



Alignment Consultation Document

Project: Chleansaid Wind Farm Connection

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CONTENTS

GLOSSARY	5
PREFACE	7
EXECUTIVE SUMMARY	8
1. INTRODUCTION	9
1.1 Purpose of the Document	9
1.2 Document Structure	9
1.3 Next Steps	9
2. THE PROPOSALS	10
2.1 The Need for the Project	10
2.2 Alternative Options and Preferred Technology Solution	10
2.3 Proposals Overview	10
3. ROUTE AND ALIGNMENT SELECTION PROCESS	13
3.1 Background	13
3.2 Route Identification and Selection	14
3.3 Alignment Identification and Selection	14
3.4 Baseline Conditions	16
3.5 Appraisal Method	17
4. COMPARATIVE APPRAISALS	20
4.1 Section 1	20
4.2 Section 2	22
4.3 Preferred Alignment	25
5. CONSULTATIONS ON THE PROPOSALS	27
5.1 Questions for Consideration by Consultees	27
5.2 Next Steps	27

Appendices

Appendix 1 – Figures

Appendix 2 – OHL Route Options Summary RAG Tables

Figures

Figure 3.1 – Study Area

Figure 3.2 – Route Options

Figure 3.3 – Preferred Route

Figure 3.4 – Alignment Options

Figure 4.1 – Key Constraints

Figure 4.2 – Preferred Alignment

GLOSSARY

Term	Definition
Alignment	A centre line of an overhead line (OHL), along with location of key angle structures.
Amenity	The natural environment, cultural heritage, landscape and visual quality. Also includes the impact of SSEN Transmission's works on communities, such as the effects of noise and disturbance from construction activities.
Conductor	A metallic wire strung from structure to structure, to carry electric current.
Consultation	The dynamic process of dialogue between individuals or groups, based on a genuine exchange of views and, normally, with the objective of influencing decisions, policies or programmes of action.
Corridor	A linear area which allows a continuous connection between the defined connection points. The corridor may vary in width along its length; in unconstrained areas it may be many kilometres wide.
Environmental Impact Assessment (EIA)	Environmental Impact Assessment. A formal process codified by EU directive 2011/92/EU, and subsequently amended by Directive 2014/52/EU. The national regulations are set out in The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. The EIA process is set out in Regulation 4(1) of the regulations and includes the preparation of an EIA Report by the developer to systematically identify, predict, assess and report on the likely significant environmental impacts of a proposed project or development.
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities.
Kilovolt (kV)	One thousand volts.
Listed Building	Building included on the list of buildings of special architectural or historic interest and afforded statutory protection under the 'Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997' and other planning legislation. Classified categories A – C.
Micro-siting	The process of positioning individual structures to avoid localised environmental or technical constraints.
Mitigation	Term used to indicate avoidance, remediation or alleviation of adverse impacts.
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.
Ramsar Site	Wetlands of international importance, designated under the Ramsar Convention.
Riparian Woodland	Natural home for plants and animals occurring in a thin strip of land bordering a stream or river.
Route	A linear area of approximately 1 km width (although this may be narrower/wider in specific locations in response to identified pinch points / constraints), which provides a continuous connection between defined connection points.
Route (preferred)	A route for the OHL 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 routing process.
Routing	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'.

Term	Definition
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
Site 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 OHL 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 Protection Area (SPA)	An area designated under the Wild Birds Directive (Directive 79/409/EEC) to protect important bird habitats. Implemented under the Wildlife and Countryside Act 1981.
Stakeholders	Organisations and individuals who can affect or are affected by SSEN Transmission works.
Study Area	The area within which the corridor, route and alignment study takes place.
Volts	The international unit of electric potential and electromotive force.
Wild Land Area (WLA)	Those areas comprising the greatest and most extensive areas of high wildness. It is not a statutory designation, but WLAs are considered nationally important.

PREFACE

This Consultation Document has been prepared by WSP UK Ltd. on behalf of Scottish Hydro Electric Transmission plc (SHE Transmission plc) to seek comments from all interested parties on the Preferred Alignment identified for the proposed Chleainsaid Wind Farm 132 kV overhead line (OHL) connection project.

The Consultation Document is available online at the project website:

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

A face to face public consultation event will be held between 3pm to 7pm on 8th June 2023 at Lairg Community Centre, Main Street, Lairg IV27 4DD.

Comments on this Consultation Document should be sent to:

Martin Godwin

Community Liaison Manager

Scottish and Southern Electricity Networks

E: Martin.Godwin@sse.com

M: 07467 399 592

10 Henderson Road, Inverness, IV1 1SN

All comments are requested by 29th June 2023.

EXECUTIVE SUMMARY

Scottish and Southern Electricity Networks Transmission (hereafter referred to as 'SSEN Transmission'), operating under licence held by Scottish Hydro Electric Transmission plc are proposing to construct Chleainsaid Wind Farm 132 kV overhead line (OHL) Connection project (the 'Proposed Development'). The Proposed Development will be supported on wooden pole tridents and will be approximately 10.5 km in length running from Chleainsaid Windfarm (proposed under section 36 of the Electricity Act 1989) substation to Dalchork Substation.

Route Options have been identified, which provided feasible areas for the OHL to be developed, and from which a Preferred Route has been identified. Alignment Options have been identified within the Preferred Route and a Preferred Alignment has been selected. This Consultation Document invites 6 comments from all interested parties on the Preferred Alignment.

Moving forward, confirmation of the Preferred Alignment will be informed by this consultation exercise and through detailed surveys, which may identify any as yet unknown engineering, environmental or land use constraints. Subject to the outcome of the consultation, the Preferred Alignment will then be referred to as the Proposed Alignment.

It is anticipated that an application for consent for a Proposed Alignment will be submitted in Spring 2024.

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

- Has the requirement for the project been adequately explained?
- Has the approach taken to select the Preferred Alignment been adequately explained?
- Are there any factors, or environmental features, that you consider may have been overlooked during the Preferred Route selection process?
- Do you feel that the Preferred Alignment selected is the most appropriate? Please provide an explanation of your answer.
- If you don't agree to our Preferred Alignment, which of the Alignment Options would you consider the best Alignment Option for SSEN Transmission to develop? Please Provide an explanation of your answer.

1. INTRODUCTION

1.1 Purpose of the Document

This Consultation Document invites comments from all interested parties on the Preferred Alignment identified for the construct Chleainsaid Wind Farm 132 kV overhead line (OHL) Connection project (the 'Proposed Development'). The Proposed Development will be supported on wooden pole tridents and will be approximately 10.5 km in length running between Chleainsaid Windfarm (proposed under Section 36 of the Electricity Act 1989) substation to Dalchork Substation.

This Consultation Document describes the Alignment Options identified, the appraisal undertaken, and the identification of the Preferred Alignment. Comments are now sought from statutory authorities, key stakeholders, elected representatives and the public on the alignment selection process and the Preferred Alignment identified.

All comments received will inform further consideration of the Preferred Alignment.

1.2 Document Structure

This report is comprised of five sections as follows:

- 1: Introduction – setting out the purpose of the Consultation Document;
- 2: The Proposals – describes the need for the proposals, the proposed technology solution and the typical construction methods;
- 3: Route and Alignment Selection Process – sets out the route and alignment selection process and methodology that has been applied to date to derive a Preferred Alignment;
- 4: Comparative Appraisal – sets out the Alignment Options that have been identified and provides a summary of the analyses of Alignment Options against environmental, technical and economic considerations to arrive at a recommendation for the Preferred Alignment; and
- 5: Consultation on the Proposals – invites comments on the alignment assessment process and identification of Preferred Alignment.

The main body of this document is supported by a series of figures (see **Appendix 1**).

1.3 Next Steps

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

Following the identification of a Proposed Alignment, further technical and environmental surveys will be undertaken to support a Section 37 consent under the Electricity Act 1989. It is anticipated that an application for consent for a Proposed Alignment will be submitted in Spring 2024.

2. THE PROPOSALS

2.1 The Need for the Project

SSEN Transmission is a wholly owned subsidiary of the SSE plc Group of companies. SSEN Transmission holds a license under the Electricity Act 1989 for the transmission of electricity in the north of Scotland and has a statutory duty under Schedule 9 of the Electricity Act 1989 to *'develop and maintain an efficient, co-ordinated and economical electricity transmission system in its licensed areas'*.

The developer of Chleainsaid Wind Farm has submitted an application to the Scottish Government under Section 36 of the Electricity Act 1989 for a 96 megawatt (MW) Wind Farm and has a contracted connection date of July 2027. Under the terms of their license, SSEN Transmission is therefore obliged to connect the developer to the transmission network by the contracted connection date. This will be achieved via the construction and operation of the Proposed Development.

2.2 Alternative Options and Preferred Technology Solution

For a connection of this length and scale an underground cable is not a feasible option due to costs involved during construction as well as ongoing maintenance problems associated with underground cables in remote areas including terrain, access and the presence of watercourses and associated flood zones, potential undesignated assets and peat. As such, all options explored were OHL routes and the options considered were the connection point of the OHL into the existing Dalchork Substation.

2.2.1 Preferred Technology Solution

It is proposed that the connection would be an OHL supported by trident H-wood pole. There may be potential environmental and technical considerations that could require the use of alternative technology solutions for lengths of the connections, such as elevation or river crossings. However, until a Proposed Alignment for OHL has been identified and further environmental and engineering studies are undertaken at the alignment stage, the requirements for other technology options is unknown.

