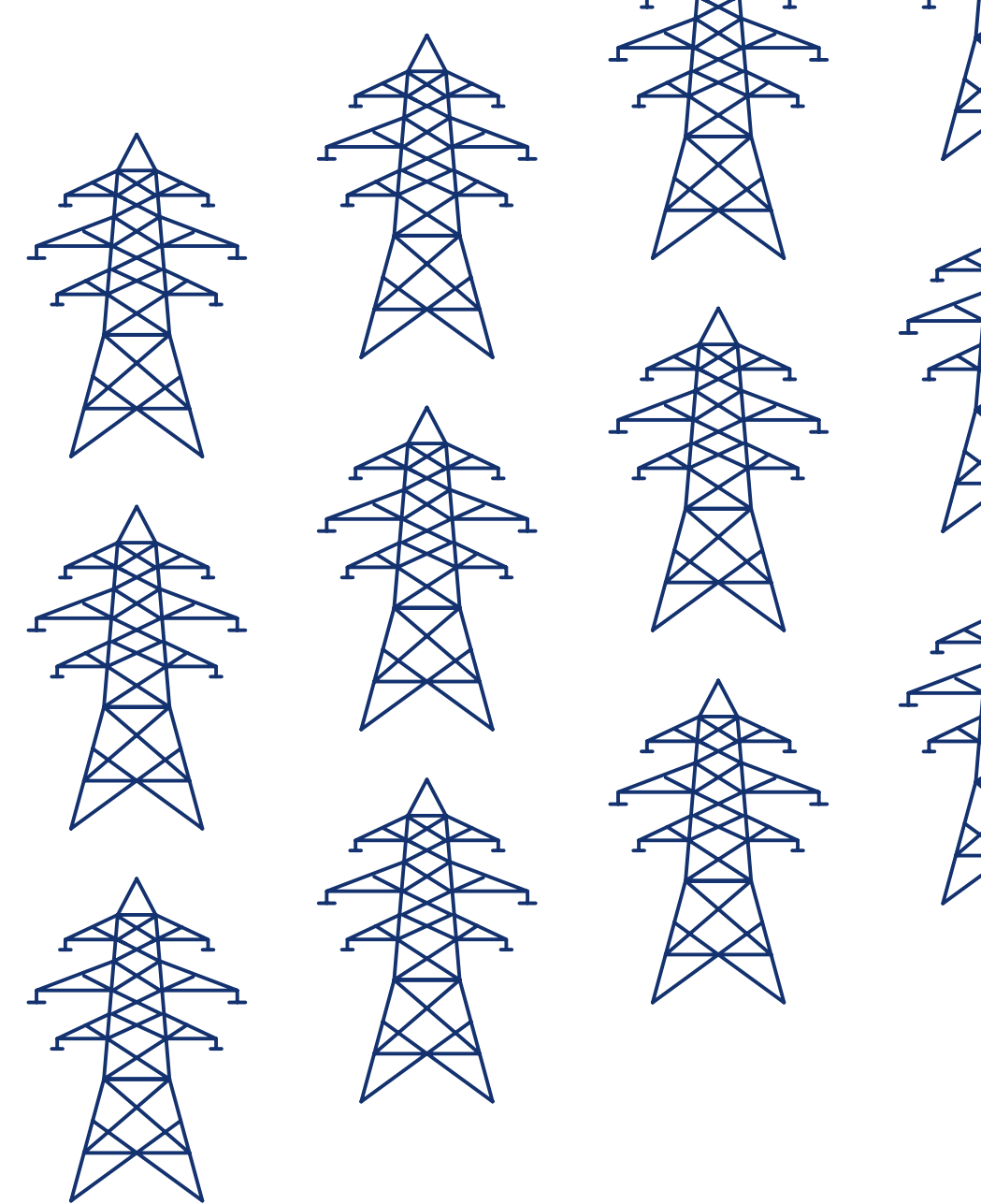




Development overview

SSEN Transmission is developing plans to strengthen the electricity transmission network in the Knocknagael area, south of Inverness, to support a secure and reliable electricity supply through 2030 and beyond.

Why this project is needed

Significant investment is being made in the electricity transmission network across Scotland to help meet future energy needs and support the transition to cleaner sources of electricity.

