as part of the Melgarve Cluster.

2.4 Proposals Overview

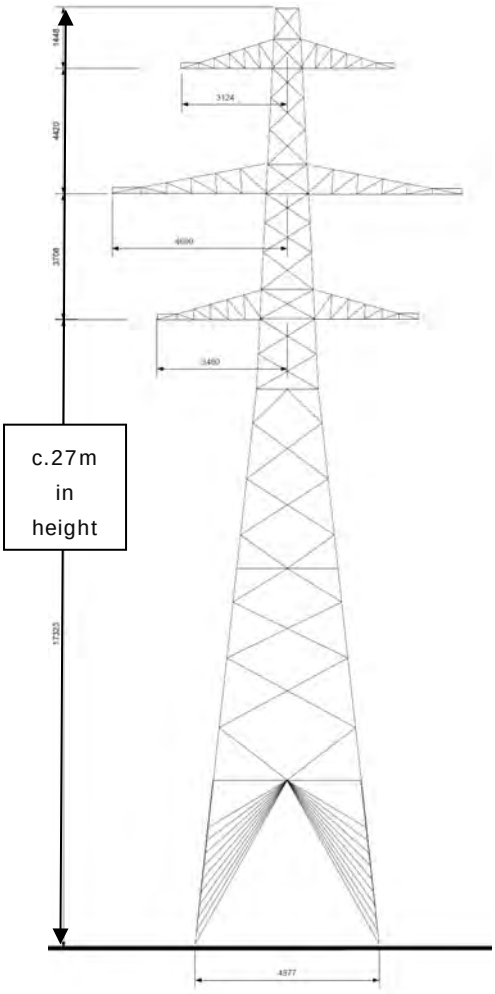
General Construction Activities for an OHL

2.4.1 To facilitate the Cloiche and Dell connections, the main construction elements associated with these developments 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 work associated with foundations, as necessary.
- assembly and erection of OHL towers.
- stringing of conductors using hauling ropes and winches.
- inspections and commissioning.

2.4.2 It is currently anticipated that the steel lattice structures would be of the L7 suite of towers with a height range of between 22m and 39m tall and have an average span length of 250 m. **Plate 2.1** shows an example OHL structure for illustrative purposes.

Plate 2.1: Example Steel Lattice Tower OHL Structure



Underground Cable

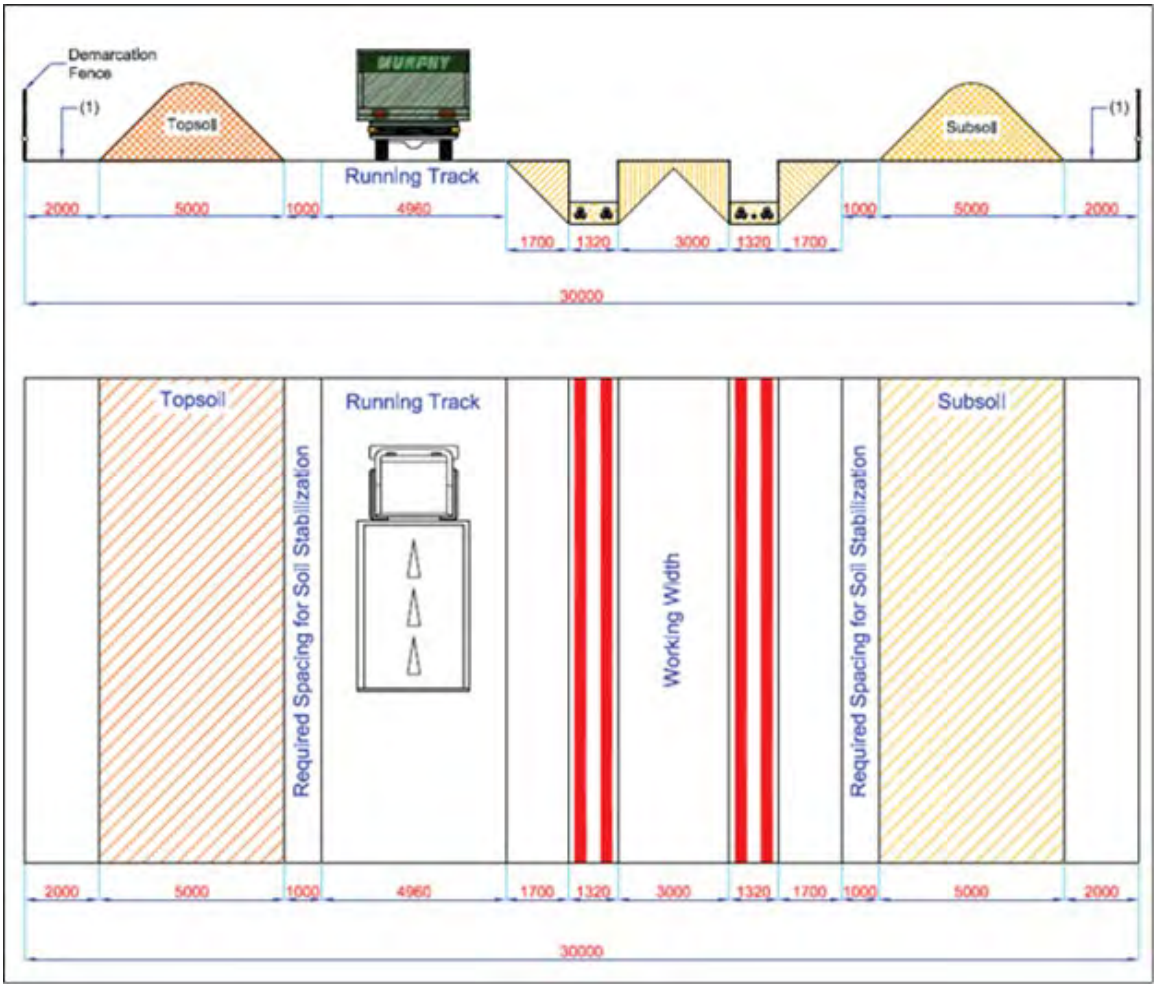
2.4.3 An UGC would be utilised for the entire length of the Glenshero connection.

2.4.4 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 layers in reverse order with turves replaced vegetation side up.

2.4.5 Plate 2.2 shows a diagram of a typical UGC construction corridor

Plate 2.2: Example of a typical UGC Construction Corridor



Forestry Removal

2.4.6 Construction of the project may require the removal of sections of commercial forest, depending on the choice of the Preferred Route for each connection, which would be undertaken in consultation with affected landowners. Scottish Forestry would also be consulted throughout the development of the project and the project would seek to adhere to Scottish Government's Control of Woodland Removal Policy.[3]

2.4.7 After felling, any timber removed that is commercially viable would likely be sold and the remaining forest material would be dealt with in a way that delivers the best practicable environmental outcome and is compliant with waste regulations.

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

2.4.9 Compensatory Planting will be considered for all woodland removed as a direct result of the project.

[3] Forestry Commission Scotland (2009) Control of Woodland Removal Policy

Access during Construction

2.4.10 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 Stronelairg 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 Stronelairg Wind Farm, presenting a suitable and obvious choice. The existing access track network for Stronelairg Wind Farm would be expanded as part of the other proposed wind farms associated with the Melgarve Cluster project, and these could potentially be utilised as far as practicable to limit new access construction.

2.4.11 The second would be to the lower ground in the south of the Corridor, 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 Wolftrax junction, and finally along the existing access road constructed for the Beauly – Denny OHL and 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 greater requirement for establishment of new access.

2.4.12 At present it is too early in the development of these projects to confirm whether stone tracks installed for construction would be retained for operational maintenance access or whether where they would be removed. This would be developed as part of the alignment selection process following further design development and stakeholder consultation in advance of detailed assessments required for any forthcoming EIA and application for s37 consent and/or planning permission.

Programme

2.4.13 It is anticipated that construction time required for each connection would vary, but an average of 20 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.

2.4.14 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.

3. ROUTE SELECTION PROCESS

3.1 Guidance Document

3.1.1 The approach to the route selection of each connection was informed by SSEN Transmission's guidance 'Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above' (September 2020). The guidance sets out SSEN Transmission's approach to selecting a route for an OHL or 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.
- Stage 4: 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 2: Route Selection, the objective of which is to identify a Preferred Route for each connection to be taken forward for consultation prior to selection of a Proposed Route. Stage 1: Corridor Selection was carried out previously to identify the most appropriate connection point for Dell Wind Farm and the Corridor Boundary to be used for the Melgarve Cluster project, as detailed within the Corridor Briefing Note.

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

- Identification of the baseline situation.
- Identification of route options.
- Environmental analysis of route options.
- Identification of a preferred route.

3.2 Area of Search

3.2.1 From the initial broad Search Areas identified by SSEN Transmission, two Study Corridors were established: one extending between the Dell Wind Farm on-site substation and Fort Augustus substation (referred to as Fort Augustus Study Corridor), and the other extending from the Dell, Cloiche and Glenshero on-site substations to Melgarve substation (referred to as Melgarve Study Corridor). The two Study Corridors were defined by environmental constraint considerations. As set out within the Corridor Briefing, only the Melgarve Corridor was taken forward in the route selection process due to significant technical and environmental constraints such as crossing Glen Tarff or Glen Brein and the Caledonian Canal Scheduled Monument.

3.2.2 Within the Melgarve Corridor that was established, route options were identified and assessed (see **Figure 1**). The Corridor was developed to encompass a range of feasible route options between the various connection points required for the Melgarve Cluster Project.

3.3 Baseline Conditions

3.3.1 A baseline desktop study has been carried out to identify a broad range of potential constraints and opportunities within the Corridor, and its adjacent context. This has involved the following activities:

- Identification of environmental designated sites and other constraints, utilising GIS datasets available via NatureScot[4] Site Link[5].
- Review of the Habitat Map of Scotland (HabMos)[6].
- Identification of archaeological designations and other recorded sites, utilising GIS datasets available via Historic Environment Scotland[7,8] and Highland Historic Environment Record (HER)[9].
- SEPA interactive Flood Risk Mapping[10].
- Review of the Scotland Carbon and Peatland Map[11].
- Review of the Highland-wide Local Development Plan (2012)[12] and the Inner Moray Firth Local Development Plan (2015)[13] and West Highland and Islands Local Development Plan (2019)[14] 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[15].
- Review of Native Woodland Survey of Scotland and Ancient Woodland Inventory data sets[16].
- 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 Stronelairg Wind Farm, Cloiche Wind Farm, Dell Wind Farm and Glenshero Wind Farm.
- Review of other local information through online and published media such as tourism sites and walking routes.[17,18,19]

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

[4] Scottish Natural Heritage (SNH) became NatureScot on 24 August 2020
[5] SNH. SNHi Site Link. [online] Available at:: https://sitelink.nature.scot/home
[6] Habitat Map of Scotland [online] Available at: https://www.environment.gov.scot/our-environment/habitats-and-species/habitat-map-of-scotland/
[7] Historic Environment Scotland Data Services. Portal. [online] Available at: http://portal.historicenvironment.scot/
[8] Royal Commission on Ancient and Historical Monuments of Scotland. Canmore. [online] Available at:: http://canmore.rcahms.gov.uk/
[9] Highland Council Archaeology Service. Highland Historic Environment Record. [online] Available at: https://her.highland.gov.uk/
[10] Scottish Environmental Protection Agency. SEPA Flood Maps [online] Available at: http://map.sepa.org.uk/floodmap/map.htm
[11] Scotland Carbon and Peatland Map [online] Available at: https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/
[12] Highland Council (2012), Highland-wide Local Development Plan
[13] Highland Council (2015), Inner Moray Firth Development Plan
[14] Highland Council (2019), West Highland and Islands Local Development Plan
[15] 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
[16] Available at data.gov.uk
[17] Munro Magic [online] Available at: http://www.munromagic.com/
[18] Walk Highlands [online] Available at: http://www.walkhighlands.co.uk/
[19] Scotways [online] Available at: https://www.scotways.com/

3.4 Route Identification and Selection Methods

3.4.1 Route options were initially identified following desk-based review, partially informed by prior knowledge and experience of the area and making use of landform while remaining sensitive to existing infrastructure, including the wind farms across the site. Initial routes were also discussed during the Corridor selection workshop held between SSEN Transmission, ASH design+assessment and WSP. In accordance with the steps outlined in the Holford Rules[20] and SSEN Transmission's guidance 'Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above', the following principles have been taken into account as far as is practicable at this routeing stage and will be considered in more detail during Stage 3 (Alignment Selection):

- 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.
- Approach urban areas through industrial zones and consider the use of undergrounding in residential and valued recreational areas.

3.4.2 Route options have been identified at varying widths, departing from the standard 1 km width in order to take account of physical and development constraints identified during the Corridor workshop, namely the site topography and the operational and proposed wind turbines across the site (see **Figure 1**). Route widths have generally been increased, up to approximately 4 km in places, to allow for subsequent identification of alignments through the wind farms during the next stage of the process (Stage 3), while route widths have been narrowed below 1 km where steep topography has been considered to preclude installation of any connection type.

3.5 Appraisal Method

3.5.1 Appraisal of route options has involved systematic consideration against the topic areas included in **Table 3.1** overleaf.

RAG Rating

A RAG rating has been applied to each topic area within each section, indicating potential constraint to development. A high-level convention for assigning RAG ratings is shown in **Plate 3.1** below.

Plate 3.1: RAG Ratings

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

[20] 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*

3.5.2 Each route option for the Cloiche and Dell connections have been appraised as an OHL. The Glenshero connection has been appraised as a UGC based on the Glenshero Wind Farm developer's choice for connection option.

3.5.3 Following review of all of the potential route options, these environmental topics have been considered in combination to arrive at an environmentally Preferred Route for each connection.

Table 3.1: 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
		Atmospheric Pollution
		Contaminated Land
		Flooding
	Ground Conditions	Terrain
		Peat
	Construction / Maintenance	Access
		Angle Towers
	Proximity	Clearance Distance
		Proximity to Windfarms
		Communication Masts
		Metallic pipes
		Urban Environments
Cost	**Capital**	Construction
		Diversions
		Public Road Improvements
		Felling
		Land Assembly
		Consents Mitigations

	Category	Sub-Topic
	Operational	Inspections
		Maintenance

4. DESCRIPTION OF ROUTES

4.1 Identification of Route Options

4.1.1 This section of the Report describes each of the route options identified for environmental appraisal (see **Figure 1**). As noted within Section 3, route options have been defined at widths varying between approximately 0.5 km and 4 km to allow for subsequent identification of alignments during Stage 3 (Alignment Selection) of the project. The route options per connection assessed are listed below:

- Cloiche Wind Farm Connection
    - Route Option C1
    - Route Option C2A and C2B
    - Route Option C3
- Dell Wind Farm Connection
    - Route Option D1
    - Route Option D2
- Glenshero Wind Farm Connection
    - Route Option G1

4.1.2 The route options per connection assessed are described in the following:

Cloiche Wind Farm Connection

4.2 Route Option C1

4.2.1 Route Option C1 connects the proposed Cloiche Wind Farm on-site substation to the operational Melgarve substation. Route Option C1 represents the most western route option of those considered for the Cloiche connection.

4.2.2 Route Option C1 leaves Cloiche substation and travels in a south-westerly direction for approximately 3 km to the south of the Glendoe Reservoir. The route would travel through proposed Cloiche Wind Farm Turbines and cross the River Tarff while remaining south of Carn nan Caorach. This is the widest point of the route, at approximately 2.25 km.

4.2.3 Route Option C1 would continue travelling south-west, passing over Aonach Odhar then it would turn to travel generally south prior to reaching, but not crossing, the watercourse of Uisg a' Chamie.

4.2.4 The route would then follow the River Tarff in a southern direction with Min Choire situated to the east. Continuing south, Route Option C1 would pass a Cairn and then the Gairbeinn Corbett to the east. The route would narrow to approximately 0.8 km to remain east of Loch Aonaich Odhair and Geal Charn.

4.2.5 Route Option C1 continues south, reaching the watercourse Allt a Mhill Ghairbd which it follows while passing over Meall Garbh Beag and Meall Garbh Mor. With Corrieyairack Forest to the west, Route Option C1 turns to travel east before it reaches the Scheduled Monument of General Wade's Military Road and the Beauly – Denny 400 kV OHL to the south. Continuing east it crosses into the woodland around the watercourse of Leachd a' Chonnaidh, while remaining north of the Old Military Road.

4.2.6 After passing through the woodland around Leachd a' Chonnaidh, the route option narrows to approximately 0.5 km to remain north of Creag Bheag while also remaining south of the steep ground of Creag Mhòr. The route would continue east for approximately 2 km, widening again to approximately 1 km as it reaches Melgarve substation.

4.2.7 Photographs of Route Option C1 are shown in **Plate 4.1** below.

Plate 4.1: Route Option C1 Photographs

Photo 1: View from eastern edge of Glendoe Dam Reservoir, looking southwest in the general direction of Cloiche substation, where Route Option C1 would originate from and then travel southwest away from.

Photo 2: View from viewpoint north of Glendoe Dam, looking south towards Uisg a' Chamie and where the connection would travel generally south.

Photo 3: View from Old Military Road, looking northwest, at point where the connection would emerge from the woodland around Leachd a' Chonnaidh, remaining north of Creag Bheag and south of the steep ground of Creag Mhòr.

Photo 4: View from Old Military Road, facing east, looking towards Melgave substation, which Route Option C1 would travel towards in an eastern direction. The pictured Beauly Denny 400 kV line would remain south of Route Option C1.

4.3 Route Option C2A and C2B

4.3.1 Route Option C2A represents a central, more 'direct' route option of those considered for the Cloiche connection. The route would travel in a generally southern direction, away from the proposed Cloiche Wind Farm on-site substation to Melgarve substation.

4.3.2 Route Option C2A leaves the proposed Cloiche substation and travels directly south for approximately 2.5 km until it reaches the area around Min Chorie and the most northern branches of the watercourse Allt Luairdhe. Route Option C2A would travel over the north-westerly point of Carn Dearg's peak and travel away from it in a south-west direction.

4.3.3 Route Option C2A would pass a Cairn and then the Gairbeinn Corbett to the west following Allt Luairdhe south, passing over Meall a' Chùit and where Allt Luairdhe branches away from Allt Féith a' Mhorair.

4.3.4 Route Option C2A would then join Route Option C1 at the northern side of the woodland around Leachd a' Chonnaidh. The route would continue as Route option C1 east to reach Melgarve substation.

4.3.5 A variation to Route Option C2A has been identified in the form of Route Option C2B. Route Option C2B differs from Route Option C2A by turning to travel south-east rather than southwest at the area around Min Chorie.

4.3.6 Route Option C2B would travel over the north-easterly point of Carn Dearg's peak and travel away from it in a south-east direction. It would cross the northern branches of Allt Féith a' Mhorair and continue traveling southeast with the steeper ground of Creag Mhòr outwith the Route Option to the west.

4.3.7 Upon reaching Meall nan Ruàdhag and Allt Gilbe to the east, Route Option C2B would then turn and continue south. With Allt Gilbe to the east, and the steep ground of Creag Mhòr to the west Route Option C2B would continue south passing over Meall a Ghiubhais. Route Option C2B would then join the route of Route Option C1 around Coire a' Chiubhais to the north of Melgarve substation. The route would continue as Route Option C1 to reach Melgarve substation.

4.3.8 Photographs of Route Options C2A and C2B are shown in **Plate 4.2** below.

Plate 4.2: Route Option C2A and C2B Photographs

Photo 1: View from eastern edge of Glendoe Reservoir, looking south in the direction of Cloiche Wind Farm on-site substation, where Route Option C2A would originate from and then travel south away from.

Photo 2: View from north of Melgarve, west of the Creag Bheag forestry, looking northwards towards Meall Chuit and Route Option C2A.

Photo 3: View from road south of Old Military Road, looking west C2A would join the route of Route Option C1 at the northern side of the pictured woodland around Leachd a' Chonnaidh then travel east towards Melgarve substation. The Beauly - Denny OHL visible in picture would remain south of the Cloiche connection.

Photo 4: View from Melgarve substation, looking southeast to where Route Option C2B would join Route Option C1. Beauly - Denny OHL visible in picture.

4.4 Route Option C3

4.4.1 Route Option C3 represents the most eastern route option of those considered for the Cloiche connection.

4.4.2 Route Option C3 travels in a generally eastern direction for approximately 3 km where it would overlap with the route of the proposed Route Option G1 traveling south towards Melgarve substation for approximately 5 km.

4.4.3 Upon leaving the proposed Cloiche on-site substation, Route Option C3 would travel east, crossing the watercourse of Caochan Uilleim through the proposed Cloiche Wind Farm turbines and passing over Meall Caca. The route would then pass into the area of Stronelairg Wind Farm, crossing the watercourse of Allt Creag Chomaich while remaining north of Lochan Iain and Dubh Lochan.

4.4.4 Route Option C3 then turns to move south-west of the peak of Carn na Gourach. The existing UGC that connects Stronelairg Wind Farm to Melgarve would enter the route at this point, just south of Carn na Gourach, and continue southwards to Melgarve substation.

4.4.5 Route Option C3 would pass over Loch nan Sidhean and Sìdhean Dubh na Cloiche Bàine then pass into the eastern area of the proposed Glenshero Wind Farm from the north. It would cross the area surrounding the proposed Glenshero Wind Farm on-site substation and five of its associated turbines.

4.4.6 Overlapping Route Option G1, Route Option C3 would extend south, between the area around the proposed Glenshero substation and Meall na h-Aisre to the east. The route would continue south, passing east of Meall nan Ruadhag and west of Coire Iain Oig. It would cross over the watercourse of Allt Gilbe and Sherramore Forest which lies north-east of Melgarve substation.

4.4.7 It would continue south, avoiding the steeper ground of Meall a Ghiubhais by passing it to the east, before reaching Melgarve substation.

4.4.8 Photographs of Route Option C3 are shown in **Plate 4.3** below.

Plate 4.3: Route Option C3 Photographs

Photo 1: View from Stronelairg Wind Farm facing south in the direction of where Route Option C3 travels east.

Photo 2: View from Stronelairg Wind Farm on-site substation facing southwest in the direction of where Route Option C3 travels east before turning south towards Melgarve substation.

Dell Wind Farm Connection

4.5 Route Option D1

4.5.1 Route Option D1 connects the proposed Dell Wind Farm on-site substation to the operational Melgarve substation via one of the proposed Cloiche Route Options as noted above.

4.5.2 Route Option D1 represents the more western route option of the two options considered for the Dell connection. It would travel generally south towards the proposed Cloiche Wind Farm.

4.5.3 Route Option D1 leaves Dell substation and travels in a south-westerly direction heading towards Glen Tarff and the Glendoe Reservoir. The route would remain south-east of Glen Brein and avoid the steep slopes there.

4.5.4 With Coire Odhar in its eastern side and the Cairn-topped Carn Easgann Bàna in its western side, the route would continue south. Turbines from the proposed Dell Wind Farm, the proposed Cloiche Wind Farm and the operational Stronelairg Wind Farm all lie within the route here. The route option is approximately 3 km wide at this point.

4.5.5 Route Option D1 would pass over A' Chraidhleag and the Stronelairg Wind Farm access tracks as it travels past the eastern side of the Glendoe Reservoir.

4.5.6 Upon reaching Carn nan Caorach and the area of the proposed Cloiche substation, Route Option D1 would connect into the substation. From this point, both the Dell Wind Farm and Cloiche Wind Farm connection would proceed to Melgarve substation as part of the same single-rated connection within the Preferred Route for the Cloiche connection.

4.5.7 Photographs of Route Option D1 are shown in **Plate 4.4** below.

Plate 4.4: Route Option D1 Photographs

Photo 1: View from main access track into Stronelairg Windfarm, at point approximately 1.5 km north of Glendoe Dam, looking east across a more minor track towards the area Route Option D1 would travel from Dell substation south from towards Cloiche substation.

Photo 2: View from main access track within Stronelairg Windfarm at point approximately 2.5 km west of Stronelairg substation, looking north towards where Route Option D1 will travel south from.

4.6 Route Option D2

4.6.1 Route Option D2 connects the proposed Dell Wind Farm on-site substation to the operational Melgarve substation via the area surrounding the proposed Glenshero on-site substation.

4.6.2 Route Option D2 represents the more eastern route option of the two options considered for the Dell connection, leaving Dell substation and travelling in a south south-easterly direction through the proposed Dell and Cloiche wind farms. The route would remain west of the steep ground around Meall nan Ruadhag and Allt Odhar.

4.6.3 The route expands to a maximum width of approximately 4 km in width and partially overlaps with Route Option D1, extending west as far as the Cairn-topped Carn Easgann Bàna. It would travel through the operational Stronelairg Wind Farm for approximately 2.5 km.

4.6.4 Route Option D2 would travel south-east to the peak of Meall Caca, crossing Allt Creag Chomaich. Route Option D1 would then overlap Route Option C3 approximately where it turns to travel south and the existing

UGC connection Stronelairg on-site substation to Melgarve substation meet. The route would remain west of the peak of Carn na Gourach.

4.6.5 Route Option D2 would pass over Loch nan Sidhean and Sìdhean Dubh na Cloiche Bàine, overlapping Route Option C3. Route Option D2 would then pass into the eastern area of the proposed Glenshero Wind Farm from the north, also overlapping Route Option G1.