2.3 Proposals Overview

SSEN Transmission is proposing to construct a new 132 kV OHL supported on wooden pole tridents, between the Chleainsaid Wind Farm's 132 kV substation to Dalchork Substation. For the purposes of this report, it is assumed that the Proposed Development would comprise a trident wooden pole design. The average height of the trident poles is between 13 and 16 meters (m), up to 18 m, with an average span of between 70 and 100 m. The proposed wooden trident poles will support three conductors (wires) on three insulators positioned at the top of the pole. A typical design of the structure is presented in **Plate 2.1**.



Plate 2.1 – Typical wooden trident pole design

The selection of the supports suitable for the OHL are being considered separately to the OHL routeing process. The final designation of support type is generally dependent on three main factors: altitude, weather and the topography of the route. The size of supports and span lengths will also vary depending on these factors, with supports being closer together at high altitudes to withstand the effects of greater exposure to high winds, ice and other weather events. Following identification of the Preferred Alignment for the Proposed Development, a detailed topographical survey will be carried out. This is required to identify the selection of the supports suitable for the OHL, the proposed positions and heights of each individual pole. Site investigations to examine the ground makeup and geology will also be carried out at proposed pole positions where required. These will inform the support foundation designs.

2.3.1 Construction Activities

Construction activities are anticipated to consist of six phases, as follows:

- Alterations to the existing transmission and distribution networks;
- Enabling work (forestry clearance and establishment of temporary construction compound(s));
- Erection of support structures;
- Conductor stringing (including construction of temporary scaffolding);
- Inspections and OHL commissioning; and
- Removal of temporary works and site reinstatement.

All construction activities will be undertaken in accordance with a Construction Environmental Management Plan (CEMP) which will define specific methods for environmental survey, monitoring and management throughout construction. A CEMP will be produced by the Principal Contractor and agreed with statutory stakeholders prior to the commencement of construction.

2.3.2 Forestry Removal

Any woodland removal which may be required prior to the construction work will be identified and described after a proposed alignment has been identified. Any removal of sections of commercial forest would be

undertaken in consultation with Scottish Forestry and affected landowners. After felling, any timber removed that is commercially viable would be sold and the remaining forest material would be dealt with in a way that delivers the best practicable environmental outcome and is compliant with waste regulations. The methods of woodland removal and management of timber would be described in a Woodland Management Document in-line with The UK Forestry Standard¹ guidance, to be prepared as part of the application for consent under Section 37 of the Electricity Act 1989, as amended. The Proposed Development will also seek to adhere to Scottish Government's Control of Woodland Removal Policy².

2.3.3 Access during Construction

Vehicle access is required to each support structure location during construction to allow excavation and creation of foundations and erection of the support structure. Existing tracks would be used where possible. Preference will be given to lower impact access solutions including the use of low pressure tracked personnel vehicles and temporary track solutions in boggy / soft ground areas to reduce any damage to, and compaction of, the ground. These journeys would be kept to a minimum to minimise disruption to habitats along the route. However, temporary stone tracks are likely to be necessary in some areas depending on existing access conditions, terrain and altitude. A more detailed plan for access during construction will be prepared once a proposed alignment has been identified and the preferred support structure type selected.

Access requirements for the Proposed Development will be dependent upon the type of OHL supports chosen. Consideration of impacts will be undertaken at the alignment stage once the support type has been confirmed. However, permanent access to angle / tension pole and tower positions would be desirable for operational and management purposes and for storm control. A more detailed plan for access during construction will be prepared once a Proposed Alignment has been identified and the type of support structure has been selected.

2.3.4 Indicative Programme

It is anticipated that construction of the Proposed Development would take place over an approximate 18-month period, following the granting of consents, although a detailed programming of works would be the responsibility of the Principal Contractor in agreement with SSEN Transmission. Construction is estimated to start in September 2025 and finish in April 2027. Every effort would be made to minimise disturbance to landowners and local residents during construction by providing regular updates on works and restrictions via the site manager, community liaison manager and corporate affairs team.

¹ The UK Forestry Standard 4th Edition (2017); The Governments' approach to sustainable forestry. [online]. Available at: <https://www.gov.uk/government/publications/the-uk-forestry-standard> (Accessed 14 June 2022).

² Scottish Forestry. (2009). The Scottish Government's Policy on Control of Woodland Removal. Available at: <https://forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal/viewdocument/285> [Accessed 10th February 2023].

3. ROUTE AND ALIGNMENT SELECTION PROCESS

3.1 Background

The approach to alignment selection, in identifying and assessing alternative OHL routes, is informed by the staged approach set out in SSEN Transmission's Routeing Guidance³ (hereafter referred to as SSEN Transmission's Routeing Guidance'). The guidance develops a process which aims to balance environmental, technical and economic considerations.

The guidance sets out SSEN Transmission's approach to selecting a route for an OHL and helps meet the obligations under Schedule 9 of the Electricity Act 1989 (as amended) 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.

The guidance splits a project into the following stages:

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

The stages that are carried out can vary depending on the type, nature of and size of a project and consultation is carried out at each stage of the process. Each stage in the SSEN Transmission routeing process is iterative, bringing economical, technical and environmental considerations together in a way which seeks the best balance at each stage. In the development of this project, SSEN Transmission has followed an approach with the following stages:

- Route Selection;
- Alignment Selection; and
- EIA and Consenting Process.

Route Selection has been completed and a Proposed Route was selected based on earlier studies and consultation⁴.

This Report summarises the process of Alignment Selection from the guidance³, which seeks to develop a Preferred Alignment for the OHL. The Preferred Alignment aims to achieve the optimum balance of technical, economic and environmental considerations. On finalisation of the Alignment Selection stage the project will progress onto the Consenting Process stage.

³ Scottish and South Electricity Networks (2020). PR-NET-ENV-501: Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above

⁴ SSEN Transmission (2022): Chleasaid Wind Farm Connection Route Selection Study Report

3.2 Route Identification and Selection

A preliminary environmental study area, hereafter referred to as the 'Study Area' was identified within which the identification and assessment of Route Options could be completed (see **Figure 3.1**). This corridor encompassed a range of feasible Route Options between Chleainsaid Wind Farm Substation and Dalchork Substation.

Desk-based studies focussed within the Study Area, although consideration was given to potential receptors outside of this area (e.g. environmental designations, visual receptors or cultural heritage sites). Route options (see **Figure 3.2**) were identified as part of the desk-based studies considering the most notable constraints. Considerations included a review of the steps outlined in the Holford Rules and SSEN Transmission's Routeing Guidance³. Due to the limited distance between connection points and the presence of geographical constraints, three direct Route Options were identified; Route Option 1, Route Option 2 and Route Option 3.

A Route Options appraisal was undertaken in December 2022⁵ to select an Preferred Route. The appraisal was informed by desk studies and empirical walk over surveys. Workshops integrating engineering and environmental considerations were then held to select a Preferred Route as the starting point for developing an OHL alignment. Route Option 2 shown on **Figure 3.3** was selected as the Preferred Route.

SSEN Transmission consulted on the Preferred Route between December 2022 and February 2023⁶. Following consultation on the Preferred Route Option 2, a Proposed Route was confirmed as the basis for subsequent alignment selection.

The Proposed Route travels east and then south following the edge of forestry plantation for approximately 1 km from Chleainsaid Substation. The Proposed Route then travels west along the Feith Osdail water course valley for approximately 5 km, crossing existing forestry tracks and the Feith Osdail water course. At the western end of the valley the route meets the A836 and River Tirry where it changes direction to travel south, parallel to the A836, crossing the River Tirry to Dalchork Substation, an approximate 4.5 km distance. The Proposed Route had the fewest engineering challenges and the greatest potential to avoid or minimise interactions with the environment and people living and working in it.

3.3 Alignment Identification and Selection

Following identification of the Proposed Route, the following tasks have been undertaken in identifying and analysing Alignment Options:

- Desk-based review of initial Alignment Options presented by the engineering consultant. Comments and alternative Alignment Options were provided for discussion and further review;
- Site visits by the project landscape architect, heritage specialists and SSEN Transmission to review the Alignment Options on site and review environmental and technical considerations;
- UK Habitat Classification (UKHab) surveys of the Proposed Route as of March 2023 were undertaken, hereafter referred to as 'Preliminary Alignments'. Up to Level 5⁷ UKHab Primary Habitats were mapped, where possible, across a 250 m-wide corridor, centred on each Preliminary Alignment, to

⁵ SSEN Transmission (December 2022) Chleainsaid Environmental Route Options Appraisal Report

⁶ SSEN Transmission (December 2022) Chleainsaid Wind Farm Connection Consultation Document.

⁷ The classification of UKHab Primary Habitats is hierarchical with five levels of detail. Level 1: Major ecosystems. Level 2: Ecosystem types, corresponding with major habitat types within the European Nature Information System (EUNIS) classification. Level 3: Broad habitat types, corresponding directly with UKBAP Habitats and closely to EUNIS. Level 4: Habitats, including UKBAP Priority Habitats, and further splits of Level 3 habitats. Level 5: Detailed habitats, including Habitats Directive Annex I habitats and further splits of Level 4 habitats.

gain sufficient additional data to identify Annex 1⁸ and United Kingdom Biodiversity Action Plan (UKBAP)⁹ priority habitats. Additionally, broad habitats (Level 3 UKHab) were mapped up to 200 m on either side of each Level 5 UKHab corridor.