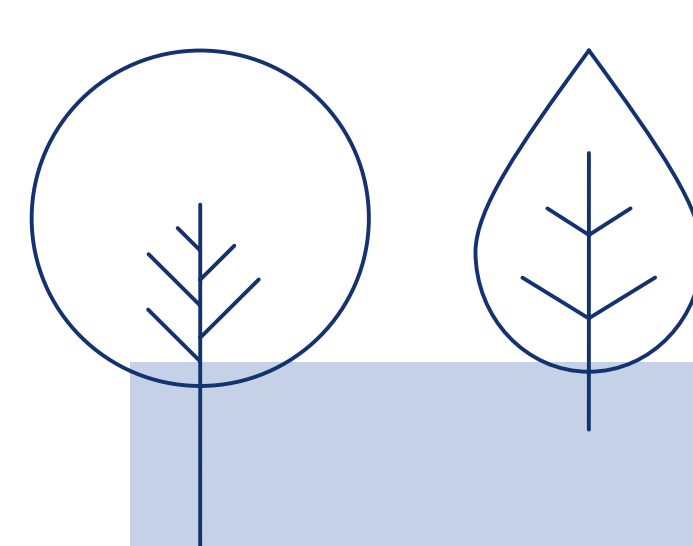
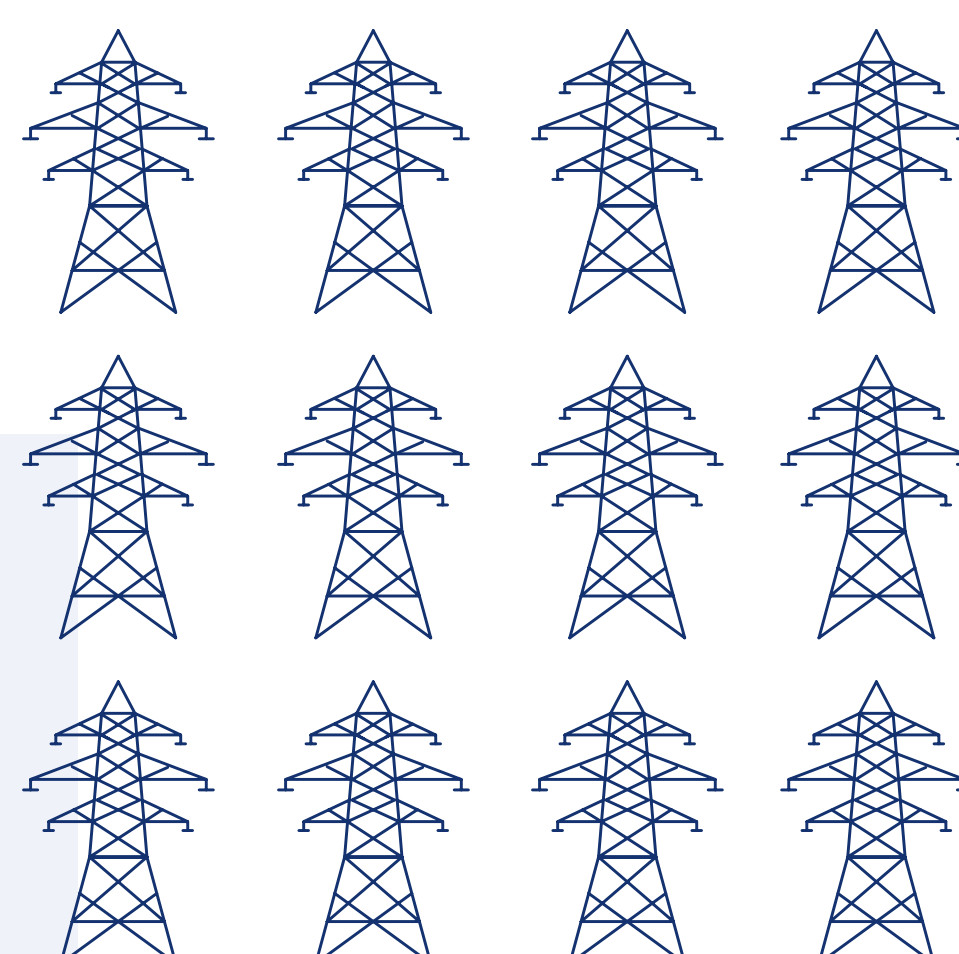
Studies were undertaken to assess how these changes will affect the network in the future. The studies identified a need for additional equipment in the Knocknagael and Farigaig area to help maintain network stability and ensure the electricity system continues to operate safely, reliably and efficiently.



