

Glenmoriston Substation Works Consultation Document

November 2022

REF: PT793



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GLOSSARY

Term	Definition
Amenity	The natural environment, cultural heritage, landscape and visual quality. Also includes the impact of SSEN Transmission plc's works on communities, such as the effects of noise and disturbance from construction activities.
Annex I Habitat	A habitat under the body of surface water, defined under the EU Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.
Area of Search	A broad geographical area within which possible sites might be capable of identification within approximately 5 km of the required connectivity point.
Biodiversity Net Gain (BNG)	Biodiversity Net Gain (BNG) is a process which leaves nature in a better state than it started.
Birds of Conservation Concern (BoCC)	The population status of birds regularly found in the UK, Channel Islands and the Isle of Man is reviewed every five years to provide an up-to-date assessment of conservation priorities.
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.
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 Development or development.
Grid Transformers (GT)	Transformer to supply an alternating voltage to a grid circuit or circuits. Transformers are used to change voltages and currents in transmission lines.
Groundwater Dependent Terrestrial Ecosystems (GWDTE)	Groundwater Dependent Terrestrial Ecosystems (GWDTE) are wetlands which critically depend on groundwater flows or chemistries.
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities.
Herpetofauna	Reptiles and amphibians of a particular region, habitat, or geological period.
Kilovolt (kV)	One thousand volts.
Listed Building	Building included on the list of buildings of special architectural or historic interest and afforded statutory protection under the 'Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997' and other planning legislation. Classified categories A – C(s).
Micrositing	The process of positioning individual structures to avoid localised environmental or technical constraints.
Mitigation	Term used to indicate avoidance, remediation or alleviation of adverse impacts.

Term	Definition
Overhead line (OHL)	An electric line installed above ground, usually supported by lattice steel towers or poles.
Plantation Woodland	Woodland of any age that obviously originated from planting.
Riparian Woodland	Natural home for plants and animals occurring in a thin strip of land bordering a stream or river.
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 Protection Area (SPA)	An area designated under the Wild Birds Directive (Directive 74/409/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 plc works.
Study Area	The area within which the appraisal of the substation options takes place. <ul style="list-style-type: none"> Detailed Study Area - An area extending approximately 1 km from the substation Site Options within which the study takes place. Wider Study Area - An area extending approximately 5 km from the substation Site Options within which the study takes place.
Substation	A node on the network to allow safe control of the electricity network. This could include convergence of multiple circuits, transformation of voltage or other functions to maintain and operate the electricity network.
Substation Site Area	Site area identified as necessary to deliver all the substation infrastructure requirements e.g. platform, access tracks, temporary construction area, drainage including SUDS, landscaping.
Substation Platform Area	Area of the stone platform required for the HV infrastructure.
Terminal Structure	A structure (tower or pole) required where the line terminates either at a substation or at the beginning and end of an underground cable section.
The National Grid	The electricity transmission network in the Great Britain.
Volts	The international unit of electric potential and electromotive force.

Term	Definition
Water Framework Directive (WFD)	The Water Framework Directive 2000/60/EC is an EU directive which commits European Union member states to achieve good qualitative and quantitative status of all water bodies (including marine waters up to one nautical mile from shore)

PREFACE

This Consultation Document has been prepared by WSP UK Ltd. on behalf of Scottish and Southern Electricity Networks (SSEN Transmission) to seek comments from all interested parties on the site selection of a proposed substation, as part of the Glenmoriston Substation Improvement Works.

The Consultation Document is available online at the project website:

<https://www.ssen-transmission.co.uk/projects/project-map/glenmoriston-gt-replacement/>

Two consultation events will be undertaken in 2023. The first is anticipated to take place in February 2023 and the second in Spring / Summer 2023. Both will be undertaken in person at locations which are yet to be determined.

Comments on this Consultation Document should be sent to:

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All comments are requested by **16th December 2022**.

As part of the design process there will be further opportunity in 2023 to comment on the preferred option prior to submission of the consent application.

EXECUTIVE SUMMARY

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 operating as Scottish Hydro Electric Transmission plc, holds a license under the Electricity Act 1989 to develop and maintain an efficient, co-ordinated and economical system of electricity transmission.

SSEN Transmission is proposing to replace the 132 / 11 kV grid transformer (GT) at the existing Glenmoriston substation, located next to Glenmoriston Hydroelectric power station, adjacent to the A887, approximately 6 km west of Invermoriston in The Highland Council region. The Glenmoriston Substation Works involves replacement of the existing grid transformers. The existing grid transformer was manufactured and installed in 1998, however a recent condition assessment has highlighted the transformer is showing signs of degradation and that there is now a need for the transformer to be replaced.

Site Options were identified which provided feasible areas for the Substation Grid Transformer to be developed, and from which Preferred Site Options can be identified to be taken to the next stage of site selection. The preferred Site Options will be those that provide an optimum balance of environmental, technical and cost factors. This Consultation Document invites comments from all interested parties on the Site Options assessment and Preferred Site Options to be taken to the next stage of site selection.

Moving forward, confirmation of the Preferred Site Option will be informed by this consultation exercise and second anticipated in early 2023, together with feedback from the public events. Subject to the outcome of the consultation, the Preferred Site Option will then be referred to as the Proposed Site and will be taken forward for detailed design. The outcome of the site selection process will be a development for which consent under the Town & Country Planning Act will be sought. Further public and stakeholder consultation will be undertaken to present the proposals ahead of submitting a planning application.

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

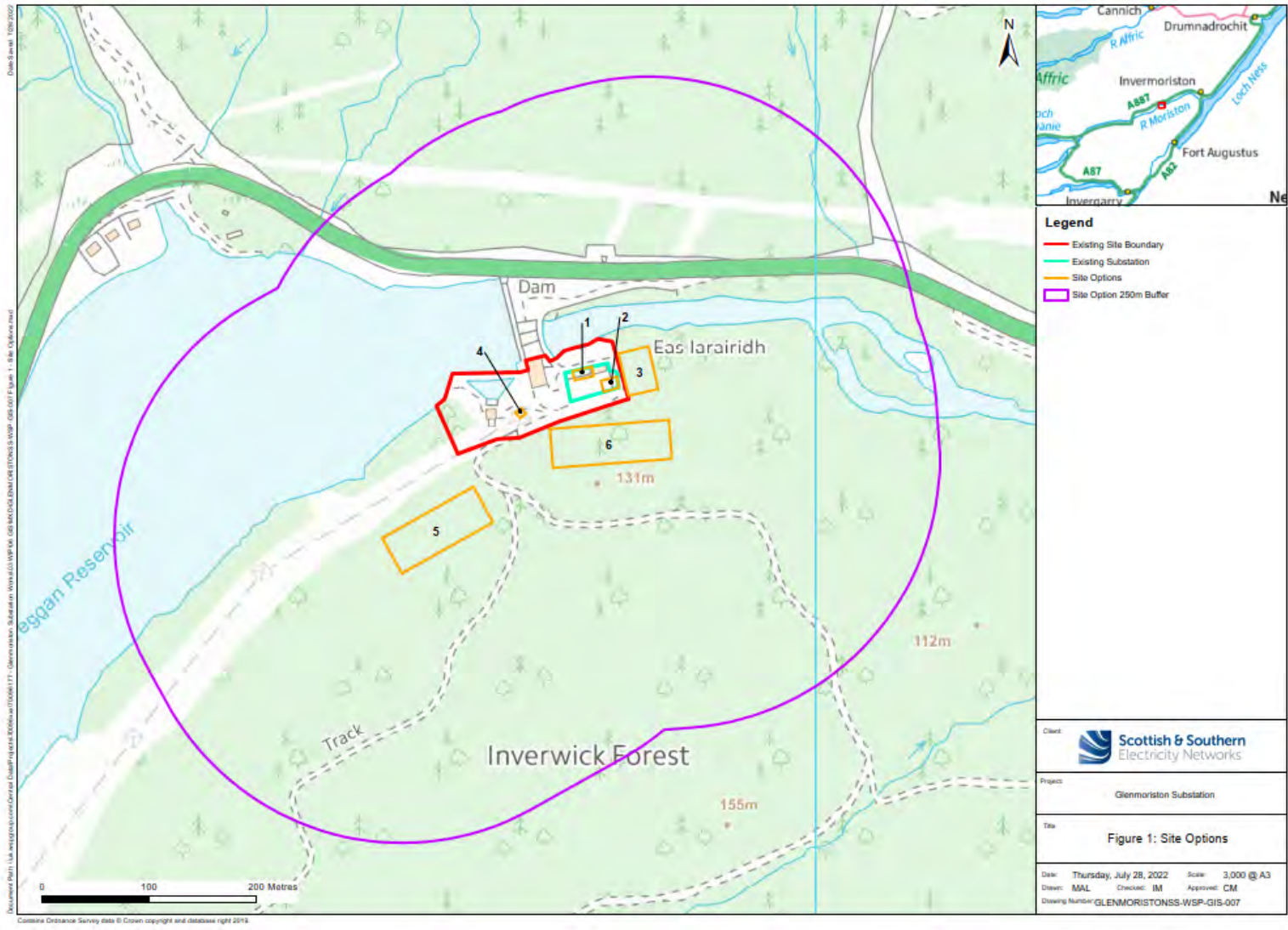
- Has the requirement for the project been clearly explained?
- Based on the information provided do you have a preferred site location?
- Are there any additional factors, or environmental features that you consider important and should be brought to the attention of the project team?

1. INTRODUCTION

1.1 Purpose of Document

- 1.1.1 This Consultation Document invites comments from all interested parties on the proposed Glenmoriston Substation Grid Transformer (GT). The project is to replace the 132 / 11 kV grid transformer at the existing Glenmoriston substation, located next to Glenmoriston Hydroelectric power station.
- 1.1.2 The existing grid transformer and any existing associated equipment to be replaced will be removed. The development, depending on the final option progressed, may also include upgrade of existing / new access tracks and temporary site compounds and construction laydown areas.
- 1.1.3 Given this project is Substation Works, this Consultation Document has followed the procedures within Scottish and Southern Electricity Networks (SSEN) Transmission's guidance on 'Substation Site Selection Procedures for Voltages at or above 132kV' (July 2022). Within this document, potential new grid transformer sites are referred to interchangeably as 'Site Options'.
- 1.1.4 This document describes the Substation Grid Transformer Site Options, the Site Options appraisal undertaken and the identification of the Preferred Site Options to progress to detailed site selection. Comments are now sought from statutory authorities, and key stakeholders in this regard.
- 1.1.5 All comments received will inform further consultation of the preferred Site Options.

Figure 1: Site Option Locations



1.2 Document Structure

1.2.1 This report is comprised of six sections as follows:

- 1: Introduction – setting out the purpose of the Consultation Document;
- 2: The Proposals – describes the need for the project and provides an overview of the proposals;
- 3: Site Selection Process – sets out the process that has been applied in the selection and appraisal of Site Options;
- 4: Description of the Site Options– describes the Site Options that have been identified, the baseline environmental and engineering conditions and provides a comparative appraisal of the grid transformer Site Options;
5. Baseline Conditions and Comparative Appraisal - summarises the baseline and key constraints within the Area of Search and analyses each Site Option against a series of environmental, engineering and cost considerations to arrive at a Preferred Grid Transformer Site; and
- 6: Consultation on the Proposals – invites comments on the site selection process and identification of the Preferred Grid Transformer Site; and outlines the next steps following the consultation events.

