

Troston Loch

Involving the local community



Who we are

SP Energy Networks (SPEN) owns and operates the network of cables, overhead power lines and substations transporting electricity to customers in central and southern Scotland.

SPEN is a regulated business with the following responsibilities under the Electricity Act 1989:

- to develop and maintain an efficient, coordinated and economical system of electricity transmission
- to facilitate competition in the generation and supply of electricity
- to offer non-discriminatory terms for connection to the transmission system, for both new generation and new sources of electricity demand.

The developer of Troston Loch wind farm has approached SPEN to provide an overhead line connection to the wider electricity network.

Our proposal

SPEN proposes to construct a new, 132-kilovolt (kV) OHL supported by wood poles to connect the consented Troston Loch Wind Farm located approximately 6.2 km north-east of St John's Town of Dalry and 10.4 km south-west of Moniaive in Dumfries and Galloway.

This exhibition provides information on:

- the design principles that are used to identify routes for a new OHL;
- how a preferred route has been identified;
- where the preferred route is located; and
- what feedback we would like at this stage.

Purpose of the consultation

We are consulting with statutory and non-statutory consultees and the general public to ensure that all available information, views and opinions have been gathered and considered in the selection of the preferred route for the OHL.

The purpose of this consultation event is to provide information on the project and to get your feedback on the preferred route.

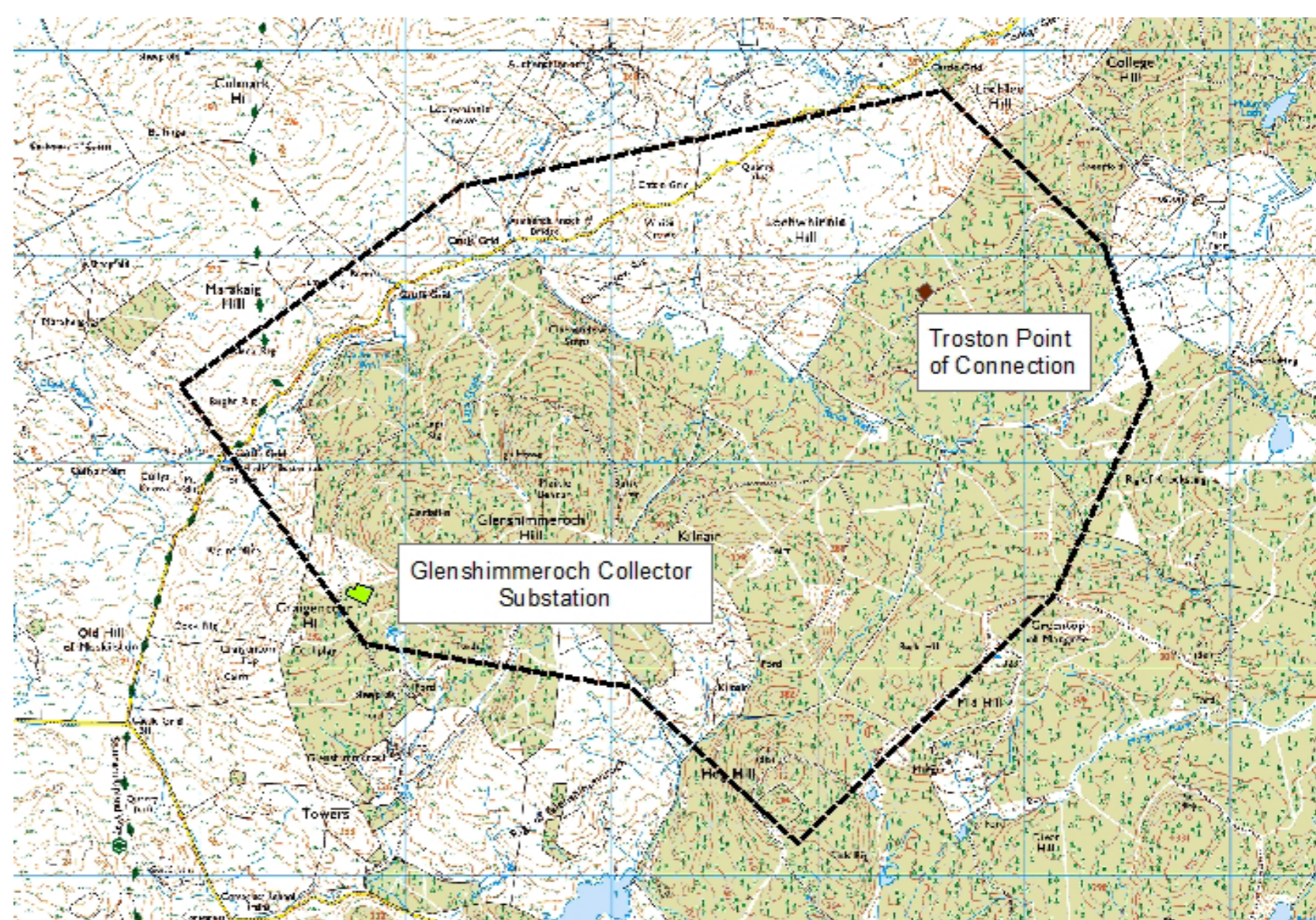
SPEN attaches great importance to the effect that its works may have on the environment and on people. In seeking to achieve 'least disturbance,' SPEN is keen to engage with key stakeholders including local communities and others who may have an interest in the project.