- Protected species suitability surveys were undertaken. An area extending up to 350 m from each Preliminary Alignment was assessed. The surveys aimed to classify the suitability of terrestrial habitats to support: bat species; badger; red squirrel; pine marten; and reptile species. In addition, the surveys aimed to classify the suitability of watercourses, at the specific location(s) that they were encountered/observed, for the following riparian mammals: otter; and water vole.
- Ornithology surveys were undertaken. Surveys to inform the Alignment Options comprised Flight Activity Surveys (from three vantage points) and Winter Walkover Surveys (WVO) encompassing the Preferred Route (as confirmed in March 2023) plus a buffer of 500 m. Surveys to inform the alignment report were undertaken from March 2023 to February 2024 (inclusive).
- Workshops held with SSEN Transmission and engineering consultants to review initial Alignment Options and suggested alternatives; and
- Review of comments received from stakeholders following publication of the Chleainsaid Wind Farm Connection Consultation Document (December 2022) and public consultation events.

Considerations included a review of the steps outlined in the Holford Rules and SSEN Transmission's Routing Guidance³. In summary the following has been considered as far as is practicable at this Alignment Selection stage:

- Avoid if possible major areas of highest amenity value (including those covered by national and international designations and other sensitive landscapes) (Holford Rule 1).
- Avoid by deviation, smaller areas of high amenity value such as regional scenic areas.
- Other things being equal, try to avoid sharp changes of direction and reduce the number of larger angle towers required (Holford Rule 3).
- Avoid skylining the alignment in key views and where necessary, cross ridges obliquely where a dip in the ridge provides an opportunity (Holford Rule 4).
- Avoid the highest terrain, where climatic conditions can impose extra loading (wind and ice) on OHL conductors (technical constraint that aligns with the second part of Holford Rule 4, land over 500 m avoided where possible, over 600 m avoided absolutely).
- Target the alignment towards moderately open valleys with woods where the apparent height of towers will be reduced, and views of the line will be broken by trees (avoid slicing through landscape types and try to keep to edges and landscape transitions) (Holford Rule 5).
- Consider construction access and the availability of existing roads and tracks.
- Consider the appearance of other lines in the landscape to avoid a dominating or confusing wirescape effect.
- Consider technical issues related to crossing the existing OHL alignment, clearances, connectivity, outages, maintenance and faults.

Applying these principles Alignment Options were identified for further assessment. **Figure 3.4** shows the Alignment Options identified.

⁸ European Union Habitats Directive 92/43/EEC Annex I.

⁹ BRIG (2011). UK Biodiversity Action Plan – Priority Habitat Descriptions. Joint Nature Conservation Committee (JNCC), Peterborough.

For ease of assessment and interpretation, the Proposed Route has been divided into two ‘Sections’ for the definition of options with the Alignment Options described within each Section. The Alignment Options are described in detail in Section 5, below.

3.4 Baseline Conditions

A series of desk-based studies have been undertaken to identify a broad range of potential constraints and opportunities within the corridor, and its adjacent context. This has included the following:

- Review of the available survey information and Environmental Impact Assessment (EIA) Report for the Chleainsaid Wind Farm and nearby Creag Riabhach OHL EIA Report;
- Identification of designated sites and other constraints from GIS datasets available from NatureScot’s SiteLink¹⁰;
- Identification of archaeological designations and other recorded sites, using GIS datasets available from Historic Environment Scotland^{11 12};
- Review of The Highland Wide Council Local Development Plan (LDP)¹³ and Caithness and Sutherland LDP¹⁴ 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 Study Area¹⁵;
- Review of Ordnance Survey (OS) mapping (1:50,000 and 1:25,000 online mapping and terrain data from OS OpenData) and aerial photography (where available) to identify other potential constraints such as settlements, properties, walking routes, cycling routes etc.;
- Extrapolation of OS OpenData to identify further environmental constraints including locations of watercourses and waterbodies and to undertake a preliminary slope analysis;
- Identification of watercourse and waterbody quality and areas prone to flooding, utilising online GIS data sources from the Scottish Environment Protection Agency (SEPA)¹⁶;
- Review of other local information through online and published media such as tourism sites and walking routes; and
- Review of ornithological data available from NatureScot and RSPB Scotland in addition to data from recent nearby EIA projects such as the Creag Riabhach OHL EIA, Chleainsaid Wind Farm EIA and Lairg to Loch Buidhe OHL.

¹⁰ NatureScot (N/A). Site Link. [online]. Available at: <https://sitelink.nature.scot/home> (Accessed 22 December 2022).

¹¹ Historic Environment Scotland, (N/A). Portal. [online]. Available at: <http://portal.historicenvironment.scot/> (Accessed 8 February 2022).

¹² Canmore (N/A). Royal Commission on Ancient and Historical Monuments of Scotland. [online]. Available at: <https://canmore.org.uk/> (Accessed 8 February 2022).

¹³ The Highland Wide Local Development Plan (The Highland Council, 2012) [online]. Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan (Accessed 8 February 2022).

¹⁴ The Highland Council. (2018) Caithness and Sutherland Local Development Plan [online] Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/283/caithness_and_sutherland_local_development_plan [Accessed 7 April 2023].

¹⁵ NatureScot (N/A). Scottish Landscape Character Type Map and Descriptions. [online]. Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions> (Accessed 8 February 2022).

¹⁶ Scottish Environment Protection Agency (N/A). SEPA Data publication. [online]. Available at: <https://www.sepa.org.uk/environment/environmental-data/> (Accessed 8 February 2022).

3.4.1 Site Visits

Following the Identification of Alignment Options (see section 3.3), site walkovers and surveys were undertaken by landscape, ecology and heritage specialists to ground truth the key constraints identified by the desk studies and to further inform the assessment of potential Alignment Options. These included:

- Landscape and Visual Survey: 12th – 14th March 2023;
- Cultural Heritage Survey: 30th - 31st March 2023;
- Ecology Protected Species Suitability Survey: 10th - 21st April 2023;
- Ecology UKHab Survey 10th – 21st April 2023; and
- Ecology Ornithology Surveys (WWO and Flight Activity Survey): March 2023 - February 2024.

The baseline environmental conditions are described in section 4 below.

3.5 Appraisal Method

Appraisal of the Alignment Options has followed the process defined in the SHE Transmission's Routeing Guidance which seeks to inform identification and selection of new overhead line (OHL) and underground cable (UGC) transmission infrastructure being developed by SHE Transmission. As stated above, the Proposed Route has been divided into two sections for the definition of options with the Alignment Options described within each Section. Environmental, engineering and economic criteria for each section are then considered in turn as part of the Alignment Options appraisal.

Table 3.1, below, lists the topic areas considered as part of the Alignment Options appraisal.

Table 3.1: Topic Areas Considered

Constraint Type	Topic	Specific aspect of the topic
Environmental	Landscape and Visual	Designations
		Landscape Character
		Visual amenity
	Natural Heritage	Designations
		Protected Species
		Habitats
		Biodiversity
		Ornithology
		Geology, Hydrology and Hydrogeology
	Cultural Heritage	Designations
		Cultural Heritage Assets
	People	Proximity to Dwellings
	Land Use	Agriculture
		Forestry
		Recreation
Planning	Policy	
	Proposals	

Constraint Type	Topic	Specific aspect of the topic
Engineering	Infrastructure Crossings	Major crossings
		Road crossings
	Environmental Design	Elevation
		Atmospheric Pollution
		Contaminated Land
		Flooding
	Ground Conditions	Terrain
		Peat
	Construction / Maintenance	Access
		Angle Towers
	Proximity	Clearance distance
		Windfarms
		Communication Masts
Economic	Capital	Construction
		Diversions
		Public Road Improvements
		Felling
		Land Assembly
		Consents Mitigation
	Operational	Inspections
		Maintenance

3.5.1 Comparative Appraisal

Each Alignment Option in each section has been considered in terms of its potential interaction with the environmental characteristics, features and sensitivities. The Alignment Options have then been compared to determine which has the greatest and least capacity or potential to accommodate the Proposed Development.

In line with the criteria defined within the SSEN Transmission Guidance³, each Alignment Option in each section is then assigned a colour ranking reflecting its relative potential to accommodate infrastructure, green for greatest potential; red for least (see **Plate 3.1** below). In assigning a Red-Amber-Green (RAG) description, consideration has also been given to the relative importance or sensitivity of the environmental feature in question.


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.

Plate 3.1: RAG Rating for Comparative Analysis

3.5.2 *Identification of a Preferred Alignment*

The overall objective throughout the appraisal of Alignment Options has been to take full consideration of all known environmental factors to minimise any potential adverse impacts on the environment whilst considering engineering and economic considerations. Alignment options have been considered in combination to arrive at a Preferred Alignment for the Proposed Development.

4. COMPARATIVE APPRAISALS

This part of the Consultation Document describes the Preferred Alignment in each section, providing a brief summary of the key environmental considerations in each section, and detailing the technical considerations and alternative Alignment Options considered.

Figure 4.1 shown in Appendix 1 below shows the Alignment Options in the context of key environmental constraints.

The Proposed Route was divided into two 'Sections', for definition of Alignment Options and ease of comparative appraisal:

- Section 1: Chleainsaid Windfarm Substation to western extent of Feith Osdail valley.
- Section 2: Western extent of Feith Osdail valley to Dalchork Substation.