4.6.6 Route Option D2 would extend south, away from the proposed Glenshero substation and along the west slope of Meall na h-Aisre. The route would continue south, passing east of Meall nan Ruadhag and west of Coire Iain Oig. It would cross over the waster course of Allt Gilbe and Sherramore Forest north-east of Melgarve substation.

4.6.7 The route would continue south, avoiding the steeper ground of Meall a Ghiubhais by passing it to the east, before reaching Melgarve substation.

4.6.8 Photographs of Route Option D2 are shown in **Plate 4.5** below.

Plate 4.5: Route Option D2 Photographs

Photo 1: View from main Stronelairg Wind Farm Access track, at a point approximately 1 km west of Stronelairg substation, looking north towards where Route Option D2 would travel from.

Photo 2: View from Stronelairg Wind Farm on-site substation facing south in the direction of where Route Option D2 travels south towards Glenshero substation.

Glenshero Wind Farm Connection

4.7 Route Option G1

4.7.1 Route Option G1 connects the proposed Glenshero Wind Farm on-site substation to the operational Melgarve substation. Route Option G1 represents the only route option in consideration for the Glenshero connection at this stage, as there are no other viable options (see Section 8).

4.7.2 Route Option G1 would extend south, away from the proposed Glenshero substation which lies west of Meall na h-Aisre. The route would continue south, passing east of Meall nan Ruadhag and west of Coire Iain Oig. It would cross over the watercourse of Allt Gilbe and Sherramore Forest north-east of Melgarve substation.

4.7.3 It would continue south, avoiding the steeper ground of Meall a Ghiubhais by passing it to the east, before reaching Melgarve substation.

4.7.4 Photographs of Route Option G1 are shown in **Plate 4.6** below.

Plate 4.6: Route Option G1 Photographs

Photo 1: View from approximately 0.5 km northeast of Melgarve substation, looking north towards the patch of woodland which lies northeast of Melgarve substation. The steep ground of Meall a Ghiubhais is visible to the west.

Photo 2: View from approximately 0.5 km northeast of Melgarve substation, looking southwest in the direction of Melgarve substation and the Beauly – Denny OHL.

5. ENVIRONMENTAL BASELINE

5.1 Introduction

5.1.1 This Section of the Report describes the environmental baseline and key constraints within the Melgarve Corridor, with a particular focus on those constraints relevant to the route options under consideration. This Section makes reference to **Figures 2 to 12** which display the various designations and environmental features discussed throughout.

5.2 Local Context

5.2.1 The Corridor is located within the local authority area of The Highland Council. It lies east of Fort Augustus and extends across the Great Glen and up onto the Monadhliath Mountain range. The Corridor boundary is generally defined by the Cairngorms National Park Authority 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.

5.2.2 The Corridor 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 boundary of the Corridor in areas with low lying glens and rivers, land use includes agriculture and commercial forestry.

5.2.3 The Corridor 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.

5.2.4 Within the Corridor area there is limited settlement. Existing 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 Corridor boundary.

5.2.5 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. The Corridor is uninhabited and adds to the sense of remoteness across much of the wider area.

5.2.6 The Corridor is largely devoid of cultural heritage interest. However, General Wades Military Road Scheduled Monument is located to the south of the Corridor boundary, along with a small number of associated listed buildings.

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

5.2.8 Other electrical infrastructure and renewable energy generation within the Corridor 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.

5.3 Environmental Designations

5.3.1 Several areas are afforded recognition or protection within planning policy outwith, but within close proximity to the Corridor area. These are the following environmentally designated sites or areas (see **Figures 2, 7 and 9**).

- The River Spey Special Area of Conservation (SAC) (site code: 8365) and Site of Special Scientific Interest (SSSI) (site code: 1699) located adjacent to the southern boundary of the Corridor. River Spey SSSI and SAC are designated for biological features including Atlantic salmon (*Salmo salar*),

Freshwater pearl mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*) and Sea Lamprey (*Petromyzon marinus*).

- 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 Corridor, designated for its natural biological features including a diverse mosaic of upland habitats of European importance. This includes priority blanket bog habitat and other upland habitats including rocky slopes (including inland cliff, rocky outcrops, acidic scree and chasmophytic vegetation), upland birch woodland, alpine and subalpine heaths, upland assemblage and vascular plant assemblage. Other important features include clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels and breeding bird assemblage. Parts of SSSI above 740 m are designated an SPA for Dotterel (*Charadrius morinellus)* breeding, qualifying under Article 4.1 of the Directive (79/409/EEC) as requiring special conservation measures.
- Monadhliath SAC (site code: 8324) and SSSI (site code: 1180) located east of the Corridor boundary. The area is designated for priority upland habitat blanket bog and its mire communities and a range of upland habitats supporting rare vascular plants. In addition, the habitat supports Black mountain moth (*Glacies coracina*), breeding bird assemblage and Dotterel (*Charadrius morinellus*), breeding, which is a species of national importance.
- Glendoe Lochans SSSI, located approximately1.6k m west of Corridor boundary, qualifying under Article 4.2 of the Directive (79/409/EEC) by regularly supporting populations of European importance of migratory species; Common scoter *Melanitta nigra* and Slavonian grebe *Podiceps auratus* breeding birds. The SSSI forms part of the Loch Knockie and nearby Lochs SAC (396.4 ha) qualifying under Article 4.1 (79/409/EEC) by regularly supporting a population of European importance of the Annex 1 species: Slavonian grebe *Podiceps auratus.*
- Glen Tarff SSSI (site code: 725) located approximately 3 km west of the Corridor boundary designated for its biological features including upland mixed ash woodland and Beetle *Bolitophagus reticulatus* which forms part of the Ness Woods SAC (site code: 8337) designated for European mixed woodlands on base-rich soils associated with rocky slopes and western acidic oak habitat and European species Otter (*Lutra lutra*).
- Parallel Roads of Lochaber SSSI (site code: 1272) located approximately 3 km south-west of the Corridor boundary designated for its quaternary geology and fluvial geomorphology features.
- There are no designated Ancient Woodland Inventory (AWI) areas located within the Corridor area. The nearest AWI (ancient- of semi natural origin) is located at NH531061 north-east of the Corridor following Allt Odhar. Several other designated AWI are located along the River Killin north of the Corridor. Further south of the Corridor (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 Corridor, approximately 0.5 km from the nearest point. The Cairngorms National Park was established in 2003 and covers the Cairngorms range of mountains, and surrounding hills. It is a landscape of great variety, with distinctive landforms, wildlife, colours and textures, and, equally important, containing less tangible qualities such as the evocation of wilderness, naturalness, remoteness, cultural continuity and recreational exploration. Around two million people visit the Cairngorms each year to ski, walk and fish.
- Wild Land Area (WLA) 19: Braeroy, Glenshirra and Creag Meagaidh bounds the Corridor area to the south. This WLA is characterised by open rolling moorland hills and plateaux formed of hard, intrusive igneous and metamorphic rocks. WLA 20: Monadhliath bounds the Corridor area to the east. This WLA is characterised by long range of large rolling moorland hills and plateaux.

5.3.2 Only one area afforded recognition or protection within planning policy is present within the actual Corridor area: the River Tarff water catchment is designated as a Drinking Water Protection Area (DWPA), which

includes the Glendoe Reservoir and its tributaries, and is situated within the west boundary of the Corridor. The catchment area of the DWPA is shown on **Figure 7**.

5.4 Natural Heritage

Protected Species

5.4.1 Based upon the presence of suitable habitats, qualifying features of nearby designated sites and the findings of previous ecological surveys for Dell, Cloiche, Glenshero and Stronelairg Wind Farm Environmental Statements (ES) / EIA Reports (EIARs), the following protected species have been considered.

- Low altitude areas are likely to provide suitable foraging habitat for badgers (*Meles meles*). However, Dell, Cloiche, Glenshero and Stronelairg Wind Farm ESs / EIARs reported no signs of badger.
- Pine marten (*Martes martes*) signs (scat) was found at lower altitudes where areas of trees are present in the Dell ES mammal surveys. No pine marten signs were recorded during Cloiche, Glenshero or Stronelairg surveys.
- Mountain hare evidence (*Lepus timidus*) was recorded during the mammal surveys for Glenshero, Stronelairg and Cloiche and were considered likely to be widespread within the Corridor area.
- The distribution and abundance of watercourses indicates there is likely to be water vole (*Arvicola amphibius)* and otter (*Lutra lutra*) present within the Corridor. Dell, Glenshero and Cloiche Wind Farm ES site surveys reported evidence of otter (spraints, footprints and potential holts and resting places) and signs of water vole (burrows, feedings signs, latrines and footprints) near watercourses. Water vole colonies were also found in narrow riparian grassland habitat areas along watercourses in Stronelairg Wind Farm ES.
- Broadleaf woodland habitat may provide suitable habitat for roosting bats, (common pipistrelle (*Pipistrelle pipistrellus*), soprano pipistrelle (*P. pygmaeus*) and Daubenton's bat (*Myotis daubentoniid)* recorded during surveys carried out for Glenshero and soprano pipistrelle bat (*Pipistrellus pygmaeus*) during surveys carried out at Stronelairg. Potential roosts were identified nearby in the Dell ES surveys as well as two species of Bat (common pipistrelle (*Pipistrelle pipistrellus*), soprano pipistrelle (*P. pygmaeus*). The plateau areas within Corridor are considered to have low foraging potential for bats due to the high altitude, low temperatures, and exposure. More favourable foraging habitat includes trees and linear features found near access tracks.
- The habitats present within the Corridor are considered to be suitable for supporting Common lizard (*Zootoca vivipara)*. Common Lizard were noted on the Dell, Stronelairg and Glenshero site surveys undertaken. Although not recorded during the site surveys, it is also considered possible that adder (*Vipera berus)* may be present too.
- Amphibians including common frog and an unidentified newt species were noted to be present in the Cloiche ES surveys across the study area. Amphibians are included in the Highlands BAP (THC, 2015)[21] and are considered to be of local importance. The common frog was also found to be widespread across the Stronelairg and Dell ES survey area.
- Mountain hare and red deer are included in the Highlands BAP (2015) and are widespread in the study area and are considered to be of local importance in Cloiche, Glenshero, Dell and Stronelairg ES surveys.
- No surveys found signs of freshwater pearl mussels in watercourses within the Corridor, however it forms one of the qualifying features for the River Spey SAC to which the Corridor is connected.

[21] https://www.highlandenvironmentforum.info/biodiversity/action-plan/

- No watercourses within the Corridor area are designated as Scottish Salmon Rivers. The River Spey is hydrologically connected to the site and is classified as having salmon present. Brown trout are a priority species in the UK Post 2010 Biodiversity Framework (2012) and were noted as present in fish surveys carried out for Cloiche, Stronelairg and Dell ESs / EIARs.

Habitats

5.4.2 Desk-based review of publicly available data for the operational Stronelairg Wind Farm, and proposed Cloiche Wind Farm, Dell Wind Farm and Glenshero Wind Farm was used to inform understanding of habitats likely to be present within the Corridor area. Aerial imagery, HabMos and the Carbon and Peatland Map were also used to provide a general overview of habitats.

5.4.3 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.

5.4.4 Small lochans and water bodies and tributaries and various sizes are common throughout the Corridor and small areas of both semi-natural woodland and commercial plantation are present at lower altitudes.

5.4.5 The following Annex 1 habitats (which are afforded greater protection through their inclusion in Annex 1 of the EU Habitats Directive 92/43/EEC) have been recorded by these schemes and are likely to be present throughout the Corridor (**Figure 3**). '*' indicates 'priority habitat' which are afforded a higher level of protection due to their conservation importance:

- 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.
- 7130 Blanket Bog*.

5.4.6 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 nah-Aisre and in the south surrounding Creag Mhor. This habitat is fairly discrete in its distribution.

Peatlands

5.4.7 The carbon and peatland map 2016 indicates that Class 1 and Class 2 peatland habitats are abundant within the corridor – particularly across the higher altitude plateaux areas in the north (**Figure 6**).

5.4.8 Class 1 Peatland Habitat is defined as 'nationally important carbon rich soils, deep peat and priority peatland habitat - Areas *likely to be* of high conservation'.

5.4.9 Class 2 Peatland Habitat is defined as 'Nationally important carbon-rich soils, deep peat and priority peatland habitat - Areas of *potentially* high conservation value and restoration potential.

5.4.10 Class 1 and 2 peatlands are recognised as 'Group 2 Areas of Significant Protection' within Scottish Planning Policy (December 2020). The SPP states that, 'Recognising the need for significant protection, in these areas wind farms may be appropriate in some circumstances. Further consideration will be required to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or

other mitigation.' Whilst wind farms are referred to directly, the same requirements will apply to other developments.

5.4.11 Potential Class 1 peatland coverage extends across much of the area in the northern half of the Corridor. Information available from Dell, Cloiche, Stronelairg and Glenshero ESs / EIARs, 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 6**.

5.4.12 It is important to note that guidance (SNH June 2015[22]) explains that "*The map cannot (and should not) be used in isolation to determine the impacts of a specific development proposal on peat. This should be based on a detailed, site specific survey of peatland habitats and peat depths across the site using existing methods. However, the map does provide useful context on the overall extent of these resources across Scotland and can be used to put the impacts of a specific application in context*"' and "*The location of a proposal in the mapped area does not, in itself, mean that the proposal is unacceptable, or that carbon rich soils, deep peat and priority peatland habitat will be adversely affected. The quality of peatland tends to be highly variable across an application site and a detailed assessment is required to identify the actual effects of the proposal, and to inform the location of site infrastructure*"'.

5.4.13 Habitat survey information from Glenshero, Stronelairg, Cloiche and Dell all mention that the peatland is degraded to some extent within the various survey areas which indicates that many areas of Class 1 peatland may fall within the Class 2 category and that opportunities for restoration exist.

Habitat Management Plans

5.4.14 The Stronelairg Wind Farm Habitat Management Plan (HMP) area is located beyond the Corridor boundary to the north of Glenmarkle Burn as shown on **Figure 4**.

5.4.15 The proposed Dell Wind Farm HMP area is to be agreed with the local planning authority prior to development commencing, this will include restoration of 10.5 ha of currently drained but restorable blanket bog in addition to 17.74 ha which will be restored on site (appears to be within the proposed Dell Wind Farm red line boundary). Other measures include the restoration of lowland blanket bog, planting of 50 sessile oak trees and creation of a black grouse flight corridor.

5.4.16 The proposed Glenshero Wind Farm HMP Options 1b, 3a and 3b are located within the Corridor area. 1b (630 ha) was specifically identified as eroded blanket bog and a good candidate for significant improvement. 3a (350 ha) and 3b (275 ha) were identified for the objective of native woodland creation and to enhance connectivity for species such as black grouse and wildcat, as well as deer.

5.4.17 No HMP area has been defined for the proposed Cloiche Wind Farm. However, the outline HMP states that within 5 years of commissioning a minimum area of 13.92 ha within the 'Study Area' (appears to be within the Cloiche Wind Farm red line planning boundary within the Corridor area) will be managed to restore blanket bog.

Ornithology

5.4.18 To the west of the Corridor lies Loch Knockie and nearby Lochans SPA, as shown on **Figure 5.** This SPA is designated for supporting populations of Slavonian Grebe (up to six pairs comprising 10 % of the UK population). These lochans also support breeding divers (Red-throated and Black-throated), as well as breeding Common Scoter. Schedule 1 bird species such as Greenshank are also present.

[22] Scottish Natural Heritage (June 2015) Spatial Planning for Onshore Wind Turbines – natural heritage considerations.

5.4.19 The Corridor falls within the foraging ranges for Golden Eagle, although their nest sites are understood lie outwith the Corridor as identified during previous survey work at the site carried out by the ornithology consultant; further assessments will be undertaken to confirm this as part of forthcoming environmental assessments for the Melgarve Cluster projects. Other Schedule 1 bird species present include Merlin (which potentially nest within the corridor) and Peregrine. Important wader species which nest within the Corridor include Golden Plover and Dunlin. Red Grouse are present in large numbers, with the area managed for this species. A host of commoner species, such as Meadow Pipit and Skylark are also present in large numbers.

Water and Soils Environment

5.4.20 There are numerous watercourses and lochs within the Corridor, including tributaries of the River Tarff, River Fechlin and River Spey to the north, west and south of the Corridor respectively, as shown on **Figure 7.** 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. The Scottish Environment Protection Agency (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 Corridor.

5.4.21 Toward the north of the Corridor, larger watercourses are deeply incised and are bound by steep gradients.

5.4.22 Review of The Highland Council private water supplies (PWS) dataset indicates that one PWS is located within the Corridor. This PWS is recorded as a groundwater borehole at Stronelairg Wind Farm. SEPA has records of several CAR licences within the Corridor, generally associated with Stronelairg Wind Farm and substation to the north and Melgarve substation to the south-east. Other authorised engineering activities are noted within the south-west of the Corridor, representing bridging culverts over the watercourses in this area.

5.4.23 Superficial deposits within the Corridor 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 Corridor, especially within the northern extent, is classified by NatureScot as Class 1 or Class 2 peatland. Areas of deep peat have been proven by peat probing associated with the proposed wind farms.

5.4.24 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.

5.5 Cultural Heritage

5.5.1 Baseline information on known cultural heritage assets recorded within the Corridors was obtained in June 2021 from datasets curated by Historic Environment Scotland (Canmore) 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 buried cable grid connection in 2014. Further targeted survey work was carried out for this appraisal in June 2021.

5.5.2 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. The shieling grounds between Garva Bridge and Loch Spey are for the most part remote shielings, with the exception of Garva Beg mid shielings on the Allt Coire iain Oig and mid shielings of Kylarchil on the Feith Talagain. To the west of these were the remote shielings of the townships of Sherrabeg and Sherramore (Corry na Gawn on Thomson's map of 1832

and Allt a'Gamhna the stream of stirks), Crathy Croy on the Allt Feith a'Mhoraire (Feavorar on Thomson's map)) Cluny on the lower reaches of the Allt Yairack and Kylarchil towards the CorrieYairack pass.

5.5.3 Each of the shieling grounds would have had at least one shieling site. Buildings at the shielings ranged from the simple huts of the ordinary tenant to much larger, almost permanent houses of the tacksman. All of these sites would have been located adjacent to watercourses but not all have been located.

5.5.4 The Corrieyairack Pass, which lies outside of and to the south-west of the Corridor, provided an important drove route for cattle coming from the Western isles and even Strath Halladale in Sutherland and was in use long before General Wade built the military road through it in 1731. Melgarve (Meall Garbh) and Garva Mor were two of the cattle stances used by the drovers. Garva Mor provided an inn (now referred to as the Barracks) but no such facilities are recorded at Melgarve.

5.5.5 Wade's military road of 1731 included bridges on the Allt a'Mhill Ghairbh, the Caochan Riabhach and Garva Bridge, but the bridge over the Allt Feith a'Mhoraire, built some 200 m upstream from the present road alignment, with a loop of road now no longer discernible, is not shown on mapping until 1832.

5.5.6 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. All of these were likely on the sites of old shielings. 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

5.5.7 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.

5.5.8 Adjacent to the Corridor, outwith the southern boundary, exists the presence of a SM 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'.
- Garvamore, Garva Bridge over River Spey (St George's Bridge) LB6900 Category 'A'.

5.5.9 The small single span Drummin Bridge is on the direct line of wade's military road and was constructed in 1731-32. It is now bypassed with a new bridge immediately to the north. The Bridge over Allt Feith a Mhoraire was constructed around the same time and comprises a single span rubble hump-back bridge with tooled rubble arch ring and parapet cope, partially collapsed on the north side. The Garva Bridge also dates from 1731-32 and is a twin arched rubble bridge with a long cere section between arches springing from a rocky outcrop in the centre of the river. These sites are displayed on **Figure 8**.

Cultural Heritage Assets

5.5.10 In addition to these designated assets, the Highland HER contains details a number of non-designated assets of archaeological and cultural heritage interest within the route options (focused to routes rather than the entire Corridor and the focus for these is largely on direct impacts). Of these, the majority are minor features associated with the seasonal shieling grounds detailed above. A field survey carried out for this appraisal identified further, previously unrecorded shielings on the Allt Feith a'Mhoraire. These sites are displayed on **Figure 8**.

5.6 People

Proximity to Dwellings

5.6.1 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 Corridor, and Newtonmore in the upper Strathspey, which is approximately 14 km to the east of the Corridor, as shown on **Figure 9**. Smaller settlements 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 Corridor 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. Within the Corridor itself there are no dwellings.

5.7 Landscape Character and Visual Amenity

5.7.1 The majority of the Corridor 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 Corridor if the various combinations of the proposed Dell, Cloiche and Glenshero Wind Farms were also constructed. In the southern part of the Corridor 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 Beauly – 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 Corridor as the roads and tracks deteriorate in structure and the more remote mountainous landscape becomes more influential.

Protected and Designated Landscapes

5.7.2 No designated or protected landscapes are present within the Corridor. However, the following areas lie within approximately 1 km, as shown in **Figure 9**:

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

5.7.3 The CNP lies within 500 m to the east and south-east of the Corridor. 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. 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[23] of potential relevance to the Proposed Development are listed in **Table 5.1**.

5.7.4 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

[23] Scottish Natural Heritage (2010). Commissioned Report No. 375 - The Special Landscape Qualities of the Cairngorms National Park.

Corridor: WLA 20: Monadhliath lies within 500 m to the east whilst WLA 19: Braeroy – Glenshirra – Creag Meagaidh lies approximately 1 km to the south. The Key Qualities of these areas are identified by NatureScot[24 / 25] and are detailed in **Table 5.1**.

Table 5.1: Qualities of Designated and Protected Landscapes

Designation / Protected Landscape	Special Landscape Qualities / WLA Key Qualities relevant to the Proposed Development
CNP	General Qualities: • Vastness of space, scale and height. • Strong juxtaposition of contrasting landscapes. • A landscape of layers, from inhabited straths to remote, uninhabited upland. • Landscapes both cultural and natural. The Mountains and Plateaux • The unique plateaux of vast scale, distinctive landforms and exposed, boulder strewn high ground. • The surrounding hills. Glens and Straths • Steep glens and high passes. Wildlife and Nature • Dominance of natural landforms. • Wildness. Visual and Sensory Qualities • Grand panoramas and framed views. Recreation • A landscape of opportunities.
WLA 19: Braeroy – Glenshirra – Creag Meagaidh	• Rounded hills and plateaux that are awe-inspiring in their massive scale and simplicity, whilst geological features and rivers contribute strongly to the sense of naturalness. • A strong contrast of experience between the hills and plateaux with the straths, glens and corries, varying in their accessibility, exposure and visibility of human elements. • A hidden interior that is simple in landform and land cover, contributing to a perceived 'emptiness' and a strong sense of remoteness and sanctuary. • Access and recreation focused around the margins, with an interior that is visited by few and possesses a sense of solitude, physical challenge and risk. • Long, remote glens that penetrate far into the hills and plateaux: some arresting by virtue of their narrowness and steep side-slopes, and some because of their openness against a surrounding backcloth of towering mountains.
WLA 20: Monadhliath	• A range of massive rounded hills and plateaux that are awe-inspiring in their simplicity, openness and immense scale, and offer panoramic views to distant mountain ranges. • An extensive, simple interior with few human artefacts, contributing to a perceived 'emptiness' and a strong sense of naturalness, remoteness and sanctuary.

[24] SNH (2017). Description of Wild Land Area 19. Braeroy – Glenshirra – Creag Meagaidh [ONLINE] Available at: https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20Braeroy-Glenshirra-Creag-Meagaidh-July-2016-19.pdf

[25] SNH (2017). Description of Wild Land Area 20. Monadhliath [ONLINE] Available at: https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20Monadhliath-July-2016-20.pdf

Designation / Protected Landscape	Special Landscape Qualities / WLA Key Qualities relevant to the Proposed Development
	• A hill range in which many types of recreation take place, but its large, remote interior maintains a sense of sanctuary, challenge and risk. • Long, narrow glens cutting into the hill and plateau edges which are remote, but facilitate access.

Landscape Character Types (LCTs)

5.7.5 The Landscape Character Assessment of Scotland, undertaken by NatureScot[26] identifies two Landscape Character Types within the Corridor, as illustrated on **Figure 10**: 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. All of the route options leading to Melgarve substation pass through both landscape character types. Those which terminate at Cloiche or Glenshero substation are located only within the Rolling Uplands – Inverness LCT. **Table 5.2** provides a baseline description of these LCTs including their key characteristics, identified by NatureScot.

5.7.6 An appraisal of landscape sensitivity has been undertaken for each of these LCTs, based on guidance from the Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3). This involves consideration of two aspects as follows:

- **Landscape Value**: This includes consideration of any landscape designations or other important landscape areas, perceptual aspects such as wildness, scenic quality, recreational or other land use interests, conservation interests and relative rarity in the local or regional context.
- **Susceptibility to change**: This involves, the ability of the landscape to accommodate development of the type proposed without changing its intrinsic qualities. This takes account of issues such as the scale and composition of the landscape, the potential for key defining characteristics to be lost or changed as a result of the development and the degree to which this type of development is already present in the landscape.

5.7.7 The sensitivity rating is based on the following criteria:

- **High** – A highly valued landscape of particularly distinctive character susceptible to relatively small changes of the type proposed.
- **Medium** – A reasonably valued landscape with a composition and characteristics tolerant of some degree of change of the type proposed.
- **Low** – A relatively unimportant landscape which is potentially tolerant of a large degree of change of the type proposed.