1.3 Next Steps

- 1.3.1 High level, desk based assessments have already been undertaken which supported the detailed selection process with the objective of identifying Preferred Grid Transformer Site Options to progress to the next stage of site selection. This information has informed this Consultation Document which is seeking comments from statutory consultees and other key stakeholders on the Preferred Grid Transformer Site Options put forward.
- 1.3.2 As detailed in the preface of this document, two consultation events will be undertaken in 2023. Both will be undertaken in person at locations which are yet to be determined. The responses received from these consultation events, and those sought from statutory consultees and other key stakeholders, will inform further consideration of the Site Options put forward and the confirmation of the Preferred Grid Transformer Site Option.
- 1.3.3 A Report on Consultation will then be produced which will document the consultation responses received, and the decision made in light of these responses.
- 1.3.4 Following the identification of the Preferred Grid Transformer Site, further survey work and technical assessments will be undertaken to support the detailed selection process with the objective of identifying a proposed site which can be taken forward into the consenting, and if required, Environmental Impact Assessment (EIA) processes.

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 operating as Scottish Hydro Electric Transmission plc, 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 Glenmoriston Substation Works, referred to as the Proposed Project, involves replacement of the existing GT. The existing GT was manufactured and installed in 1998, however a recent condition assessment has highlighted the transformer is showing signs of degradation and that there is now a need for the transformer to be replaced. No other condition related issues have been identified at this substation. Much of the 132 kV plant and connections has been installed in the past four years during the works to connect Bhlaraidh wind farm in 2018. It is anticipated the proposed work can be carried out without necessitating an outage on the Bhlaraidh Wind farm circuit, which connects to the grid via the 132kV busbar at Glenmoriston substation.

2.1.3 The GT replacement is required in close proximity to Glenmoriston power station to minimise electrical losses and where possible maintain the use of existing assets. An in-situ replacement of the GT may not be feasible due to modern design and safety specifications and the required length of generator outage time at the nearby power stations of Glenmoriston and Livishie.

2.2 Proposal Overview

2.2.1 The following elements are included as a part of the proposed project:

- Replacement of the existing grid transformer;
- Associated equipment to support the new grid transformer;
- Landscaping and biodiversity requirements; and
- Permanent access requirements to the site will be dependent on the Site Option chosen.

Construction Activities

2.2.2 To facilitate the proposed project, the main construction elements associated with the development are anticipated to include:

- Establishment of a temporary construction compound and upgrade of existing or new access tracks;
- Establishment of suitable laydown areas for materials;
- Ground works to achieve a level area at the site (including tree felling and stump removal);
- Removal of existing GT and associated equipment;
- Delivery of components and materials to site;
- Installation of replacement GT and associated equipment;

- Remedial works to reinstate the immediate vicinity, and any ground disturbed to pre-existing condition; and
- Inspections and commissioning.

Programme

2.2.3 It is anticipated that construction of the project would take approximately 18 months, following the granting of consents, although detailed programming of the works would be the responsibility of the Principal Contractor in agreement with SSEN Transmission.

Access Track Upgrade / Installation

2.2.4 A new access track would likely be required depending on the preferred Site Option. Temporary access tracks may be required for the construction of the Proposed Project. Existing access track would require to be upgraded. Access tracks are assumed to be formed with stone and permanent access tracks may require to be finished with a tarmac surface.

2.3 Biodiversity Net Gain

2.3.1 Biodiversity Net Gain (BNG) is a process which aims to leave development sites in a better state for nature than pre-development. Although it is an internationally recognised process and tool within the development industry, it is not a term that is widely used or implemented in Scotland¹. A small handful of businesses are making voluntary commitments to incorporating BNG into their projects, including SSEN Transmission.

2.3.2 SSEN Transmission is committed to protecting and enhancing the environment by minimising the potential impacts from its construction and operational activities on biodiversity. SSEN Transmission 's published commitment for new infrastructure projects is to:

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

2.3.3 SSEN Transmission has developed a BNG toolkit for use across the business, their consultants and contractors, to enable a full assessment of BNG to ensure it meets the needs of SSEN Transmission's Scottish developments. It is an efficient and effective method for demonstrating whether development projects have been able to maintain or increase the biodiversity value of a development site after construction works.

¹ CIEEM. 2019. Biodiversity Net Gain in Scotland. CIEEM Scotland Policy Group. <https://cieem.net/wp-content/uploads/2019/06/Biodiversity-Net-Gain-in-Scotland-CIEEM-Scotland-Policy-Group.pdf>

2.3.4 BNG does not apply to statutory designated sites or irreplaceable habitats (e.g. blanket bog)². The project is required to attain a No Net Loss as a minimum in line with SSEN Transmission current commitments.

² CIRIA, CIEEM, IEMA (2019). Biodiversity Net Gain: Good practice principles for development, A Practical Guide. <https://cieem.net/wp-content/uploads/2019/02/C776a-Biodiversity-net-gain.-Good-practice-principles-for-development.-A-practical-guide-web.pdf>

3. SITE SELECTION PROCESS

3.1 Background

3.1.1 The approach to site selection was informed by SSEN Transmission's guidance on 'Substation Site Selection Procedures for Voltages at or above 132kV³' (July 2022). The guidance sets out the approach to identification and selection of new substation sites (referred to as 'Converter Station Sites' and/or 'Site Options' in this document; see Paragraph 1.1.2 above). The guidelines are developed based on Holford Rules principles, industry best practice and lessons learned.

3.1.2 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.

3.1.3 The guidance aims to balance these environmental considerations with technical and economic considerations throughout the site selection process.

3.1.4 The guidance splits the principal site selection into stages, as follows:

- Stage 0: Pre-Site Selection Activities – Strategic Connections Options Appraisal
- Stage 1: Initial Site Screening
- Stage 2: Detailed Site Selection
- Post Site Selection Activities – Consenting Process

3.1.5 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 report focusses on Site Options considered as part of **Stage 1: Initial Site Screening**. **The project is moving into Stage 2: Detailed Site Selection** and will be informed by consultation responses to this report.

3.1.6 In consideration of the principles outlined in the guidance document, the method of identifying preferred Site Options in this study has involved the following 4 key tasks:

- Identification of the baseline situation;
- Identification of Site Options;
- Environmental, economic and technical appraisal of Site Options; and
- Identification of preferred sites to detailed site selection.

³ Scottish and Southern Electricity Networks (November 2020) Substation Site Selection Procedures for Voltages at or above 132 kV

3.2 Area of Search

3.2.1 The area of search (AoS) is a broad geographical area within which possible sites might be capable of identification within approximately 6 km of the required works.

3.2.2 The Site Options (see **Figure 1**) from this initial process were provided to WSP in order to conduct a Stage 1 Initial Site Screening exercise.

3.2.3 The Stage 1 exercise considered the following:

- The above AoS, bearing in mind that no option will take the development north of the A887; and
- Additional searching for designated sites for geese within 20 km

3.2.4 The Stage 1 Initial Site Screening process has also utilised the following study areas:

- Detailed Study Area - An area extending approximately 250 m from the Site Options; and
- Wider Study Area - An area extending approximately 6 km from the Site.

3.2.5 The Site Options were provided to WSP; these were then assessed in the Stage 1 Initial Site Screening report. The Stage 1 report concluded six potential Site Options of which two Site Options were identified for further assessment in the Stage 2 Detailed Site Selection report. These six Site Options are referred to as Option 1 - Option 6 and presented on **Figures 2.1 to 2.6**.

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 Area of Search, and its adjacent context. This has involved the following activities:

- Identification of environmental designated sites and other constraints, utilising Geographical Information Systems (GIS) datasets available via the NatureScot Site Link⁴ and Scotland's Environment webmap⁵;
- Identification of archaeological designations and other recorded sites, utilising GIS datasets available via Historic Environment Scotland and the Historic Environment Record^{6,7};
- Scottish Environment Protection Agency (SEPA) Water Classification Hub⁸ and interactive Flood Risk Mapping⁹;

⁴ NatureScot. Site Link. [online] Available at: <https://sitelink.nature.scot/home>

⁵ <https://map.environment.gov.scot/sewebmap/>. Accessed 14.10.21.

⁶ Historic Environment Scotland Data Services. *Portal*. [online] Available at: <http://portal.historicenvironment.scot/>

⁷ Royal Commission on Ancient and Historical Monuments of Scotland. *Canmore*. [online] Available at: <http://canmore.rcahms.gov.uk/>

⁸ Scottish Environmental Protection Agency. *SEPA Water Classification Hub* [online] Available at: <https://www.sepa.org.uk/data-visualisation/water-classification-hub/>

⁹ Scottish Environmental Protection Agency. *SEPA Flood Maps* [online] Available at: <http://map.sepa.org.uk/floodmap/map.htm>

- Review of the Highland Council’s Highland-wide Local Development Plan¹⁰ 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 Area¹¹;
- Review of Native Woodland Survey of Scotland and Ancient Woodland Inventory data sets¹²;
- 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 etc; and
- Extrapolation of OS Vectormap GIS data to identify further environmental constraints including locations of watercourses and waterbodies, and roads classifications.

Site Visits

It is understood that an initial walkover was undertaken by the engineering team to get the long list options. Environmental site visits are ongoing and will inform the Stage 2: Detailed Site Selection.

3.4 Site Identification and Selection Methods

3.4.1 Six potential Site Options were identified by SSEN Transmission within the AoS. Initial site screening was undertaken for the GT which involved desktop exercises together with a site walkover carried out by SSEN Transmission.

3.4.2 In accordance with the steps outlined in SSEN Transmission’s approach to substation site selection (July 2022) and having regard to the Holford Rules principles, the following considerations have been taken into account as far as is practicable at this stage and will be considered in more detail during subsequent assessments:

- Respect areas of high amenity value and take advantage of the containment of natural features such as woodland, fitting in with the landscape character of the area;
- Take advantage of ground form with the appropriate use of site layout and levels to avoid intrusion into surrounding areas;
- Use space effectively to limit the area required for development, minimising the effects on existing land use and rights of way;
- Alternative designs of the substation may also be considered, e.g. ‘enclosed’, rather than ‘open’, where additional cost can be justified;
- Consider the relationship of substation structures with background and foreground features, to reduce the prominence of structures from main viewpoints; and

¹⁰ v Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan

¹¹ 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>

¹² Available at data.gov.uk

- When siting the substation take account of the effects of line connections that will need to be made.

3.4.3 In addition, principles of BNG and the mitigation hierarchy have been considered during the site selection process and will continue to inform detailed site design decisions as the project progresses.

3.5 Appraisal Method

3.5.1 Following the process defined in the 'Substation Site Selection Procedures for Voltages at or above 132kV' the appraisal of Substation Site Options has involved systematic consideration against the topic areas included in **Table 3.1**.