Following the consultation, we will arrive at a **proposed route** that will be put forward in the application for consent.

Consents

New electricity lines exceeding 20 kV require consent from the Scottish Ministers under Section 37 of the Electricity Act 1989.

It is SPEN's intention to submit an environmental impact assessment (EIA) screening request to the Scottish Ministers as part of the application for consent under Section 37 of the Electricity Act (1989) for the Troston OHL grid connection. The screening response may confirm that EIA is not a requirement. In this context an environmental appraisal would be undertaken to support the Section 37 application.



The point of connection and collector points



Project need

SPEN proposes to construct an overhead line (OHL) between the consented Troston Loch Wind Farm's substation and the proposed Glenshimmeroch collector substation to connect the Troston Loch Wind Farm to the national grid.

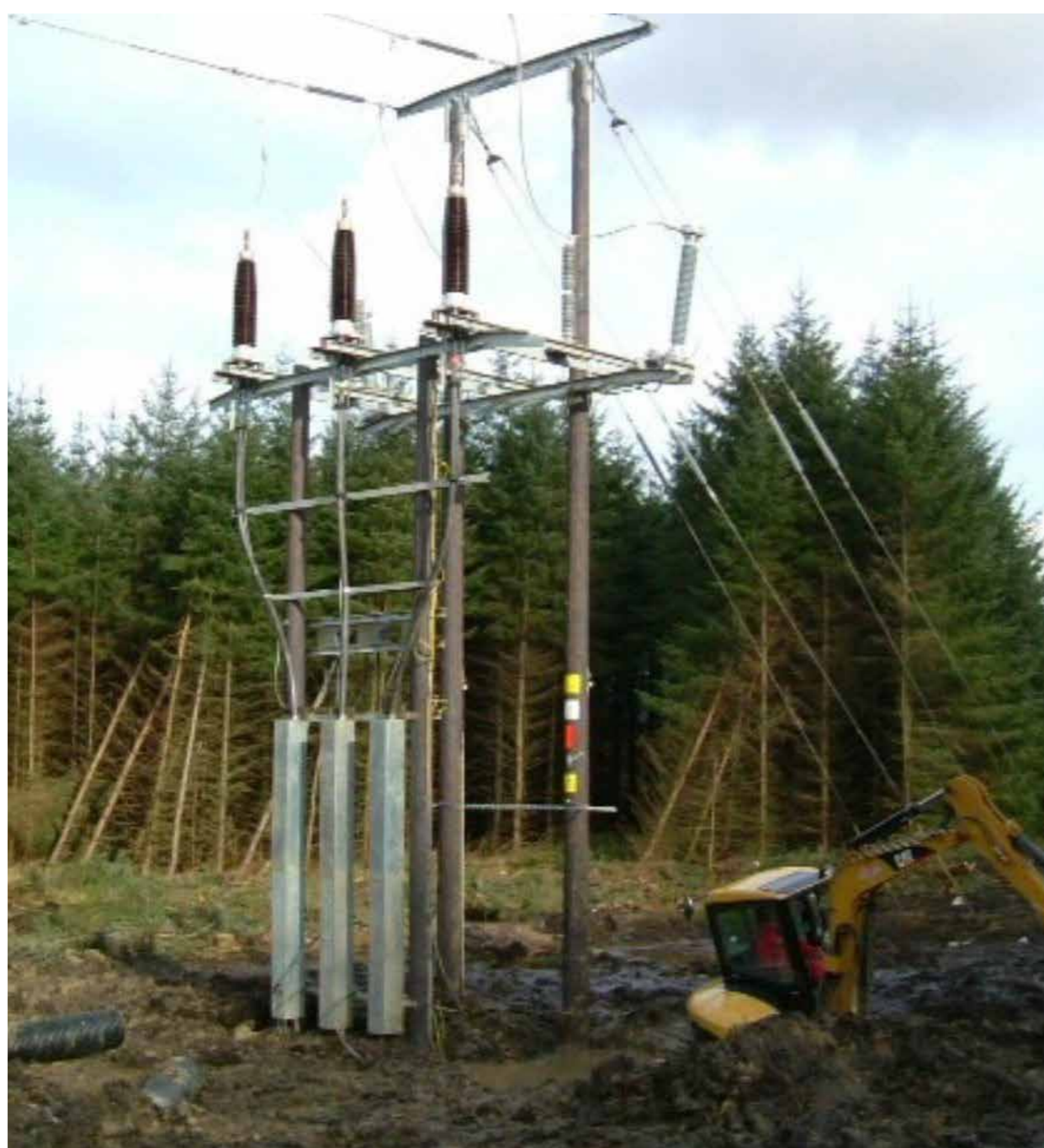
Grid connection design and infrastructure

SPEN's document 'Approach to Routing and Environmental Impact Assessment' (2020) seeks, for major electrical infrastructure, a continuous OHL solution for all transmission connections; only where there are exceptional constraints are underground cables considered an acceptable design option. Such constraints can be found in urban areas and in rural areas of the highest scenic and amenity value. On this basis, the key design assumption is that the Troston grid connection will be a continuous OHL connection throughout. SPEN has identified that the planned grid connection will require a 132-kV OHL connection and will transmit electricity generated at the consented Troston Loch Wind Farm from the point of connection at the planned Troston Loch substation and deliver it to the collector point at the proposed Glenshimmeroch collector substation.

Overhead line infrastructure