4.1 Section 1

Section 1 contains three Alignment Options, Option 1A, 1B and 1C, shown in **Plate 4.1**. Option 1A travels south-east from the Chleainsaid Windfarm Substation for approximately 850 m towards Dalnessie estate. It then extends south for approximately 300 m towards the existing access track leading to Dalnessie estate, before running in a south-western direction adjacent to the access track for approximately 1 km to the north-eastern extent of forestry block. Option 1A then heads west along the Feith Osdail watercourse valley, parallel to the access track, for approximately 3.2 km.

Option 1B travels south from Chleainsaid Windfarm Substation for approximately 660 m through a block of commercial forestry to an existing forestry track, before traveling south-west along the forestry track, through the commercial forestry block and crosses the Feith Osdail watercourse for approximately 1.4 km. Once across the watercourse and over the other side of the valley Option 1B intersects and follows the same route as Option 1A, traveling west across the valley, parallel to the access track for approximately 2.2 km.

Option 1C initially follows Option 1B, traveling south from Chleainsaid Windfarm Substation for approximately 100 m towards the forestry block. Here, Option 1C splits and travels south-west and west along a forestry track for 1.2 km to the western edge of the forestry block. Option 1C then travels south through an opening in the forestry block for approximately 850 m, where it crosses the Feith Osdail watercourse and valley. Here, Option 1C follows the same route as Option 1A and Option 1B, traveling west across the valley, parallel to the existing access track and south of the watercourse.

The Preferred Alignment in Section 1 is Option 1A.

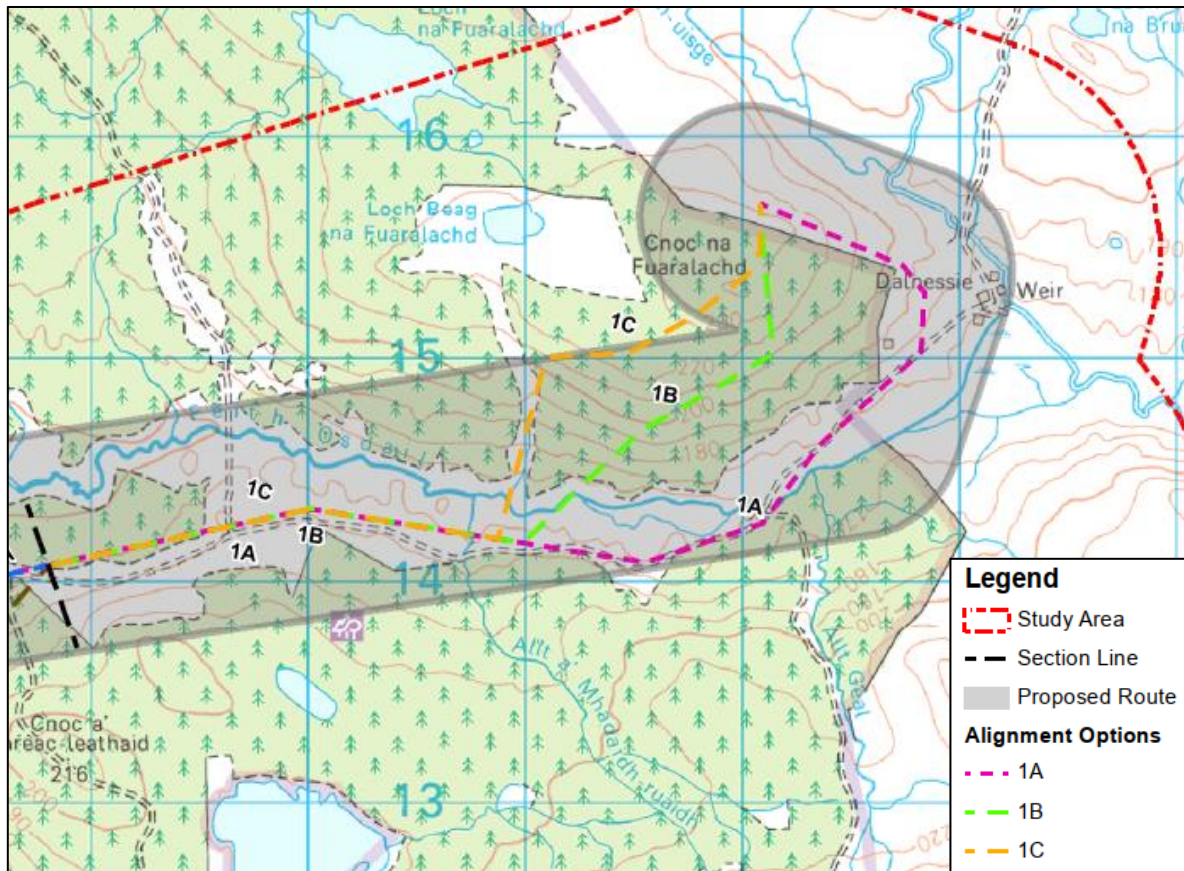


Plate 4.1 – Section 1 Alignment Options

4.1.1 Environmental Considerations

The key environmental considerations in this section includes (see **Appendix 1** for further details):

- Potential setting impacts; particularly in relation to Cnoc a'chreac-leathaid, shielings and cairnfield (SM5300) and Loch Beag na Fuaralachd, cairn and shielings (SM5081) and Loch Beag na Fuaralachd, shielings (SM5159) Scheduled Monuments, located approximately 100 m to the south, and 200 m to the north, respectively.
- Minimising potential impacts on commercial forestry and recreational activities such as stalking at Dalnessie Estate.
- Potential policy impacts in relation to Policy 51 Trees and Development, Policy 52 Principle of Development in Woodland, and Policy 61 Landscape set out in THC Highland-wide LDP.
- Avoiding potential impacts on the Private Water Supply (PWS) located near Dalnessie estate, approximately 250 m east of Option 1A.
- Minimising the likelihood of bird collisions on the OHL and reduce impacts during construction on bird species.
- Minimise potential ecological impacts by avoiding peat habitats, Annex 1 habitats and potential GWDTE sites.
- Reducing construction impacts on closest residential property, Dalnessie House, which is approximately 200 m west of Option 1A.

4.1.2 *Technical Considerations*

The key engineering considerations in this Section relate to the presence of peat, potential flood risk zones and retaining clearance distances from, or crossing existing features such as the 11kV & Creag Riabhach overhead line and the cell mast and cable located in the vicinity of section one. A network of existing tracks spreads throughout the section and managing this to ensure sufficient clearances are maintained is essential.

Peat

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

Flooding

Flooding can cause many problems to OHLs, especially when the structure utilised is of a wood pole design as it can increase the rate of degradation of the structure. It can also pose problems for operations and maintenance.

Proximity

Existing features can constrain an aAlignment Option often requiring the features to be avoided to reduce or avoid impact. For this project in particular the existing infrastructure in the area includes an 11kV OHL, a cell tower and communications cable. Each constraint on this project has its own challenges that require mitigation, whether that be undergrounding overhead lines ensuring line of sight is not infringed with the cell tower.

4.1.3 *Alternative Alignments Considered*

The most significant constraint to the Alignment Options within Section 1 relates to the potential setting impacts to the Scheduled Monuments and non-designated heritage assets located in proximity to the Alignment Options. Due to the proximity of the Schedule Monuments, all the Alignment Options have the potential for setting impacts on these designated heritage assets. When considering other environmental topics and sub-topics, the alternative Section 1 Alignment Options, Option 1B and 1C, performed similarly to the environmental appraisal of Option 1A, with the exception of landscape character and planning policy. Both Options 1B and 1C would significantly impact landscape character as they would require the removal of forestry (which avoids routeing through forestry blocks) and impacts characteristic elements of Landscape Character Type (LCT) 134. Additionally, Option 1B and 1C performed worse in relation to potential impacts upon planning policy, mainly due to forestry clearance to construct the OHL, as opposed to Option 1A which avoids commercial forestry. The following planning policies within THC Highland-wide LDP likely to be impacted by Option 1B and 1C are Policy 51 Trees and Development, Policy 52 Principle of Development in Woodland, and Policy 61 Landscape. With exceptions of forestry removal, effects on landscape character and policy impacts, the three Alignment Options performed similarly from an environmental perspective.

4.2 **Section 2**

Section 2 contains three Alignment Options, Options 2A, 2B1 and 2B2, shown in **Plate 4.2**. The Alignment Options in Section 2 begin at the western extent of the Feith Osdail valley and travel in a general southerly direction towards the existing Dalchork Substation. From the intersection point with Section 1, Option 2A travels west and then south-west for approximately 1.25 km towards the A836, where it crosses the Creag Riabhach 132 kV OHL. At this point, approximately 180 m east of the A836 road, Option 2A travels south,

parallel to the A836, River Tirry and Creag Riabhach OHL for approximately 1.6 km which are located to the west. Option 2A continues to travel south-west for approximately 1 km, before switching to a slight south-easterly direction across a tributary of the River Tirry and valley. At the top of the watercourse valley, Option 2A travels south-west for approximately 600 m, and finally turns to travel south-east for approximately 600 m into Dalchork Substation.

Option 2B1 initially follows the same route as Option 2A, traveling west for approximately 500 m, where it splits and travels south-west for 500 m along the north-western boundary of the forestry block. Option 2B1 then travels south as it nears the Creag Riabhach 132 kV OHL, running parallel to its alignment but not crossing it for approximately 1.6 km, before continuing south-west for approximately 1.2 km. Option 2B1 then follows a similar route as Option 2A to cross the tributary of the River Tirry and valley side, traveling south-eastern for 250 m. At the top of the watercourse valley, Option 2B1 travels south-west for approximately 600 m, and finally turns to travel south-east for approximately 600 m into Dalchork Substation.