Table 5.2: Key Characteristics and Sensitivity of LCTs

LCT	Description, Key Characteristics and Sensitivity Rating	
Rolling Uplands – Inverness LCT	Key Characteristics	• A series of large scale, smooth, rounded hills with summits of similar height forming broad, undulating upland plateaux containing occasional steep-sided straths. • Open heather moorland dominates, the uniform colour and texture accentuating the landform. • Strath floors contain in-bye pastures, trees and small patches of woodland. • Conifer forests limited to the lower edges of uplands and strath sides. • Settlement limited to a few isolated farms in remote straths. • A few mainly single track roads, integrated within the landform

[26] 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

LCT	Description, Key Characteristics and Sensitivity Rating	
		• Uninhabited interior, largely inaccessible to vehicles. • Archaeological evidence of settlement and farming from prehistoric times to the 19th century. • Striking colour and textural contrast between strath floors and moorland vegetation above. • Expansive views from the hill tops and plateaux create a strong sense of openness and exposure. • Scale and distance difficult to judge. • Few signs of active management in the interiors, creating a strong perception of remoteness, although this is affected by a number of large wind farm developments.
	Sensitivity	Within the Corridor this LCT is strongly influenced by wind turbines, which would increase with the addition of either Dell, Cloiche or Glenshero. This would reduce susceptibility to further development although there is potential for visual confusion between turbines and lattice towers. The LCT is to some extent valued for recreational opportunities and for its remote qualities, experienced away from existing wind turbines. Sensitivity ranges between **Low – Medium** in areas characterised by existing turbines, to **Medium - High** in areas where more remote characteristics predominate.
Upland Glen – Inverness	Key Characteristics	• Broad U-shaped glen. • River Spey headwaters meandering across glen floor. • Fragmented vegetation pattern with occasional remnant Caledonian pine forming a visual focus in some locations. • Angular conifer forests on lower side slopes. • Winding narrow, single-track old military road up the centre of the glen ending in a rough mountain pass. • Unsettled, with only derelict farmsteads and shielings. • Sense of remoteness.
	Sensitivity	This LCT 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. There is also susceptibility for cumulative effects. Sensitivity is considered to be **Medium**.

Potential Visual Receptors

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

5.7.9 The area is sparsely populated with only one lodge property present near Loch Killin, to the north and a small group of cottages at Garvabeg to the south. In addition, two recreational mountain bothies are present in Glen Spey to the south-west of the Corridor at Melgarve and Shesgnan.

5.7.10 There are a number of recorded and publicised recreational routes passing through and close to the Corridor with potential for views to be obtained of any new development. These include Scottish Hill Tracks[27] 235 (Laggan to Whitebridge) which passes through the east of the Corridor, 231 (Tomatin to Whitebridge) which passes close to the north-east, and 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 Corridor.

[27] Scottish Rights of Way and Access Society (2012). Scottish Hill Tracks, 5th Edition. Scottish Mountaineering Club

In addition, the main spine road of the Stronelairg Wind Farm is promoted by the South Loch Ness Access Group as part of the Monadhliath Trail between Fort Augustus and Whitebridge.

5.7.11 These routes are largely located within the glens around the Corridor with views directed along the glens by the surrounding hills. Scottish Hill Track 235 and the Monadhliath Trail also passes across the plateau, with more elevated views but with existing wind turbines often forming a visual focus.

5.7.12 Other popular viewing locations include hill or mountain summits of which there are two Corbetts (Gairbeinn and Meall na h-Aishre) within the Corridor and one Munro (Geal Charn) just to the east of the Corridor. These summits are all typically accessed from the River Spey valley to the south of the Corridor. A small public car park at Garva Bridge, just to the south-east of the Corridor, also forms a popular viewing location as it marks the end of the public road and is sited on the boundary of the CNP.

5.7.13 Recreation is discussed further in Section 5.8 below.

5.8 Land Use and Recreation

5.8.1 This section considers land use and recreation within the Corridor, specifically forestry and agriculture, and recreational use and amenity. In addition to this the existing infrastructure associated with Glendoe Hydro Scheme, present in the wider area (dam, reservoir, intakes, pipelines, tunnels, tracks and administrative building), and Stronelairg Wind Farm (turbines, tracks, substation, cable route, administrative building), have been included on **Figure 11**.

Forestry

5.8.2 Forestry is not a common land use within the Corridor. **Figure 12** shows the distribution of the few forest areas that are within the Corridor, all of which are to the south, close to Melgarve substation. Some small areas of Native Woodland are identifiable in these southern areas.

5.8.3 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.

5.8.4 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 Corridor.

Agriculture

5.8.5 Rough grazing is the predominant agricultural land use within the area, with some small-scale agricultural occurring, outwith the Study Corridor to the west in the land along the flat bases of the Great Glen.

5.8.6 Areas of agricultural land are classified by The Macaulay System of Land Capability for Agriculture[28] ranks land based on its potential for productivity and cropping flexibility. There are seven classes in total, where Class 1 has the highest potential for agriculture and Class 7 has the lowest.

5.8.7 Within the Corridor, the majority of the land is Class 7, land of very limited agricultural value or Class 6.3, land capable of use as rough grazing with low quality plants.

[28] 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 30 June 2021].

5.8.8 Within the south-west there is a section of Class 6.2, land capable of use as rough grazing with moderate quality plants. There is one area classed as Class 5.3, land capable of use as improved grassland within the Corridor. This is to the south, in the vicinity of Melgarve substation.

Recreation

5.8.9 The Corridor 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. Areas within the Corridor are also popular for activities such as walking and cycling.

5.8.10 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 11**).

5.8.11 Scottish Hill Track 235 exits the Cairngorms National Park travelling north and runs through the existing turbines of Stronelairg Wind Farm as well as the most eastern proposed turbines of Cloiche Wind Farm. It travels through the north-eastern protruding edge of the Corridor for approximately 3.3 km linking up with the Monadhliath Trail. Scottish Hill track 236 travels from within the Cairngorms National Park west to Fort Augustus and runs near to the south boundary of the Corridor.

5.8.12 In terms of Hill Walking, there are several Munros in the surrounding area, however, none are within the Corridor. Two Corbetts fall within the Corridor (a mountain over 2,500 feet, but under 3,000 feet). These are Meall na h'Aisre to the east and Gairbeinn, to the west.

5.9 Planning

National Policy

5.9.1 Scotland's third National Planning Framework (NPF3) was published by the Scottish Government on 23rd 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. The NPF4 consultation draft is due to be issued to parliament in autumn 2021, aiming for final approval by spring 2022.

5.9.2 Scottish Planning Policy (SPP) was also published on 23rd 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

5.9.3 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.

5.9.4 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.

5.9.5 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 16th March 2012 to enable these elements to remain in force.

5.9.6 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.

5.9.7 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.

5.9.8 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.

5.9.9 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 Corridor. The nearest settlement covered by the plan is Invergarry, situated approximately 16 km west of the Corridor.

Planning Proposals

5.9.10 The identification of planning proposals has been limited to those within or adjacent to the route options under consideration, rather than the full Corridor, as applications outwith the route options are not likely to be affected by a new OHL.

Current Applications

5.9.11 There are very few current applications for planning permission identified within or adjacent to the route options under consideration.

5.9.12 The three proposed Wind Farm developments that are related to this Cluster project are the largest-scale current applications within or adjacent to the route options. These are the proposed Cloiche Wind Farm, the proposed Dell Wind Farm and the proposed Glenshero Windfarm. These developments will need to be taken into consideration when planning the routes for the connections.

Consented Development

5.9.13 A number of planning applications lodged within the last two years have been granted consent within the Corridor. These are to the south and lie near to Melgarve substation. These include:

- Formation of a track on land 640 m northwest of Garvabeg West, Laggan, which prior Approval was deemed Not Required in February 2020.

- Formation of forestry roads on land 2720 m northwest of 1 Garvamore, Laggan was permitted in April 2020.
- Installation of an 11 kV OHL which extends from Melgarve substation to Glenshero Lodge, adjacent to Loch Crunachdan.
- Retention of tarmac/site construction compound area for emergency helipad on the land 2910 m northwest of 1 Garvamore, Laggan was permitted in November 2019.
- Temporary Lay-Down Compound Adjacent to Melgarve substation was permitted consent in September 2020.

5.9.14 No other recent consents have been identified within or adjacent to the route options.

6. SUMMARY OF COMPARATIVE APPRAISAL: CLOICHE

6.1 Cloiche Comparative Appraisal

6.1.1 This section provides a summary of the potential environmental, technical and economic constraints identified for each route option for the Cloiche Wind Farm connection following the topic areas shown in **Table 3.1**. Appraisal of route options is set out in greater detail within **Appendix 1**. Reference should also be made to Reference should also be made to **Figures 2** to **12** which illustrate potential environmental baseline constraints identified under each topic.

6.1.2 Each route option has been appraised as an OHL as per the contracted position. A desk-based assessment of other projects in the area has indicated there may be potential challenge to an OHL solution on environmental grounds and as such consideration of an UGC option for all or part of each Route is discussed where relevant.

6.1.3 As noted earlier in Section 2.2, L7 steel lattice tower structures are the preferred technology option for OHL route options. For the purposes of this appraisal, it has been assumed that OHL options will feature this technology.

6.2 Environmental Topic Areas

Natural Heritage

Designations

6.2.1 None of the route options for Cloiche pass through any designated Ramsar, SSSI, SAC, Ancient Woodland or NNR sites. Several designated sites (River Spey SSSI and SAC; Creag Meagaidh SSSI, SAC, SPA and NNR; Monadhliath SSSI and SAC; Glendoe Lochans SSSI; Loch Knockie and nearby Lochs SAC; Glen Tarff SSSI; Ness Woods SAC and Parallel Roads of Lochaber SSSI) are located within 5 km of the Corridor. The only site which is likely to have connectivity to the routes is the River Spey SSSI and SAC which is connected to all routes via water courses.

6.2.2 All four routes are present within the River Tarff surface water catchment which is designated as a DWPA. Route Option C1 has the greatest presence within the catchment as approximately 4.5 km, while the other route options are within the catchment for 2.5 km or less.

6.2.3 As none of the route options pass through any protected designations but all have a potential connectivity to the River Spey and as such they have all been assigned **Amber** RAG ratings for natural heritage designations. While not considered to be an internationally / European or nationally protected designation, the DWPA designation does set Route Option C1 as a lower preference than the other route options.

Protected Species

6.2.4 All route options pass through a similar mix of habitats from higher to lower altitudes with water course crossings fairly frequent throughout them all.

6.2.5 Impacts on protected species could be further reduced or eliminated by undertaking pre-construction surveys and adopting appropriate mitigation. These measures are expected to be included in a standard species protection plan for the proposal.

6.2.6 All route options have been allocated a RAG rating of **Amber** for protected species. At this stage, no clear preference has been identified between route options in relation to protected species.

Habitats

6.2.7 Annex 1 data for Cloiche and Glenshero was available for this Report (**Figure 3)**. Due to these habitats' inclusion in Annex 1 of the Habitats Directive (92/43/EEC) they are afforded a higher level of conservation importance. Priority Annex 1 habitats (mostly blanket bog in the Corridor area) are recognised as particularly unique and of higher importance.

6.2.8 At the time of writing there was not data coverage for the entirety of all Route Options. However, the data available was suitable to provide an indication of the Annex 1 habitats likely to be present and their general abundance and distribution within the Route Options. The data generally show that blanket bog is highly likely to be the dominant Annex 1 priority habitat across all the routes, particularly at higher altitudes where low slopes and cold and wet conditions favour its development. Wet heath is the next most dominant Annex 1 habitat but is generally more patchily distributed and easier to avoid. The other five Annex 1 habitats tends to be rare across the site and confined to discrete patches; it should therefore be possible for most routes to avoid these.

6.2.9 Because blanket bog habitat is the most dominant Annex 1 and is a priority habitat that is also afforded additional protection in SPP, it is advised that route selection should focus on minimising impacts on this habitat. Other Annex 1 habitats should be easier to either avoid or minimise impacts on.

6.2.10 All route options pass through large areas of Class 1 peatland at higher altitudes with the abundance decreasing as altitude decreases towards the south of each route **(Figure 6**). The routes are ordered below from greatest to least impact on peatland habitats, based on the likely abundance of Class 1 peat:

- C3: Likely to have the highest impact due to having the longest section at higher altitude and therefore dissecting a larger area of Class 1 Peatland.
- C2B: Likely to have a high to intermediate impact on Class 1 Peatland due to greater proportion of the route at higher altitude and the likelihood that Class 1 Peatland appears to completely dissect the route in two areas, thereby making it more difficult to avoid.
- C2A: Likely to have an intermediate impact on Class 1 Peatland due to a smaller proportion of the route at higher altitude and Class 1 Peatland appears to completely dissect the route in one area and is potentially avoidable in other areas.
- C1: Likely to have the lowest impact as a greater proportion of the route is at lower altitude out with peaty areas. The large area of peatland in the north of this route may be avoidable by keeping to the edge of the route.

6.2.11 Route options C1 and C2A both overlap with management unit 3b of Glenshero outline Habitat Management Plan (HMP) which is proposed for native tree planting. There is uncertainty over the location of Cloiche HMP area (which has not been defined yet) so there is a possibility the route could conflict with this. Routes C2B and C3 do not overlap with management unit 3b. They do overlap with management unit 4a of Glenshero HMP but this is not likely to cause any constraint as it is for carrion removal. There is uncertainty over the location of Cloiche HMP area as noted above.

6.2.12 The route options pass through habitats of varying distinctiveness, with areas of blanket bog and Fen habitat designated as very high distinctiveness, while areas of upland heathland, heathland, woodland and scrub and acid grassland are of high distinctiveness. The BU and BU / Ha of each option are as set out in **Table 6.1**.

Table 6.1: Route Options Biodiversity Scores

Option	Biodiversity Units (BU)	BU per Hectare (BU / Ha)
Route Option C1	25,035.43	16.86
Route Option C2A	24,265.33	16.32
Route Option C2B	19,901.08	16.30
Route Option C3	30,918.99	17.74

6.2.13 The routes are ordered below from greatest to least impact on habitats, based on the calculated BU for each Route Option.

- C3: Likely to have the highest impact due to having the greatest BU and BU / Ha within its extents and the longest section at higher altitude and therefore dissecting a larger area of habitat classified as very high and high distinctiveness.
- C1: Likely to have a high impact with the second highest calculated BU. However, a greater proportion of the route is at lower altitude out with habitats of very high and high distinctiveness areas. The large area of blanket bog in the north of this route may be avoidable by keeping to the edge of the route.
- C2A: Likely to have an intermediate impact on habitats due to a smaller proportion of the route at higher altitude, however, blanket bog (habitat of very high distinctiveness) appears to completely dissect the route in one area and is potentially avoidable in other areas.
- C2B: Likely to have the lowest impact on habitats due to the lowest total BU and BU / Ha. However, the proportion of the route at higher altitude and the likelihood that habitat of very high distinctiveness (blanket bog) being completely dissecting the route in two areas, thereby making it difficult to avoid.

6.2.14 All route options cover blanket bog, an irreplaceable habitat. The BU and BU / Ha of each option suggests that Route Option C2B has the greatest potential to achieve No Net Loss (NNL) when considering all options and is the preferred option in terms of calculated Biodiversity Units, whereas Route Option C3 has the highest BU and BU / Ha and the least potential to achieve NNL.

6.2.15 For all route options, the sensitive habitats identified present moderate constraints which could be further reduced or eliminated by micro-siting of structures and / or adopting appropriate mitigation such as following the route of the existing access tracks where feasible to place the grid connection in areas of previously disturbed ground. Given the relatively small footprint of OHL infrastructure, an Amber RAG rating has been applied to all OHL route options for habitats. An UGC would likely have a greater impact on habitats than the OHL due to the larger footprint consisting of a 1 m width trench and 30 m width working corridor.

Ornithology

6.2.16 All route options could potentially result in the loss of small areas of peat bog and upland moorland habitat which are of value to, and support, a number of different species such as waders, wildfowl and raptors.

6.2.17 There are several protected species which nest on the boggy areas of the plateau, including Dunlin (Calidris alpina) and Golden Plover (Pluvialis apricaria), and a selection of upland raptors also use the plateau for hunting purposes, including Golden Eagle (Aquila chrysaetos), Merlin (Falco columbarius) and Hen Harrier (Circus cyaneus).

6.2.18 The wetland area immediately to the east of the Glendoe Reservoir holds a good diversity of bird life, as the lack of infrastructure in that area and good habitat provides excellent foraging and nesting opportunities to a range of wildfowl and wader species, as well as prey items for hunting raptors.

6.2.19 The ridge of hills along the southern edge of the plateau south of Glenshero has a high level of Golden Eagle activity (**Figure 5).**

6.2.20 For all routes, standard bird surveys would need to be undertaken to update the baseline, followed by an assessment of the bird activity within the various routes which would inform the route selection. Appropriate mitigation measures would need to be implemented to minimise any disturbance / collision risk to protected species. These are likely to include the provision of an Ecological Clerk of Works (ECoW), pre-construction surveys, the timings of works, creation of buffer zones from nesting birds, etc.

6.2.21 Due to the ornithological constraints posed by the eagles along the ridge, if an OHL is used across all the routes, a Red RAG rating will be applied as this could result in significant adverse impacts on the local Golden Eagle population. Due to the contracted position being an OHL Ornithology is therefore assigned a **Red** RAG.

Geology, Hydrology and Hydrogeology

6.2.22 As shown on **Figure 6**, priority peatland mapping highlights that all the route options would pass through areas of Class 1 and Class 2 peatland. The presence of peat is not considered to be a significant development constraint as higher-class areas can largely be avoided and micrositing can be used to mitigate potential effects.

6.2.23 Watercourse crossings would be necessary for all route options, and all permanent structures would need to be set back from the watercourse channel to protect against exposure from natural processes leading to watercourse meandering and migration **(Figure 7).**

6.2.24 SEPA floodplain mapping shows that the Medium (0.5 % annual exceedance probability of flooding / 1 in 200 year) likelihood of flooding floodplain extents associated with the larger watercourses, however flood extents are generally confined to the watercourse channels.

6.2.25 Potential for flood risk during the construction stage and the siting of construction related infrastructure would need to be given appropriate consideration for all route options.

6.2.26 A RAG rating of **Amber** for Geology, Hydrology and Hydrogeology has been assigned to all Cloiche route options, with a slight preference towards Route Option C3 due to reduced constraints from hydrology and opportunities to make use of the existing track / cable route associated with the Stronelairg Wind Farm connection to Melgarve substation.

Cultural Heritage

Cultural Heritage Designations

6.2.27 Route Option C1 as an OHL has the greatest potential for visual impact on the SM Wade's Military Road, Melgarve to Allt Ruadh section which lies to the south-east of the route option. Although the arc of visibility would be narrow as the OHL emerges from the valley of the Allt a'Mhill Ghairbh, it would then run approximately parallel to the military road for up to 1.5k m and continue to be visible from the higher parts of the road as it continues east. It would add to the existing visual impact of the Beauly – Denny OHL, potentially increasing the significance of this visual impact, but, following approximately the same route, it would not significantly increase the arc of visibility of modern elements in the landscape. The route boundary crosses the Melgarve, Corrieyairack Pass Bridge listed building; however, opportunities exist to avoid this site and it is not currently anticipated that any physical impacts would arise. Appropriate mitigation measures should be employed to ensure no accidental damage to the bridge. An **Amber** RAG rating has been applied to this route for OHL.

6.2.28 For Route Option C2A, OHL, visual impact of this route is limited by topography and standing coniferous planting but, as it emerges from the valley of the Allt Feith a'Mhoraire a section would be visible from the SM, Wade's military road, Melgarve to Allt Ruadh section, and the two listed buildings, Bridge over Caochan Riabhach and Bridge over Allt Feith a'Mhoraire. It would add to the existing visual impact of the Beauly Denny OHL, potentially increasing the significance of this visual impact, but, following approximately the same route, it would not significantly increase the arc of visibility of modern elements in the landscape. As per Route Option C1, the boundary of this route would cross the Corrieyairack Pass Bridge listed building, but opportunities exist to avoid this designation. An **Amber** RAG rating has been applied to this route for OHL.

6.2.29 Route Option C2B and Route Option C3 are not considered to have any significant constraints posed by designated assets, and a **Green** RAG rating has been applied.

Cultural Heritage Assets

6.2.30 For route options C2B and C3, no Cultural Heritage Assets have been identified other than the iron fence marking the watershed, or a small number of minor archaeological features of local significance. There may also be minor features associated with shielings along the larger watercourses but these are unlikely to be directly impacted. A **Green** RAG rating has thus been applied to these route options.

6.2.31 Route options C1 and C2A, however, are more constrained by the shieling site at NN 48556 59570. This recently identified site is considered to be of Regional significance. The archaeological feature is within the southern boundary of this route, upstream from the confluence with the Allt Luaidhe however, avoidance of this asset should be possible. An **Amber** RAG rating has been applied to these routes in order to flag up the significance of this site for OHL.

People

Proximity to Dwellings

6.2.32 No dwellings are present within the route options as can be seen in **Figure 9**, and it is anticipated that a 100 m separation buffer applied to all properties would be observed. As such, a **Green** RAG rating has been applied for all OHL options.

Landscape and Visual

Designations

6.2.33 None of the route options would pass through any designated or protected landscapes and therefore there would be no direct effects. However, there would be potential for the Route Option C3 to lead to some indirect effect on the CNP where the OHL would be seen to connect infrastructure within the valley of the River Spey and the upland plateau, potentially affecting Special Landscape Qualities which relate to the contrast and transition between upland and lower lying areas. An **Amber** RAG rating is therefore applied to these route options.

6.2.34 Route options passing towards the west of the Corridor (comprising route options C1 and C2A) would also potentially appear as constructed artefacts within the context of some parts of WLA 19: Braeroy – Glenshirra – Creag Meagaidh which could affect wild land characteristics. These routes have therefore also been applied an **Amber** RAG rating.

6.2.35 Route Option C2B has been applied a **Green** RAG rating as it is considered unlikely to affect any designated or protected landscapes.

Landscape Character

6.2.36 When passing through existing or proposed wind turbines which it is assumed would be present within the Rolling Uplands – Inverness LCT, the constraints relating to the location of an OHL amongst turbines would lead to potentially more complex OHL alignments with greater potential for these to appear inconsistent with landform patterns or visually confusing in relation to turbines. This would be most likely to affect Route Option C3. However, away from the existing or proposed wind turbines, an OHL would be more likely to affect more remote parts of the upland plateau, particularly amongst the ridgeline of hills which forms the transition between the plateau and valley of the River Spey. Route options C1 and C2A would affect new parts of the landscape where existing development or proposed wind farm development would be less influential (particularly if Glenshero turbines are not taken into consideration), leading to an increased spread of development. Route Option C3 would have a lesser effect in this respect because it would follow an existing track for much of the route. In addition, route options C1 and C2A would have greater potential for cumulative landscape effects on the Upland Glen LCT as they would be required to follow parallel to the existing Beauly – Denny OHL along the

more remote, westerly parts of the Corrieyairack Pass and River Spey valley for a greater distance. By contrast, Route Option C3 would take a more direct route to the Melgarve substation and therefore although cumulative effects would occur, these would be likely to affect a smaller area. Of all the Routes, Route Option C2B would take the least rational path through the landform, being required to cross a number of higher ridges and valleys on the northern edge of the rounded hills which form the transition between the Rolling Uplands – Inverness LCT, and the Upland Glen LCT. It would also have a greater potential to be prominent as it descended the steep slope of Meall a' Ghiubhais.

6.2.37 Route option C3, which follows the existing track down to Melgarve substation, has been allocated an **Amber** RAG rating for landscape character, based on the potential for complexity of alignment through the existing or proposed wind turbines and potential cumulative effects on the approach to Melgarve.

6.2.38 Route options C1, C2A and C2B have been allocated **Amber** / **Red** RAG ratings for landscape character due to a potential for greater cumulative effects, the potential to affect new, undeveloped glen areas (route options C1 and C2A) and an inconsistency of the route across the natural grain of the landform (Route Option C2B).

Visual

6.2.39 There would be visual effects for recreational users accessing two Corbett summits: Gairbeinn and Meall na h-Aisre. Those affecting Gairbeinn would be affected by route options C1 and C2A, and those accessing Meall ha-Aisre would be affected by route options C2B and C3. In addition, there would further potential effects for all route options for those using recreational routes through the River Spey valley, including cumulative effects with the existing Beauly – Denny OHL. Cumulative effects would be greatest for route options C1 and C2B with some potential for limited views from mountain bothies also occurring. There would be some potential for views from cottages at Garvabeg and a recreational car park at Garva Bridge for route options C2B and C3 although this would be relatively distant. Due to the potential for these visual effects, an **Amber** RAG rating has been applied to all OHL route options.

Land Use

Agriculture

6.2.40 The agricultural land within the route 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 route options is considered to be low. No grade 1, 2, 3 or 4 agricultural land is present in the vicinity of the route options.

6.2.41 As such, a RAG rating of **Green** has been allocated to all route options for impacts on Agriculture.

Forestry

6.2.42 There is limited forestry within the Corridor, and as such all route options would have minimal interaction with forestry. No areas of Ancient Woodland Inventory (AWI) are present within any of the route options.