The size of poles and span lengths will vary depending on several factors, in line with industry the Energy Networks Association specification ENA TS 43-50 Issue 2. The OHL is likely to require construction using H poles (rather than single poles), with a span length of about 70–110 m and pole heights ranging from 11–18 m with a typical height of 13 m. This has been used as the basis for identification of the preferred route; however, the precise pole configuration, height and spans will be determined after a detailed line design following confirmation of the proposed route.

The wood pole will support three conductors (wires) in a horizontal flat formation. The photos below show some examples of typical trident double wood poles, section and terminal structures, and it is anticipated that similar poles and structures would be used for the Troston OHL grid connection. Subject to confirmation of the proposed route for the new OHL, detailed survey work will be carried out to inform the proposed positions and heights of each individual wood pole.



Example of typical terminal structures of a trident 132-kV OHL (SPEN, 2019)



Example of typical section structures of a trident 132-kV OHL (SPEN, 2019)



Example of a typical intermediate section of a trident double wood pole supporting a 132-kV OHL (SPEN, 2019)

Routeing

SPEN proposes to construct a 132-kV continuous overhead line (OHL) between the consented Troston Loch Wind Farm and the proposed Glenshimmeroch collector substation in order to connect the Troston Loch Wind Farm to the national grid. The challenge is to identify an OHL route between the points of connection that will achieve SPEN's routeing objective and comply with current best practice guidance. SPEN's approach to routeing an OHL is based on the premise that the major environmental effect of an OHL is visual, and the degree of visual intrusion can be reduced by careful routeing. A reduction in visual intrusion can be achieved by routeing the line to fit the topography, by using topography and trees to provide screening and/or background, and by routeing the line away from settlements and roads. In addition, a well-routed line takes into account other environmental and technical considerations and avoids, wherever possible, the most sensitive and valued natural and man-made features.