Option 2B2 initially travels in a south-west direction through a commercial forest block for approximately 860 m. The alignment then travels south for approximately 1.4 km, parallel and approximately 250 m east of Option 2B1. Here Option 2B2 follows the same route as 2B1 south towards Dalchork, over the watercourse and into Dalchork Substation.

The Preferred Alignment in Section 1 is Option 2B1.

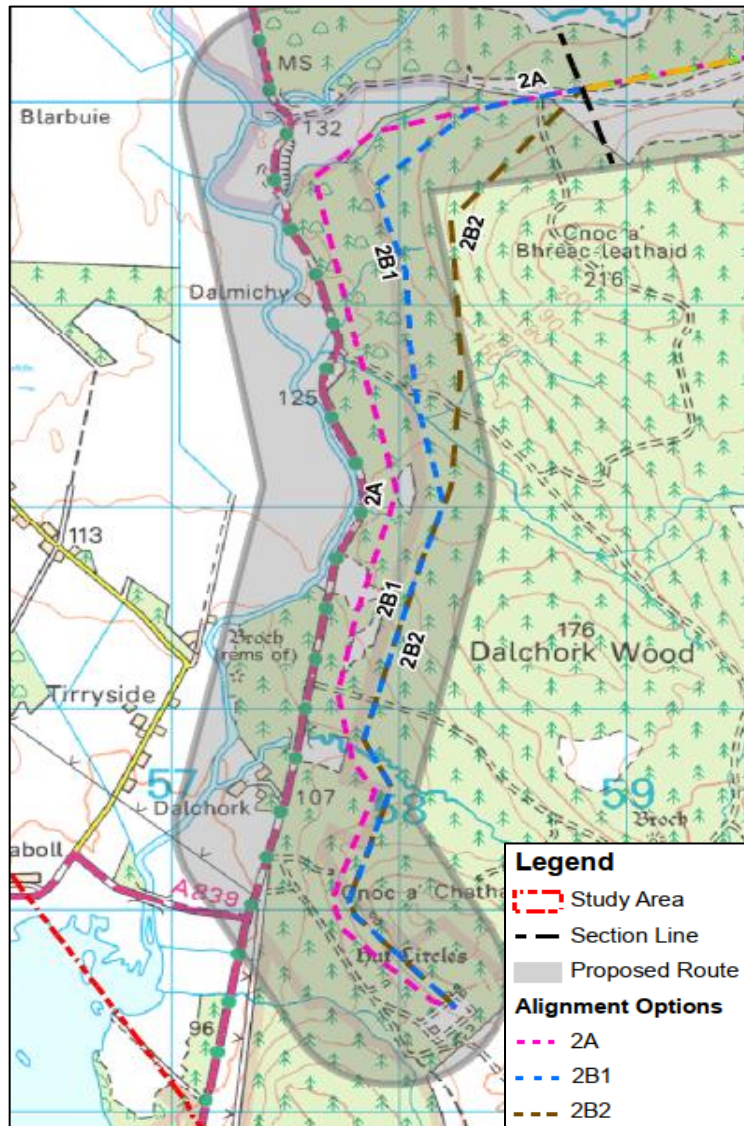


Plate 4.2 – Section 2 Alignment Options

4.2.1 Environmental Considerations

The key environmental considerations in this section includes (see **Appendix 1** for further details):

- Minimising impacts on native woodland, which is present at the most southern point close to Dalchork.
- Minimising potential impacts on landscape character, in particular the key characteristics of LCT 134 and 142.
- Reducing effects on bird species during construction such as hen harrier and black grouse.
- Mitigating impacts on non-designated assets such as hut circles (Canmore ID 5047, Canmore ID 5048), cairn and cist (Canmore ID 5051) and medical battle site (Canmore ID 81981) during construction.
- Limiting commercial forestry loss where possible. It could be possible to avoid all forestry areas following micro-siting if close proximity to the existing OHL can be obtained.
- Taking policy into account, specifically around forestry implications. However, this could be avoided if placement near the existing Creag Riabhach 132 kV OHL can be obtained.

- Minimise potential ecological impacts by avoiding peat habitats.
- Minimising effects on the consented application of Starth Tirry Wind Farm (20/05067/FUL).

4.2.2 *Technical Considerations*

The key engineering considerations in this Section relate to the presence of peat and retaining clearance distances from, or crossing, existing features such as the existing Creag Riabhach OHL and proposed windfarm Strath Tirry. An existing network of access tracks are located throughout the Section, and this is to be properly managed to ensure sufficient clearance is maintained at all times.

Peat

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

Proximity

Existing features can constrain an Alignment Option often requiring the features to be avoided to reduce or avoid impact. For this section the proximity constraints include the existing Creag Riabhach OHL, the proposed Strath Tirry Windfarm as well as the 11kV OHL that constrained Section 1.

4.2.3 *Alternative Alignments Considered*

The alternative Alignment Options considered for this section were Alignment Options 2A and 2B2. These options were similar to the Preferred Alignment, however there were significant impacts on landscape character and visual amenity. Option 2B2 would likely compromise characteristic elements of LCT 134 and LCT 142 as the wood poles would cut through existing forestry which would break the skyline, particularly in the northern extent. Alignment 2A would likely compromise the characteristics of LCT 142 as the wooden poles would be prominent in this area. Option 2A would have visual impacts on users of the National Cycle Network (NCN) as it is in close proximity. Option 2B2 would also have visual impacts on users of the NCN as well as individual properties and residential receptors to the east of the Alignment Option.

4.3 Preferred Alignment

A Preferred Alignment has been identified following consideration of both environmental, engineering, and cost considerations.

The analysis to date has concluded that Alignment Options 1A and 2B1 provide advantages over the other Alignments Options and could offer a viable alignment and solution for the project from an environment, engineering, and cost perspective.

On balance and based on current analysis, it is considered that Alignment Options 1A and 2B1 are the Preferred Alignment Options as:

- For Section 1, Option 1A has the potential to give rise to significant effects on cultural heritage designations, particularly in relation to setting impacts on the Scheduled Monuments located in proximity to all the Section 1 Alignment Options. Compared to the other Alignment Options, Option 1A has no significant impacts on commercial forestry as it avoids the existing commercial forestry blocks associated with Dalchork Wood. Option 1A is also considered to have substantially less impact upon the landscape character of the area and relevant planning policy.

- For Section 2, Option 2B1 has no significant impacts on landscape designations, character or visual. Option 2B1 has fewer significant impacts compared to the other Alignment Options, particularly in relation to landscape character and planning policy impacts. The presence of the existing Creag Riabhach 132 kV OHL also means Option 2B1 has the potential to run parallel and in close proximity to the existing Creag Riabhach 132 kV OHL, resulting in substantially less forestry and visual impact when compared to the other Alignment Options.

The Preferred Alignment is illustrated on **Figure 4.2**.

The Preferred Alignment will require careful consideration during EIA Stage of the Project to achieve an acceptable final alignment with minimal environmental effects.

Should further site and desk-based analysis at the EIA Stage identify a particular constraint, a further review of Alignment Options may be required prior to the identification of a final alignment.

5. CONSULTATIONS ON THE PROPOSALS

SSEN Transmission plc 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.

5.1 Questions for Consideration by Consultees

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

- Has the requirement for the project been adequately explained?
- Has the approach taken to select the Preferred Alignment been adequately explained?
- Are there any factors, or environmental features, that you consider may have been overlooked during the Preferred Route selection process?
- Do you feel that the Preferred Alignment selected is the most appropriate? Please provide an explanation of your answer.
- If you don't agree to our Preferred Alignment, which of the Alignment Options would you consider the best Alignment Option for SSEN Transmission to develop? Please Provide an explanation of your answer.

5.2 Next Steps

A consultation event will be held, as detailed in the Preface of this document. The responses from this consultation event, and those sought from statutory consultees and other key stakeholders, will inform further consideration and any refinement of the Preferred Alignment.