Table 3.1: Topic Areas Considered


Category	Sub-Topic
Environmental Parameters	
Natural Heritage	Designations
	Protected Species
	Habitats (including BNG)
	Ornithology
	Hydrology / Geology
Cultural Heritage	Designations
	Cultural Heritage Assets
Landscape and Visual	Designations
	Landscape Character
	Visual
Land Use	Agriculture
	Forestry and Woodland
	Recreation
Planning	Policy
	Proposals
Engineering	
Connectivity	Existing circuits / network
	Future development possibilities
	Interface with SSE Distribution and Generation
	DNO Connection
Footprint Requirements	Technology
	Adjacent Land Use
	Space Availability
Hazards	Unique Hazards
	Existing Utilities
Ground Conditions	Topography
	Geology – Superficial Deposits (peat)
	Geology (site testing to verify properties)
Environmental Conditions	Elevation
	Salt Pollution
	Flooding

Category	Sub-Topic
	Carbon Footprint
	SF6
	Contaminated Land
	Noise (proximity to dwellings / residential properties)
Construction Access	Substation Access Road
	Transformer Delivery Route
Operation and Maintenance	Access

RAG Rating

3.5.2 A Red-Amber-Green (RAG) rating has been applied to each topic area within each section, indicating potential constraints to development. A high-level convention for assigning RAG ratings is shown in **Table 3.2** below. More detailed guidance for topic specific considerations is included in Annex 8 of SSEN Transmission's substation site selection guidelines.

Table 3.2: 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

Identification of a Preferred Site Option

3.5.3 Following review of the Substation Site Options, these environmental and engineering topics have been considered in combination to arrive at the Preferred Site Options. The overall objective throughout the appraisal of site options has been to take full consideration of all factors to minimise any potential adverse impacts on the environment and to ensure the Preferred Site Options are technically feasible and cost effective. Potential impacts which concern the population have also been considered under the umbrella of the environment and environmental conditions, e.g. potential impacts on visual amenity, recreational receptors, noise (proximity to dwellings) and flood risk.

4. DESCRIPTION OF SITE OPTIONS

4.1.1 This section of the report describes each of the Site Options identified for high-level appraisal (see **Figures 1, Figure 2.1** and **Figure 2.2**). Site Options have been identified to allow for subsequent refinement of the proposals.

4.1.2 The Site Options assessed are listed below (in order of proximity to Glenmoriston Substation) and described in the following section:

- Option 1: This option would involve in situ replacement of the GT within the boundaries of the existing substation. The existing HV infrastructure would remain as is. There are, however, constraints in that the existing bund on site does not meet modern design specifications; there is limited space in the existing building for switching controls and other equipment; and a long outage of the connection of Glenmoriston and Livishie hydro generation units would be required.
- Option 2: This option would involve a new GT being installed at the south-east corner of the substation and would allow sufficient fire damage clearance in all directions. A new transformer platform would be required and existing HV equipment would be rearranged. There would still be limited space for switching/control equipment and battery room, and an outage would still be required.
- Option 3: This would be a new GT immediately north-east of the existing GT. The area is mostly flat ground and would give more space for a new building to the necessary specifications together with offline installation. This option would involve a new GT and all associated infrastructure and equipment in a new platform with very limited use of existing infrastructure in the existing substation compound. Additional land would need to be acquired and there is a presence of tall established trees.
- Option 4: This option is immediately adjacent to the existing OHL per Figure 2.4 and offers more space for a new building and a reduced environmental impact, together with offline installation. It would include a new GT and the minimum of associated ancillary equipment, with reliance, instead, on associated equipment in the existing substation compound. It is on elevated ground and there is limited space close to the existing dam. Tall established trees surround the area.
- Option 5 and Option 6: These options both involve a GT and all associated infrastructure and equipment in a new platform with very limited use of existing infrastructure in the existing substation compound. The options would be distinctly separate from the existing substation. Both options would require underground cable runs and acquisition of land. The ground is elevated and wooded with established commercial (Option 5) and native (Option 6) trees. Options 5 and 6 would allow an offline build.

5. BASELINE CONDITIONS AND COMPARATIVE APPRAISAL

5.1.1 This section of the report describes the baseline and key constraints within the Study Area and the surrounding area, with a focus on those constraints relevant to the Site Options under consideration. This section makes reference to **Figure 3** which illustrates the various designations and environmental features discussed throughout.

5.1 Environmental Baseline

5.1.1 The site is located in a relatively remote area, adjacent to forestry, the Glenmoriston Estate and to the hydropower dam on the River Moriston. North of the river, which forms the northern boundary of the site, is the A887, the primary transport route in the area which links to the A82 north-east of the site. The nearest large settlement, Fort Augustus is over 20 km away by road.

5.1.2 The following environmentally designated sites or areas are present within the 6 km Area of Search itself (see **Figure 3**):

- River Moriston Special Area of Conservation (SAC), designated for primarily freshwater pearl mussel, with Atlantic salmon as an additional qualifying interest, adjacent to the Site Options;
- Levishie Wood Site of Special Scientific Interest (SSSI) designated for upland birch woodland, 4 km from the Site Options;
- Dundreggan Farm, a Scheduled Monument within 3 km of site;
- The closest Wild Land Area (WLA) is the Central Highlands WLA which lies over 5 km to the north-west of the AoS; and
- The Highland Council's Loch Ness and Duntelchaig Special Landscape Area (SLA) lies over 4 km from the Site Options, towards the south east and east of the AoS.

5.1.3 The River Moriston Special Area of Conservation SAC is designated for freshwater pearl mussel with Atlantic salmon as an additional qualifying interest and is immediately adjacent to the existing substation. Levishie Wood SSSI is designated for upland birch woodland and is c.4 km east of the Site Options. A large area of woodland listed on the Ancient Woodland Inventory (AWI) falls within the AoS.

5.1.4 The AoS is predominately made up of broadleaved and coniferous woodland habitat listed on the AWI, and some smaller areas of open heathland. In addition, a large stretch of riparian habitat intersects the AoS associated with the River Moriston. There is the potential for ground water dependent terrestrial ecosystems (GWDTE) within the AoS (mainly out with forested areas).

5.1.5 Woodland habitat within the AoS could provide foraging/resting opportunities for a number of protected species (badger, red squirrel, pine marten, bat species). Adjacent riparian zones offer suitable habitat for otter, as well as freshwater pearl mussel and Atlantic salmon for which the River Moriston SAC is designated. Proximity to the built structures of the existing substation provides the additional constraint of bat Potential Roosting Features (PRFs) within buildings. Additional species of interest includes reptiles (adder, slow worm, common lizard). These prefer heterogeneous habitats with a mosaic of open and covered areas.

- 5.1.6 Proximity to the existing substation buildings may provide a baseline level of disturbance that bird species have become habituated to. However, an inactive osprey nest is present within vicinity of the existing substation. In addition, habitats within the AoS present have potential to support Schedule 1 species (such as crossbill) and numerous different breeding BoCC¹³ species (including starling, redwing, mistle thrush, grey wagtail). Nesting birds will utilise adjacent woodland, scrub and riparian habitat.
- 5.1.7 All Site Options lie within the River Moriston Catchment¹⁴. Site Options 1 and 3 are located within 20 m of the 'River Moriston - Loch Ness to Dundreggan Dam' (ID: 23381) at the closest point, while Site Option 2 is within 40 m. Site Option 5 and 6 are located within 60 m of the 'River Moriston - Dundreggan Dam to Bun Loyne' (ID: 23382), and Site Option 4 is within 40 m. The River Moriston - Loch Ness to Dundreggan Dam and the River Moriston - Dundreggan Dam to Bun Loyne were classified by SEPA, under the Water Framework Directive (WFD), as having an overall status of 'Moderate ecological potential' and 'Good ecological potential', respectively in 2020. Both are designated as a heavily modified water bodies on account of physical alterations that cannot be addressed without a significant impact on water storage for hydroelectricity generation.
- 5.1.8 All Site Options are underlain by the Northern Highlands Groundwater Body (ID: 150701) which was designated as having a status of 'Good' in 2020. The online BGS hydrogeology¹⁵ map shows that all Site Options are underlain by the Loch Eil Group, Low Productivity Aquifer. This aquifer is described as having small amounts of groundwater in the near surface weathered zone and secondary fractures.
- 5.1.9 The NatureScot SiteLink¹⁶ shows that all Site Options are within 100 m of the River Moriston Special Area of Conservation (SAC), designated due to the presence of freshwater pearl mussel with additional interest in Atlantic salmon. There are no other designated sites within 1 km of the Site Options.
- 5.1.10 The 'Scottish Government Drinking Water Protected Areas (DWPA) – Scotland river basin district map'¹⁷ indicates that the Site Options are not within DWPA (Surface Water), however the Site Options are within a DWPA (Groundwater). Highland Council data indicates four PWS within 1 km of the Site Options. Two PWS, Dundreggan Power Station and Glenmoriston Power Station are located within the Site Boundary.
- 5.1.11 SEPA Flood Maps indicate that Site Options 1 and 2 are situated within a low likelihood of flood risk zone, meaning that each year this area has a 0.1% chance of flooding. The rest of Site Options are out with SEPA flood zones. Flood risk assessment is assumed to be an engineering consideration and therefore undertaken by SSEN Transmission as per the site

¹³ Stanbury *et al.* (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. Accessed at: https://britishbirds.co.uk/sites/default/files/BB_Dec21-BoCC5-IUCN2.pdf

¹⁴ Water Classification Hub, SEPA. Available at: <https://www.sepa.org.uk/data-visualisation/water-classification-hub/>

¹⁵ British Geological Survey, GeolIndex Hydrogeology. Available at: http://mapapps2.bgs.ac.uk/geoindex/home.html?layer=BGSHydroMap&_ga=2.86978136.1700146680.1643637192-96331536.1635767367

¹⁶ NatureScot SiteLink Interactive Map. Available at: <https://sitelink.nature.scot/map>

¹⁷ Scottish Government Drinking Water Protected Areas – Scotland river basin district: maps. Available at: <https://www.gov.scot/publications/drinking-water-protected-areas-scotland-river-basin-district-maps/>

selection guidance. There is the potential for the presence of GWDTE in the area; however, the predominant sources of water in this location are anticipated to be rainfall and the adjacent influence of the River Moriston.

5.1.12 For all site options there are no World Heritage Sites, Scheduled Monuments, Inventory Garden & Designed Landscapes or Inventory Battlefields within the Inner Study Area or Outer Study Area. For all Site Options there are no Listed Buildings, non-inventory Garden and Designed Landscapes, and Conservation Areas are located within the Inner Study Area or Outer Study Area. There are no Undesignated Assets located within the Inner Study Area. There are a number of undesignated heritage assets located within 3 km of all Site Options. These relate to prehistoric funerary and ritual activity to post-medieval agriculture and settlement activity.

5.1.13 The closest undesignated heritage asset is Glenmoriston Power Station (Canmore ID312948) and is located between 25 to 70 m to the north-west of the Site Options. A single Scheduled Monument is located within 3 km of all Site Options, Dundreggan Farm, motte (SM11875). The nearest Listed Building is located circa 5.5 km to the south-west.

5.1.1 The AoS does not lie within any national or local landscape designations. The closest National Scenic Area (NSA) is Glen Affric, which lies over 4 km to the west and north west of the AoS. The closest WLA is the Central Highlands WLA which lies over 5 km to the north west of the AoS. At a local level, The Highland Council's Loch Ness and Duntelchaig Special Landscape Area (SLA) lies within the south of the AoS, but due to intervening topography it would have no intervisibility with the Site Options. The local character of the Proposed Project is defined by the narrow wooded glen of the River Moriston, backed by the rugged moorland hills to the south and rocky moorland plateau to the north. Generally a remote area with limited inhabitants, but the immediate area around the Site Options is characterised by the existing energy infrastructure. This includes the power station, dam, existing substation, and OHL which lies along the southern side of the glen. The A887 is another defining feature of the landscape here, as the main access along the glen, lying close to the north side of the river within the AoS.