6.2.43 Route options C1 and C2A include areas of high-sensitivity native woodland within the pine plantation west of Creag Bheag and to the west of Melgarve substation. Some felling may be necessary; however, opportunities exist to avoid woodland by making use of the existing felled areas.

6.2.44 Route Option C2B is less constrained by forestry, including only the native woodland west of Melgarve and it is anticipated that this could be avoided through appropriate alignment selection.

6.2.45 Route Options C3 includes Sherramore Forest, situated north-east of Melgarve substation, which includes pockets of native woodland. Any felling through this forest is unlikely to be able to avoid felling native woodland

also given its distribution and the need to fell to a windfirm edge. However, opportunities exist to avoid this woodland altogether through selection of an alignment in the west half of the route at this point. Route Option C3 also includes the native woodland west of Melgarve and it is anticipated that this could be avoided through appropriate alignment selection.

6.2.46 All route options have been assigned a **Green** RAG rating for forestry.

Recreation

6.2.47 There are few points of recreational interest within the Corridor. The following recreational assets fall within, or near to, the route options and may potentially be impacted:

- Gairbeinn Corbett, and its associated access route, in the south-west of the Corridor, within route options C1 and C2A, which may be relevant to hill walking.
- Meall na h-Aisre Corbett, situated at the east edge of Route Option C3, also of relevance to hill walking interests.
- Scottish Hill Track 236 which runs parallel to the south boundary of the Corridor, near the south end of all four route options.
- the Monadhliath Trail situated north of the route options.
- shooting may occur on estates in the area.

6.2.48 It is anticipated that a new OHL through route options C1, C2A, C2B, or C3 may adversely affect these recreational interests, however, this would be limited to disruption at the construction stage, with minimal adverse effects on recreational activities during operation. As such, a **Green** RAG rating has been applied to all OHL route options.

Planning Context

Policy

6.2.49 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.

6.2.50 As such, all OHL route options have been allocated a **Red** RAG rating given high potential for constraint in some topic areas, particularly in relation to Ornithology, but also for constraints posed by Landscape Character for route options C1, C2A and C2B.

6.2.51 It is acknowledged that opportunities exist to reduce impacts, and associated constraints, through careful design choices through the alignment selection stage (Stage 3), and that these high constraint ratings at this high-level stage of the appraisal don't necessarily preclude any development through the routes in planning terms.

Proposals

6.2.52 At the current stage some constraints posed by other proposals have been identified. Upon leaving the proposed Cloiche substation, all OHL route options would be constrained by the turbines of Cloiche Wind Farm.

6.2.53 OHL route options C2A, C2B and C3 would also be constrained by the turbines of Glenshero Wind Farm to differing degrees, with OHL Route Option C2B likely to be the most constrained given the narrower route it takes to the south-west of Glenshero Wind Farm as a result of the steeper landform.

6.2.54 While not a consideration for planning proposals, OHL Route Option C3 would also be subject to partial development constraint as a result of the turbines of the operational Stronelairg Wind Farm within its north boundary.

6.2.55 A small number of recently consented developments have been identified in the vicinity of Melgarve substation; however, these are not considered to pose any notable constraints to any of the route options which could not be addressed through careful and considered siting and design.

6.2.56 Based on the constraints identified, all OHL route options have been allocated Amber RAG ratings.

6.3 Engineering Topic Areas

Infrastructure Crossings

Major Crossings

6.3.1 Major infrastructure crossings[29] can present many obstacles when designing and constructing an OHL and therefore, it is advantageous to avoid multiple crossings if possible.

6.3.2 All four route options will be required to cross the existing Beauly-Denny OHL. As OHL, this would require a 'duck-under' or an underground cable section to a transition structure resulting in an **Amber** RAG rating for all the Cloiche route options as OHL.

Road Crossings

6.3.3 No route options have any road crossings and have all been assigned a **Green** RAG rating.

Environmental Design

Elevation

6.3.4 The elevation on which an OHL is constructed can have a significant effect in terms of influencing both wind and ice loading. In order to limit the effects of wind and ice loading due to elevation, it is favourable to minimise the erection of overhead lines on lands above 200 m AOD.

6.3.5 All of the OHL route options are situated above 200 m AOD and have thus been assigned a **Red** RAG rating.

Atmospheric Pollution

6.3.6 Based on publicly accessible information[30], areas of high pollution are not found within the study area of any of the route options and so a **Green** RAG rating has been allocated to all routes.

Contaminated Land

6.3.7 Based on the SEPA environmental map[31], no evidence for contaminated land was found in relation to the route options, and therefore a **Green** RAG rating has been applied to all.

Flooding

[29] Major infrastructure crossings include high voltage transmission lines, rail lines, wide rivers (greater than 200 m), navigable canals, gas pipelines, and hydro pipelines.

[30] Department for Environment Food & Rural Affairs, *DEFRA Interactive monitoring networks map* [online] Available at: https://uk-air.defra.gov.uk/interactive-map

[31] Scottish Environmental Protection Agency, *SEPA Maps* [online] Available at: https://www.sepa.org.uk/data-visualisation/scottish-communities-landfill-fund/

6.3.8 There are three types of flooding which must be considered; Coastal, Surface and River. Potential for flood risk has been based on SEPA publicly available data to determine if less than 80% of the width for less than 2% of the length of any route options was found to be within the 1:200-year flood zone[32].

6.3.9 Based on the SEPA online flood map, less than 2% of the lengths of the route options has 80% of width in a 1 in 200-year flood zone. A **Green** RAG rating has thus been applied to all.

Ground Conditions

Terrain

6.3.10 Unfavourable terrain can lead to many design and construction related challenges for new OHL builds. Steep slopes, mountainous terrain and / or cliffs create difficult obstacles for OHLs to cross and it is therefore preferred to limit construction in this terrain where possible. Another consideration is pinch points and areas within the Corridor with limited options to achieve a potential route.

6.3.11 For Route Option C1 there are two pinch points between Maell Garbh / Maell Barbh Mor and Maell a' Chuit, and Gael Charn and Gairbeinn which are approximately 600 m and 400 m respectively. For route options C1 and C2A there is also a narrow pinch point of 70 m wide between the existing Beauly-Denny OHL and steep hills to its north, however, with the extension of the route option to the South, any new overhead line could be constructed South of the Beauly-Denny OHL. Route Option C2B features frequent pinch points along the route ranging from 200 m to 400 m. There are very few pinch points along Route Option C3.

6.3.12 All route options pass through mountainous terrain, however, Route Options C2A and C2B pass through the central mountain region and pass-through steeper terrain and narrower pinch points. All options include terrain that is greater than 50%, however, the severity of the terrain in C2A and C2B meant that they were scored a RAG rating of **Red**, and C1 and C3, which have less severe but still undulating terrain throughout, scored a RAG rating of **Amber**.

Peat

6.3.13 Construction in areas of peat can pose engineering challenges during both the design and construction stages of an OHL build. In addition, construction in peat can lead to increased construction and maintenance costs and therefore, should be reduced or avoided where possible.

6.3.14 There is Class 1 and Class 2 peat within all of the route options, and all route options include extensive coverage, therefore **Red** RAG ratings were applied to all.

Construction / Maintenance

6.3.15 Constructability is an important consideration for all OHL developments considering the wide-ranging terrain and multiple obstacles that are often encountered. Therefore, giving some forethought to access routes and the number of critical angle masts to be used on this OHL is important for the construction and future maintenance requirements of the line.

Access

6.3.16 Adequate access is an important consideration for both construction and maintenance activities. Positioning an OHL in close proximity to existing public roads and networks of tracks will provide ease of access and can greatly reduce costs associated with the construction stage.

[32] Scottish Environmental Protection Agency. *SEPA Flood Maps* [online] Available at: http://map.sepa.org.uk/floodmap/map.htm

6.3.17 All of the route options are over 1 km from an existing (public) road network. Route options C1, C2A and C2B could be serviced via a combination of the Beauly - Denny 400 kV OHL access track and the Melgarve substation access track, which extends along most of the south of the study area. Despite this, extensive access track construction works will be required for the mountainous sections further north. The existing Stronelairg – Melgarve UGC includes a cable-haul road which could service a substantial length of Route Option C3. Combined with the access tracks that would likely be constructed for the Glenshero and Cloiche wind farms, Route Option C3 would potentially have access tracks for the majority of its route length, with only short 'spur' sections required. For this reason, Route Option C3 was awarded a **Green** RAG rating, and all others were scored with an **Amber** RAG rating.

Angle Towers

6.3.18 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.

6.3.19 Although similar in length to route options C1, C2A and C2B, the directness of Route Option C3, with its low gradient terrain, is estimated to require the fewest number of angle towers, and therefore has been given a **Green** RAG rating. Due to the low number of angle towers anticipated for Route Option C3, the increase in angle towers for route options C1, C2A and C2B exceeds 10% which would indicate a **Red** RAG rating as per SSEN Transmission's routeing Procedures for Routeing Overhead Lines and Underground Cables of 132kV and Above guidance.

Proximity

6.3.20 The location of an OHL relative to structures and settlement of people is an important consideration when selecting a preferred route. 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

6.3.21 Assessment of the route options was undertaken to determine the clearance distances available between buildings and dwellings.

6.3.22 There are no residential, private properties or buildings inside any of the route option boundaries or within 250 m of them, therefore all have been allocated a **Green** RAG rating.

Proximity to Windfarms

6.3.23 One of the biggest constrains for all route options is proximity to existing or future wind turbines.

6.3.24 In accordance with SSEN Transmission's guidance for Routeing Overhead Lines and Underground Cables of 132kV and above, if any route option is within '<750m' of a windfarm, then it should be scored a RAG rating of **Red**. All route options included in this project will be within this threshold due to the nature of the scheme, i.e. connecting wind farms to the grid.

6.3.25 To better understand this issue and differentiate Route Options in this regard a modified approach was used. All route options had less than 20 % of their route length and more than 50 % of their width through the existing

Stronelairg Wind Farm. Route options C2A, C2B and C3 were considered to be more constrained due to the number of Cloiche and Glenshero wind turbines they pass near to. For this reason, Route Option C1 is preferred as it avoids more turbines and route options C2A, C2B and C3 are all equally the least preferred.

Communication Masts

6.3.26 A communication mast is estimated to be located within route options C1, C2A and C2B based on observations made during site surveys, therefore these options were given an **Amber** RAG rating.

6.3.27 The location of the communication mast has been estimated to be outside of Route Option C3, therefore it was awarded a **Green** RAG rating.

Metallic pipes

6.3.28 No metallic pipes have been identified within the vicinity of the route options and all have been assigned a **Green** RAG rating.

Urban Environments

6.3.29 No urban developments are found in close proximity to any of the route options, therefore the RAG ratings given to all are **Green.**

6.4 Cost Topic Areas

6.4.1 Costs were assessed in detail as part of the route selection process for the Cloiche Wind Farm connection. The different cost topic areas are rated below but will also be considered in more detail at the alignment stage when the technical and engineering specifications required become clearer.

Capital

Construction

6.4.2 For the OHL connection options, construction cost was assumed to be proportional to OHL length. At approximately 11.5 km in OHL length with a necessary addition of approximately 0.4 km of UGC to connect into Melgarve, Route Option C1 has intermediate potential to be constrained by construction costs, and therefore has received an **Amber** RAG rating. Route options C2A, C2B and C3 are all up to 10 km in length (inclusive of the necessary addition of approximately 0.4 km of UGC to connect into Melgarve) and are considered to have low potential to be constrained by construction costs, and therefore have received a **Green** RAG rating. Option C2B is the least expensive, followed by C3, and then C2A.

Diversions

6.4.3 There are no diversions identified on any of the routes. Therefore, all route options for both OHL and UGC have been assigned a **Green** RAG rating.

Public Road Improvements

6.4.4 All four of the route options for the Cloiche connection would be constructed using the same public road network. Given the relative similar length of the route options it is assumed the level of public road improvements associated with them would be similar and classified within 120% of each other. Therefore, the RAG rating for all route options is **Green**.

Felling

6.4.5 There are forested areas identified within all of the route options being considered. This appraisal assumes that there is potential for the alignment to affect these forestry blocks, requiring an 80 m corridor through the forest to be felled and then the same area to be replanted as compensatory planting.

6.4.6 Route Option C2B has the lowest area of trees to be felled and replanted and therefore the lowest cost. It has been awarded a **Green** RAG rating. All other options are greater than 140 % of Route Option C2B in both area and cost, therefore, the RAG rating for route options C1, C2A and C3 is **Red**.

6.4.7 However, it should be noted that caution should be taken when interpreting felling scores in overall RAG assessments as there is potential for these routes to avoid crossing through these areas of trees during the alignment stage. Therefore on the assumption that tree felling can be avoided in the alignment stage all Route Options are rated as a **Green** RAG.

Land Assembly

6.4.8 For the purpose of this assessment, land assembly costs are assumed to be proportional to OHL length. Therefore, the shortest and lowest land assembly cost is Route Option C2B at approximately 8.3 km of OHL. Route Option C2A at approximately 9.7 km of OHL, and Route Option C3 at approximately 9.5 km of OHL are less than 120 % of the length and land assembly cost of Option C2B. Option C1 at approximately 11.5 km of OHL is between 120 – 140 % of the length and cost of Option C2B.

6.4.9 Therefore, the RAG rating for route options C2A, C2B and C3 is **Green**, while the RAG rating for Route Option C1 is **Amber**.

Consent Mitigations

6.4.10 There are no known mitigations that would be required to achieve consent on any of these options at this stage in the project. Therefore, this was not considered in the cost assessment.

Operational

Inspections

6.4.11 Jumper sampling and conductor testing of OHLs are taken four times in a 45-year lifecycle. The number of tests required is based on the length of the OHL.

6.4.12 Route options C2A, C2B and C3 are all between 5 and 10 km in length therefore all require two jumper samples and two conductor tests to be undertaken four times in 45 years. Route Option C1 is over 10 km but under 20 km in length therefore also requires two jumper samples and two conductor tests to be undertaken four times in 45 years. The cost of all route options would be the same, therefore the RAG rating is be **Green** for all.

Maintenance

6.4.13 Maintenance costs over a 45-year lifecycle are proportional to length, therefore, the shortest and lowest maintenance cost would be Route Option C2B at 8.28 km. Route Option C2A at 9.66 km and Route Option C3 at 9.52 km are less than 120 % of the length and maintenance cost of Route Option C2B. These route options have therefore been allocated a **Green** RAG rating.

6.4.14 Route Option C1 is between 120 – 140 % of the length and cost of Route Option C2B. Therefore, the RAG rating it has been allocated is **Amber.**

6.5 Comparative Analysis Summary

6.5.1 **Table 6.2** below illustrates the environmental, engineering and cost appraisal RAG ratings for the route options considered for Cloiche. A summary RAG table for Cloiche is included in **Appendix 1**.

Table 6.2: Cloiche RAG Ratings

	Category	Sub-Topic	Route Option C1	Route Option C2A	Route Option C2B	Route Option C3
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				

	Category	Sub-Topic	Route Option C1	Route Option C2A	Route Option C2B	Route Option C3
Engineering	Infrastructure Crossings	Major Crossings (132kV, 275kV, Rail, 200+m wide river, navigable canal, gas or hydro pipeline)				
		Road Crossings				
	Environmental Design	Elevation				
		Atmospheric Pollution				
		Contaminated Land				
		Flooding				
	Ground Conditions	Terrain				
		Peat				
	Construction / Maintenance	Access				
		Angle Towers				
	Proximity	Clearance Distance				
		Proximity to Windfarms				
		Communication Masts				
		Metallic pipes				
		Urban Environments				
C	Capital	Construction				

	Category	Sub-Topic	Route Option C1	Route Option C2A	Route Option C2B	Route Option C3
		Diversions				
		Public Road Improvements				
		Felling				
		Land Assembly				
		Consent Mitigations				
	Operational	Inspections				
		Maintenance				

7. SUMMARY OF COMPARATIVE APPRAISAL: DELL

7.1 Dell Comparative Appraisal

7.1.1 This section provides a summary of the potential environmental, technical and economic constraints identified for each route option for the Dell Wind Farm connection following the topic areas shown in **Table 3.1**. Appraisal of route options is set out in greater detail within **Appendix 2**. Reference should also be made to made to **Figures 2** to **12**, which illustrate potential environmental baseline constraints identified under each topic.

7.1.2 Each route option has been appraised as an OHL as per the contracted position. A desk-based assessment of other projects in the area has indicated there may be potential challenge to an OHL solution on environmental grounds and as such consideration of an UGC option for all or part of each Route is discussed where relevant.

7.1.3 For the purposes of this comparative appraisal, as noted in Section 4.5, Route Option D1 would travel from Dell substation to the Cloiche substation. From this point, both the Dell Wind Farm and Cloiche Wind Farm connection would proceed to Melgarve substation as part of the same connection within the Preferred Route for the Cloiche connection as detailed in section 6.

7.1.4 For Route Option D1, to travel as the same connection, within the Preferred Route for the Cloiche connection, at this stage the Preferred Route for the Cloiche has been identified as Route Option C3 (see Section 9). Therefore, for the purposes of this comparative appraisal, the connection for Route Option D1 assessed and assigned RAG ratings in the following comparative analysis sections has been D1 + C3.

7.1.5 For the purposes of this comparative appraisal, as noted in Section 4.6, Route Option D2 would travel from the north, through the operational Stronelairg Wind Farm, into the eastern area of the proposed Glenshero Wind Farm and overlap with Route Option G1 to travel south to Melgarve substation.

7.1.6 As noted earlier in Section 2.3, L7 steel lattice tower structures are the preferred technology option for OHL route options. For the purposes of this appraisal it has been assumed that OHL options will feature this technology.

7.2 Environmental Topic Areas

Natural Heritage

Designations

7.2.1 Neither of the route options for Dell pass through any designated Ramsar, SSSI, SAC, Ancient Woodland or NNR sites. Several designated sites (River Spey SSSI and SAC; Creag Meagaidh SSSI, SAC, SPA and NNR; Monadhliath SSSI and SAC; Glendoe Lochans SSSI; Loch Knockie and nearby Lochs SAC; Glen Tarff SSSI; Ness Woods SAC and Parallel Roads of Lochaber SSSI) are located within 5 km of the Corridor. The only site which is likely to have connectivity to the routes is the River Spey SSSI and SAC which is connected to all routes via water courses.

7.2.2 Both routes are present within the River Tarff surface water catchment which is designated as a DWPA. Route Option D1 has the greatest presence within the catchment at approximately 3 km, while Route Option D2 has minimal presence and could avoid the DWPA entirely.

7.2.3 As neither of the route options pass through any designated sites but both have a potential connectivity to the River Spey, they have been assigned **Amber** RAG ratings for natural heritage designations. While not considered to be an internationally / European or nationally protected designation, the DWPA designation does set Route Option D1 as a lower preference than the other route option.

Protected Species

7.2.4 All route options pass through a similar mix of habitats from higher to lower altitudes with water course crossings fairly frequent throughout them all.

7.2.5 Impacts on protected species could be further reduced or eliminated by undertaking pre-construction surveys and adopting appropriate mitigation. These measures are expected to be included in a standard species protection plan for the proposal.

7.2.6 All route options have been allocated a RAG rating of **Amber** for protected species. At this stage, no clear preference has been identified between route options in relation to protected species.

Habitats

7.2.7 Annex 1 data for Cloiche and Glenshero was available for this Report (**Figure 3**). Due to these habitats' inclusion in Annex 1 of the Habitats Directive (92/43/EEC) they are afforded a higher level of conservation importance. Priority Annex 1 habitats (mostly blanket bog in the Corridor area) are recognised as particularly unique and of higher importance.

7.2.8 At the time of writing there was not data coverage for the entirety of all Route Options. However, the data available was suitable to provide an indication of the Annex 1 habitats likely to be present and their general abundance and distribution within the Route Options. The data generally show that blanket bog is highly likely to be the dominant Annex 1 priority habitat across both the routes particularly at higher altitudes where low slopes and cold and wet conditions favour its development. Wet heath is the next most dominant Annex 1 habitat but is generally more patchily distributed and easier to avoid. The other five Annex 1 habitats tends to be rare across the site and confined to discrete patches – it should therefore be possible for most routes to avoid these.

7.2.9 Because blanket bog habitat is the most dominant Annex 1 and is a priority habitat that is also afforded additional protection in SPP, it is advised that route selection should focus on minimising impacts on this habitat (see above section). Other Annex 1 habitats should be easier to either avoid or minimise impacts on.

7.2.10 All route options pass through large areas of Class 1 peatland at higher altitudes with the abundance decreasing as altitude decreases towards the south of each route (**Figure 6**). Both route options are likely to have a high impact due to long sections at higher altitude and therefore dissecting a large area of Class 1 Peatland. OHL is considered to be the best option for mitigating the impacts on Peatland and it is recommended OHL is the preferred design option for routes D1 and D2.

7.2.11 Routes D1+C3 and D2 both overlap with management unit 4a of Glenshero outline HMP but this is not likely to cause any constraint as it is for carrion removal. There is uncertainty over the location of Cloiche HMP area as noted above.

7.2.12 The route options pass through habitats of varying distinctiveness, with areas of blanket bog and fen habitat designated as Very High Distinctiveness, while areas of upland heathland, heathland and scrub, woodland and acid / marshy grassland are of High Distinctiveness. The BU and BU / Ha of each option are as set out in **Table 7.1**.

Table 7.1: Route Options Biodiversity Scores

Option	Biodiversity Units (BU)	BU per Hectare (BU / Ha)
Route Option D1 & C3	55,249.68	18.14
Route Option D2	57,746.50	17.88

7.2.13 The routes are ordered below from greatest to least impact on habitats, based on the calculated BU for each Route Option.

- D2: Likely to have the highest impact due to having the greatest BU within its extents with large areas of habitat classified as Very High and high distinctiveness, particularly at higher altitudes.
- D1 & C3: Likely to have a lower impact based upon calculated BU. However, a greater BU/ Ha was calculated for D1 & C3. Large areas of habitat classified as Very High and high distinctiveness, particularly at higher altitudes within route extent.

7.2.14 Both route options cover significant areas of blanket bog, an irreplaceable habitat. Route Options D1+C3 currently has the lowest BU but a higher BU / Ha of all route options. In contrast, Route Option D2 contains the highest BU and lowest BU / Ha. This suggests that Route Option D1 has the greatest potential to achieve No Net Loss (NNL) when considering both options and is the preferred option in terms of calculated Biodiversity Units.

7.2.15 For both route options, the sensitive habitats identified present moderate constraints which could be further reduced or eliminated by micro-siting of structures and / or adopting appropriate mitigation such as following the route of the existing access tracks where feasible to place the grid connection in areas of previously disturbed ground. Given the relatively small footprint of OHL infrastructure, an **Amber** RAG rating has been applied to all OHL route options for habitats.

Ornithology

7.2.16 Both route options could potentially result in the loss of small areas of peat bog and upland moorland habitat which are of value to, and support, a number of different species such as waders, wildfowl and raptors.

7.2.17 There are several protected species which nest on the boggy areas of the plateau, including Dunlin (Calidris alpina) and Golden Plover (Pluvialis apricaria), and a selection of upland raptors also use the plateau for hunting purposes, including Golden Eagle (Aquila chrysaetos), Merlin (Falco columbarius) and Hen Harrier (Circus cyaneus).

7.2.18 The wetland area immediately to the east of the Glendoe Reservoir holds a good diversity of bird life, as the lack of infrastructure in that area and good habitat provides excellent foraging and nesting opportunities to a range of wildfowl and wader species, as well as prey items for hunting raptors.

7.2.19 The ridge of hills along the southern edge of the plateau south of Glenshero has a high level of Golden Eagle activity **(Figure 5).**

7.2.20 For both routes, standard bird surveys would need to be undertaken to update the baseline, followed by an assessment of the bird activity within the various routes which would inform the route selection. Appropriate mitigation measures would need to be implemented to minimise any disturbance / collision risk to protected species. These are likely to include the provision of an Ecological Clerk of Works (ECoW), pre-construction surveys, the timings of works, creation of buffer zones from nesting birds, etc.

7.2.21 Due to the ornithological constraints posed by the eagles along the ridge, if an OHL is used across the routes, a **Red** RAG rating will be applied as this could result in significant adverse impacts on the local Golden Eagle population. Due to the contracted position being an OHL Ornithology is therefore assigned a **Red** RAG.

Geology, Hydrology and Hydrogeology

7.2.22 As shown on **Figure 6,** priority peatland mapping highlights that both routes would pass through significant areas of Class 1 and Class 2 peatland, especially within the northern areas of the routes. The presence of peat

is not considered to be a significant development constraint as higher-class areas can largely be avoided and micrositing can be used to mitigate potential effects.

7.2.23 Watercourse crossings would be necessary for both routes, and all permanent structures would need to be set back from the watercourse channel to protect against exposure from natural processes leading to watercourse meandering and migration (**Figure 7**). Route D2 would need to cross at least two deeply incised watercourses channels.

7.2.24 SEPA floodplain mapping shows that the Medium (0.5 % annual exceedance probability of flooding / 1 in 200 year) likelihood of flooding floodplain extents associated with the larger watercourses, however flood extents are generally confined to the watercourse channels. A wider flood extent is shown within the south-western extent of D1, immediately east of Glendoe reservoir.

7.2.25 Potential for flood risk during the construction stage and the siting of construction related infrastructure would need to be given appropriate consideration for all route options.