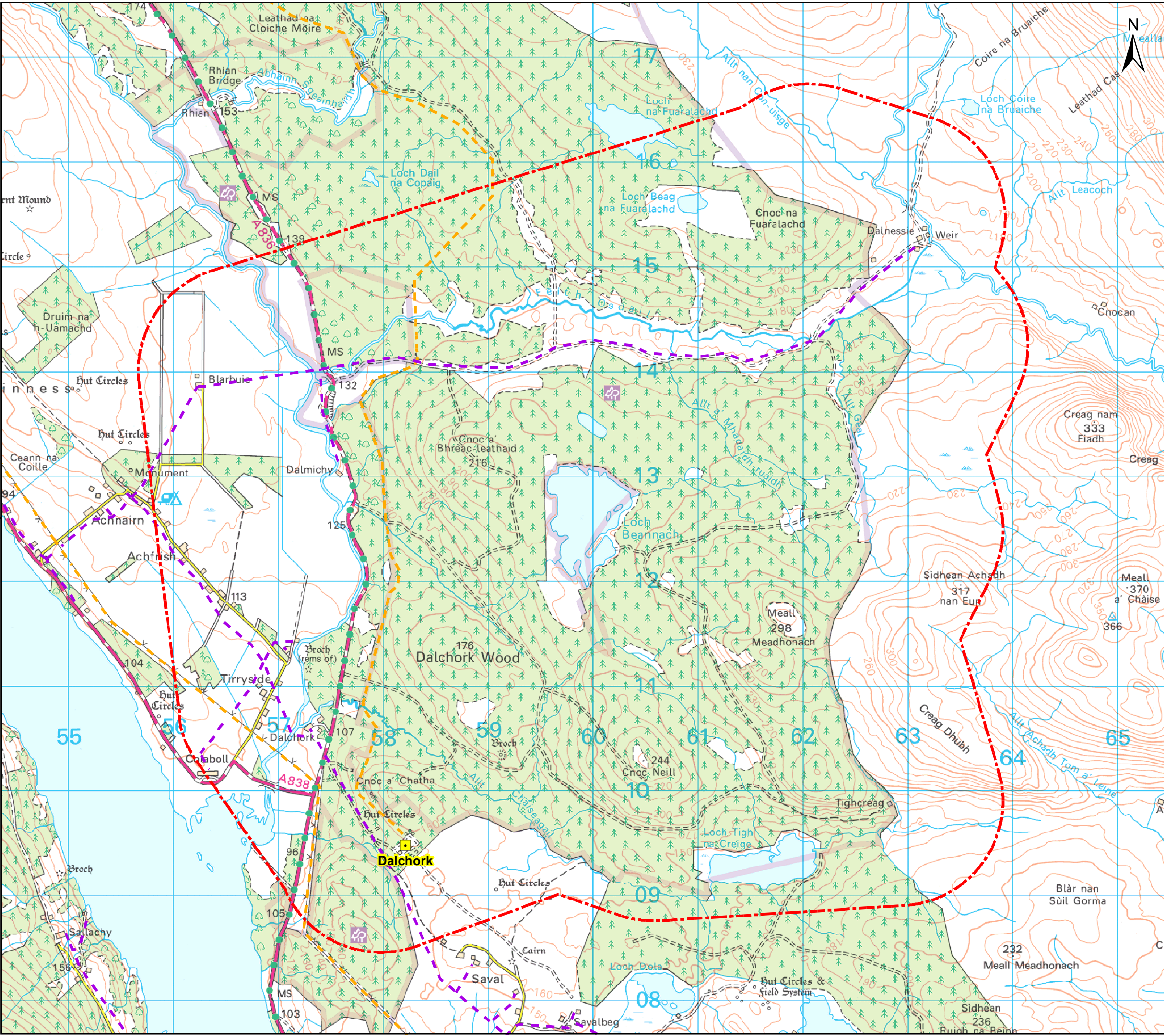
All comments are requested by 29th June 2023. A Report on Consultation will be produced which will document the comments received, and the decisions made in light of these responses.

Following the identification and confirmation of a Preferred Alignment, further technical and environmental surveys will be undertaken to identify a Proposed Alignment for the EIA stage and an application for consent under Section 37 of the Electricity Act 1989.

Consultation on the Proposed Alignment as part of the EIA stage will be undertaken in a similar manner to the identification of a Preferred Alignment. This is currently anticipated for July 2023.

APPENDIX 1 – FIGURES

Date Saved: 4/5/2023
Document Path: \\uk.wspgroup.com\central_data\Projects\1700999xx\1700999990 - Chleainsaid Wind Farm Connection\03 WIP\3E- GIS\MXD\CWFC-WSP-DA-GIS-002 Figure 3.1 v2 - Study Area.mxd



Legend

- Study Area
- Existing Substation
- Existing OHL
 - 11 kV
 - 33 kV
 - 132kV

0 1 2 km

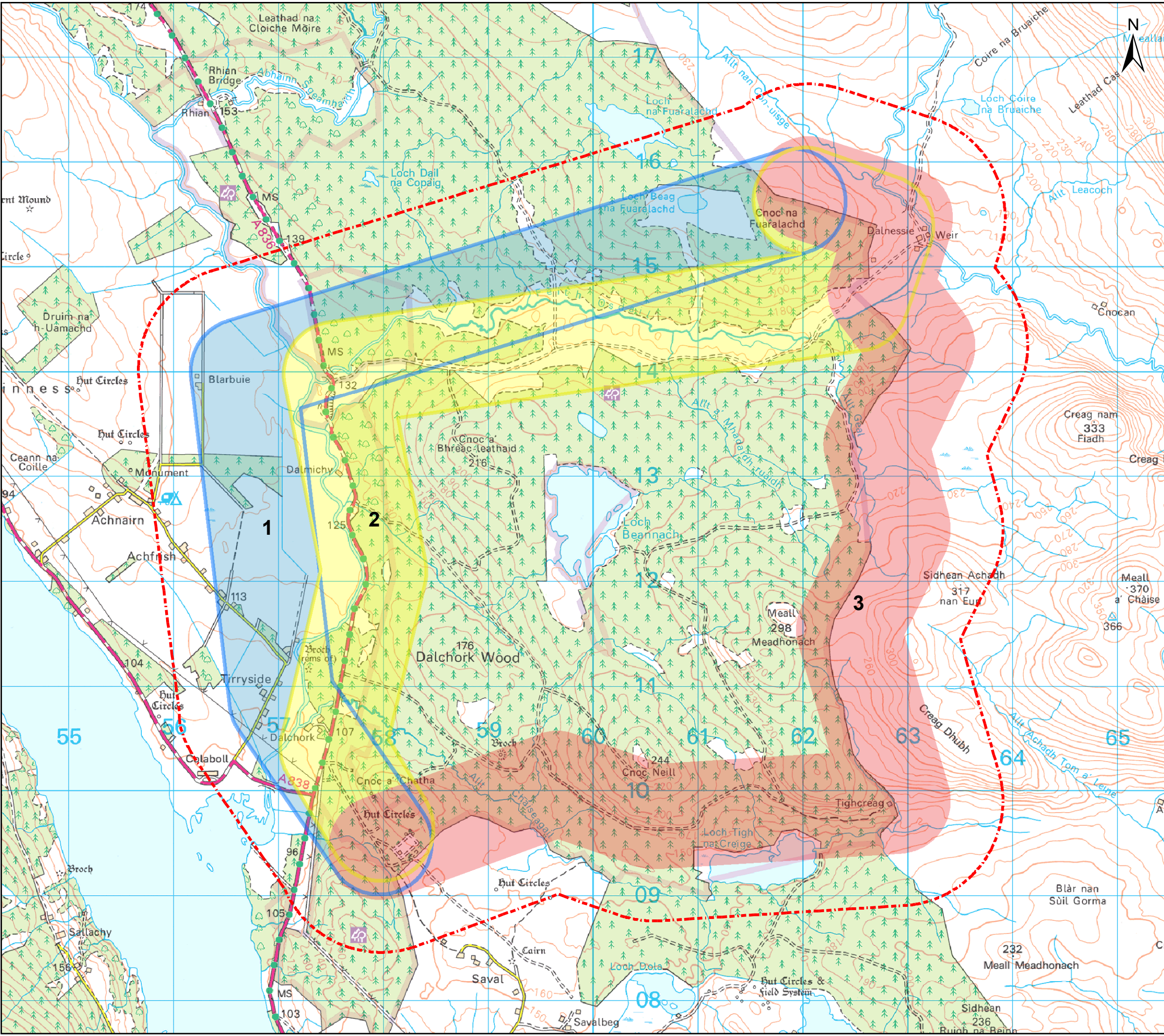
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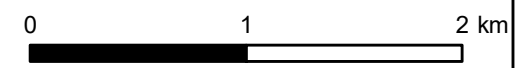
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Drawn: AS Checked: IM Approved: JB
Drawing Number: CWFC-WSP-DA-GIS-002

Date Saved: 4/5/2023
Document Path: \\uk.wspgroup.com\central_data\Projects\1700999xx\1700999990 - Chleainsaid Wind Farm Connection\03 WIP\3E - GIS\MXD\CWFC-WSP-DA-GIS-003 Figure 3.2 - Route Options v3.mxd