Routeing objective

The routeing objective for this project is to identify a technically feasible and economically viable OHL route for a continuous 132-kV OHL connection between the consented Troston Loch Wind Farm and the Glenshimmeroch collection point, which causes least disturbance to the environment and the people who live, work and enjoy recreation within it.

Routeing guidance

The Holford Rules are used to guide the routeing process. These rules were first established in 1959 by Sir William Holford and continue to inform transmission line routeing in the UK.

Rule 1: Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence.

Rule 2: Avoid smaller areas of high amenity value, or scientific interest by deviation; provided that this can be done without using too many angle towers, i.e., the more massive structures which are used when lines change direction.

Rule 3: Other things being equal, choose the most direct line, with no sharp changes of direction and thus with few angle towers

Rule 4: Choose tree and hill backgrounds in preference to sky backgrounds, wherever possible.

Rule 5: Prefer moderately open valleys with woods where the apparent height of towers will be reduced, and views of the line will be broken by trees.

Rule 6: In country that is flat and sparsely planted, keep the high voltage lines as far as possible independent of smaller lines, converging routes, distribution poles and other masts, wires and cables, so as to avoid a concentration or 'wirescape'.

Rule 7: Approach urban areas through industrial zones, where they exist; and if this is not possible, consider undergrounding any lower voltage lines.



View of existing wood pole OHL south of Coalburn, South Lanarkshire



View of existing wood pole OHL in a valley at Chirmorie, south of Barrhill

Routeing Strategy

The OHL route should, on balance, cause the least disturbance to the environment and the people who live, work and enjoy outdoor recreation within it. To help minimise landscape and visual effects, in accordance with the Holford Rules and SPEN's routeing methodology, the proposed OHL has also sought to avoid high ground and ridgelines, responding to the grain of the landscape, subject to avoiding areas of highest amenity and environmental values far as practicable (as above). To help assess temporary and permanent cumulative effects, careful consideration has also been given to the relationship of the proposed OHL with other electricity infrastructure in the study area. Route options are developed and appraised in line with the strategy to arrive at a preferred route for consideration at consultation. Following this consultation period, the preferred route may be modified based on feedback and a proposed route will be adopted.

Routeing considerations

Overhead lines (OHL) are linear elements in the landscape. They are likely to affect, to varying degrees, visual and other environmental aspects of the area through which they run. This part of the process predominantly comprises information gathering and consideration of the potential for effects.

The initial stage is to determine a study area and gather baseline information within this area through desk-based studies, site visits, and consultations to identify potential constraints and opportunities to routeing.

To define a route that meets the requirements of the Electricity Act 1989, a balance must be struck between three sets of considerations:

- environmental;
- technical; and
- economic.

Environmental considerations

Statutory duties imposed by Schedule 9 of the Electricity Act 1989 require licence holders to seek to preserve features of natural and cultural heritage interest and mitigate, where possible, any adverse effects which a development may have. Experience across the electricity industry shows that an overhead transmission line is likely to affect, to varying degrees, the following:

- landscape and visual amenity;
- ecology, ornithology and nature conservation;
- geology, hydrogeology and hydrology;
- cultural heritage; and
- forestry and woodland.

Other considerations which may affect routeing, to a greater or lesser degree, include:

- planning allocations and major applications;
- noise;
- traffic (access for construction);
- land use (agriculture); and
- socio-economics (tourism and recreation).

Technical considerations

Technical considerations potentially include existing infrastructure, altitude and slope angle, and physical constraints such as large waterbodies. These technical considerations are not considered as being absolute constraints but are a guide to routeing. The approach taken is to identify preferred environmental options informed by a staged review of technical issues.