NatureScot's Scotland Landscape Character Assessment¹⁸ includes the following Landscape Character Types (LCTs) within the AoS:

- Wooded Glen (Inverness) LCT 226;
- Rocky Moorland Plateau (Inverness) LCT 222; and
- Rugged Massif (Inverness) LCT 220.

5.1.2 There are no core paths, known public rights of way or national cycle network routes within 500 m of any of the Site Options. Fishing, stalking and driven shooting activities are undertaken on the Glenmoriston estate within the AoS for the Site Options. The River Moriston is also commonly used for white water rafting and other recreational water activities.

5.1.1 The enclosed character of the wooded glen will limit the number of people with potential intervisibility with the AoS. There are no residents in close proximity – the nearest are at Bhlaraidh over 2 km to the north east, and at Dundreggan, over 2 km to the south west

¹⁸ <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

along the A887. Sensitive visual receptors in the AoS will therefore be limited to users of the A887, walkers within the surrounding woodland and hills and recreational receptors on the River Moriston.

5.1.2 The AoS is located within Class 6.2 agricultural land, as defined by the Macaulay Land Use Research Institute¹⁹. Class 6.2 agricultural land is classified as land capable of use as rough grazings with moderate quality plants and is not considered to be prime agricultural land. The area is largely characterised by woodland, the AoS is located within Glenmoriston Forestry Plan Boundary. Site Options 1, 2, 4 and 5 are located within a larger area of Low Impact Silvicultural Systems (LISS)²⁰ area which is a type of woodland management which helps to increase species and structural diversity. This type of forestry management normally causes less rapid change to the landscape and to the physical environment than clear felling systems. It is, however, recognised that Options 1 and 2 are located within the substation boundary and Option 4 is located within the existing OHL wayleave route and therefore would not be subject to LISS. Site Option 3 is located within an area of woodland planned to be clear-felled in years 1 to 5 of the Glenmoriston Forestry Plan.

5.1.3 A review of planning applications within the last 12 months with a focus of 500 m from each of the Site Options has been undertaken. One planning application is located within 500 m of all Site Options:

- 21/05668/SCRE | Installation of an electric line above ground with a voltage of 132 kV between the proposed Bhlaraidh Extension Windfarm substation and the Fort Augustus Substation within Auchteraw | Land 365M SE Of Beith Mhor 1 Dundreggan Bungalows Glenmoriston.

5.2 Engineering Baseline

5.2.1 From a review of publicly available historical mapping²¹, the following historical land uses are noted in the context of potentially contaminative legacy land uses at each Site Option. Site Options 1 and 2 are located within the existing Glenmoriston Substation, within hardstanding, with woodland and open areas to the north, east and south. Mapping from 1843^{Error! Bookmark not defined.} indicates the area was previously woodland until 1957 when the substation was built. Mapping from 1949-1971^{Error! Bookmark not defined.} shows the substation and Dundreggan Reservoir. Site Option 3 is located approximately 10 m east of the existing Glenmoriston Substation and currently consists of woodland. Mapping^{Error! Bookmark not defined.} shows the area to be generally unchanged since 1843, with only minor changes in tree cover. Site Option 4 is located approximately 40 m west of the existing Glenmoriston Substation and consists of broken hardstanding, with woodland to the south. Mapping from 1843^{Error! Bookmark not defined.} indicates the area was previously unused woodland until 1957 when the substation is shown to the north east of this area.

¹⁹ The James Hutton Institute: Land Capability for Agriculture in Scotland [Land Capability for Agriculture in Scotland | Exploring Scotland | The James Hutton Institute](#)

²⁰ Scottish Forestry: Scottish Forestry Map Viewer
<https://scottishforestry.maps.arcgis.com/apps/webappviewer/index.html?id=0d6125cfe892439ab0e5d0b74d9acc18>

²¹ National Library of Scotland, Map Images. Available at: <https://maps.nls.uk/geo/explore/side-by-side/#>

- 5.2.2 Site Option 5 is located approximately 80 m to the west of the existing Glenmoriston Substation. The land is currently situated on woodland, 60 m south of the Dundreggan Reservoir. Mapping from 1843^{Error! Bookmark not defined.} indicates the land use was similar to Site Options 3 and 6 and consisted of woodland.
- 5.2.3 Site Option 6 is located approximately 15 m to the south of the existing Glenmoriston Substation. The land is currently situated on woodland. Mapping from 1843^{Error! Bookmark not defined.} indicates the land has remained generally unchanged.
- 5.2.4 The online BGS Viewer²² has shown the following:
- *Superficial Deposits* – Site Option 5 and Site Option 6 are underlain by Devensian till. There are no superficial deposits indicated in the remaining Site Option locations;
 - *Bedrock* – All Site Option locations are underlain by the Tarvie Psammite Formation – Psammite and Semipelite; and
 - *Boreholes* – there are three boreholes within 100m of the Site Options. The boreholes were undertaken in 1948 for the Dundreggan reservoir works, and they show a layer of peat underlain by gravel and boulders.
- 5.2.5 The National Soil Map of Scotland²³ indicates all Site Options are underlain by mineral podzols. The NatureScot Carbon and Peatland 2016 map²⁴ does not indicate peat soils underlying any of the Site Options. Peat will be considered within the engineering section of the comparative appraisal, as required.
- 5.2.6 The Coal Authority Online Interactive Viewer²⁵ has shown that the Site Options do not lie within a Coal Mine Reporting Area, nor are there any shafts or coal seams/workings.
- 5.2.7 A review of the Zetica online risk map²⁶ has shown that that the Site Options lie in an area that is at low risk from unexploded ordnance.

5.3 Comparative Appraisal

Environmental Appraisal

- 5.3.1 In terms of designations of Natural Heritage, all Site Options have the potential to adversely impact the Glenmoriston SAC during construction, given immediate proximity to the watercourse; however, Site Options 5 and 6 are the furthest from the watercourse and so impacts will be less likely and likely of lesser magnitude.
- 5.3.2 In term of habitats, Site Options 1, 2 and 4 are preferred due to the absence of any Annex 1 or ancient woodland habitats within these Site Options. Site Options 3, 5 and 6 are situated within areas listed on the AWI and as such are located within areas of

²² British Geological Survey, Geology of Britain. Available at: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

²³ The Hutton Institute: National Soil Map of Scotland. Available at: https://map.environment.gov.scot/Soil_maps/?layer=1&layer=1

²⁴ NatureScot: Carbon and Peatland map. Available at: https://map.environment.gov.scot/Soil_maps/?layer=1&layer=1#

²⁵ The Coal Authority, Interactive Map. Available at: <http://mapapps2.bgs.ac.uk/coalauthority/home.html>

²⁶ Zetica UXO, Risk Maps. Available at: <https://zeticauxo.com/downloads-and-resources/risk-maps/>

irreplaceable habitat. There is the potential for the presence of GWDTE within the AoS. However, all Site Options are either situated within existing infrastructure or areas of woodland and are therefore less likely to have areas of GWDTE. Habitats present across Site Options 3, 5 and 6 have the potential to support breeding territories of a number of different Schedule 1 or BoCC. The proximity of Site Options 1, 2, and 4 to the existing substation limit the likelihood of an ornithological constraint due to the baseline levels of disturbance. However, due to the presence of a historical osprey nest within vicinity of all Site Options, there is potential for disturbance if the nest is occupied during the construction phase of the Proposed Project.

- 5.3.3 With regard to protected species, Site Options 3, 5 and 6 are located within areas of woodland habitat. These areas provide suitable habitat for a number of protected species including badger, red squirrel, pine marten and bat species. There is also the potential for adjacent riparian zones to offer a suitable habitat for otter, freshwater pearl mussel and Atlantic salmon, although unlikely to be affected due to the distance of the Site Options from the River Moriston. Site Options 1, 2 and 4 are located within the existing substation infrastructure and require no habitat removal. However, it should be noted that existing buildings within the substation compound may support bats and their roosts.
- 5.3.4 In terms of geology and hydrology, all Site Options have the potential to compromise quality or quantity of surface waters or groundwaters, due to their proximity to the River Moriston. It is recommended that flood risk is further investigated in relation to all Site Options, as placement of critical infrastructure should avoid areas potentially subject to flood inundation or exacerbate flood risk to local receptors. Further mitigation may be applicable where locations remain subject to flood risk, considering any climate change predictions.
- 5.3.5 With regards to cultural heritage, no Site Options have the potential for direct or indirect impacts on any World Heritage Sites, Scheduled Monuments, Inventory Garden & Designed Landscapes or Inventory Battlefields. A single undesignated asset is located in proximity to all Site Options, Glenmoriston Power Station (Canmore ID312948). No adverse impacts are predicted on this asset from any Site Options. The potential does exist for the presence of subsurface archaeological remains within Site Options 3, 5 and 6 due to the lack of previous development. No Site Options have the potential for direct or indirect impacts on any Listed Buildings, non-inventory Garden & Designed Landscapes or Conservation Areas. The distance from assets and the presence of intervening screening from existing infrastructure, topography and tree cover.
- 5.3.6 With regards to landscape, no Site Options would lie within or have intervisibility with any national or local landscape designations, therefore no significant impacts.
- 5.3.7 For landscape character Site Options 1 and 2 would lie within the context of the existing substation and will be indiscernible from the existing infrastructure. They would have a negligible potential to affect landscape character. Site Option 3 would lie alongside the existing substation but would require the removal of woodland. This will slightly increase the perception of infrastructure within this area and result in loss of the characteristic native woodland which also provides screening within the wider landscape. (The details of this section of woodland and its contribution to character and screening will be reviewed at Stage 2 of the site selection). Site Option 4 would lie beside existing OHL within the context of the existing substation and dam. It would therefore not appear incongruous in the

landscape and would not result in any loss of woodland or planting. It is unlikely to have any potential for significant effects on landscape character. Site Options 5 and 6 lie to the south of the existing substation and OHL, within the wooded lower slopes of the glen, which is understood to be largely native woodland. Both Site Options would require a considerable area of tree removal for the substation and access, and necessary earthworks to provide a level platform. In addition to the removal of native woodland, the clearing required would open up the landscape in this area and increase the perception of infrastructure in this otherwise relatively remote landscape.