7.2.26 Both route options have been allocated a RAG rating of **Amber** for Geology, Hydrology and Hydrogeology.

Cultural Heritage

Cultural Heritage Designations

7.2.27 Both Route Option D1 and Route Option D2 are not considered to have any significant visual impact on designated assets until the point they overlap with other route options.

7.2.28 Route Option D1 is assumed to join with Route Option C3 after passing Cloiche substation. From there the route continues east then travels south overlapping Route Option G1. There may be a very limited visibility of this route from Garva Bridge and to an even lesser extent, Garvamore 'Barracks' as it crosses open ground on the east flank of Meall a'Ghuibhais. This would be within the same arc of visibility as the existing Beauly – Denny OHL. While the development would slightly increase the visual impact of modern elements, the sensitivity of these Listed Buildings is reduced by the functionality of their purpose. Therefore, this OHL route is not considered to have any significant visual impact on designated assets and a **Green** RAG rating has been applied.

7.2.29 Route Option D2 would be subject to the same constraints as Route Option D1 through C3. Therefore, this OHL route has been assigned a **Green** RAG rating.

Cultural Heritage Assets

7.2.30 No cultural heritage assets have been identified other than the iron fence marking the watershed and a small number of minor archaeological features of local significance. There may also be minor features associated with shielings along the larger watercourses, but these are unlikely to be directly impacted. A **Green** RAG rating has thus been applied to both route options.

People

Proximity to Dwellings

7.2.31 No dwellings are present within the route options as can be seen in **Figure 9**, and it is anticipated that a 100 m separation buffer applied to all properties would be observed. As such, a **Green** RAG rating has been applied for OHL options.

Landscape and Visual

Designations

7.2.32 Neither of the route options pass through any designated or protected landscapes. However, both route options would follow an alignment via Cloiche Route Option C3 and Glenshero Route Option G1 with the potential to lead to some indirect effect on the CNP where the OHL would be seen to connect infrastructure within the valley of the River Spey and the upland plateau, potentially affecting Special Landscape Qualities which relate to the contrast and transition between upland and lower lying areas. An **Amber** RAG rating is therefore applied to both route options for OHL.

Landscape Character

7.2.33 Both route options would pass through existing or proposed wind turbines (assumed would be present) within the Rolling Uplands – Inverness LCT, the constraints relating to the location of an OHL amongst turbines would lead to potentially more complex OHL alignments with greater potential for these to appear inconsistent with landform patterns or visually confusing in relation to turbines. Both route options would follow Route Option C3 / G1 down to the River Spey valley. This is a broadly rational route through landform and following an existing track, although towers would be potentially prominent, descending into the valley with potential for cumulative effects with existing infrastructure. An **Amber** RAG rating has therefore been applied to both route options.

Visual

7.2.34 Route Options D1 and D2 would both cross the existing Stronelairg Wind Farm main access track which forms part of the Monadhliath Trail, promoted by the South Loch Ness Access Group. In combination with turbines, the appearance of towers would be potentially visually confusing. However, given the existing visual context of wind turbines, this is not anticipated to lead to additional adverse effects.

7.2.35 There would be visual effects of the southern part of both route options as the join Cloiche Route Option C3 for recreational walkers accessing Meall ha-Aisre and using recreational routes through the River Spey valley, including cumulative effects with the existing Beauly – Denny OHL. There would also be some potential for views from cottages at Garvabeg and a recreational car park at Garva Bridge for this section of both route options. Due to the potential for these visual effects, an **Amber** RAG rating has been applied.

Land Use

Agriculture

7.2.36 The agricultural land within the route 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 either of the route options is considered to be low. No grade 1, 2, 3 or 4 agricultural land is present in the vicinity of the route options.

7.2.37 As such, a RAG rating of **Green** has been allocated to both route options for impacts on Agriculture.

Forestry

7.2.38 There is limited forestry within the Corridor, and as such both route options would have minimal interaction with forestry. No areas of AWI are present within any of the route options.

7.2.39 Route Option D1 would not interact with any areas of Native Woodland up to the point at which it connects to Cloiche substation. From here the route would continue as Route Option C3. Route Option C3 includes Sherramore Forest, situated north-east of Melgarve substation, which includes pockets of native woodland. Any felling through this forest is unlikely to be able to avoid felling native woodland also given its distribution

and the need to fell to a windfirm edge. However, opportunities exist to avoid this woodland altogether through selection of an alignment in the west half of the route at this point. Route Option C3 also includes the native woodland west of Melgarve substation, and it is anticipated that this could be avoided through appropriate alignment selection.

7.2.40 Route Option D2 would be subject to the same forestry constraints as Route Option D1.

7.2.41 Both route options have been assigned a **Green** RAG rating for forestry for OHL.

Recreation

7.2.42 The majority of the Corridor is maintained for sporting activities. There are few points of other recreational interest within the Corridor. The following recreational assets fall within, or near to, the route options and may potentially be impacted:

- Meall na h-Aisre Corbett, situated at the east edge of Route Option C3, of relevance to hill walking interests.
- Scottish Hill Track 236 which runs parallel to the south boundary of the Corridor, near the south end of both route options.
- the Monadhliath Trail situated within the route options.
- sporting activities (shooting grouse and deer) occur throughout the estate land in the area.

7.2.43 It is anticipated that a new OHL through route options D1 or D2 (assumed to continue as Route Option C3 from Cloiche substation) may adversely affect these recreational interests, however this would be limited to disruption at the construction stage, with minimal adverse effects on recreational activities during operation. As such, a **Green** RAG rating has been applied to all OHL route options.

7.2.44 Similarly, a UGC for all route options may present disruption during construction but would be unlikely to have any adverse effects on recreation during operation.

Planning Context

Policy

7.2.45 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.

7.2.46 As such, both OHL route options have been allocated a **Red** RAG rating given high potential for constraint associated with Ornithology.

7.2.47 It is acknowledged that opportunities exist to reduce impacts, and associated constraints, through careful design choices through the alignment selection stage (Stage 3), and that these high constraint ratings at this high-level stage of the appraisal don't necessarily preclude any development through the routes in planning terms.

Proposals

7.2.48 At the current stage some constraints posed by other proposals have been identified. Upon leaving the proposed Dell substation, both OHL route options would be constrained by the turbines of Dell and Cloiche Wind Farm.

7.2.49 Both OHL route options would also be constrained by the turbines of Glenshero Wind Farm as they pass to the west of Meall na h-Aisre.

7.2.50 While not a consideration for planning proposals, both OHL route option be subject to significant development constraint as a result of the turbines of the operational Stronelairg Wind Farm which span the breadth of both routes.

7.2.51 A small number of recently consented developments have been identified in the vicinity of Melgarve substation; however, these are not considered to pose any notable constraints to any of the route options which could not be addressed through careful and considered siting and design.

7.2.52 Based on the constraints identified, both OHL route options have been assigned **Amber** RAG ratings.

7.3 Engineering Topic Areas

Infrastructure Crossings

Major Crossings

7.3.1 Major infrastructure crossings[33] can present many obstacles when designing and constructing an OHL and therefore, it is advantageous to avoid multiple crossings if possible.

7.3.2 Both route options will be required to cross the existing Beauly-Denny OHL. As OHL, this would require a 'duck-under' or an underground cable section to a transition structure resulting in an **Amber** RAG rating for route options D1 + C3 and D2 as OHL.

Road Crossings

7.3.3 No route options have any road crossings and have all been assigned a **Green** RAG rating.

Environmental Design

Elevation

7.3.4 The elevation on which an OHL is constructed can have a significant effect in terms of influencing both wind and ice loading. In order to limit the effects of wind and ice loading due to elevation, it is favourable to minimise the erection of overhead lines on lands above 200 m AOD.

7.3.5 All of the OHL route options are situated above 200 m AOD and have thus been assigned a **Red** RAG rating.

Atmospheric Pollution

7.3.6 Based on publicly accessible information[34], areas of high pollution are not found within the study area of any of the route options and so a **Green** RAG rating has been allocated to all routes.

Contaminated Land

7.3.7 Based on the SEPA environmental map[35], no evidence for contaminated land was found in relation to the route options, and therefore a **Green** RAG rating has been applied to both.

Flooding

[33] Major infrastructure crossings include high voltage transmission lines, rail lines, wide rivers (greater than 200 m), navigable canals, gas pipelines, and hydro pipelines.

[34] Department for Environment Food & Rural Affairs, *DEFRA Interactive monitoring networks map* [online] Available at: https://uk-air.defra.gov.uk/interactive-map

[35] Scottish Environmental Protection Agency, *SEPA Maps* [online] Available at: https://www.sepa.org.uk/data-visualisation/scottish-communities-landfill-fund/

7.3.8 There are three types of flooding which must be considered; Coastal, Surface and River. Potential for flood risk has been based on SEPA publicly available data to determine if less than 80% of the width for less than 2% of the length of any route options was found to be within the 1:200 year flood zone[36].

7.3.9 Based on the SEPA online flood map, less than 2% of the lengths of the route options has 80% of width in a 1 in 200-year flood zone. A **Green** RAG rating has thus been applied to both.

Ground Conditions

Terrain

7.3.10 Unfavourable terrain can lead to many design and construction related challenges for new OHL builds. Steep slopes, mountainous terrain and / or cliffs create difficult obstacles for OHLs to cross and it is therefore preferred to limit construction in this terrain where possible. Another consideration is pinch points and areas within the Corridor with limited options to achieve a potential route.

7.3.11 Route Option D1 + C3 and D2 both include small sections of terrain of more than 50% in gradient, however the majority of the route options are made of terrain that is undulating, with gradients of up to 30% for most of the area.

7.3.12 There are a few pinch points in the southern section of Route Option D2, and there are very few pinch points along the Route Option D1. Both route options as OHL were scored **Amber** for terrain.

Peat

7.3.13 Construction in areas of peat can pose engineering challenges during both the design and construction stages of an OHL build. In addition, construction in peat can lead to increased construction and maintenance costs and therefore, should be reduced or avoided where possible.

7.3.14 Both route options include extensive coverage of peat soil therefore a **Red** RAG rating has been applied to both.

Construction / Maintenance

7.3.15 Constructability is an important consideration for all OHL developments considering the wide-ranging terrain and multiple obstacles that are often encountered. Therefore, giving some forethought to access routes and the number of critical angle masts to be used on this OHL is important for the construction and future maintenance requirements of the line.

Access

7.3.16 Adequate access is an important consideration for both construction and maintenance activities. Positioning an OHL in close proximity to existing public roads and networks of tracks will provide ease of access and can greatly reduce costs associated with the construction stage.

7.3.17 Small sections of both route options D1 + C3 and D2 are serviced by the existing access route that runs adjacent to the existing Beauly – Denny OHL.

7.3.18 The proposed access tracks to construct and maintain the Cloiche and Glenshero wind farms would cover approximately 50 % of both route options. Additionally, the access track / cable haul road that runs adjacent to

[36] Scottish Environmental Protection Agency. *SEPA Flood Maps* [online] Available at: http://map.sepa.org.uk/floodmap/map.htm

the existing Stronelairg – Melgarve 132 kV UGC could provide a good access point for the route options beyond the wind farm access tracks.

7.3.19 Although both route options are over 1 km from an existing (public) road network, there will be an existing network of tracks that can be used during construction. Minor access track works may still be required, however. Both route options have received a **Green** RAG rating.

Angle Towers

7.3.20 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.

7.3.21 Route Option D2 is estimated to require fewer angle towers than Route Option D1. This is due to the reduced OHL length but also the directness of the route option. There should also be fewer 'pinch points' associated with Route Option D2 due to the favourable terrain.

7.3.22 For these reasons Route Option D2 was scored with a **Green** RAG rating and Route Option D1 was scored with a **Red** RAG rating.

Proximity

7.3.23 The location of an OHL relative to structures and settlement of people is an important consideration when selecting a preferred route. 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

7.3.24 Assessment of the route options was undertaken to determine the clearance distances available between buildings and dwellings.

7.3.25 Both route options are situated over 250 m from all identified buildings and dwellings and have thus been assigned **Green** RAG ratings.

Proximity to Windfarms

7.3.26 One of the biggest constrains for the route options is proximity to existing or future wind turbines.

7.3.27 In accordance with SSEN Transmission's guidance for Routeing Overhead Lines and Underground Cables of 132kV and above, if any route option is within '<750 m' of a windfarm, then it should be scored a RAG rating of **Red**. All route options included in this project will be within this threshold due to the nature of the scheme, i.e. connecting wind farms to the grid.

7.3.28 Route Option D1 + C3 would have less than 20 % of its route length, but more than 50% of its route width, through the operational Stronelairg Wind Farm. Route options C3 is considered to be constrained due to the number of Cloiche and Glenshero wind turbines they pass near to.

7.3.29 Route Option D2 would have 20 – 60 % of its route length and more than 50 % of its route width through the existing Stronelairg wind farm. As above D2 is also constrained due to the number of Cloiche and Glenshero wind turbines they pass near to.

7.3.30 As such, both options are equally constrained and there is no preference in this regard.

Communication Masts

7.3.31 No existing communication masts along were identified within proximity of the route options. As such, all route options have been assigned a **Green** RAG rating.

Metallic pipes

7.3.32 No metallic pipes have been identified within the vicinity of the route options and all have been assigned a **Green** RAG rating.

Urban Environments

7.3.33 No urban developments are found in close proximity to any of the route options, therefore the RAG ratings given to all are **Green.**

7.4 Cost Topic Areas

7.4.1 Costs were assessed in detail as part of the route selection process for the Dell Wind Farm connection. These are rated below but will also be considered in more detail at the alignment stage when the technical and engineering specifications required become clearer.

Capital

Construction

7.4.2 For the purposes of this RAG assessment, construction cost is assumed to be proportional to OHL length. The shortest and lowest construction cost is Route Option D2 at approximately 12.3 km of OHL with a necessary addition of 0.4 km of UGC to connect into Melgarve. Route Option D1 + C3 is slightly longer at approximately 14.2 km of OHL with a necessary addition of 0.4 km of UGC to connect into Melgarve. However, the RAG rating for both options is **Green** as the length of Route Option D1 + C3 remains within 120 % of the length of Route Option D2.

Diversions

7.4.3 There are no diversions identified on either of the route options. Therefore, both route options are rated as **Green** in RAG scoring.

Public Road Improvements

7.4.4 Both route options would be constructed using a public road network that is unlikely to be constraining on the development. Therefore, both have been assigned a **Green** RAG rating.

Felling

7.4.5 There are forested areas identified within both route options being considered.

7.4.6 This assessment assumes that there is potential for the route options to affect these forestry blocks, requiring an 80 m corridor through the forest to be felled and then the same area to be replanted as compensatory planting.

7.4.7 The felling area that might be required for Route Option D1 is approximately 1,700 m by 80 m, and the replanting area would be approximately 13.6 Ha. This results in high potential for the development to be constrained by felling costs, and therefore a **Red** RAG rating has been allocated to Route Option D1.

7.4.8 The felling area that might be required for Route Option D2 is the same as for Route Option D1, resulting in high potential for the development to be constrained by felling costs, and therefore a **Red** RAG rating has also been allocated to Route Option D2.

7.4.9 However, it should be noted that caution should be taken when interpreting felling scores in overall RAG assessments as there is potential for these routes to avoid crossing through these areas of trees during the alignment stage. Therefore on the assumption that tree felling can be avoided in the alignment stage all Route Options are rated as a **Green** RAG.

Land Assembly

7.4.10 For this comparative assessment, land assembly costs are assumed to be proportional to length. Therefore, the shortest and lowest land assembly cost would be for Route Option D2 at approximately 12.3 km of OHL with a necessary addition of approximately 0.4 km of UGC to connect into Melgarve substation. Route Option D1 + C3 is slightly longer at approximately 14.2 km of OHL with a necessary addition of approximately 0.4 km of UGC to connect into Melgarve. The RAG rating for both options is **Green**.

Consent Mitigations

7.4.11 There are no known mitigations that would be required to achieve consent on any of the route options at this stage in the project. Therefore, this was not considered in the cost assessment.

Operational

Inspections

7.4.12 Jumper sampling and conductor testing of OHLs are taken four times in a 45-year lifecycle. The number of tests required is based on the length of the OHL.

7.4.13 Both route options are over 10 km but under 20 km in length, therefore would require two jumper samples and two conductor tests to be undertaken four times in 45 years. The cost of both route options will be the same, therefore the RAG rating is **Green** for both.

Maintenance

7.4.14 Maintenance costs over a 45-year lifecycle are proportional to length, therefore, the shortest and lowest maintenance cost would be for Route Option D2 at approximately 12.3 km of OHL with a necessary addition of approximately 0.4 km of UGC to connect into Melgarve substation. Route Option D1 is slightly longer at approximately 14.2 km of OHL with a necessary addition of approximately 0.4 km of UGC to connect into Melgarve substation. The RAG rating for both options is **Green**.

7.5 Comparative Analysis Summary

7.5.1 **Table 7.2** below illustrates the environmental, engineering and cost appraisal RAG ratings for the route options considered for Dell. A summary RAG table is included in **Appendix 2**.

Table 7.2: Dell RAG Ratings

	Category	Sub-Topic	Route Option D1 Rating	Route Option D2 Rating
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		

	Category	Sub-Topic	Route Option D1 Rating	Route Option D2 Rating
Engineering	Infrastructure Crossings	Major Crossings (132kV, 275kV, Rail, 200+m wide river, navigable canal, gas or hydro pipeline)		
		Road Crossings		
	Environmental Design	Elevation		
		Pollution Areas		
		Contaminated Land		
		Flooding		
	Ground Conditions	Terrain		
		Peat		
	Construction / Maintenance	Access		
		Angle Towers		
	Proximity	Clearance Distance		
		Proximity to Windfarms		
		Communication Masts		
		Metallic pipes		
		Urban Environments		
Cost	Capital	Construction		
		Diversions		

	Category	Sub-Topic	Route Option D1 Rating	Route Option D2 Rating
		Public Road Improvements		
		Felling		
		Land Assembly		
		Consent Mitigations		
	Operational	Inspections		
		Maintenance		

8. SUMMARY OF APPRAISAL: GLENSHERO

8.1 Glenshero Appraisal

8.1.1 This section provides a summary of the potential environmental, technical and economic constraints identified for the Glenshero Wind Farm connection route following the topic areas shown in **Table 3.1**. Reference should also be made to **Figures 2** to **12** which illustrate potential environmental baseline constraints identified under each topic.

8.1.2 As noted within Section 4, only one route option has been identified for the Glenshero connection. The route represents a generally direct path towards Melgarve substation, following the established UGC route between Stronelairg Wind Farm on-site substation and Melgarve substation. It includes a section of access track retained from this UGC installation and follows the landform down from the plateau of higher ground, minimising the need to cross or ascent adjacent slopes. Any other route outwith this would create a longer connection (entailing greater financial costs) and require crossing steep and / or difficult ground associated with Leathad Gaothach to the east or Creag Mhòr to the west. Additional watercourses would need to be crossed, likely requiring disruptive works in remote locations with no established access. Depending on the alternative routes identified, alignments may require to negotiate a path through the proposed turbines of Glenshero Wind Farm as well.

8.1.3 Taking these considerations into account, Route Option G1 presents the only viable route for connection between Glenshero Wind Farm and Melgarve substation

8.1.4 The route has been appraised as UGC only.

8.2 Environmental Topic Areas

Natural Heritage

Designations

8.2.1 The Glenshero route does not pass through any designated Ramsar, SSSI, SAC, Ancient Woodland or NNR sites. Several designated sites (River Spey SSSI and SAC; Creag Meagaidh SSSI, SAC, SPA and NNR; Monadhliath SSSI and SAC; Glendoe Lochans SSSI; Loch Knockie and nearby Lochs SAC; Glen Tarff SSSI; Ness Woods SAC and Parallel Roads of Lochaber SSSI) are located within 5 km of the Corridor boundary. The only site which is likely to have connectivity to the route is the River Spey SSSI and SAC which is connected to all routes via water courses.

Protected Species

8.2.2 The Route Option passes through a mix of habitats from higher to lower altitudes with water course crossings fairly frequent.

8.2.3 Impacts on protected species could be further reduced or eliminated by undertaking pre-construction surveys and adopting appropriate mitigation. These measures are expected to be included in a standard species protection plan for the proposal.

Habitats

8.2.4 Annex 1 data for Glenshero was available for this Report (**Figure 3**). Due to these habitats' inclusion in Annex 1 of the Habitats Directive (92/43/EEC) they are afforded a higher level of conservation importance. Priority Annex 1 habitats (mostly blanket bog in the Corridor area) are recognised as particularly unique and of higher importance.

8.2.5 At the time of writing there was not data coverage for the entirety of the Route Option. However, the data available was suitable to provide an indication of the Annex 1 habitats likely to be present and their general abundance and distribution within the Route Options.

8.2.6 The data generally show that blanket bog is highly likely to be the dominant Annex 1 priority habitat across the route, particularly at higher altitudes where low slopes and cold and wet conditions favour its development. Wet heath is the next most dominant Annex 1 habitat but is generally more patchily distributed and easier to avoid. The other five Annex 1 habitats tends to be rare across the site and confined to discrete patches – it should therefore be possible for most routes to avoid these. Because blanket bog habitat is the most dominant Annex 1 habitat and is a priority habitat that is also afforded additional protection in SPP, it is advised that minimising impacts on this habitat be factored into eventual alignment selection (see above section). Other Annex 1 habitats should be easier to either avoid or minimise impacts on.

8.2.7 The Route Option passes through small-moderate area of Class 1 peatland at higher altitudes with the abundance decreasing as altitude decreases towards the south of the route (**Figure 6**). The route is likely to have a moderate impact due to the section at a higher altitude which may dissect an area of Class 1 Peatland.

8.2.8 Route G1 overlaps with management unit 4a of Glenshero outline HMP but this is not likely to cause any constraint as it is for carrion removal.

8.2.9 The Route Option passes through habitats of varying distinctiveness, with areas of blanket bog and fen habitat designated as very high distinctiveness, while areas of upland heathland, heathland and scrub, woodland and marshy / acid grassland are of high distinctiveness. The BU and BU / Ha of each option are as set out in **Table 8.1**.

Table 8.1: Route Options Biodiversity Score

Option	Biodiversity Units (BU)	BU per Hectare (BU / Ha)
Route Option G1	13,461.46	16.55

8.2.10 Based on the calculated BU, Route Option G1 would have an impact on habitats with large areas classified as high and very high distinctiveness particularly at high altitudes.

Ornithology

8.2.11 The route runs down from the plateau to the glen below through predominantly peaty moorland with several narrow, fast-flowing watercourses and rocky outcrops. Previous bird surveys in the area have recorded upland and lowland waders and protected raptors, with the ridge in the northern section of the route having a high level of Golden Eagle (Aquila chrysaetos) activity.

8.2.12 Standard breeding bird surveys would need to be undertaken to assess any changes in baseline prior to any works commencing, and appropriate mitigation measures should be implemented to minimise any disturbance to protected species / nesting birds along this route.

Geology, Hydrology and Hydrogeology

8.2.13 As shown on **Figure 6**, priority peatland mapping highlights that the route option would pass through areas of Class 1 and Class 2 peatland. The presence of peat is not considered to be a significant development constraint as higher-class areas can largely be avoided and micrositing can be used to mitigate potential effects.

8.2.14 Watercourse crossings would be necessary, and all permanent structures would need to be set back from the watercourse channels to protect against exposure from natural processes leading to watercourse meandering and migration.

8.2.15 SEPA floodplain mapping shows that the Medium (0.5 % annual exceedance probability of flooding / 1 in 200 year) likelihood of flooding floodplain extents associated with the larger watercourses within the route, including the Allt Coire Iain Oig and Allt Gilbe, however flood extents are generally confined to the watercourse channels.

8.2.16 Potential for flood risk during the construction stage and the siting of construction related infrastructure would need to be given appropriate consideration.

Cultural Heritage

Cultural Heritage Designations

8.2.17 As a UGC indirect visual impacts on designated assets would be negligible.

Cultural Heritage Assets

8.2.18 No cultural heritage assets have been identified other than the iron fence marking the watershed and a small number of minor archaeological features of local significance. There may also be minor features associated with shielings along the larger watercourses, but these are unlikely to be directly impacted.

Landscape and Visual

Designations

8.2.19 As a UGC, there would be some effects potentially occurring during construction. However, assuming that all access routes would be removed or sympathetically reinstated after construction no notable longer-term effects are anticipated.

Landscape Character

8.2.20 It is envisaged that, assuming construction access would be removed or sympathetically reinstated following implementation, there would be very limited longer-term perceptibility of the development.

Visual

8.2.21 It is considered that, although there would be views of works during construction, there would be very limited potential for longer term views to be obtained by visual receptors, assuming that access routes were removed or sympathetically reinstated.

Land Use

Agriculture

8.2.22 The agricultural land within the route 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 the route option is considered to be low. No grade 1, 2, 3 or 4 agricultural land is present in the vicinity of the route.

Forestry

8.2.23 There is limited forestry within the Corridor, and as such the route would have minimal interaction with forestry. No areas of AWI are present within the route.

8.2.24 Route Option G1 includes Sherramore Forest, situated north-east of Melgarve substation, which includes pockets of native woodland. Any felling through this forest is unlikely to be able to avoid felling native woodland also given its distribution and the need to fell to a windfirm edge. However, opportunities exist to avoid this woodland altogether through selection of an alignment in the west half of the route at this point. Route Option G1 also includes the native woodland west of Melgarve and it is anticipated that this could be avoided through appropriate alignment selection.