- Legend**
- Study Area
 - Route Options**
 - 1
 - 2
 - 3

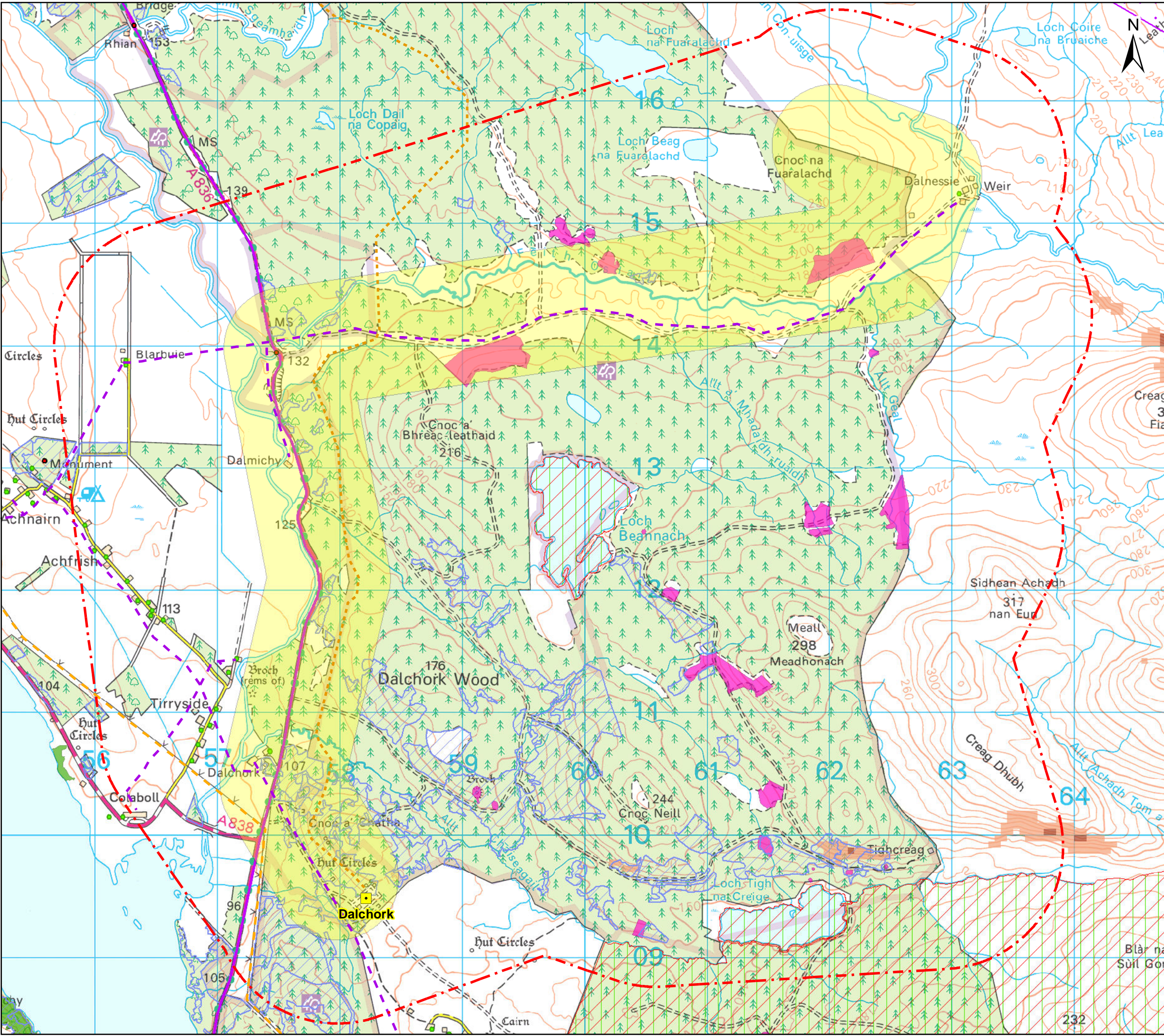


Client: TRANSMISSION

Project: Chleainsaid Wind Farm Connection

Title: **Figure 3.2: Route Options**

Date: 4/5/2023 Scale: 35,000 @ A3
Drawn: AS Checked: IM Approved: JP
Drawing Number: CWFC-WSP-DA-GIS-003



Legend

- Study Area
- Existing Substation

Existing OHL

- 11 kV
- 132kV
- Preferred Route
- Residential Dwellings
- National Cycle Network - Reclassified
- Routes (Public)
- Site of Special Scientific Interest
- Special Protection Areas
- Wild Land Areas
- Native Woodland (Native Woodland Survey of Scotland)
- Scheduled Monuments
- Ancient Woodland Inventory

Listed Building Category

- C

Slope Angle

- 15° - 22°
- >22°

0 1 2 km

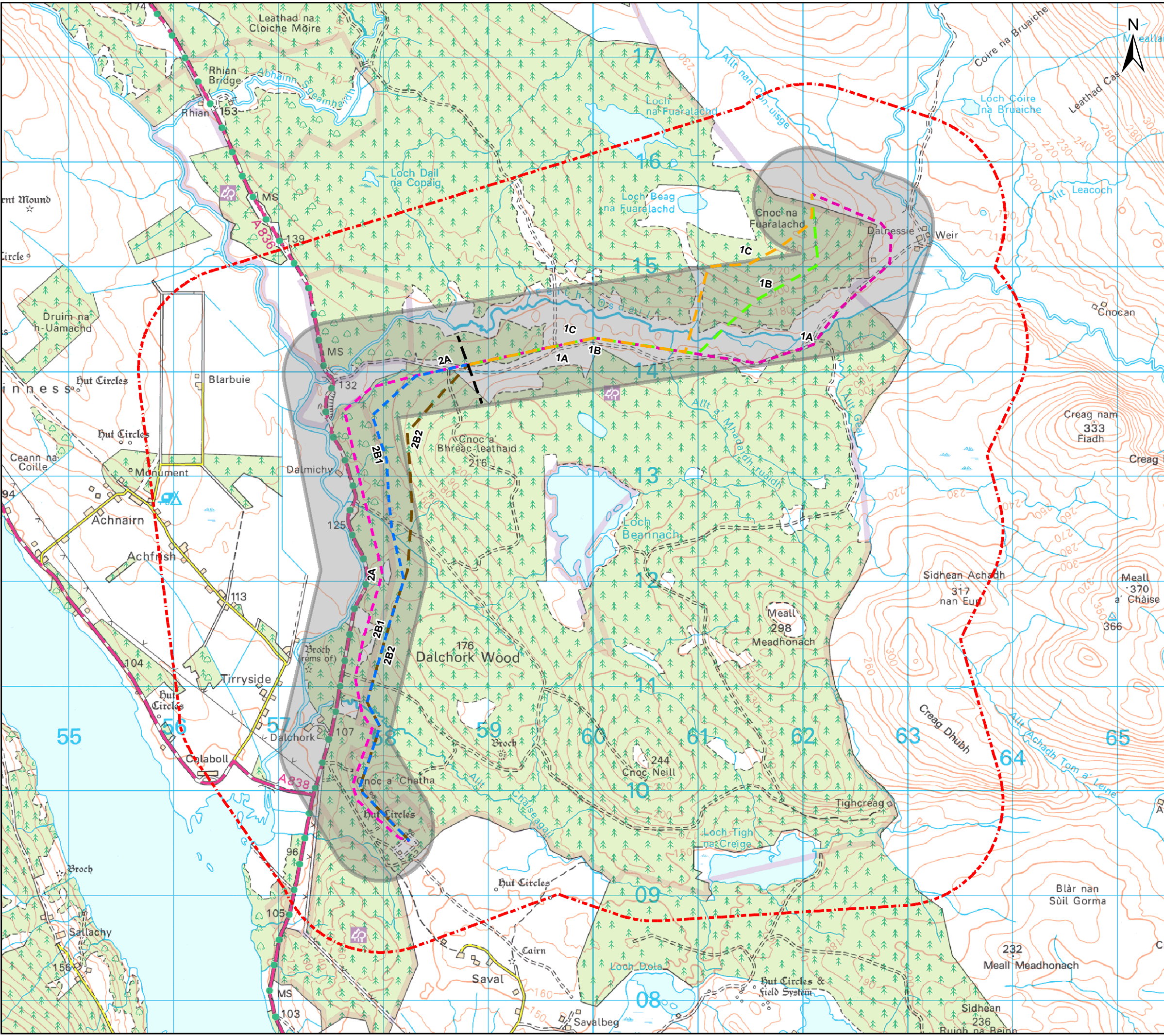
Client:

Project: Chleainsaid Wind Farm Connection

Title: **Figure 3.3: Preferred Route**

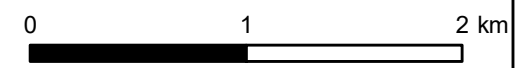
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 Drawing Number: CWFC-WSP-DA-GIS-004

Date Saved: 4/5/2023
Document Path: \\uk.wspgroup.com\central_data\Projects\700999xx\70099990 - Chleainsaid Wind Farm Connection\03 WIP\3E - GIS\MXD\CWFC-WSP-DA-GIS-114 Figure 3.4 Alignment_Options.mxd



Legend

- Study Area
- Section Line
- Proposed Route
- Alignment Options**
- 1A
- 1B
- 1C
- 2A
- 2B1
- 2B2