- 5.3.8 Site Options 1 and 2 would lie within the context of the existing substation and will be indiscernible from the existing infrastructure. They would have a negligible potential to create significant visual effects. Site Option 3 would lie alongside the existing substation but would require the removal of woodland. This woodland has value as a visual screen and removal may open up views to more of the existing substation and energy infrastructure for people using the A887 and walkers in the area (this would be confirmed during site survey at Stage 2). Site Option 4 would lie beside existing OHL within the context of the existing substation and dam. It would therefore not appear incongruous in any views of this area for people travelling on the A887 or walking in the area. It is unlikely to have any potential for significant effects on these visual receptors. Site Options 5 and 6 lie to the south of the existing substation and OHL within woodland on the hill slopes above the existing infrastructure. Both Site Options would require a considerable area of tree removal for the substation and access., and necessary earthworks to provide level platforms on the slopes. The clearing required would potentially open up views into this area, increasing the presence of infrastructure away from the valley floor and up on to the lower slopes in views for those travelling along the A887 and walkers in the area.
- 5.3.9 All Site Options are located within Class 6.2 agricultural land which is considered to be lower quality agricultural land and all options are located within the Glenmoriston Forestry Plan Boundary and have the potential to interact with the forestry operations. All options avoid interaction with public rights of way, core paths and national cycle network routes. However, all Site Options are located within areas which could be used for highland sports. It is recognised that Site Options 1, 2 and 4 are located within the existing site boundary, and therefore no commercial sporting activities would be undertaken. Site Options 3, 5 and 6 are located adjacent to the existing site boundary and are therefore not considered to compromise the commercial viability of any highland sport activities.
- 5.3.10 Adherence to National, Regional and Local planning policy will, in a large part, depend on avoiding or minimising potential constraints noted, particularly in relation to potential impacts on the natural environment. There is a lack of interaction between the Site Options and designated sites and that any potential conflicts with planning policies are likely avoidable through careful siting and design. The Site Options are located in close proximity to the proposed Bhlaraidh Extension Wind Farm grid connection overhead line (s37 consent application reference number ECU00004639). The screening opinion is detailed under planning application 21/05668/SCRE and ECU reference ECU00003379 and therefore the preferred option will require to take this application into account
- 5.3.11 The RAG ratings for the environmental criteria is presented in **Table 5.1**.

Engineering Appraisal

- 5.3.12 For Site Option 1, the primary scope (replacing the GT), has low interaction/impact on the existing HV equipment for existing (ML/FM) circuits. It will directly feed into the existing 132kV connection. However, for the expanded scope of necessary works, it would potentially require additional land for a diesel generator, replacement of 11kV cables and replacement of existing circuit switch. To satisfy current fire safety specification (PR-NET-SST-004) and avoid deviations, a midal-coolant replacement transformer would be required or possible construction of an additional firewall.
- 5.3.13 For Site Option 2, for the primary scope (replacing the GT), it is similar to Option 1 in that it will also feed into the existing 132kV export HV system. However, it will have significant impacts on both existing (ML/FM) circuits as a long outage would be needed to dismantle and rearrange the existing HV equipment. Its main advantage would be to satisfy fire-damage zone requirements. Similar to Option 1, the expanded scope of necessary works would potentially require replacement of 11kV cables, replacement of existing circuit switch, and additional land for a diesel generator.
- 5.3.14 For Site Option 3, for the primary scope (replacing the GT), it is similar to Option 1 in that it will also feed into the existing 132kV export HV system. However, it will have significant impacts on both existing (ML/FM) circuits as a long outage will be needed to dismantle and rearrange the existing HV equipment. Its main advantage would be to satisfy the fire-damage zone requirements. Similar to Option 1, the expanded scope of necessary works would potentially require replacement of 11kV cables, replacement of existing circuit switch, and additional land for a diesel generator.
- 5.3.15 For Site Option 4, the space would be used for a new GT platform and circuit breaker only. All other equipment would remain on the existing site. A significant amount of additional underground cabling would be required to route the 11 kV upwards to the GT output back down to the existing transmission substation gantry. This Option is on land owned by SSE Generation (third party to SSEN Transmission)..
- 5.3.16 For Site Option 5, this would have minimal impact to the existing site and no interruption of transmission operations during works. A very short outage would be necessary to transfer controls from the existing control building. Sufficient space to build a control building, GT platform and Diesel Generator to current specifications would be available. However, significant modifications to connect the 132 kV would be required. Alternatively, a new tower could be built for the site for grid connection (to tower 47, more than 100 m due west). This Option is in close proximity to the proposed alignment of the Bhlaraidh Extension Wind Farm grid connection overhead line (s37 consent application reference number ECU00004639).
- 5.3.17 Site Option 6 is very similar to Option 5. The land areas are separated by an existing forestry track, with Option 6 east of this track and Option 5 west. This Option is in close proximity to the proposed alignment of the Bhlaraidh Extension Wind Farm grid connection overhead line (s37 consent application reference number ECU00004639).

Comparative Analysis

5.3.18 **Table 5.1** below summarises the environmental and technical appraisal RAG ratings for the Grid Transformer Site Options.

Table 5.1: RAG Comparison Table

Category	Sub-Topic	Site Option						
		1	2	3	4	5	6	
Natural Heritage	Designations	Yellow	Yellow	Yellow	Yellow	Green	Green	
	Protected Species	Green	Green	Yellow	Green	Yellow	Yellow	
	Habitats	Green	Green	Red	Green	Yellow	Red	
	Ornithology	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	
	Hydrology/Geology	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	
Cultural Heritage	Designations	Green	Green	Green	Green	Green	Green	
	Cultural Heritage Assets	Green	Green	Green	Green	Green	Green	
Landscape and Visual	Designations	Green	Green	Green	Green	Green	Green	
	Character	Green	Green	Yellow	Green	Red	Red	
	Visual	Green	Green	Yellow	Green	Red	Red	
Land Use	Agriculture	Green	Green	Green	Green	Green	Green	
	Woodland/Forestry	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	
	Recreation	Green	Green	Green	Green	Green	Green	
Planning	Policy	Green	Green	Green	Green	Green	Green	
	Proposals	Green	Green	Yellow	Green	Green	Green	
Connectivity	Existing circuits / network	Distance and feasibility of connecting to the existing circuits / network (132)	Yellow	Red	Yellow	Yellow	Yellow	Yellow
		Distance and feasibility of connecting to the existing circuits / network (11)	Yellow	Red	Yellow	Yellow	Green	Green
		Outages for modification to existing circuits	Yellow	Red	Yellow	Yellow	Green	Green
	Future development possibilities	Extension of site or other circuits	Red	Red	Green	Red	Green	Green
		Interface with SSE Distribution and Generation	Consideration of Business Separation and whole system requirements (generation)	Yellow	Red	Green	Red	Green
	Consideration of Business Separation and whole system requirements (distribution)		Yellow	Red	Green	Red	Green	Green

Category	Sub-Topic		Site Option					
			1	2	3	4	5	6
	DNO Connection	Proximity of LVAC supplies						
Footprint Requirements	Technology	i.e. AIS/GIS or certainty of sizing on non-standard plant and equipment						
	Adjacent Land Use	Availability for ancillary infrastructure like welfare compounds, laydown areas (TEMP)						
		Availability for ancillary infrastructure like screening and SUDS infrastructure. (PERMANENT)						
	Space Availability	Non-standard substation configurations to accommodate site specific considerations						
Hazards	Unique Hazards							
	Existing Utilities							
Ground Conditions	Topography							
	Geology – Superficial Deposits (Peat)							
	Geology – site testing to verify properties							
Environmental Conditions	Elevation							
	Salt Pollution							
	Flooding							
	Carbon Footprint							
	SF6							
	Contaminated Land							
	Noise (proximity to dwellings / residential properties)							
Construction Access	Substation Access Road							
	Transformer Delivery Road							
Operation and Maintenance	Access							

5.4 Preferred Grid Transformer Site Options

- 5.4.1 The selection of the Preferred Site Options has been undertaken through the consideration of environmental, engineering and cost assessments on each site.
- 5.4.2 The environmental aspects of the above appraisal indicate that most Site Options have a Green or Amber rating, allowing for few or very few constraints pertaining in particular to cultural heritage, access and recreation, landscape designations and natural heritage designations and species. However, Site Options 3, 5 and 6 would likely require loss of habitat, including habitats listed on the AWI, making these Site Options potentially substantially constrained. Similarly, landscape character and visual impacts would be potentially substantial constraints for Options 5 and 6. The site visits for Stage 2: Detailed Site Selection, will help to confirm the status of these habitats and landscapes, and thereby inform the need for any mitigation for these and Site Options 1, 2 and 4. Based on the above, Options 1, 2 and 4 would be the environmentally preferred Site Options.
- 5.4.3 Option 2 performs worst in terms of connectivity with Option 4 also performing poorly for connectivity. Option 1 and 2 perform the worst in terms of space availability, hazards and future development possibilities. However, Options 4, 5 and 6 perform the worst in terms of construction access and topography. The engineering preferred options would be options 3, 5 and 6.
- 5.4.4 On balance considering, the various topic constraints, the preferred options to be taken forward to Stage 2: Detailed Site Selection would be **Site Options 3 and 6**.

6. CONSULTATION ON THE PROPOSALS

6.1.1 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.

6.2 Questions for Consideration by Consultees

6.2.1 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 clearly explained?
- Based on the information provided do you have a preferred site location?
- Are there any additional factors, or environmental features that you consider important and should be brought to the attention of the project team?

6.3 Next Steps

6.3.1 As detailed in the preface of this document, two in person consultation events will be undertaken in 2023. Locations of the events are yet to be determined. The responses received from these consultation events, and those sought from statutory consultees and other key stakeholders, will inform further consideration of the Site Options put forward and the confirmation of the Preferred Substation GT Site Option.

6.3.2 All comments are requested by 16th December 2022. A summary on consultation will be produced which will document the consultations received, and the decisions made in light of these responses.