What the project involves

To deliver the project, the following elements are proposed:

- A new Static Synchronous Compensator (STATCOM) on a satellite site near Knocknagael Substation to support voltage stability on the transmission network.
- An extension to the existing Knocknagael 275kV Substation to facilitate connection of the new equipment to the transmission network.
- A short section of underground cable connecting the new STATCOM facility to the substation extension.
- New Shunt Reactors at Knocknagael and Farigaig to help manage voltage levels and support reliable operation of the transmission network.



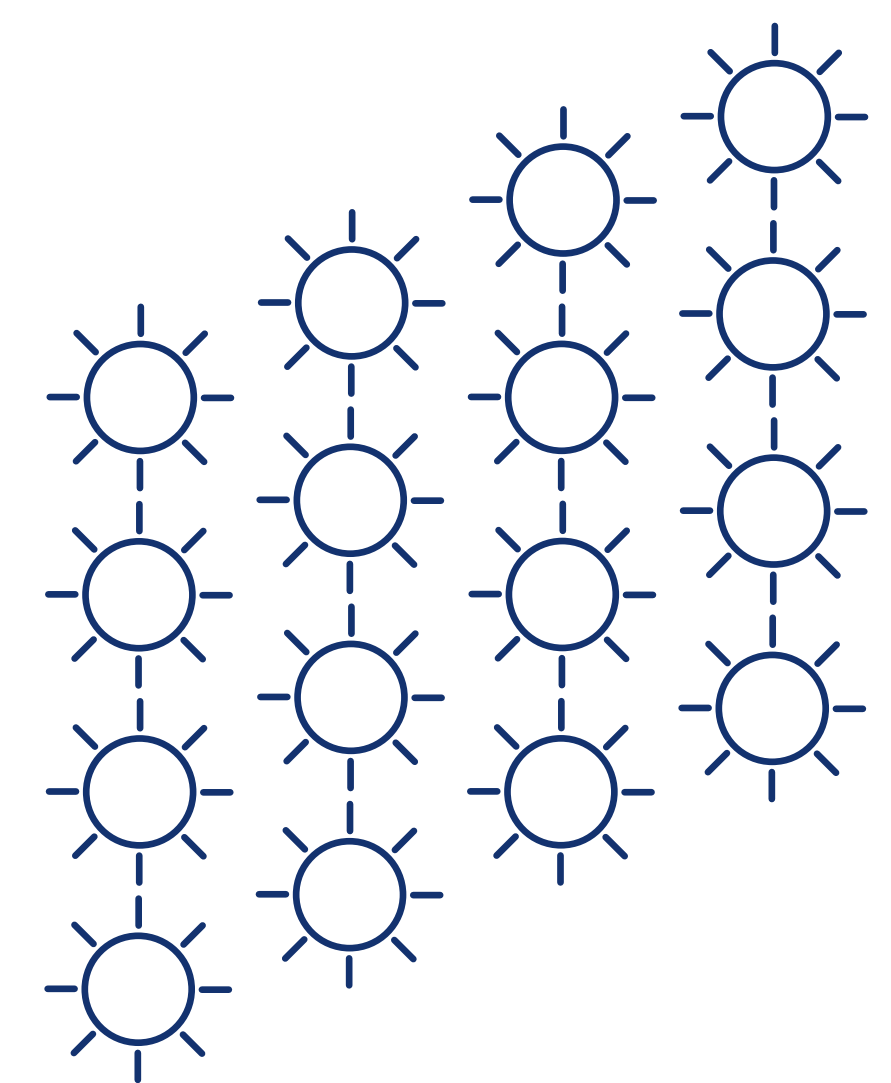
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About the project

STATCOM

SSEN Transmission is proposing to construct and operate a single 250 MVar Static Synchronous Compensator (STATCOM) and associated infrastructure in the Knocknagael/Farigaig area. As electricity demand and generation change throughout the day, voltage levels can rise or fall.