Recreation

8.2.25 Apart from use of the estate land for sporting activities (shotting grouse and deer), there are few points of recreational interest within the Corridor. The following recreational assets fall within, or near to, the route and may potentially be impacted:

- Meall na h-Aisre Corbett, situated at the east edge of Route Option G1, of relevance to hill walking interests.
- Scottish Hill Track 236 which runs parallel to the south boundary of the Corridor, near the south end of the route.
- shooting for grouse and deer occurs on estate land in the area.

8.2.26 It is anticipated that a new UGC through the route may adversely affect these recreational interests, however, this would be limited to disruption at the construction stage, with negligible adverse effects on recreational activities during operation.

Planning Context

Policy

8.2.27 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.

8.2.28 As such, the route option has moderate potential for constraint associated with Natural Heritage topics, notably designations, protected species, habitats and hydrology / geology.

Proposals

8.2.29 At the current stage some constraints posed by other proposals have been identified. Upon leaving the proposed Glenshero substation, the turbines of Glenshero Wind Farm may present a degree of constraint in selection of a suitable alignment; however, as the on-site substation sits at the south-east edge of the wind farm, it is considered that opportunities exist to avoid these constraints.

8.2.30 A small number of recently consented developments have been identified in the vicinity of Melgarve substation; however, these are not considered to pose any notable constraints to the route which could not be addressed through careful and considered siting and design.

8.3 Engineering Topic Areas

Infrastructure Crossings

Major Crossings

8.3.1 The Glenshero cable will cross, buried beneath, the existing 400kV Beauly–Denny OHL adjacent to Melgarve Substation. There are no initial technical concerns associated with this crossing, it will be considered as part of the cable route overall design.

8.3.1 2 x watercourse crossings and 2 x deep peat crossings have been identified along the route. Further assessment is required however, there are no initial technical concerns associated with these crossing, they will be considered as part of the cable route overall design

Road Crossings

8.3.2 The Glenshero cable will cross, buried beneath, the existing access road to the North of Melgarve substation. This road is a hardcore / untarred rough access track uses mainly by Glenshero Estate or for access to the OHL towers. There are no initial technical concerns associated with this crossing, it will be considered as part of the cable route overall design.

Environmental Design

Elevation

8.3.3 There are no initial technical concerns associated with the elevation of the Glenshero cable route. Although challenging, the route is likely to follow the existing Stronelairg cable route and utilise the existing cable route access tracks.

Atmospheric Pollution

8.3.4 Site pollution severity in accordance with IEC 60815 and is classified as “Light”, presenting no technical concerns.

Contaminated Land

8.3.5 No contaminated land has been identified in the area that would give rise to any technical concerns.

Flooding

8.3.6 There exists potential for flood risk during construction; however, this would be managed accordingly and form part of the designer’s risk assessment.

Ground Conditions

Terrain

8.3.7 Terrain inclines upwards from Melgarve substation to Glenshero substation. Rock, peat and watercourses have all been identified along the route option. Navigating the route option through the terrain would be considered as part of the cable route overall design.

Peat

8.3.8 Peat areas have been identified along the route option with two deep peat locations being of particular concern. These deep peat locations were previously crossed with a cable as part of the Stronelairg Wind Farm connection to Melgarve substation. Lessons learned would be taken to inform the Glenshero design. There are no other initial technical concerns.

Construction / Maintenance

8.3.9

Access

8.3.10 It is proposed that the existing Stronelairg UGC access track would be utilised for the new Glenshero UGC route.

Angle Towers

8.3.11 Consideration of angle towers is not applicable to this route option as UGC would be utilised for the full length of connection.

Proximity

8.3.12 The Glenshero UGC is likely to be installed alongside the existing Stronelairg UGC. All clearances / separation distances would be maintained in accordance with the latest standards and specifications.

Clearance Distance

8.3.1 The Glenshero UGC is likely to be alongside the existing Stronelairg UGC. All clearances / separation distances will be maintained in accordance with the latest standards and specifications.

Proximity to Windfarms

8.3.2 The Glenshero UGC would route through the Glenshero windfarm, and no initial technical concerns have been identified for this arrangement.

Communication Masts

8.3.3 Not communication masts were identified in proximity to the route option during initial assessments.

Metallic pipes

8.3.4 No metallic pipes were identified in proximity to the route option during initial assessments.

Urban Environments

8.3.5 No urban environments exist in proximity to the route option.

8.4 Cost Topic Areas

8.4.1 Costs were assessed in detail as part of the route selection process for the Glenshero Wind Farm connection. The different cost topic areas are rated below but will also be considered in more detail at the alignment stage when the technical and engineering specifications required become clearer.

Capital

Construction

8.4.2 Construction cost is proportional to length. Route Option G1 benefits from the presence of an existing cable haul road that could be upgraded to facilitate construction, potentially saving on cost.

Diversions

8.4.3 There are no diversions identified on Route Option G1. Therefore, there is no cost associated to this.

Public Road Improvements

8.4.4 The construction of a UGC within Route Option G1 would use the same public road network that was used for the installation of the existing Stronelairg Wind Farm UGC. An assessment would be undertaken at Alignment Stage to assess public road improvement (PRI) requirements; however, given the recent construction of the Stronelairg UGC, any required PRI is likely to be minimal in nature.

Felling

8.4.5 There are forested areas identified within Route Option G1, however there is scope to avoid these areas at alignment stage. Therefore, there is no cost associated to this.

Land Assembly

8.4.6 Land assembly costs are proportional to length. There are no known additional land assembly requirements that would be required to obtain a wayleave or servitude at this stage in the project.

Consent Mitigations

8.4.7 There are no known mitigations that would be required to achieve consent on Route Option G1 at this stage. Therefore, there is no cost associated to this.

Operational

Inspections

8.4.8 Inspection cost over a 45-year lifecycle is proportional to length. There are no known additional inspection requirements in Route Option G1 at this stage which would increase maintenance cost.

Maintenance

8.4.9 Maintenance cost over a 45-year lifecycle is proportional to length. There are no known additional maintenance requirements in Route Option G1 at this stage which would increase maintenance cost.

9. SELECTION OF PREFERRED ROUTES

9.1 Preferred Routes

9.1.1 A Preferred Route has been identified following consideration of environmental, engineering and cost considerations for each of the three wind farm connections. Each will be discussed in the following paragraphs.

9.2 Cloiche

9.2.1 A Preferred Route has been identified following consideration of environmental, engineering and cost considerations for the Cloiche Wind Farm grid connection to Melgarve substation.

9.2.2 From an **environmental** perspective, the comparative analysis of route options has highlighted that Route Option C3 is preferred.

9.2.3 In selection of an OHL route, Ornithology and Landscape Character are identified as the most constraining factors, followed by Habitats. All route options are considered to be broadly equivalent for Ornithology, and thus the choice of Preferred Route is largely driven by the remaining factors which are at odds with each other. However, the differences in potential impacts on Landscape Character between route options are more pronounced than those of Habitats, which could be controlled through appropriate selection of alignments and micrositing away from higher sensitivity areas. Route Option C2B is generally the least favoured overall, while Route Option C3 is the most favoured from a Landscape Character standpoint. Route options C1 and C2A are broadly equivalent, with slight differences highlighted between routes in Habitats, Cultural Heritage and Hydrology / Geology. Overall, Route Option C3 is the environmentally Preferred Route for the Cloiche connection.

9.2.4 From an **engineering** perspective, variations in constraints for an OHL relate primarily to terrain, access, angle towers, proximity to wind farms and communication masts.

9.2.5 All route options pass through mountainous terrain however Route Options C2A and C2B pass through the central mountain region and pass-through steep terrain and narrower pinch points. Route Options C1 and C3 pass through less severe terrain, and there are very few pinch points along Route Option C3.

9.2.6 Route options C1, C2A and C2B are fairly well serviced by the Melgarve access track that extends along most of the south of the study area, however, extensive access track construction works will still be required for the mountainous sections further north. The existing Stronelairg-Melgarve cable route connection includes a cable-haul road which services a substantial amount of Route Option C3. Combined with the access tracks that will likely be constructed for the Glenshero and Cloiche windfarms, Route Option C3 will potentially have access tracks for the majority of its length, with only short ‘spur’ sections required.

9.2.7 Although similar in length to route options C1, C2A and C2B, the directness of Route Option C3, with its low gradient terrain, is estimated to require the least amount of angle towers.

9.2.8 For proximity to windfarms, route options C2A, C2B and C3 were scored as more constrained due to the number of Cloiche and Glenshero wind turbines they would pass near to. While Route Option C1 was able to avoid some of these.

9.2.9 A communication mast is estimated to be located within route options C1, C2A and C2B, while no communication masts have been estimated to be inside of Route Option C3

9.2.10 The route options are considered to be broadly comparable for all other engineering constraints.

9.2.11 The route appraisal shows that Route Option C3 is the Preferred Route option in engineering terms. This is primarily due to existing access tracks and the directness of the Route Option. The existing Stronelairg – Melgarve UGC has been constructed on relatively undulating terrain which Route Option C3 would be able to follow for much of its length.

9.2.12 From a **cost** perspective, route options C2A, C2B and C3 are broadly preferred on the basis of both capital and operational costs.

9.2.13 Felling of woodland may potentially be required for all route options, however Route Option C2B contains the lowest area of trees and thus felling and replanting costs are likely to be lowest. All other options are greater than 140 % of this option in forested area. However, as noted earlier in this Report, it is possible for alignments within all of these routes to avoid crossing through these areas of trees during the alignment stage, and thus constraints are considered to be minimal.

9.2.14 Route Option C1 is the only route option that is over 10 km in length, therefore in categories where cost is assumed to be proportional to OHL length, such as construction, land assembly and maintenance this is the least preferred.

9.2.15 In determining a preferred route on cost grounds, Route Option C2B appears to be the Preferred Route. However, in recognition that felling could give a rise to a false RAG interpretation, total capital cost was assessed. This showed that C2A, C2B and C3 are all unlikely to be constrained by cost, while Route Option C1 has intermediate potential for the development to be constrained by cost considerations.

9.2.16 Taking the various constraints and route preferences into account, the Preferred Route is considered to be **Route Option C3,** as shown on **Figure 13**. The environmental and engineering appraisals have both identified Route Option C3 as the overall preference. The cost appraisal identified Route Option C2B as the overall preference, however it was noted to be marginal and generally comparable with Route Option C3.

9.2.17 The Preferred Route would require careful consideration during alignment selection to achieve an acceptable alignment with minimal environmental effects. Should further site and desk-based analysis at the alignment selection stage identify a particular constraint, a further review of route or alignment options may be required.

9.3 Dell

9.3.1 A Preferred Route has been identified following consideration of environmental, engineering and cost considerations for the Dell Wind Farm grid connection to Melgarve substation.

9.3.2 From an **environmental** perspective, the comparative analysis of route options has highlighted that Route Option D1 is preferred.

9.3.3 In selection of an **OHL route**, Ornithology has been identified as the most constraining factor. Both route options are considered to be broadly equivalent for Ornithology, and thus the choice of Preferred Route is largely driven by other considerations, including Planning Proposals, Habitats and Natural Heritage Designations. There exists a preference for Route Option D2 given its potential to avoid the DWPA altogether, whereas Route Option D1 is preferred under Habitats due to the lower BU within the route and potentially greater opportunities to achieve NNL. On balance, Route Option D1 is the Preferred Route for an OHL Dell connection. The appraisal carried out assumed that the connection would continue through Route Option C3 to Melgarve substation, and Route Option C3 was confirmed as the environmentally Preferred Route for the Cloiche connection.

9.3.4 From an **engineering** perspective, there are few variations between Route Option D1 and Route Option D2. The variations in engineering constraints relate primarily to angle towers.

9.3.5 Route Option D2 is estimated to require fewer angle towers. This is due to the reduced overhead line length but also the directness of the route option. There should also be fewer 'pinch points' due to the favourable terrain. For these reasons Route Option D2 is preferable over Route Option D1.

9.3.6 The route options are considered to be broadly comparable for all other engineering constraints. Both route options would have high potential to be constrained by the presence of peat, and for elevation as more than 25 % of both route options would be above 200 m AOD.

9.3.7 In determining a preferred route on purely engineering grounds using the guidance on Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above, Route Option D2 is the Preferred Route.

9.3.8 From a **cost** perspective, both route options scored the same for both capital and operational costs.

9.3.9 Route Option D1 and Route Option D2 both have one high risk category within capital costs. This is for felling. Felling of woodland is likely to be required for both route options. However, as noted in Section 7.4, caution should be taken when interpreting felling scores in the overall RAG assessments as there is potential in all routes to avoid crossing through areas of trees during the alignment stage.

9.3.10 In determining a preferred route on cost grounds, Route Option D1 and Route Option D2 are broadly comparable. As the slightly shorter option, Route Option D2 could be marginally preferable to Route Option D1 if costs are assumed to be proportional to length.

9.3.11 Taking the various constraints and route preferences into account, the Preferred Route is considered to be Route Option D2. All three appraisals (environmental, engineering and cost) 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 and cost appraisals identifying a slight preference for Route Option D2. However, there are material factors associated with the project which aren't strictly covered by the SSEN Transmission guidance on Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above which influence the decision on Preferred Route for Dell.

9.3.12 While the engineering appraisal has identified a slight preference for Route Option D2 on the basis of likely number of angle towers, the routes established at project outset are much broader than the standard 1 km route width to enable consideration of various alignment options at Stage 3 (alignment selection), particularly in light of the number of operational and proposed wind turbines within the route options. It is considered that, taking account of numerous other factors which could influence an alignment through the Dell route options (e.g. proximity to both operational and planned wind turbines, habitats, ground conditions, presence of any protected species, etc.), it is too early in the process to state confidently whether Route Option D1 would necessarily require more angle towers than Route Option D2.

9.3.13 Other factors outwith the guidance on Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above require to be considered in determining the viability of Route Option D2. Notably, a landowner has refused access for surveys within a portion of Route Option D2 and has noted objection to an OHL. Route Option D1 is considered to be a viable alternative which avoids affecting the landowner.

9.3.14 In addition, Route D1 allows the Applicant to consider options to rationalise the infrastructure required, such as Cloiche and Dell sharing OHL structures, which could reduce overall cost as well as minimise technical challenges and potential for adverse environmental effects.

9.3.15 These factors are considered to present justification for selection of Route Option D1 over Route Option D2 for the Dell connection, particularly given that, by review of all RAG appraisal outcomes, there is only a slight preference for the latter. Consequently, the Preferred Route is considered to be **Route Option D1**, as shown on **Figure 13**.

9.3.16 The Preferred Route would require careful consideration during alignment selection to achieve an acceptable alignment with minimal environmental effects. Should further site and desk-based analysis at the alignment selection stage identify a particular constraint, a further review of route or alignment options may be required.

9.4 Glenshero

9.4.1 The Glenshero Route Option has been appraised in terms of environmental, engineering and cost considerations to identify the main constraints to development of a UGC.

9.4.2 From an **environmental** perspective, the main constraints for the Glenshero connection are Natural Heritage Designations, Protected Species, Habitats and Geology / Hydrology. These will be the key factors requiring careful consideration during the alignment selection stage of the project to achieve an acceptable alignment with minimal environmental effects. Should further site and desk-based analysis at the alignment selection stage identify a particular constraint, a further review of the route or alignment options may be required prior to the identification of a preferred alignment.

9.4.3 From an **engineering** perspective, the key constraints associated with the Glenshero connection relate primarily to ground conditions and crossings of watercourses, peat and roads.

9.4.4 From a **cost** perspective, the key constraints associated with the Glenshero connection relate primarily to construction, land assembly, inspections and maintenance. However, these are normal costs for a project to incur and there are no known additional constraints at this stage that would increase costs.

9.4.5 For Glenshero Wind Farm Connection, as the only option appraised, **Route Option G1** has been identified as the Preferred Route. Nevertheless, the appraisal process has identified particular constraints within the route option that would require further consideration at alignment stage.

9.4.6 The Preferred Route would require careful consideration during alignment selection to achieve an acceptable alignment with minimal environmental effects. Should further site and desk-based analysis at the alignment selection stage identify a particular constraint, a further review of route or alignment options may be required.

10. CONSULTATION ON THE PROPOSALS

10.1.1 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.

10.2 Questions for Consideration by Consultees

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

- Has the need for the project been clearly explained?
- Are there any additional factors, or environmental features, that you consider important and should be brought to the attention of the project team?
- Do you have any other comments regarding the route options and layout?
- Following review of the provided information, how would you describe your understanding of the Melgarve Cluster project?
- Overall, how do you feel about the Melgarve Cluster project?
- And finally, from your experience to date, can you rate the quality of consultation undertaken on the Melgarve Cluster project?

10.3 Next Steps

10.3.1 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 route options put forward, and the identification of preferred routes to take forward to the next stage in the routeing process (alignment selection) for each of the three wind farm development grid connections.

10.3.2 All comments are requested by **28th January 2022**. A Report on Consultation will be produced which will document the consultations received, and the decisions made in light of these responses.

10.3.3 Following the identification and confirmation of a Proposed Route for each of the three wind farm development connections, further technical and environmental surveys (e.g. Phase 1 Habitat / NVC surveys, Protected Species Surveys and further input by landscape, ecology, cultural heritage and hydrology specialists) would be undertaken to identify preferred alignments. Consultation on preferred alignments will be undertaken in a similar manner to the identification of preferred routes for each of the three wind farm development connections in Spring 2022.

Appendix 1: Cloiche Summary RAG Table

	Category	Sub-Topic	Route Option C1	Route Option C2A	Route Option C2B	Route Option C3
Environmental	**Natural Heritage**	Designations	The route does not intersect with any designated sites but is hydrologically connected with the River Spey SAC and SSSI. Greatest presence in the DWPA.	The route does not intersect with any designated sites but is hydrologically connected with the River Spey SAC and SSSI.	The route does not intersect with any designated sites but is hydrologically connected with the River Spey SAC and SSSI.	The route does not intersect with any designated sites but is hydrologically connected with the River Spey SAC and SSSI. Least presence in the DWPA.
		Protected Species	Various protected species identified across the site in previous studies. Risk of impacts could be reduced or eliminated by undertaking pre-construction surveys and adopting appropriate mitigation.	Various protected species identified across the site in previous studies. Risk of impacts could be reduced or eliminated by undertaking pre-construction surveys and adopting appropriate mitigation.	Various protected species identified across the site in previous studies. Risk of impacts could be reduced or eliminated by undertaking pre-construction surveys and adopting appropriate mitigation.	Various protected species identified across the site in previous studies. Risk of impacts could be reduced or eliminated by undertaking pre-construction surveys and adopting appropriate mitigation.
		Habitats	Habitats present moderate constraints, anticipated that potential effects could be minimised along this route at the alignment stage though there may still be minor loss of habitats. Micro-siting should be used to avoid sensitive habitats when placing OHL structures. Other HMPs present through route to consider.	Habitats present moderate constraints, anticipated that potential effects could be minimised along this route at the alignment stage though there may still be minor loss of habitats. Micro-siting should be used to avoid sensitive habitats when placing OHL structures. Other HMPs present through route to consider.	Habitats present moderate constraints, anticipated that potential effects could be minimised along this route at the alignment stage though there may still be minor loss of habitats. Micro-siting should be used to avoid sensitive habitats when placing OHL structures. Other HMPs present through route to consider.	Habitats present moderate constraints, anticipated that potential effects could be minimised along this route at the alignment stage though there may still be minor loss of habitats. Micro-siting should be used to avoid sensitive habitats when placing OHL structures. Other HMPs present through route to consider.
		Ornithology	Potential for loss of suitable habitat for several species. Constraints posed by waders and raptors. Significant constraint posed by Golden Eagles	Potential for loss of suitable habitat for several species. Constraints posed by waders and raptors. Significant constraint posed by Golden Eagles	Potential for loss of suitable habitat for several species. Constraints posed by waders and raptors. Significant constraint posed by Golden Eagles	Potential for loss of suitable habitat for several species. Constraints posed by waders and raptors. Significant constraint posed by Golden Eagles
		Geology, Hydrology and Hydrogeology	The route is within the catchments of the Glendoe Reservoir and River Spey. The route is located within Class 1 and Class 2 peatland. CAR licences are situated within the route.	The route is within the catchments of the Glendoe Reservoir and River Spey. The route is located within Class 1 and Class 2 peatland. CAR licences are situated within the route.	The route is within the catchments of the Glendoe Reservoir and River Spey. The route is located within Class 1 and Class 2 peatland. CAR licences are situated within the route.	The route is within the catchments of the Glendoe Reservoir, the River Spey and the River Fechlin. The route is located within Class 1 and Class 2 peatland. CAR licences are situated within the route.
	Cultural Heritage	Designations	Some potential indirect impacts on designations which could be further reduced through sensitive siting.	Some potential indirect impacts on designations which could be further reduced through sensitive siting.	Limited potential indirect impacts on designations which could be further reduced through sensitive siting.	Limited potential indirect impacts on designations which could be further reduced through sensitive siting.
		Cultural Heritage Assets	Some potential impacts along the route could be minimised through avoidance at alignment stage.	Some potential impacts along the route could be minimised through avoidance at alignment stage.	Limited potential impacts along the route could be minimised through avoidance at alignment stage.	Limited potential impacts along the route could be minimised through avoidance at alignment stage.
	People	Proximity to Dwellings	It is anticipated that a 100 m separation buffer applied to all properties could be observed for the entirety of the option.	It is anticipated that a 100 m separation buffer applied to all properties could be observed for the entirety of the option.	It is anticipated that a 100 m separation buffer applied to all properties could be observed for the entirety of the option.	It is anticipated that a 100 m separation buffer applied to all properties could be observed for the entirety of the option.
	Landscape and Visual	Designations	The route does not pass through any landscape designations. Potential adverse effects on nearby WLA 19.	The route does not pass through any landscape designations. Potential adverse effects on nearby WLA 19.	The route does not pass through any landscape designations or give rise to indirect effects on such.	The route does not pass through any landscape designations. Potential adverse effects on nearby CNP.
		Character	Moderate – high constraint posed by landscape character. Potentially crosses high ground and affect remote areas.	Moderate – high constraint posed by landscape character. Potentially crosses high ground and affect remote areas	Moderate – high constraint posed by landscape character. Potentially inconsistent with existing landscape features.	Moderate constraints posed by landscape character. Potentially inconsistent with existing landscape features.
		Visual	Potential for some visual effects within lower ground areas and mountain bothies. Also potentially visible from recreational routes and summits.	Potential for some visual effects within lower ground areas and mountain bothies. Also potentially visible from recreational routes and summits.	Potential for some visual effects within lower ground areas and mountain bothies. Also potentially visible from recreational routes and summits.	Potential for some visual effects within lower ground areas and mountain bothies. Also potentially visible from recreational routes and summits.
	Land Use	Agriculture	Agricultural land is not considered particularly sensitive or fertile.	Agricultural land is not considered particularly sensitive or fertile.	Agricultural land is not considered particularly sensitive or fertile.	Agricultural land is not considered particularly sensitive or fertile.