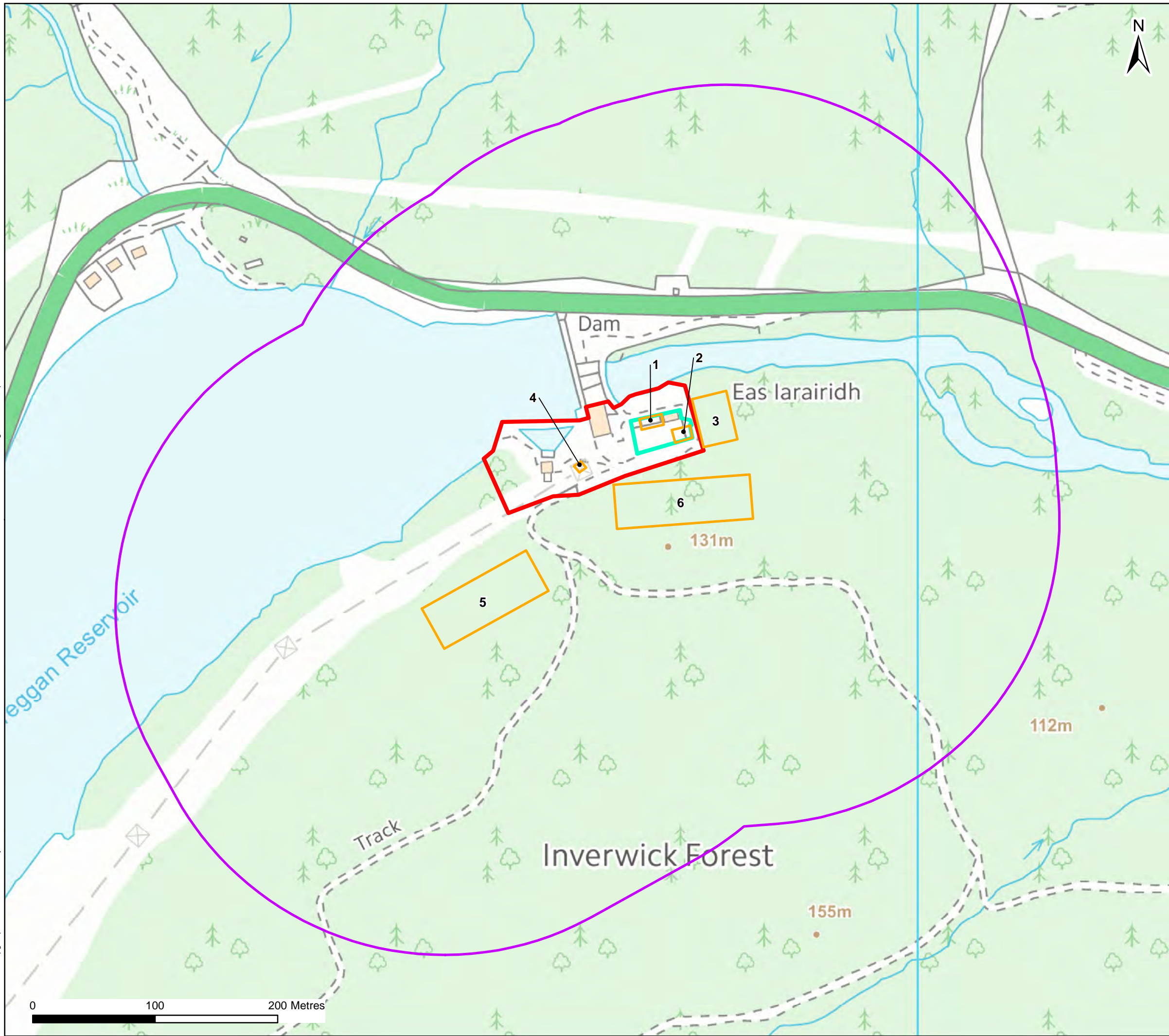
6.3.3 The outcome of the GT site selection process will be a development for which consent under the Town & Country Planning regime will be sought. The application will identify:

- The site boundary clearly shown in red (the Planning Red Line Boundary) including any access route (up to the public road including junction improvements); and
- The Proposed Development in relation to the site boundary with dimensions of all permanent structures, buildings, perimeter fencing, and any key drainage features (SuDS pond) and key electrical features, such as transformers.

6.3.4 In some cases, the application will be subject to Environmental Impact Assessment (EIA) under the Town & Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. This may result in further alterations to the Proposed Development to reflect outcomes of the EIA consultation process. Should the Proposed Development be deemed non-EIA (due to its scale or number and significance of potential environmental effects), a voluntary Environmental Appraisal is carried out to support the application.

6.3.5 Further public and stakeholder consultation will be undertaken to present our proposals ahead of submitting a planning application.

6.3.6 Where overhead line elements are required, a similar application is made to the Scottish Ministers under Section 37 of the Electricity Act 1989.



Legend

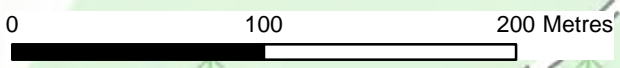
- Existing Site Boundary
- Existing Substation
- Site Options
- Site Option 250m Buffer

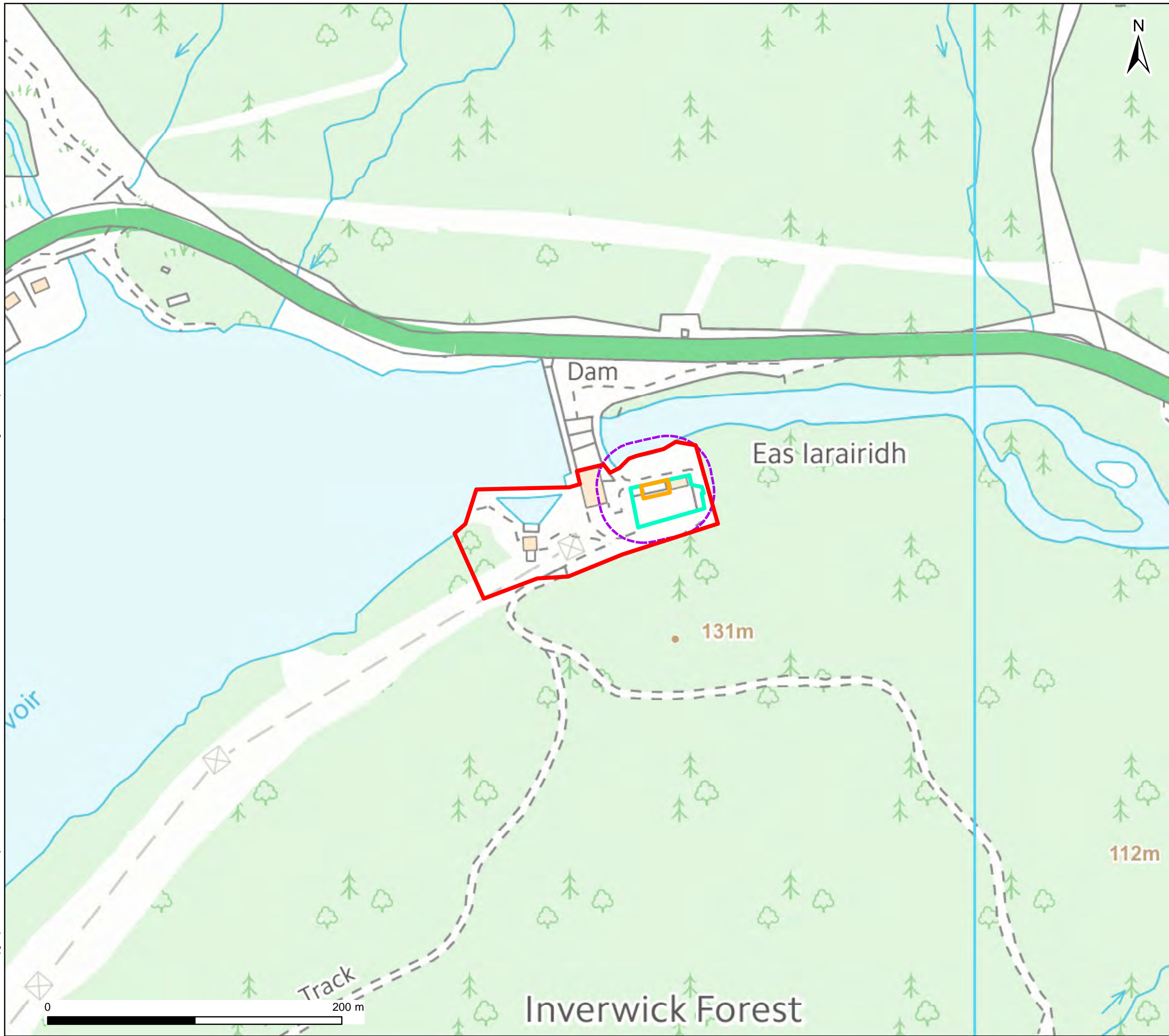
Client:

Project: Glenmoriston Substation

Title: **Figure 1: Site Options**


Date: Thursday, July 28, 2022 Scale: 3,000 @ A3
 Drawn: MAL Checked: IM Approved: CM
 Drawing Number: GLENMORISTONSS-WSP-GIS-007





Legend

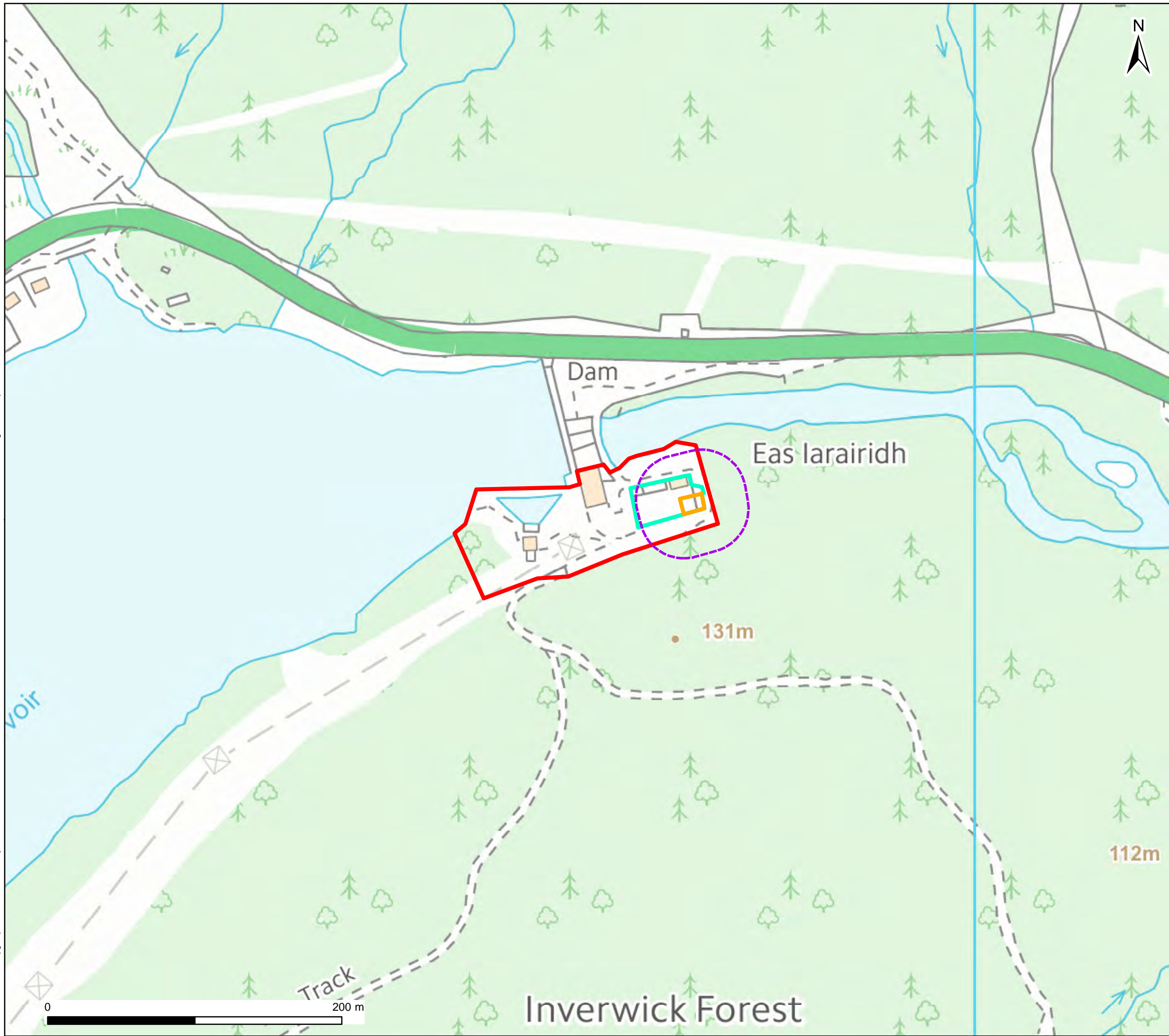
- Existing Site Boundary
- Existing Substation
- Option Boundary
- 30m Buffer of Option

Client: 