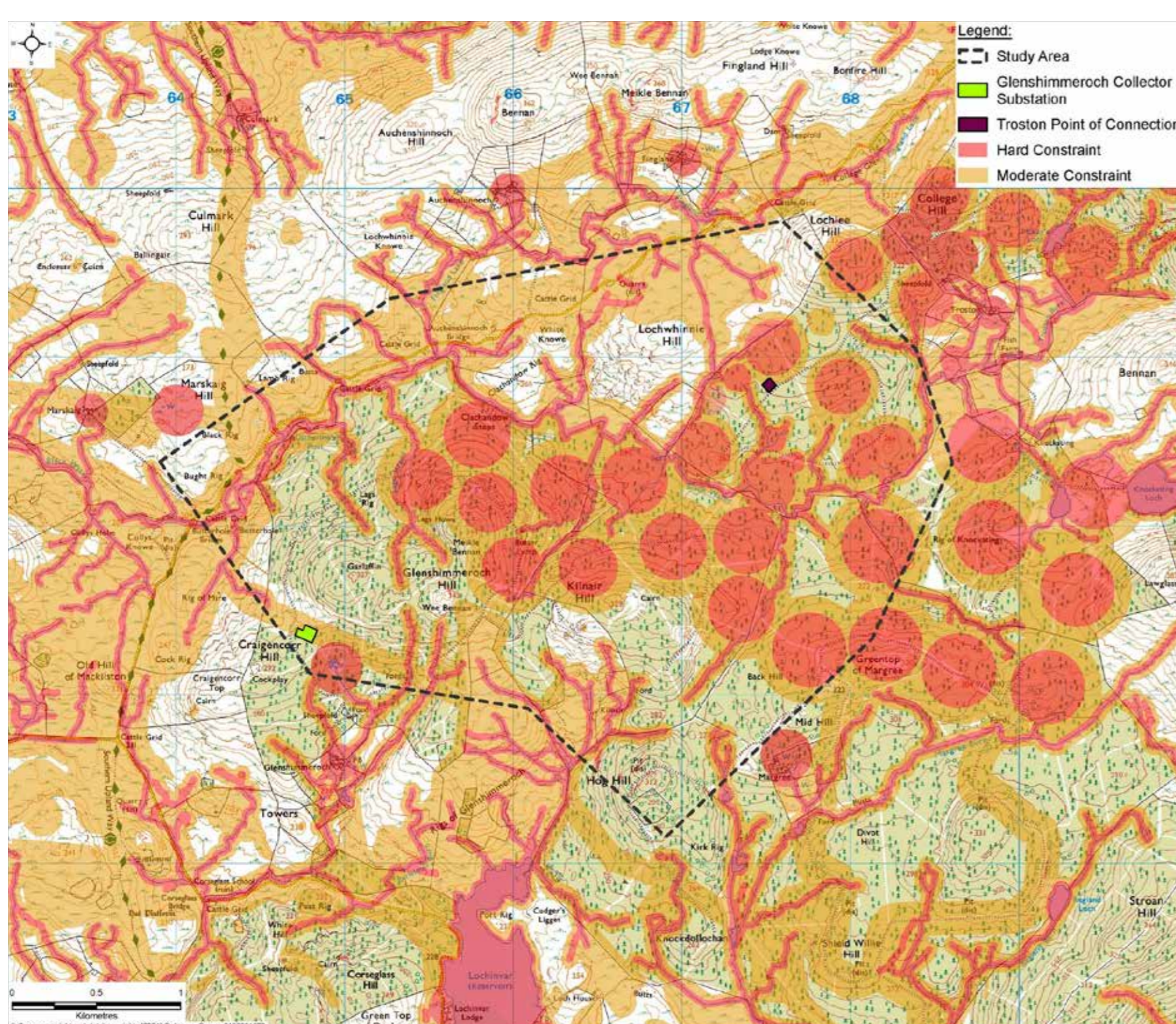
Economic considerations

In compliance with Schedule 9 of the Electricity Act 1989, the routeing objective requires the proposed connection to be economical. It is interpreted by SPEN as meaning that, as far as possible and all other things being equal, the connections should be as direct as possible, and the route should avoid areas where technical difficulty or compensatory schemes would render the connection uneconomical.