A STATCOM responds very quickly to these changes, helping to keep the network operating safely, reliably and efficiently. It continuously responds to changes in network conditions, helping to maintain stable voltage levels and a secure, reliable supply of electricity.

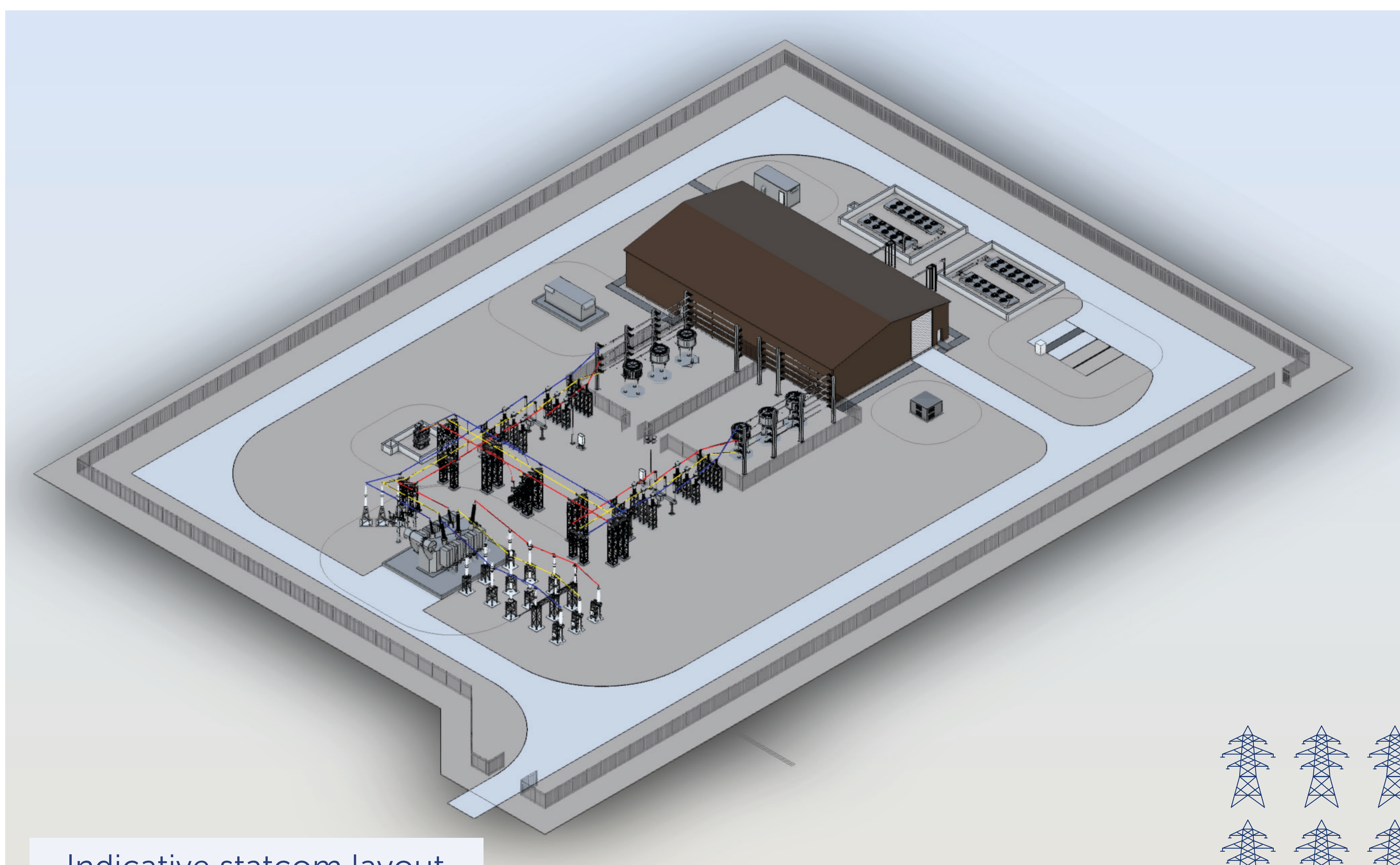
The STATCOM would be located within newly established 275 kV satellite site close to Knocknagael Substation and connected to the existing substation via a short section of underground cable. The proposed site would cover an area of approximately 110m x 150m.