Project: Glenmoriston Substation

Title: **Figure 2.1: Site Option 1**

Date: 7/28/2022 Scale: 2,500 @ A3
 Drawn: MAL Checked: JM Approved: CM
 Drawing Number: GLENMORISTONSS-WSP-GIS-001



- Legend**
- Existing Site Boundary
 - Existing Substation
 - Option Boundary
 - 30m Buffer of Option

Client: **Scottish & Southern**
Electricity Networks

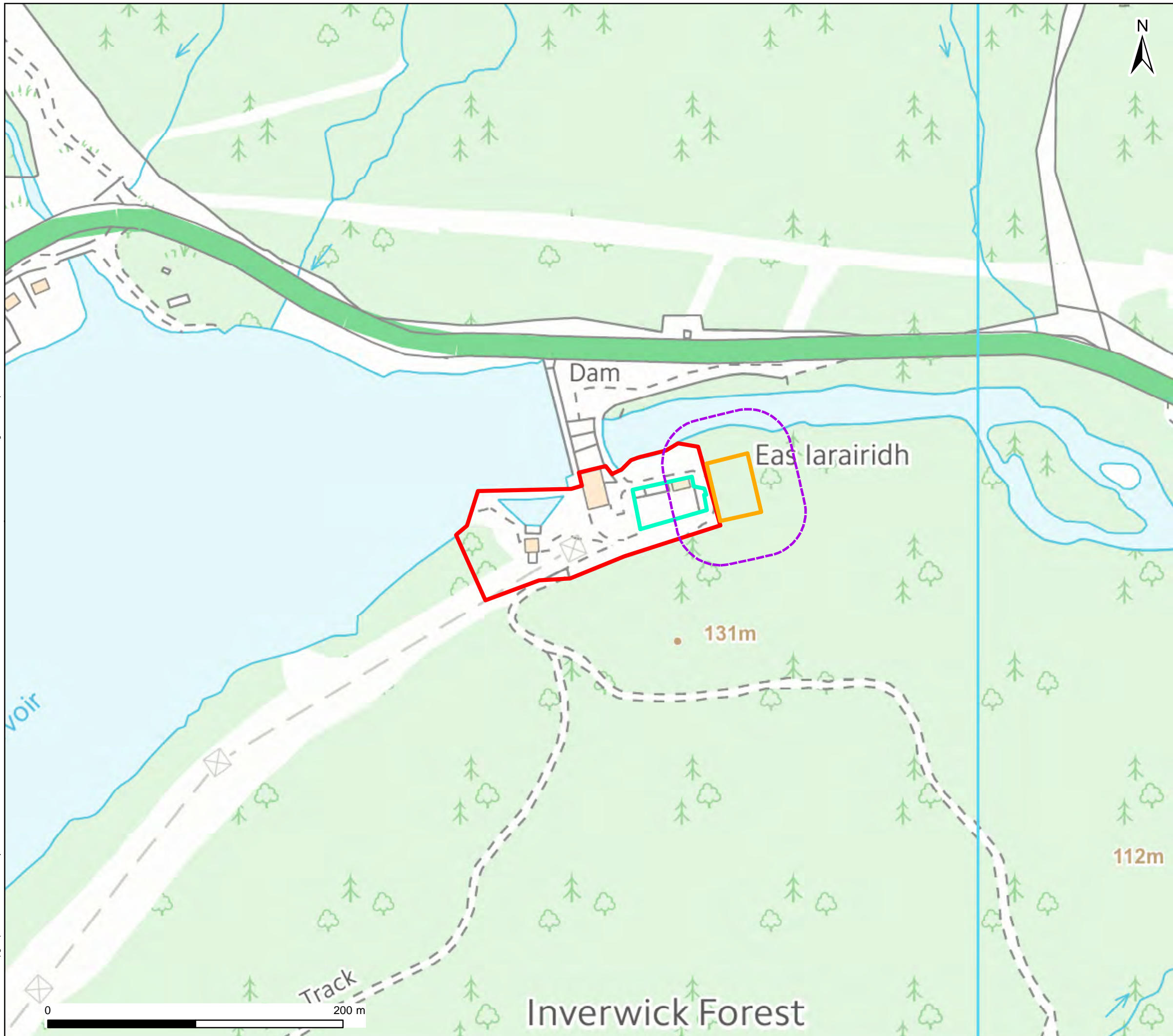
Project: Glenmoriston Substation

Title: **Figure 2.2: Site Option 2**

Date: 7/28/2022 Scale: 2,500 @ A3
 Drawn: MAL Checked: IM Approved: CM
 Drawing Number: GLENMORISTONSS-WSP-GIS-002

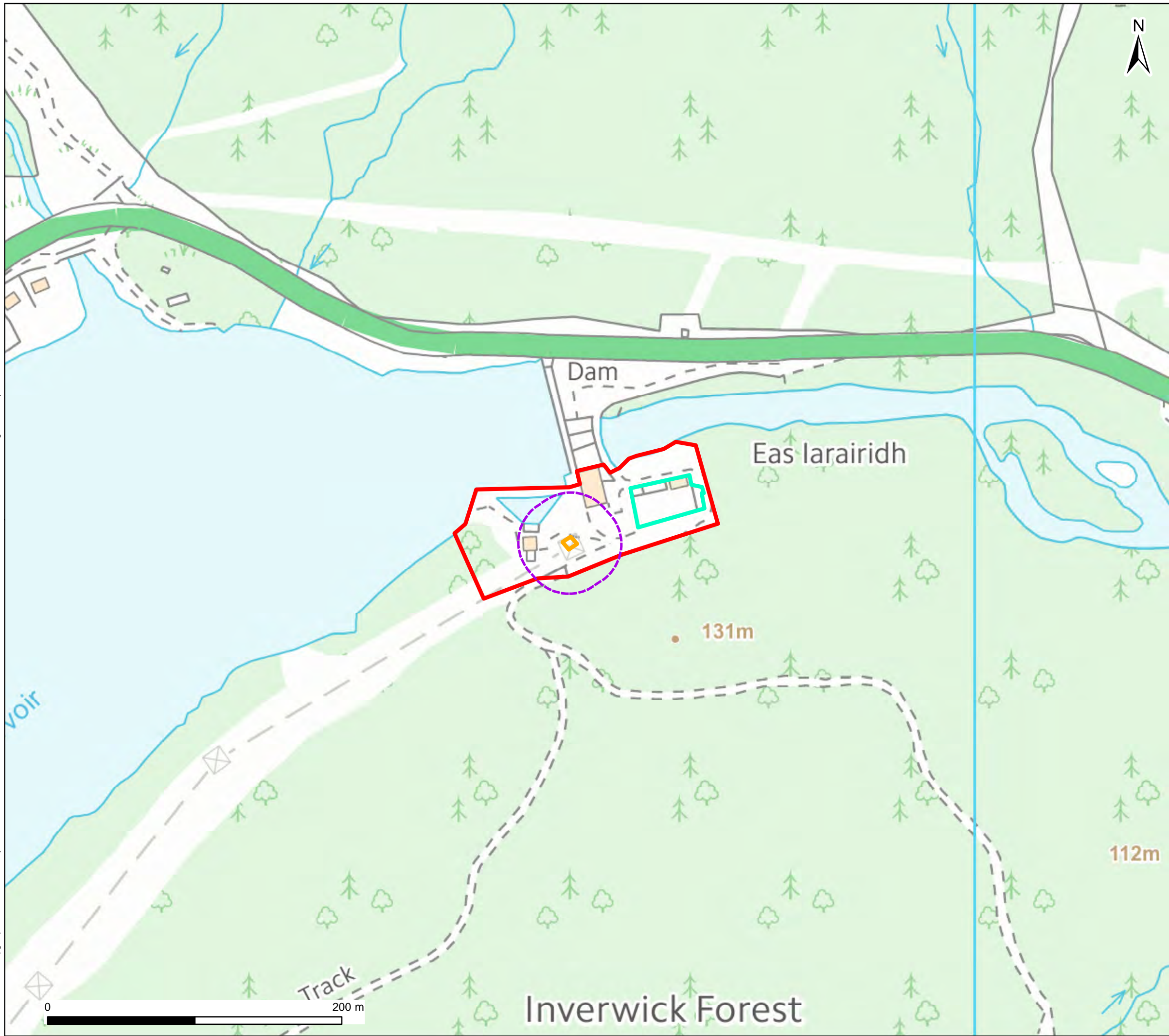


Inverwick Forest



- Legend**
- Existing Site Boundary
 - Existing Substation
 - Option Boundary
 - 30m Buffer of Option

Client:	
Project:	Glenmoriston Substation
Title:	Figure 2.3: Site Option 3
Date:	7/28/2022
Scale:	2,500 @ A3
Drawn:	MAL
Checked:	IM
Approved:	CM
Drawing Number:	GLENMORISTONSS-WSP-GIS-003



Legend

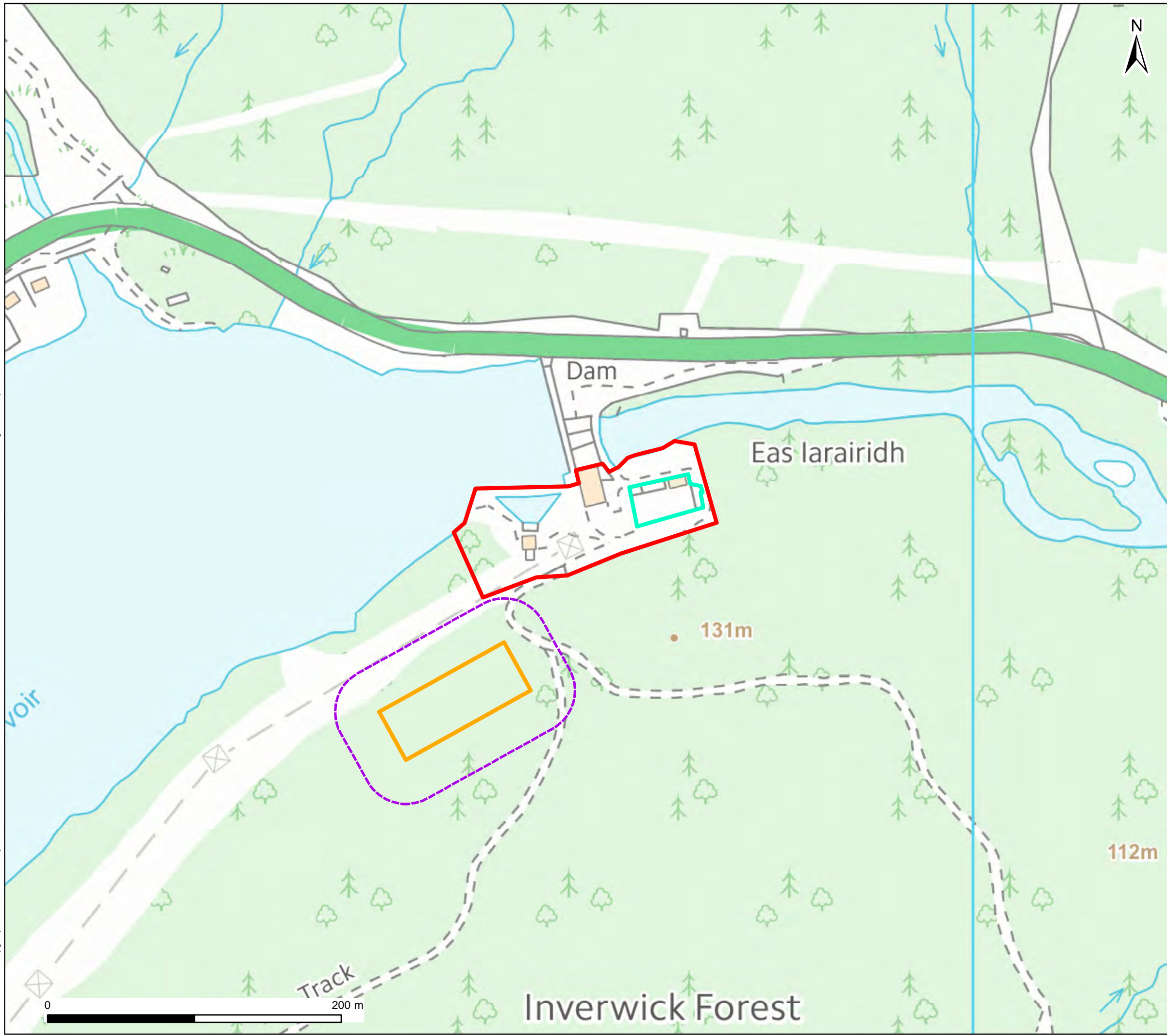
- Existing Site Boundary
- Existing Substation
- Option Boundary
- 30m Buffer of Option