Site-specific environmental, planning and technical constraints

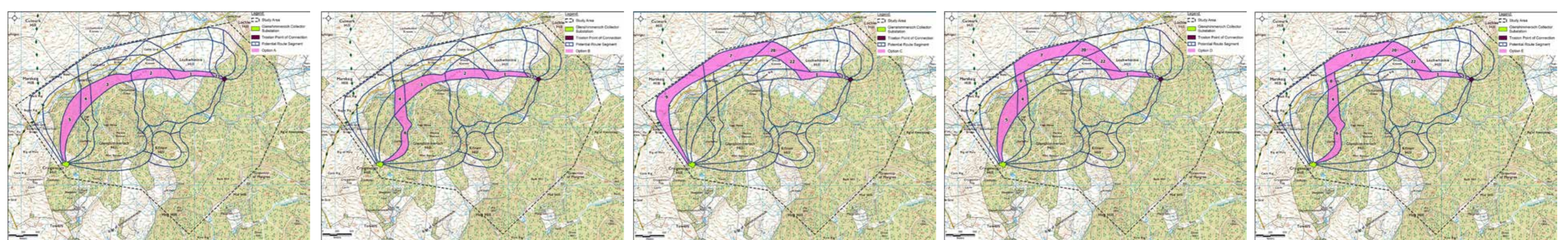
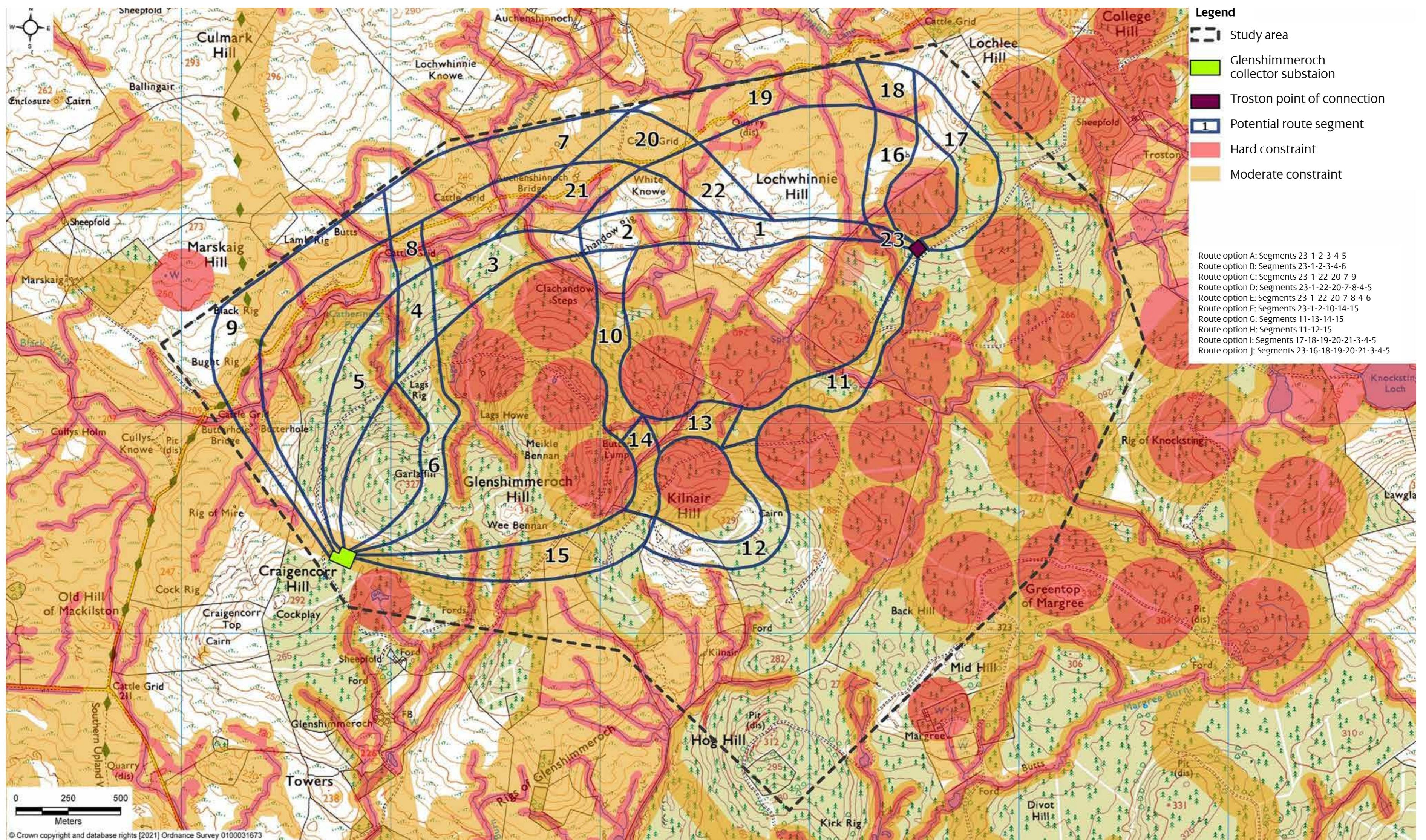
A combined constraints map was generated showing the environmental, planning and technical constraints within the study area. Areas indicated in **red** were identified as high sensitivity or hard constraints, to be avoided, while **amber** constraints were identified as areas where the OHL infrastructure could be routed with caution, and where impact mitigation would be required.