Substation Extension

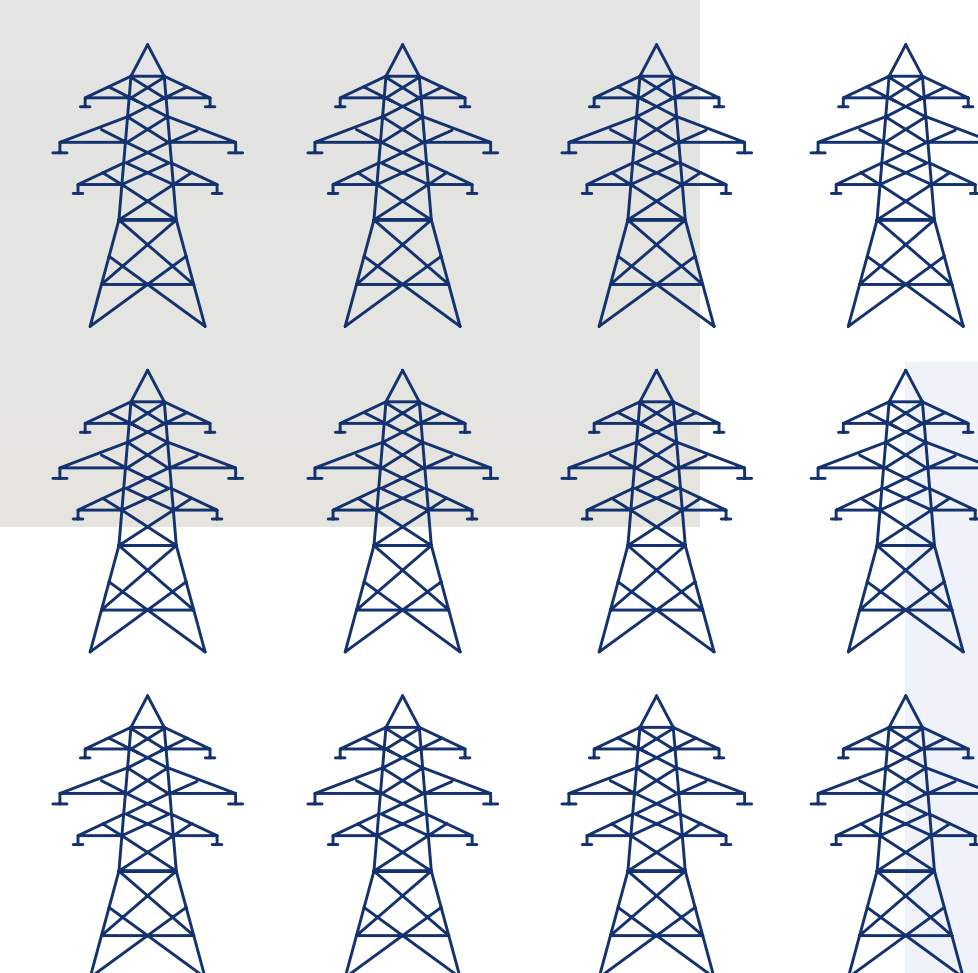
To enable the new equipment to connect to the transmission network, an extension to the existing Knocknagael 275 kV Substation is required. The proposed extension would involve extending part of the existing substation by approximately 130 metres by 50 metres to allow the new equipment to connect to the wider transmission network. Opportunities to coordinate these works with the adjacent Loch na Cathrach project are currently under review.

Shunt Reactors

New Shunt Reactors are also proposed at Knocknagael and Farigaig Substations as part of the Project. This equipment helps manage voltage levels on the transmission network, supporting the safe, reliable and efficient transmission of electricity. The shunt reactors will be constructed within existing substation platforms.