	Category	Sub-Topic	Route Option C1	Route Option C2A	Route Option C2B	Route Option C3
		Forestry	Potential for effects on native woodland, although opportunities exist to avoid. Some potential loss of pinewood planation woodland. Avoids AWI.	Potential for effects on native woodland, although opportunities exist to avoid. Some potential loss of pinewood planation woodland. Avoids AWI.	Potential for effects on native woodland, although opportunities exist to avoid. Some potential loss of pinewood planation woodland. Avoids AWI.	Potential for effects on native woodland, although opportunities exist to avoid. Some potential loss of pinewood planation woodland. Avoids AWI.
		Recreation	The route has the potential for limited interaction with a few recreational assets although opportunities to minimise impacts exists.	The route has the potential for limited interaction with a few recreational assets although opportunities to minimise impacts exists.	The route has the potential for limited interaction with a few recreational assets although opportunities to minimise impacts exists.	The route has the potential for limited interaction with a few recreational assets although opportunities to minimise impacts exists.
	Planning	Policy	High potential for constraint in some areas may preclude adherence to planning policy.	High potential for constraint in some areas may preclude adherence to planning policy.	High potential for constraint in some areas may preclude adherence to planning policy.	High potential for constraint in some areas may preclude adherence to planning policy.
		Proposals	Some constraint posed by Cloiche Wind Farm.	Some constraint posed by Cloiche Wind Farm and some minimal constraint posed by Glenshero Wind Farm.	Moderate constraint posed by Cloiche and Glenshero Wind Farm.	Moderate constraint posed by Cloiche and Glenshero Wind Farm and the operational Stronelairg Wind Farm.
Engineering	**Infrastructure Crossings**	Major Crossings (132kV, 275kV, Rail, 200+m wide river, navigable canal, gas or hydro pipeline)	Route option is likely to result in one major infrastructure crossing; the Beauly-Denny OHL.	Route option is likely to result in one major infrastructure crossing; the Beauly-Denny OHL.	Route option is likely to result in one major infrastructure crossing; the Beauly-Denny OHL.	Route option is likely to result in one major infrastructure crossing; the Beauly-Denny OHL.
		Road Crossings	No road crossings on route option.	No road crossings on route option.	No road crossings on route option.	No road crossings on route option.
	Environmental Design	Elevation	All of the route option area is above 200 m.	All of the route option area is above 200 m.	All of the route option area is above 200 m.	All of the route option area is above 200 m.
		Atmospheric Pollution	No areas of pollution identified within proximity of the route option.	No areas of pollution identified within proximity of the route option.	No areas of pollution identified within proximity of the route option.	No areas of pollution identified within proximity of the route option.
		Contaminated Land	Based on available information, this route option is not expected to cross any contaminated land.	Based on available information, this route option is not expected to cross any contaminated land.	Based on available information, this route option is not expected to cross any contaminated land.	Based on available information, this route option is not expected to cross any contaminated land.
		Flooding	Less than 2% of the route length has 80% of width in a 1 in 200-year flood zone.	Less than 2% of the route length has 80% of width in a 1 in 200-year flood zone.	Less than 2% of the route length has 80% of width in a 1 in 200-year flood zone.	Less than 2% of the route length has 80% of width in a 1 in 200-year flood zone.
	Ground Conditions	Terrain	Route option includes small sections of terrain of >50%, but the majority is made up of terrain that is undulating, with gradients of up to 30%. There are two pinch points which are approximately 600 m and 400 m respectively. There is a narrow pinch point of 70 m wide between the existing Beauly-Denny OHL and steep hills to its north.	Route option includes almost two-thirds of terrain in its length of >50%, with only small sections of the route option made up of undulating, low gradient terrain. There are frequent pinch points along the route ranging from 150 m to 400 m. There is a narrow pinch point of 70 m wide between the existing Beauly-Denny OHL and steep hills to its north.	Route option includes almost two-thirds of terrain in its length of >50%, with only small sections of the route option made up of undulating, low gradient terrain. There are frequent pinch points along the route ranging from 200 m to 400 m.	Route option includes small sections of terrain of >50% however the majority of the route option is made of terrain that is undulating, with gradients of up to 30% for most of the area. There are very few pinch points along the route option.
		Peat	There is Class 1 and Class 2 peat within the route option. It is estimated that 18% and 21% of the route length has more than 50% of the width through Class 1 peat and Class 2 peat, respectively, therefore a total of 39%.	There is Class 1 and Class 2 peat within the route option. It is estimated that 27% and 12% of the route length has more than 50% of the width through Class 1 peat and Class 2 peat, respectively, therefore a total of 39%.	There is Class 1 and Class 2 peat within the route option. It is estimated that 40% of the route length has more than 50% of the width through Class 1 peat.	There is Class 1 and Class 2 peat within the route option. It is estimated that 43% of the route length has more than 50% of the width through Class 1 peat.

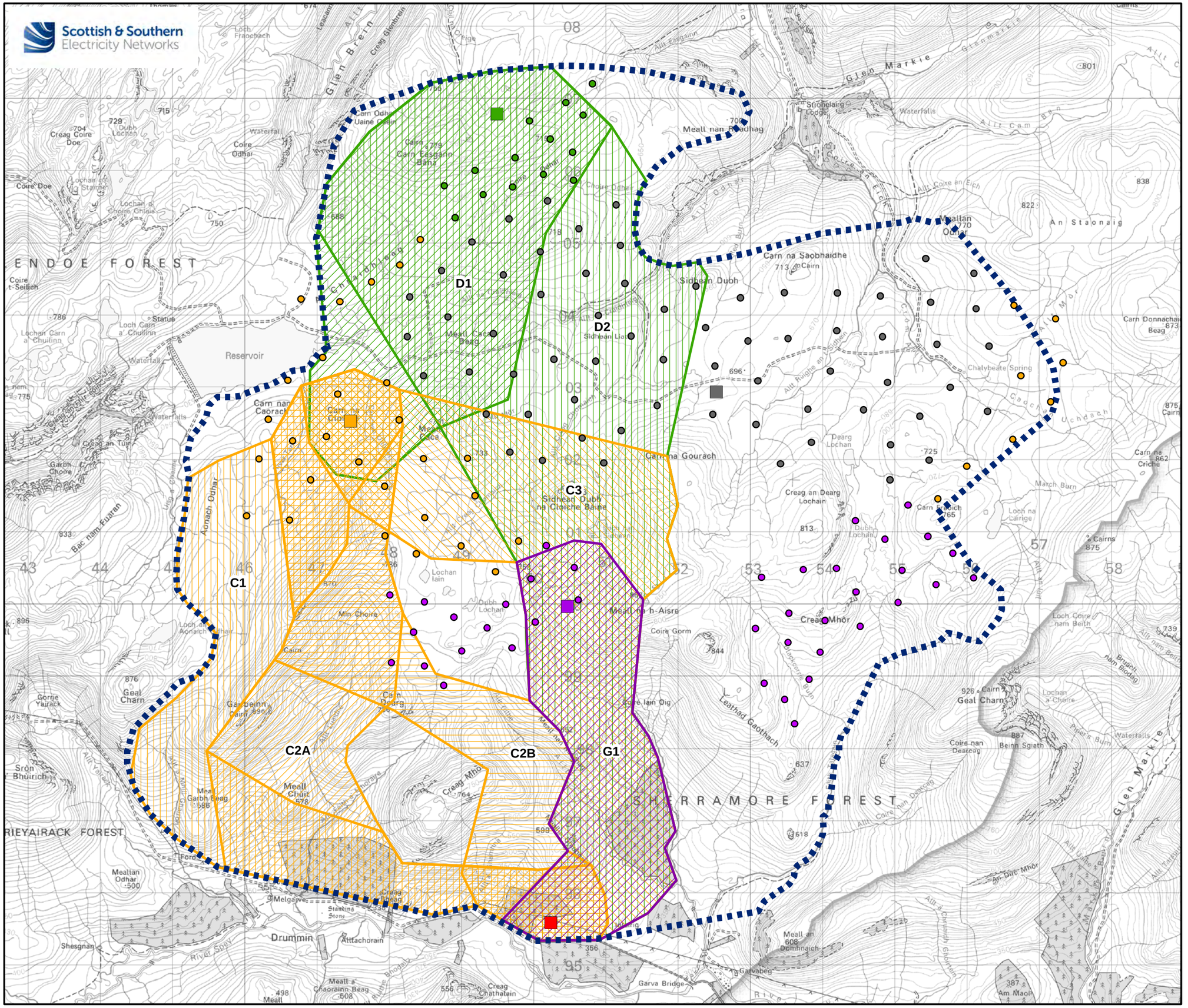
	Category	Sub-Topic	Route Option C1	Route Option C2A	Route Option C2B	Route Option C3
	Construction / Maintenance	Access	To the south, the route option is serviced by existing access route that runs adjacent to the Beauly-Denny OHL. Access tracks of up to 0.6km may be required to spur off the existing track. The proposed access tracks to construct and maintain Cloiche Wind Farm will cover approximately 18% of this route option. Despite the presence of existing access track, extensive access works will be required. All of the route option is over 1km from an existing (public) road network.	To the south, the route option is serviced by existing access route that runs adjacent to the Beauly-Denny OHL. Access tracks of up to 0.6km may be required to spur off the existing track. The proposed access tracks to construct and maintain Cloiche Wind Farm will cover approximately 13% of this route option. Despite the presence of existing access track, extensive access works will be required. All of the route option is over 1km from an existing (public) road network.	Small section of route option is serviced by existing access route that runs adjacent to Beauly-Denny OHL. The proposed access tracks to construct and maintain Cloiche and Glenshero Wind Farms will cover approximately 50% of this route option. Despite the presence of existing access track, extensive access works will be required. All of the route option is over 1km from an existing (public) road network.	Small section of route option is serviced by existing access route that runs adjacent to Beauly-Denny OHL. The proposed access tracks to construct and maintain Cloiche and Glenshero Wind Farms will cover approximately 50% of this route option. The access track / cable haul road that runs adjacent to the existing Stronelairg-Melgarve 132 kV cable route can also provide a good access point. All of the route option is over 1km from an existing (public) road network.
		Angle Towers	Route option has long, straight sections and limited pinch points. Presence of Cloiche Wind Farm to the north will require additional angle structures. The number of angle towers for route option exceeds 10%.	Due to route option having a number of pinch points, a meandering nature and a number of wind turbines, angle structures will be required. The number of angle towers for route option exceeds 10%.	Due to route option having a number of pinch points, a meandering nature and a number of wind turbines, angle structures will be required. The number of angle towers for route option exceeds 10%.	Due to route option having a low number of pinch points, and number of wind turbines, few angle structures will be required. The number of angle towers for route option does not exceed 10%.
	Proximity	Clearance Distance	There are no residential or private properties or buildings inside the route option boundary or within 250m of it.	There are no residential or private properties or buildings inside the route option boundary or within 250m of it.	There are no residential or private properties or buildings inside the route option boundary or within 250m of it.	There are no residential or private properties or buildings inside the route option boundary or within 250m of it.
		Proximity to Windfarms	Route option within 750 m of Cloiche Wind Farm.	Route option within 750 m of Cloiche Wind Farm.	Route option within 750 m of Cloiche Wind Farm.	Route option within 750 m of Cloiche Wind Farm.
		Communication Masts	A communication mast is estimated to be within this route option.	A communication mast is estimated to be within this route option.	A communication mast is estimated to be within this route option.	No communication masts are estimated to be within this route option.
		Metallic pipes	No metallic pipelines are assumed to be in the vicinity of the route option.	No metallic pipelines are assumed to be in the vicinity of the route option.	No metallic pipelines are assumed to be in the vicinity of the route option.	No metallic pipelines are assumed to be in the vicinity of the route option.
		Urban Environments	No sections of the route option are within an urban environment.	No sections of the route option are within an urban environment.	No sections of the route option are within an urban environment.	No sections of the route option are within an urban environment.
Cost	**Capital**	Construction	Construction cost is assumed to be proportional to OHL length, therefore at 11.451 km long, this Route Option has intermediate potential to be constrained by construction costs.	Construction cost is assumed to be proportional to OHL length, therefore at 9.657 km long, this Route Option has low potential to be constrained by construction costs.	Construction cost is assumed to be proportional to OHL length, therefore at 8.283 km long, this Route Option has low potential to be constrained by construction costs.	Construction cost is assumed to be proportional to OHL length, therefore at 9.516 km long, this Route Option has low potential to be constrained by construction costs.
		Diversions	There are no diversions identified for the Route Option.	There are no diversions identified for the Route Option.	There are no diversions identified for the Route Option.	There are no diversions identified for the Route Option.
		Public Road Improvements	Route option would be constructed using a public road network that is unlikely to be constraining on the development.	Route option would be constructed using a public road network that is unlikely to be constraining on the development.	Route option would be constructed using a public road network that is unlikely to be constraining on the development.	Route option would be constructed using a public road network that is unlikely to be constraining on the development.
		Felling	The felling area of this Route Option is 2150 m x 80 m and the replanting area is 17.2 Ha. However, areas of forestry can be avoided and there is therefore low potential for the development to be constrained by felling costs.	The felling area of this Route Option is 2150 m x 80 m and the replanting area is 17.2 Ha. However, areas of forestry can be avoided and there is therefore low potential for the development to be constrained by felling costs.	The felling area of this Route Option is 550 m x 80 m and the replanting area is 4.4 Ha. However, areas of forestry can be avoided and there is therefore low potential for the development to be constrained by felling costs.	The felling area of this Route Option is 1700 m x 80 m and the replanting area is 13.6 Ha. However, areas of forestry can be avoided and there is therefore low potential for the development to be constrained by felling costs.
		Land Assembly	Land Assembly costs are assumed to be proportional to OHL length. Therefore at 11.451 km long this Route Option has intermediate potential to be constrained by Land Assembly costs.	Land Assembly costs are assumed to be proportional to OHL length. Therefore at 9.657 km long this Route Option has low potential to be constrained by Land Assembly costs.	Land Assembly costs are assumed to be proportional to OHL length. Therefore at 8.283 km long this Route Option has low potential to be constrained by Land Assembly costs.	Land Assembly costs are assumed to be proportional to OHL length. Therefore at 9.516 km long this Route Option has low potential to be constrained by Land Assembly costs.

	Category	Sub-Topic	Route Option C1	Route Option C2A	Route Option C2B	Route Option C3
		Consent Mitigations	There are no known mitigations that would be required to achieve consent on any of these options at this stage in the project. Therefore, this was not considered in the cost assessment.	There are no known mitigations that would be required to achieve consent on any of these options at this stage in the project. Therefore, this was not considered in the cost assessment.	There are no known mitigations that would be required to achieve consent on any of these options at this stage in the project. Therefore, this was not considered in the cost assessment.	There are no known mitigations that would be required to achieve consent on any of these options at this stage in the project. Therefore, this was not considered in the cost assessment.
	Operational	Inspections	Route option is between 10 km and 20 km in length therefore will require two jumper samples and two conductor tests to be undertaken 4 times in 45 years. Low potential for constraint.	Route option is between 5 km and 10 km in length therefore will require two jumper samples and two conductor tests to be undertaken 4 times in 45 years. Low potential for constraint.	Route option is between 5 km and 10 km in length therefore will require two jumper samples and two conductor tests to be undertaken 4 times in 45 years.	Route option is between 5 km and 10 km in length therefore will require two jumper samples and two conductor tests to be undertaken 4 times in 45 years.
		Maintenance	Maintenance cost over 45 years lifecycle is proportional to length therefore at 11.451 km long there is intermediate potential for the development to be constrained by maintenance costs.	Maintenance cost over 45 years lifecycle is proportional to length therefore at 9.657 km long there is low potential for the development to be constrained by maintenance costs.	Maintenance cost over 45 years lifecycle is proportional to length therefore at 8.283 km long there is low potential for the development to be constrained by maintenance costs.	Maintenance cost over 45 years lifecycle is proportional to length therefore at 9.516 km long there is low potential for the development to be constrained by maintenance costs.

Appendix 2: Dell Summary RAG Table

	Category	Sub-Topic	Route Option D1 Rating	Route Option D2 Rating
Environmental	**Natural Heritage**	Designations	The route does not intersect with any designated sites but is hydrologically connected with the River Spey SAC and SSSI.	The route does not intersect with any designated sites but is hydrologically connected with the River Spey SAC and SSSI.
		Protected Species	Various protected species identified across the site in previous studies. Risk of impacts could be reduced or eliminated by undertaking pre-construction surveys and adopting appropriate mitigation.	Various protected species identified across the site in previous studies. Risk of impacts could be reduced or eliminated by undertaking pre-construction surveys and adopting appropriate mitigation.
		Habitats	Habitats present moderate constraints, anticipated that potential effects could be minimised along this route at the alignment stage though there may still be minor loss of habitats. Micro-siting should be used to avoid sensitive habitats when placing OHL structures. Other HMPs present through route to consider.	Habitats present moderate constraints, anticipated that potential effects could be minimised along this route at the alignment stage though there may still be minor loss of habitats. Micro-siting should be used to avoid sensitive habitats when placing OHL structures. Other HMPs present through route to consider.
		Ornithology	Potential for loss of suitable habitat for several species. Constraints posed by waders and raptors. Significant constraint posed by Golden Eagles	Potential for loss of suitable habitat for several species. Constraints posed by waders and raptors. Significant constraint posed by Golden Eagles
		Geology, Hydrology and Hydrogeology	The route is within the catchments of the Glendoe Reservoir and River Foyers. The route is located within Class 1 and Class 2 peatland. CAR licence situated within the route.	The route is within the catchments of the Glendoe Reservoir, River Foyers and River Spey. The route is located within Class 1 and Class 2 peatland. CAR licence situated within the route.
	Cultural Heritage	Designations	Limited potential indirect impacts on designations which could be further reduced through sensitive siting.	Limited potential indirect impacts on designations which could be further reduced through sensitive siting.
		Cultural Heritage Assets	Limited potential impacts along the route could be minimised through avoidance at alignment stage.	Limited potential impacts along the route could be minimised through avoidance at alignment stage.
	People	Proximity to Dwellings	It is anticipated that a 100 m separation buffer applied to all properties could be observed for the entirety of the option.	It is anticipated that a 100 m separation buffer applied to all properties could be observed for the entirety of the option.
	Landscape and Visual	Designations	The route does not pass through any landscape designations. Potential adverse effects on nearby CNP.	The route does not pass through any landscape designations. Potential adverse effects on nearby CNP.
		Character	Moderate constraints posed by landscape character. Potentially inconsistent with existing landscape features.	Moderate constraints posed by landscape character. Potentially inconsistent with existing landscape features.
		Visual	Potential for some visual effects within lower ground areas and mountain bothies. Also potentially visible from recreational routes and summits, notably the Monadhliath Trail.	Potential for some visual effects within lower ground areas and mountain bothies. Also potentially visible from recreational routes and summits, notably the Monadhliath Trail.
	Land Use	Agriculture	Agricultural land is not considered particularly sensitive or fertile.	Agricultural land is not considered particularly sensitive or fertile.
		Forestry	Potential for effects on native woodland, although opportunities exist to avoid. Some potential loss of pinewood planation woodland. Avoids AWI.	Potential for effects on native woodland, although opportunities exist to avoid. Some potential loss of pinewood planation woodland. Avoids AWI.
		Recreation	The route has the potential for limited interaction with a few recreational assets although opportunities to minimise impacts exists.	The route has the potential for limited interaction with a few recreational assets although opportunities to minimise impacts exists.
	Planning	Policy	High potential for constraint in some areas may preclude adherence to planning policy.	High potential for constraint in some areas may preclude adherence to planning policy.
		Proposals	Moderate constraint posed by Cloiche, Dell and Glenshero Wind Farm and the operational Stronelairg Wind Farm.	Moderate constraint posed by Cloiche, Dell and Glenshero Wind Farm and the operational Stronelairg Wind Farm.
Engineering	**Infrastructure Crossings**	Major Crossings (132kV, 275kV, Rail, 200+m wide river, navigable canal, gas or hydro pipeline)	Route option is likely to result in one major infrastructure crossing; the Beauly-Denny OHL.	Route option is likely to result in one major infrastructure crossing; the Beauly-Denny OHL.
		Road Crossings	No road crossings on route option.	No road crossings on route option.
	Environmental Design	Elevation	All of the route option area is above 200 m.	All of the route option area is above 200 m.
		Atmospheric Pollution	No areas of pollution identified within proximity of the route option.	No areas of pollution identified within proximity of the route option.
		Contaminated Land	Based on available information, this route option is not expected to cross any contaminated land.	Based on available information, this route option is not expected to cross any contaminated land.
		Flooding	Less than 2% of the route length has 80% of width in a 1 in 200-year flood zone.	Less than 2% of the route length has 80% of width in a 1 in 200-year flood zone.

	Category	Sub-Topic	Route Option D1 Rating	Route Option D2 Rating
	Ground Conditions	Terrain	The route option includes small sections of terrain of >50% however the majority of the route option is made of terrain that is undulating, with gradients of up to 30% for most of the area. There are very few pinch points along the route option.	The route option includes small sections of terrain of >50% however the majority of the route option is made of terrain that is undulating, with gradients of up to 30% for most of the area. There are a few pinch points in the southern section of the route however in the northern section, the area is made up of terrain that is <200% in gradient.
		Peat	Areas of class 1 and Class 2 peat are within the route option. It is estimated that 60% and 4% of the route length has more than 50% of the width through Class 1 peat and Class 2 peat, respectively, therefore a total of 64%.	Areas of class 1 and Class 2 peat are within the route option. It is estimated that 50% and 4% of the route length has more than 50% of the width through Class 1 peat and Class 2 peat, respectively, therefore a total of 54%.
	Construction / Maintenance	Access	A small section of the route option is serviced by the existing access route that runs adjacent to the existing Beauly-Denny overhead line. The proposed access tracks to construct and maintain the Cloiche and Glenshero wind farms will cover approximately 50% of this route option. Additionally, the access track / cable haul road that runs adjacent to the existing Stronelairg-Melgarve 132kV cable route provide a good access point for the route that isn't covered by the wind farms. There will be an existing network of tracks that can be used during the construction of any OHL in this route option. Minor access track works would be required. All of the route option is over 1km from an existing (public) road network.	A small section of the route option is serviced by the existing access route that runs adjacent to the existing Beauly-Denny overhead line. The proposed access tracks to construct and maintain the Cloiche and Glenshero wind farms will cover approximately 50% of this route option. Additionally, the access track / cable haul road that runs adjacent to the existing Stronelairg-Melgarve 132kV cable route provide a good access point for the route that isn't covered by the wind farms. There will be an existing network of tracks that can be used during the construction of any OHL in this route option. Minor access track works would be required. All of the route option is over 1km from an existing (public) road network.
		Angle Towers	Route option is between 14 and 16 km long and has several pinch points. Route option also has a meandering nature; therefore, a number of angle structures will be required.	Route option is approximately 12 km in length and its overall route direction, terrain and obstacles (primarily wind turbines) will result in a limited number of angle towers.
	Proximity	Clearance Distance	There are no residential or private properties / buildings inside the route option or within 250 m of it.	There are no residential or private properties / buildings inside the route option or within 250 m of it.
		Proximity to Windfarms	Route option within 750 m of Dell Wind Farm.	Route option within 750 m of Dell Wind Farm.
		Communication Masts	No communication masts are estimated to be within this route option.	No communication masts are estimated to be within this route option.
		Metallic pipes	No metallic pipelines are assumed to be in the vicinity of the route option.	No metallic pipelines are assumed to be in the vicinity of the route option.
		Urban Environments	No sections of the route option are within an urban environment.	No sections of the route option are within an urban environment.
Cost	**Capital**	Construction	For the purposes of this RAG assessment, construction cost is assumed to be proportional to OHL length. This route option at 14.23 km of OHL with a necessary addition of 0.4 km of UGC for the OHL has low potential for the development to be constrained.	For the purposes of this RAG assessment, construction cost is assumed to be proportional to OHL length. This route option at 12.33 km of OHL with a necessary addition of 0.4 km of UGC for the OHL has low potential for the development to be constrained.
		Diversions	There are no diversions identified on the route option.	There are no diversions identified on the route option.
		Public Road Improvements	Route option would be constructed using a public road network that is unlikely to be constraining on the development.	Route option would be constructed using a public road network that is unlikely to be constraining on the development.
		Felling	The felling area that might be required for this route option is approximately 1700 m by 80 m, and the replanting area would be approximately 13.6 Ha. This results in high potential for the development to be constrained by felling costs.	The felling area that might be required for this route option is approximately 1700 m by 80 m, and the replanting area would be approximately 13.6 Ha. This results in high potential for the development to be constrained by felling costs.
		Land Assembly	For the purposes of this RAG assessment, land assembly cost is assumed to be proportional to OHL length. This route option at 14.23 km of OHL with a necessary addition of 0.4 km of UGC for the OHL has low potential for the development to be constrained.	For the purposes of this RAG assessment, land assembly cost is assumed to be proportional to OHL length. This route option at 12.33 km of OHL with a necessary addition of 0.4 km of UGC for the OHL has low potential for the development to be constrained.
		Consent Mitigations	There are no known mitigations that would be required to achieve consent on any of these options at this stage in the project. Therefore, this was not considered in the cost assessment.	There are no known mitigations that would be required to achieve consent on any of these options at this stage in the project. Therefore, this was not considered in the cost assessment.
	Operational	Inspections	Route option is between 10 km and 20 km in length therefore will require two jumper samples and two conductor tests to be undertaken 4 times in 45 years. Low potential for constraint.	Route option is between 10 km and 20 km in length therefore will require two jumper samples and two conductor tests to be undertaken 4 times in 45 years. Low potential for constraint.
		Maintenance	Maintenance costs over a 45-year lifecycle are proportional to length. This route option at 14.226 km of OHL with a necessary addition of 0.4km of UGC for the OHL has low potential for the development to be constrained.	Maintenance costs over a 45-year lifecycle are proportional to length. This route option at 12.331 km of OHL with a necessary addition of 0.4km of UGC for the OHL has low potential for the development to be constrained.