Red infrastructure constraints included the topple heights of the planned or consented wind turbines at the proposed Troston Loch Wind Farm, Glenshimmeroch Wind Farm and adjacent Margree Wind Farm, as well as steep slopes. Red environmental constraints included residential properties, certain heritage assets, deep peat, private water supplies and watercourses (in no particular order of importance). The presence of the Southern Upland Way within the study area also influenced the route options appraisal as it is a nationally significant long-distance core path, Scotland's first coast-to-coast route.



Route options

To allow identification of a preferred route, an appraisal of the identified route options was undertaken. The purpose of the appraisal is to identify the relative potential of each route option to accommodate an overhead line, including a focus on potential landscape and visual impacts of the options as directed by Holford Rules 3 to 7. Each route option was subjected to an environmental and technical appraisal, where the goal was to identify a preferred route. Owing to the nature of the site and its constraints, several route segments were identified that could be combined in various ways to form several route options for appraisal.



Route A

Route B

Route C

Route D

Route E



Route F

Route G

Route H

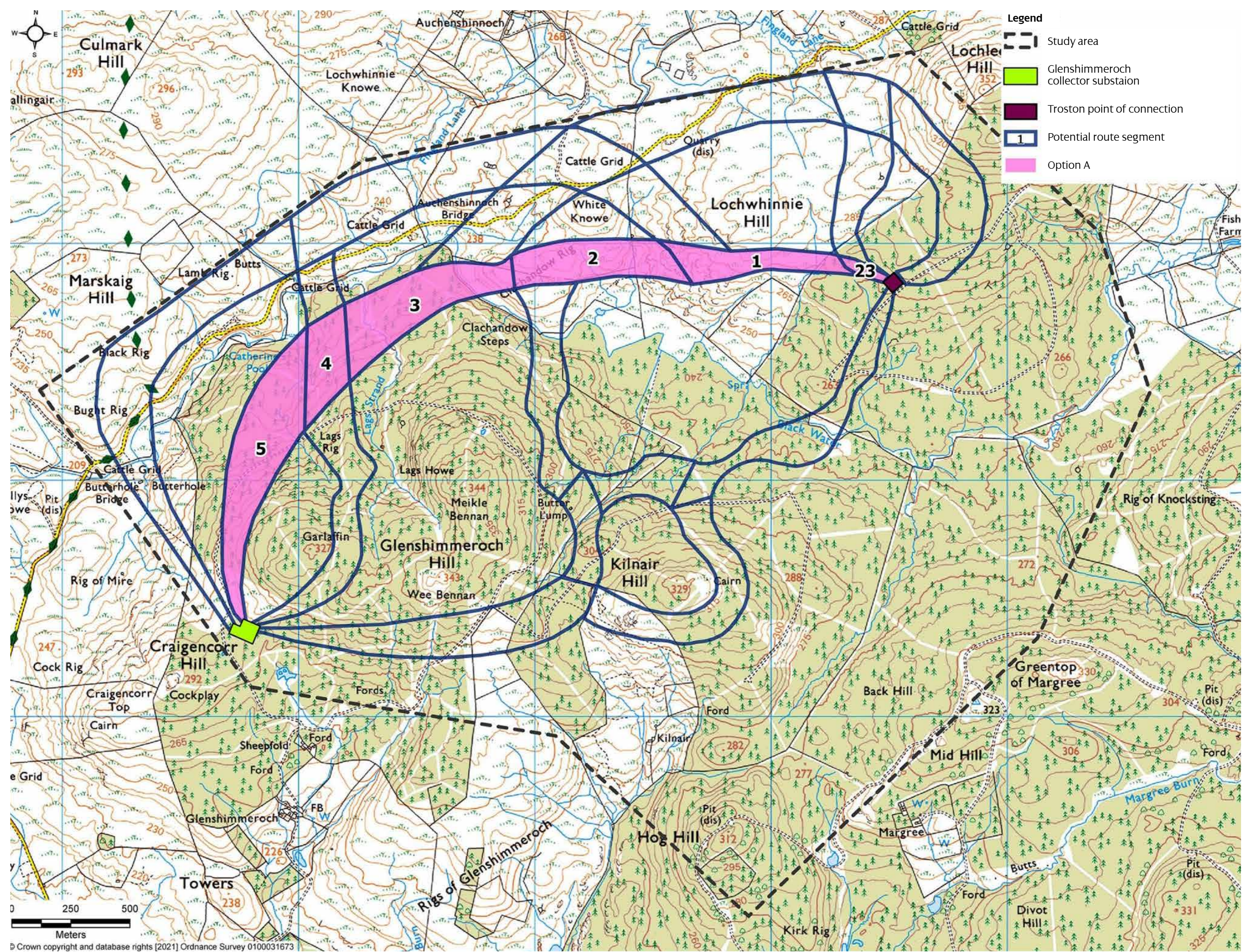
Route I

Route J



Preferred route

The preferred route on balance of considerations is Route Option A.



Thank you

Thank you for taking the time to consider the information presented. You can obtain further information on the proposed design from our website. If you are unable to access the information online, you can request paper copies by calling **07516 461129** and leaving your name and address.