Client: Scottish & Southern Electricity Networks

Project: Glenmoriston Substation

Title: Figure 2.4: Site Option 4

Date: 7/28/2022 Scale: 2,500 @ A3
 Drawn: MAL Checked: IM Approved: CM
 Drawing Number: GLENMORISTONSS-WSP-GIS-004



- Legend**
- Existing Site Boundary
 - Existing Substation
 - Option Boundary
 - 30m Buffer of Option

Client: **Scottish & Southern**
Electricity Networks

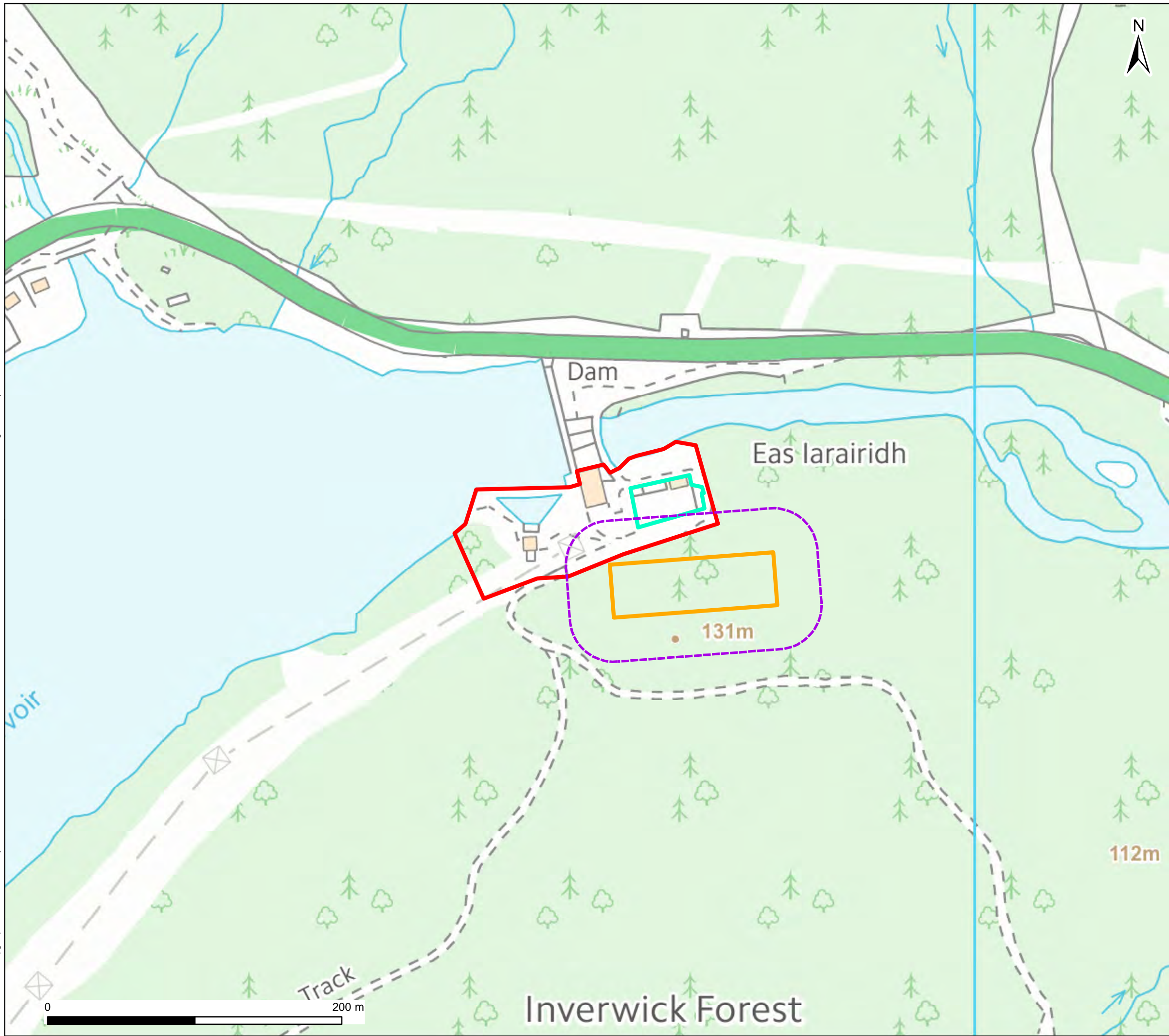
Project: Glenmoriston Substation

Title: **Figure 2.5: Site Option 5**

Date: 7/28/2022 Scale: 2,500 @ A3
 Drawn: MAL Checked: IM Approved: CM
 Drawing Number: GLENMORISTONSS-WSP-GIS-005



Inverwick Forest



- Legend**
- Existing Site Boundary
 - Existing Substation
 - Option Boundary
 - 30m Buffer of Option

Client: **Scottish & Southern**
Electricity Networks

Project: Glenmoriston Substation

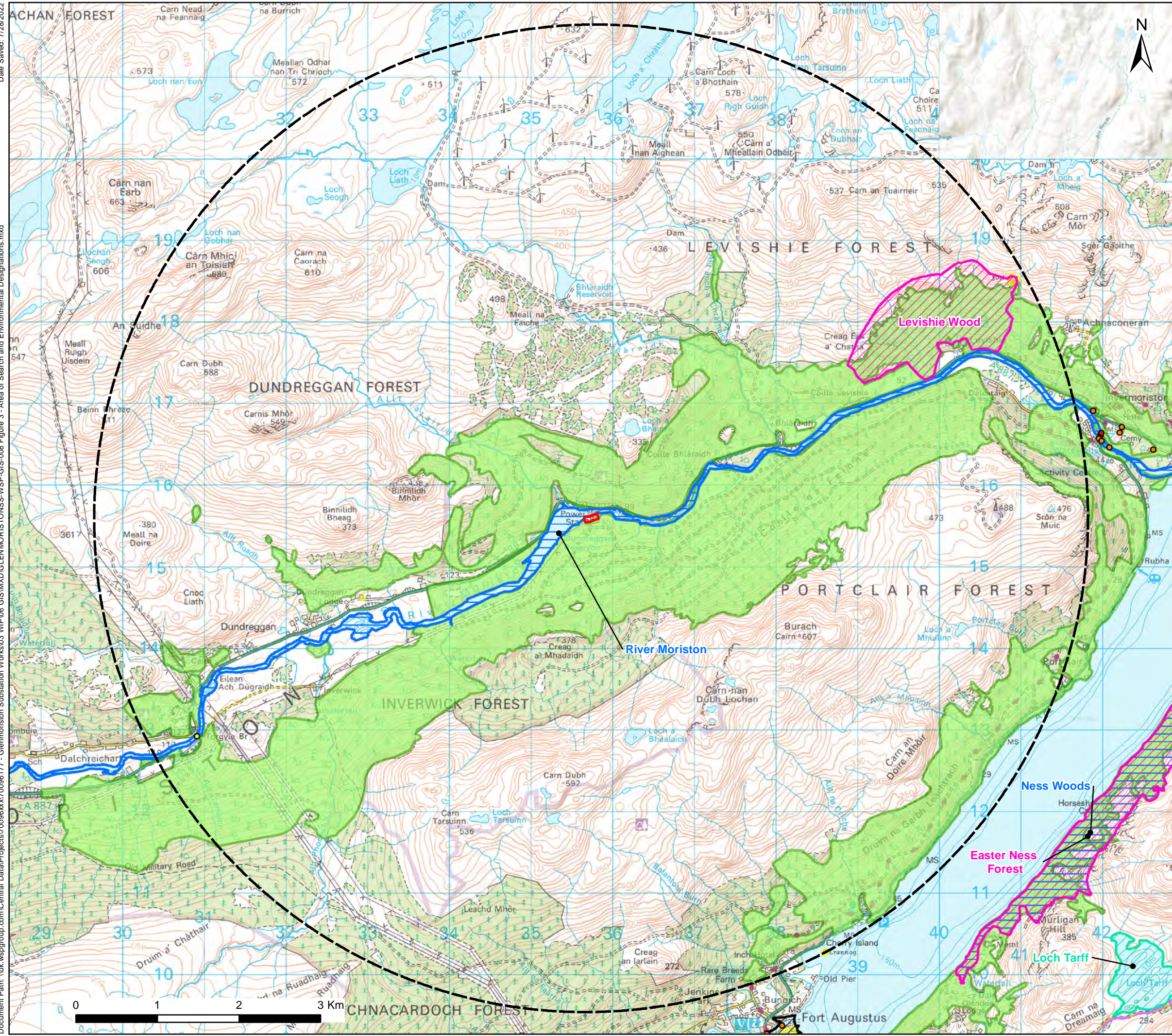
Title: **Figure 2.6: Site Option 6**

Date: 7/28/2022 Scale: 2,500 @ A3
 Drawn: MAL Checked: IM Approved: CM
 Drawing Number: GLENMORISTONSS-WSP-GIS-006



Inverwick Forest

Date Saved: 7/28/2022
Document Path: \\uk-wspgroup.com\Central Data\Projects\700966xx\70096177 - Glenmoriston Substation Works\03 WIP\06 GIS\MXD\GLENMORISTONSS-WSP-GIS-008 Figure 3 - Area of Search and Environmental Designations.mxd



Legend

- Existing Site Boundary
- Area of Search
- Constraints
- Listed Building Category
 - A
 - B
 - C
- National Cycle Network
- Important Bird Area (IBA)
- Conservation Area
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Scheduled Monument
- Ancient Woodland Inventory

Client: Scottish & Southern Electricity Networks

Project: Glenmoriston Substation

Title: **Figure 3: Area of Search and Environmental Constraints**

Date: Thursday, July 28, 2022 Scale: 45,000 @ A3
Drawn: MAL Checked: IM Approved: CM
Drawing Number: GLENMORISTONSS-WSP-GIS-008