Legend

- Study Corridor
- Cloiche Application Turbine
- Dell Consented Turbine
- Glenshero Application Turbine
- Stronelairg Turbine

Substations

- Melgarve
- Cloiche
- Dell
- Glenshero
- Stronelairg

Cloiche Route Options

- C1
- C2A
- C2B
- C3

Dell Route Options

- D1
- D2

Glenshero Route Option

- G1

DRAFT

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

ash

Project:	Melgarve Cluster
Title:	Figure 1 - Melgarve Corridor Route Options
Drawn by:	LT
Date:	11/10/2021
Drawing:	121010-D-RCD1-0.1.0

Scottish & Southern Electricity Networks

Glendoe Lochans (SSSI)

Glen Tarff (SSSI) & Ness Woods (SAC)

Monadhliath (SSSI & SAC)

Parallel Roads of Lochaber (SSSI)

Creag Meagaidh (SSSI & SAC)

River Spey (SSSI & SAC)

Creag Meagaidh NNR

N

0 0.5 1 2 3 4 5 km

Scale - 1:100,000@ A3

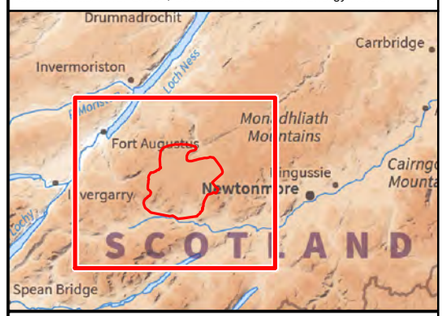
Legend

- Corridor

Substations

- Cloiche
- Dell
- Glenshero
- Melgarve
- Stronelairg
- 5km Distance Band
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- National Nature Reserve (NNR)
- Ancient Woodland

Source: MacArthur Green, Scottish and Southern Energy Networks



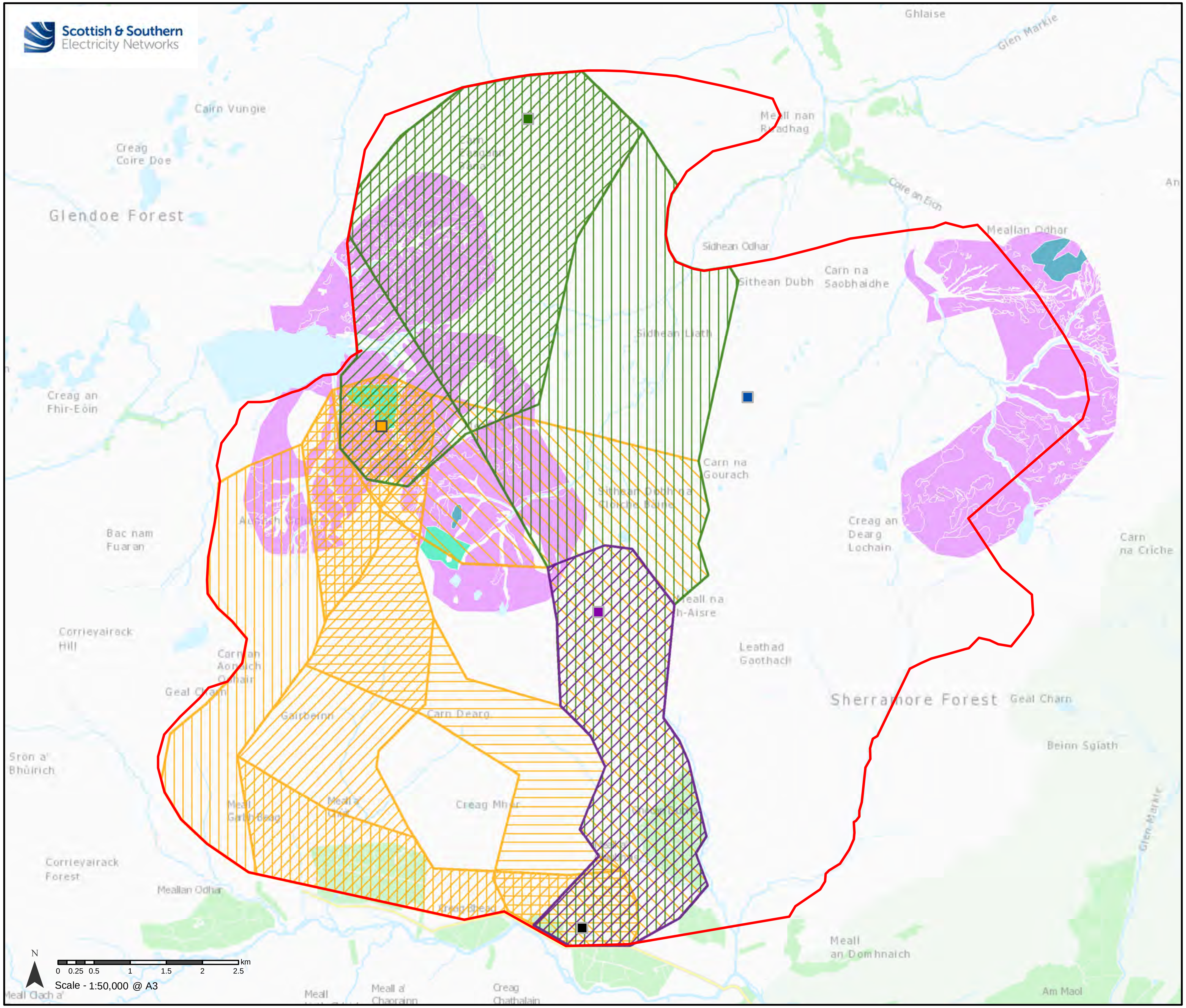
MacArthur Green

Project: Melgarve Cluster

Title: Ecology Designated Sites and Ancient Woodland (within 5km)

Map Author: LM Approved: DM Date: 11/08/2021

Figure: 2 Rev: 1



Scottish & Southern Electricity Networks
Ghlaise
Glen Markie
Cairn Vungie
Creag Coire Doe
Glendoe Forest
Meall nan Ruadhag
Corre an Eich
Mealllan Odhar
Sidhean Odhar
Sithean Dubh
Carn na Saobhaidhe
Sidhean Liath
Creag an Fhir-Eòin
Carn na Gourach
Creag an Dearg Lochain
Carn na Criche
Bac nam Fuaran
Meall na h-Aisre
Leathad Gaothach
Corrieyairack Hill
Geal Charn
Gairbeinn
Carn Dearg
Sherramore Forest
Geal Charn
Beinn Sgiath
Sròn a' Bhùirich
Creag Mhòr
Corrieyairack Forest
Meallan Odhar
Meall an Domhnaich
Meall Chaorainn
Creag Chathalain
Am Maol
N
0 0.25 0.5 1 1.5 2 2.5 km
Scale - 1:50,000 @ A3

Legend

Corridor

Route Options

- Cloiche Option: C1
- Cloiche Option: C2A
- Cloiche Option: C2B
- Cloiche Option: C3
- Dell Option: D1
- Dell Option: D2
- Glenshero Option: G1

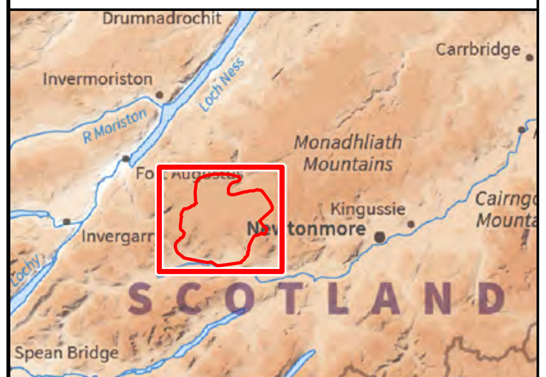
Substations

- Cloiche
- Dell
- Glenshero
- Melgarve
- Stronelairg

Cloiche Annex 1 Habitats

- 4010 Northern Atlantic Wet Heaths with Erica tetralix
- 4060 Alpine and Boreal Heath
- 7130 Blanket Bog

Source: MacArthur Green, Scottish and Southern Energy Networks



MacArthur Green

Project: Melgarve Cluster

Title: Annex 1 Habitats

Map Author: LM Approved: DM Date: 11/08/2021

Figure: 3 Rev: 1

Scottish & Southern Electricity Networks

Cairn Vungie
Creag Coire Doe
Glendoe Forest
Meall nan Ruadhag
Coire an Eoin
Meallan Odhar
Sidhean Odhar
Sithean Dubh
Carn na Saobhaidhe
Sidhean Liath
Creag an Fhir-Eoin
Carn na Gourach
Aonach Odhar
Bac nam Fuaran
Meall na h-Aisre
Carn na Criche
Corrieyairack Hill
Carn an Aonaich Odhair
Geal Charn
Gairbeinn
Carn Dearg
Sherramore Forest
Beinn Sgiath
Srèn a' Bhùirich
Creag Mhor
Corrieyairack Forest
Meallan Odhar
Meall an Domhnaich
Meall Liath-Chloich
Meall a' Chaorainn Beag
Creag Chathalain
Am Maol
Glen Markie

4a
4b
1b
3a
3b

N
0 0.25 0.5 1 1.5 2 2.5 km
Scale - 1:50,000 @ A3

Legend

Corridor

Route Options

- Cloiche Option: C1
- Cloiche Option: C2A
- Cloiche Option: C2B
- Cloiche Option: C3
- Dell Option: D1
- Dell Option: D2
- Glenshero Option: G1

Substations

- Cloiche
- Dell
- Glenshero
- Melgarve
- Stronelairg

Habitat Management Plan (HMP) Areas

- Glenshero Wind Farm*

Source: MacArthur Green, Scottish and Southern Electricity Networks, *Glenshero Wind Farm Technical Appendix 6.5 Outline Habitat Management Plan

MacArthur Green

Project:	Melgarve Cluster
Title:	Habitat Management Plan Areas
Map Author: LM	Approved: DM Date: 11/08/2021
Figure: 4	Rev: 1

Scottish & Southern Electricity Networks

Legend

- Study Corridor
- Cloiche Application Turbine
- Dell Consented Turbine
- Glenshero Application Turbine
- Stronelairg Turbine

Substations

- Melgarve
- Cloiche
- Dell
- Glenshero
- Stronelairg

Cloiche Route Options

- C1
- C2A
- C2B
- C3

Dell Route Options

- D1
- D2

Glenshero Route Option

- G1

Ornithology Constraints

- Eagle and Water Bird Species Breeding Area
- High Eagle Activity

DRAFT

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

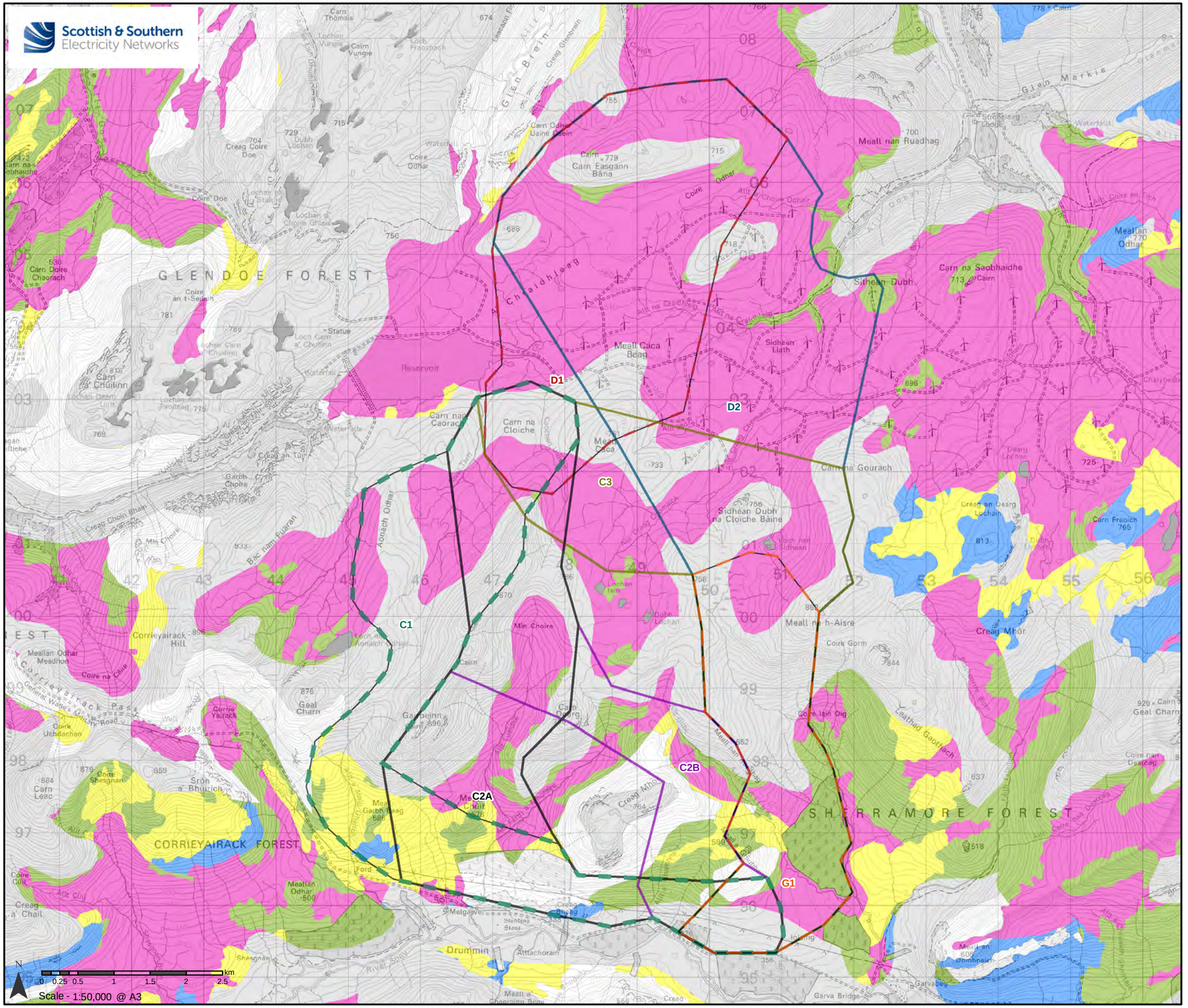
ash

Project: Melgarve Cluster

Title: Figure 5 - Melgarve Corridor Ornithology Constraints

Drawn by: LT Date: 11/10/2021

Drawing: 121010-D-RCD5-0.1.0



Legend

- Dell Route Option - D1
- Dell Route Option - D2
- Cloiche Route Option - C1
- Cloiche Route Option - C2A
- Cloiche Route Option - C2B
- Cloiche Route Option - C3
- Glenshero Route Option - G1

National Importance for Carbon-Rich Soil, Deep Peat and Priority Peatland Habitat

- CLASS 1 All vegetation cover is priority peatland habitats. All soils are carbon-rich soils and deep peat
- CLASS 2 The vegetation cover is dominated by priority peatland habitats. All soils are carbon-rich soil and deep peat
- CLASS 3 Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat
- CLASS 4 Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils
- CLASS 5 Soil information takes precedence over vegetation data. No peatland habitat recorded. May also show bare soil. All soils are carbon-rich soil and deep peat
- Mineral soils - Peatland habitats are not typically found on such soils
- Non-soil (i.e. loch, built up area, rock and scree)

Project No: 121010

Project: Melgarve Cluster

Title: Figure 6 - Peatland Classification

Drawn by: NJG Date: 11/08/2021

Drawing: 04707.00029.0008.0

Scottish & Southern Electricity Networks

GLENDOE FOREST

CORRIEYAIRACK FOREST

SHERRAMORE FOREST

Glendoe Lochans SSSI

Loch Knockie and nearby Lochs SPA

Glen Doe Reservoir Catchment

Ness Woods SAC

River Tarff Catchment

Glen Tarff SSSI

River Foyers Catchment

River Spey Catchment

River Spey SAC

River Spey SSSI

Monadhliath SAC

Monadhliath SSSI

Cairngorms National Park

D1

D2

C1

C2A

C2B

C3

G1

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

Legend

- Dell Route Option - D1
- Dell Route Option - D2
- Cloiche Route Option - C1
- Cloiche Route Option - C2A
- Cloiche Route Option - C2B
- Cloiche Route Option - C3
- Glenshero Route Option - G1
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)
- National Park
- Water Course (OS OpenMap Local)
- Waterbody (OS OpenMap Local)
- Private Water Supply
- SEPA CAR Licensed Activity Site
- Water Monitoring Site
- Drinking Water Protected Area (DWPA)

Nested Waterbody Catchments

- Glen Doe Reservoir
- River Foyers
- River Spey
- River Tarff / Allt Lagan a'Bhainne

Project No: 121010

Project: Melgarve Cluster

Title: Figure 7 - Local Hydrology

Drawn by: NJG Date: 11/08/2021

Drawing: 04707.00029.0009.0

Scottish & Southern Electricity Networks

D1
D2
C1
C2A
C2B
C3
G1

Old fence line / trig point
Fence line end point
Shieling site
Shieling site
Allt Gilbe shieling hut
Corrieyairack Pass,military road, Melgarve to Allt Ruadh SM
Melgarve, Corrieyairack Pass Bridge LB
Melgarve, Corrieyairack Pass, Drummin Bridge LB
Garvamore, Garva Bridge LB

ENDOE FOREST
RRIEYAIRACK FOREST
SHERRAMORE FOREST

Legend

- Study Corridor
- Cloiche Application Turbine
- Dell Consented Turbine
- Glenshero Application Turbine
- Stronelairg Turbine

Substations

- Melgarve
- Cloiche
- Dell
- Glenshero
- Stronelairg

Cloiche Route Options

- C1
- C2A
- C2B
- C3

Dell Route Options

- D1
- D2

Glenshero Route Option

- G1

Cultural Heritage

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

DRAFT

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

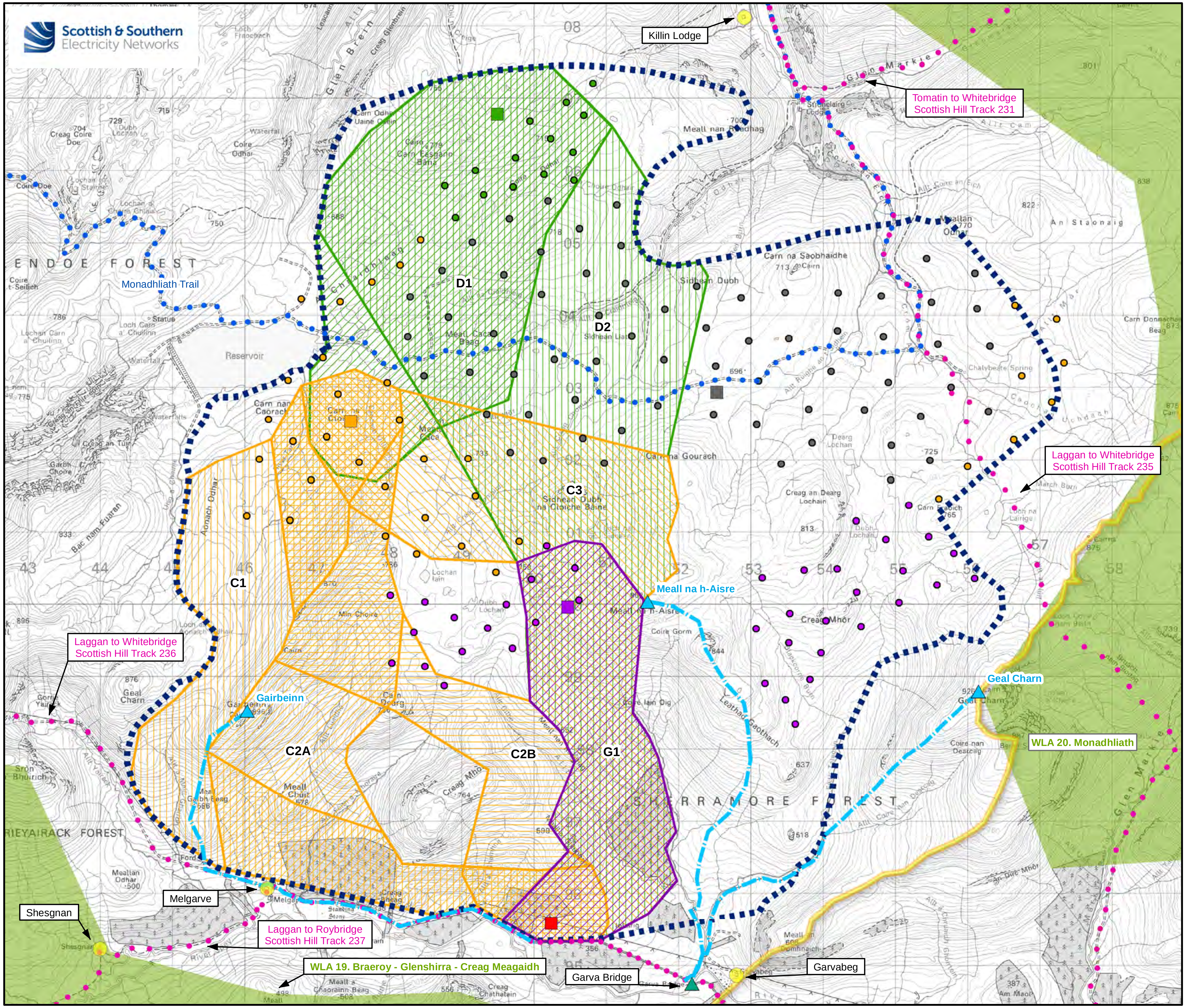
ash

Project: Melgarve Cluster

Title: Figure 8 - Melgarve Corridor Cultural Heritage

Drawn by: LT Date: 11/10/2021

Drawing: 121010-D-RCD8-0.1.0



Legend

Study Corridor
Cloiche Application Turbine
Dell Consented Turbine
Glenshero Application Turbine
Stronelairg Turbine

Substations

Melgarve
Cloiche
Dell
Glenshero
Stronelairg

Cloiche Route Options

C1
C2A
C2B
C3

Dell Route Options

D1
D2

Glenshero Route Option

G1

Landscape and Visual Constraints

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

DRAFT

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

ash

Project: Melgarve Cluster

Title: Figure 9 - Melgarve Corridor Landscape and Visual Constraints

Drawn by: LT Date: 11/10/2021

Drawing: 121010-D-RCD9-0.1.0

Scottish & Southern Electricity Networks

D1
D2
C1
C2A
C2B
C3
G1

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

ENDOE FOREST
RRAMORE FOREST
RIEYAIRACK FOREST

Legend

- Study Corridor
- Cloiche Application Turbine
- Dell Consented Turbine
- Glenshero Application Turbine
- Stronelairg Turbine

Substations

- Melgarve
- Cloiche
- Dell
- Glenshero
- Stronelairg

Cloiche Route Options

- C1
- C2A
- C2B
- C3

Dell Route Options

- D1
- D2

Glenshero Route Option

- G1

Landscape Character Types (LCTs)

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

DRAFT

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

ash

Project: Melgarve Cluster

Title: Figure 10 - Melgarve Corridor Landscape Character Types

Drawn by: LT Date: 11/10/2021

Drawing: 121010-D-RCD10-0.1.0

Scottish & Southern Electricity Networks

Tomatin to Whitebridge Scottish Hill Track 231

Laggan to Whitebridge Scottish Hill Track 235

Laggan to Whitebridge Scottish Hill Track 236

Laggan to Roybridge Scottish Hill Track 237

Meall na h-Aisre

Geal Charn

Gairbeinn

D1

D2

C1

C2A

C2B

C3

G1

ENDOE FOREST

SHERRAMORE FOREST

RIEVAIRACK FOREST

Glendoe Hydro
- Intake
- Areas Necessary for Access
- Track
- Tunnels and Pipeline
- Pipeline
- Dam

Legend

- Study Corridor
- Cloiche Application Turbine
- Dell Consented Turbine
- Glenshero Application Turbine
- Stronelairg Turbine

Substations
- Melgarve
- Cloiche
- Dell
- Glenshero
- Stronelairg

Cloiche Route Options
- C1
- C2A
- C2B
- C3

Dell Route Options
- D1
- D2

Glenshero Route Option
- G1

Land Use, Recreation and Existing Infrastructure
- Surface Water
- Monadhliath Trail
- Scottish Hill Tracks
- Mountain Summit
- Beauly to Denny 400kV Overhead Line
- Stronelairg Underground Cable

Agricultural Classification
- 5.3
- 6.2
- 6.3

DRAFT

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

ash

Project:	Melgarve Cluster
Title:	Figure 11 - Melgarve Corridor Land Use, Recreation and Existing Infrastructure
Drawn by:	LT
Date:	11/10/2021
Drawing:	121010-D-RCD11-0.1.0

Scottish & Southern Electricity Networks

D1
D2
C1
C2A
C2B
C3
G1

ENDOE FOREST
RRAMORE FOREST
RIEYAIRACK FOREST

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Legend

- Study Corridor
- Cloiche Application Turbine
- Dell Consented Turbine
- Glenshero Application Turbine
- Stronelairg Turbine

Substations

- Melgarve
- Cloiche
- Dell
- Glenshero
- Stronelairg

Cloiche Route Options

- C1
- C2A
- C2B
- C3

Dell Route Options

- D1
- D2

Glenshero Route Option

- G1

Forest and Woodland

- Native Woodland Survey of Scotland (NWSS)

National Forest Inventory Scotland

- Conifer Woodland
- Felled Woodland

DRAFT

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

ash

Project: Melgarve Cluster

Title: Figure 12 - Melgarve Corridor Forest and Woodland

Drawn by: LT Date: 11/10/2021

Drawing: 121010-D-RCD12-0.1.0

Scottish & Southern Electricity Networks

Legend

- Study Corridor
- Cloiche Preferred Route Option C3
- Cloiche Application Turbine
- Dell Consented Turbine
- Glenshero Application Turbine
- Stronelairg Turbine

Substations

- Melgarve
- Cloiche
- Dell
- Glenshero
- Stronelairg

DRAFT

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

ash

Project:	Melgarve Cluster
Title:	Figure 13 - Melgarve Corridor Preferred Route Page 1 of 2
Drawn by:	LT
Date:	11/10/2021
Drawing:	121010-D-RCD13-0.1.0

Scottish & Southern Electricity Networks

Legend

- Study Corridor
- Dell Preferred Route Option D1 + C3
- Cloiche Application
- Dell Consented Turbine
- Glenshero Application
- Stronelairg Turbine

Substations

- Melgarve
- Cloiche
- Dell
- Glenshero
- Stronelairg

DRAFT

N

0 0.25 0.5 1 1.5 2 2.5 km

Scale - 1:50,000 @ A3

ash

Project:	Melgarve Cluster
Title:	Figure 13 - Melgarve Corridor Preferred Route Page 2 of 2
Drawn by: LT	Date: 11/10/2021
Drawing:	121010-D-RCD13-0.1.0