We value community engagement and are always keen to listen to what people have to say, as this feedback often plays an important part in the design evolution of a project. We invite you to submit your comments – please contact us by **24 October 2022** by:

- Completing the online feedback form/questionnaire: www.spenergynetworks.co.uk/pages/troston_loch_wind_farm_connection.aspx
- Post to: **Troston Overhead Line Grid Connection Project, Land and Planning Team, SP Energy Networks, 55 Fullarton Drive, Glasgow, G32 8FA** or
- Email: trostonprojectmanager@spenergynetworks.co.uk



What happens next?

Following this consultation, it is possible that some changes to the preferred route will be suggested as a result of the emergence of new information. The suggested changes would be evaluated and, if necessary, subjected to additional consultation.

Once we have received all comments on the preferred route for the proposed Troston overhead line (OHL) grid connection, we will confirm the location of the proposed route.

An Environmental Impact Assessment (EIA) screening request will be submitted to the Scottish Ministers to determine whether an EIA will be required for the planned Troston OHL grid connection.

The final OHL route will be submitted to the Scottish Government as part of an application for Section 37 consent under the Electricity Act 1989.

Please note that any comments made during this Consultation Stage are not representations to The Scottish Government Energy Consents Unit, who will determine any subsequent application for consent. Following the submission of the Section 37 Application, interested parties will have the opportunity to make representations to the Scottish Government on these proposals.



Thank you for participating in this proposal, your input is valued and your contribution is appreciated.