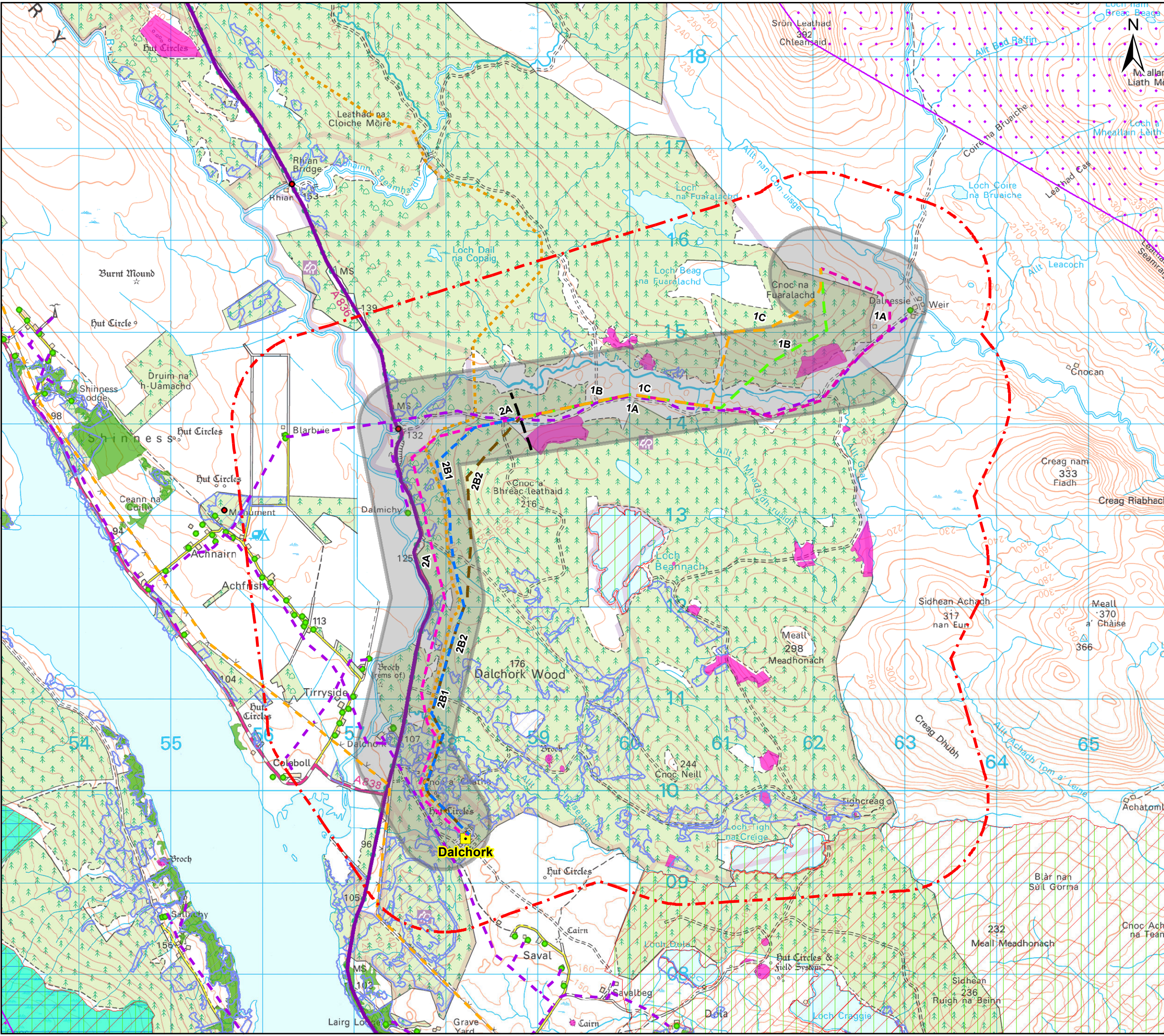


Client: TRANSMISSION

Project: Chleainsaid Wind Farm Connection

Title: **Figure 3.4: Alignment Options**

Date: 4/5/2023 Scale: 35,000 @ A3
Drawn: AS Checked: IM Approved: JB
Drawing Number: CWFC-WSP-DA-GIS-114



Legend

- Study Area
- Section Line

Alignment Options

- 1A
- 1B
- 1C
- 2A
- 2B1
- 2B2

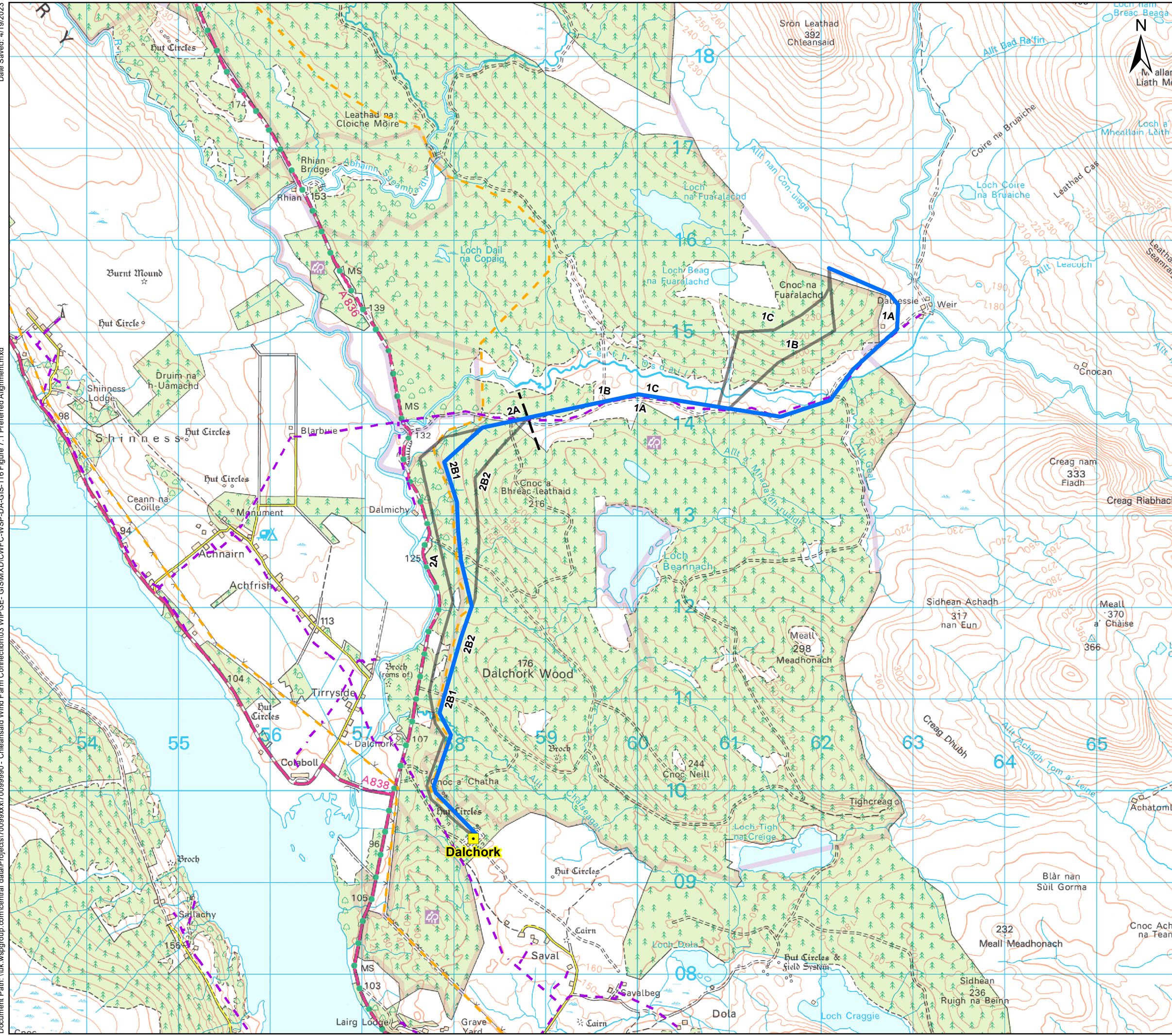
- Proposed Route
- Existing Substation
- Listed Building Category C
- Residential Dwellings
- National Cycle Network - Reclassified Routes (Public)
- Special Areas of Conservation
- Site of Special Scientific Interest
- Special Protection Areas
- Wild Land Areas
- Native Woodland (Native Woodland Survey of Scotland)
- Ramsar Sites
- Scheduled Monuments
- Ancient Woodland Inventory

Existing OHL

- 11 kV
- 132kV

0 1 2 km

Client:		
Project:	Chleainsaid Wind Farm Connection	
Title:	Figure 4.1: Key Constraints	
Date:	4/5/2023	Scale: 40,000 @ A3
Drawn:	AS	Checked: IM Approved: JB
Drawing Number:	CWFC-WSP-DA-GIS-115	



Legend

- Preferred Alignment
- - - Discounted Alignment Options
- - - Section Line
- Existing Substation

Existing OHL

- 11 kV
- 132kV

0 1 2 km

Client:

Project: Chleasaid Wind Farm Connection

Title: **Figure 4.2 Preferred Alignment**

Date: 4/19/2023 Scale: 40,000 @ A3
 Drawn: CB Checked: IM Approved: JB
 Drawing Number: CWFC-WSP-DA-GIS-119

1.3 Economic Summary RAG Rating Table

Alignment Options	RAG Impact Rating – Costs							
	Capital						Operational	
	Construction	Diversion	Public Road Improvements	Felling	Land Assembly	Consents Mitigation	Inspection	Maintenance
1A								
1B								
1C								
2A								
2B1								
2B2								

1.4 Preferred Alignment Option Summary RAG Rating Table

Constraint Type	Topic	Specific aspect of the topic	Alignment Option	
			Option 1A	Option 2B1
Environmental	Landscape and Visual	Designations		
		Landscape Character		
		Visual amenity		
	Natural Heritage	Designations		
		Protected Species		
		Habitats		
		Biodiversity		
		Ornithology		
		Geology, Hydrology and Hydrogeology		
	Cultural Heritage	Designations		
		Cultural Heritage Assets		
	People	Proximity to Dwellings		
	Land Use	Agriculture		
		Forestry		
		Recreation		
	Planning	Policy		
		Proposals		
Engineering	Infrastructure Crossings	Major crossings		
		Road crossings		

Constraint Type	Topic	Specific aspect of the topic	Alignment Option	
			Option 1A	Option 2B1
	Environmental Design	Elevation	Yellow	Green
		Atmospheric Pollution	Green	Green
		Contaminated Land	Green	Green
		Flooding	Red	Yellow
	Ground Conditions	Terrain	Green	Green
		Peat	Red	Green
	Construction/Maintenance	Access	Green	Green
		Angle towers	Red	Green
	Proximity	Clearance distance	Green	Green
		Windfarms	Green	Green
		Communications Masts	Red	Green
	Economic	Capital	Construction	Green
Diversions			Green	Green
Public Road Improvements			Green	Green
Felling			Green	Green
Land Assembly			Yellow	Green
Consents Mitigation			Green	Green
Operational		Inspections	Green	Green
		Maintenance	Green	Green