Indicative statcom layout



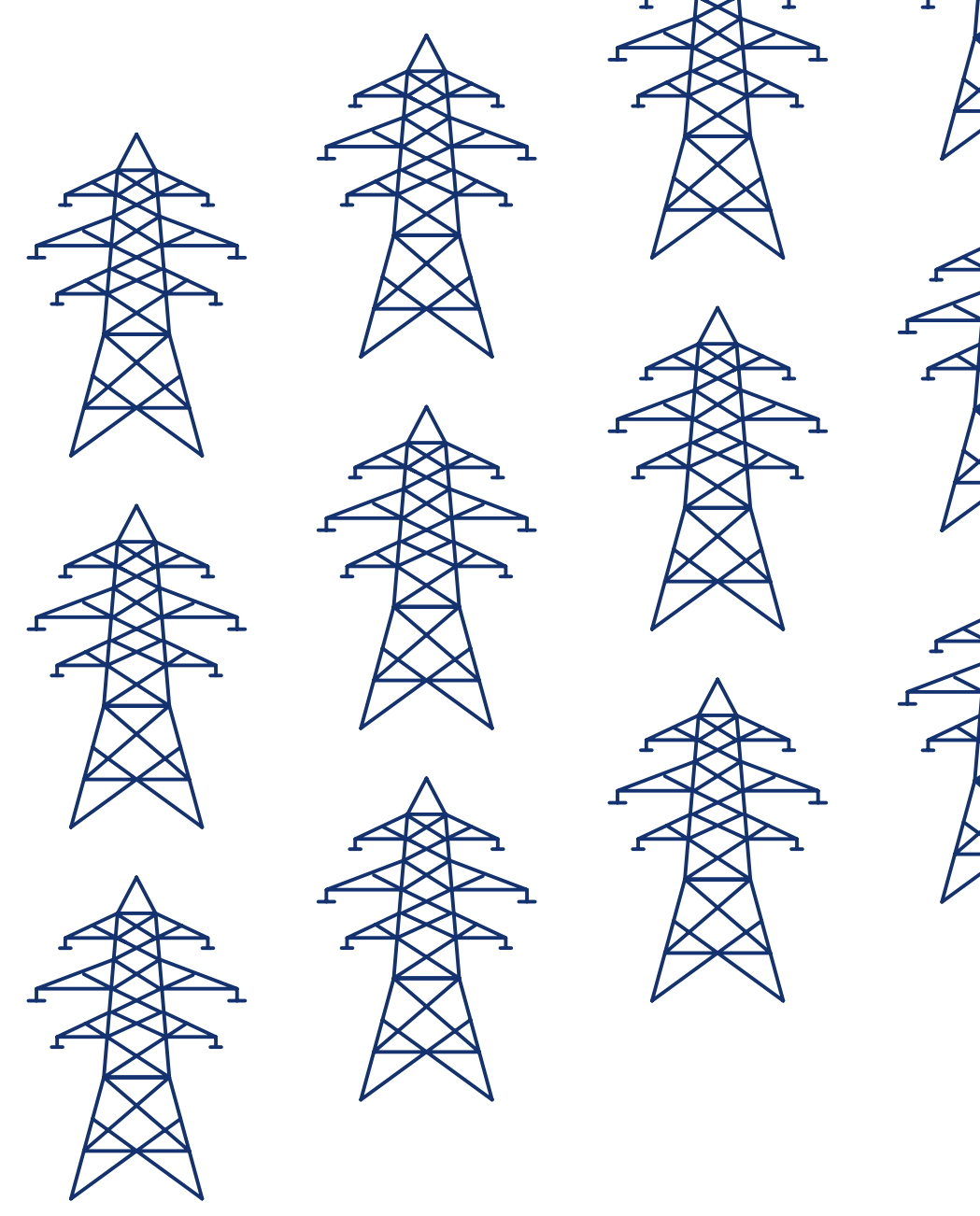
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Help shape our plans

The work we have planned has the potential to deliver benefits in your community, Scotland, and beyond. Yet we know that achieving our goals will require a lot of work that may impact your local community. That's why we want to work with you every step of the way throughout the planning and delivery stages of these essential works.

This period of engagement in the development phase is vital in shaping our proposals and to do this effectively, we need to capture feedback from stakeholders, harness local knowledge to identify risks in key areas of the sites and explore potential community benefit opportunities.

Today, we are presenting our approach to developing this project, including the site selection process and the key engineering and environmental considerations that have informed the assessment of site options. We also share maps and visual information to help stakeholders and community members better understand the project and the work undertaken to date.

What are we consulting on?

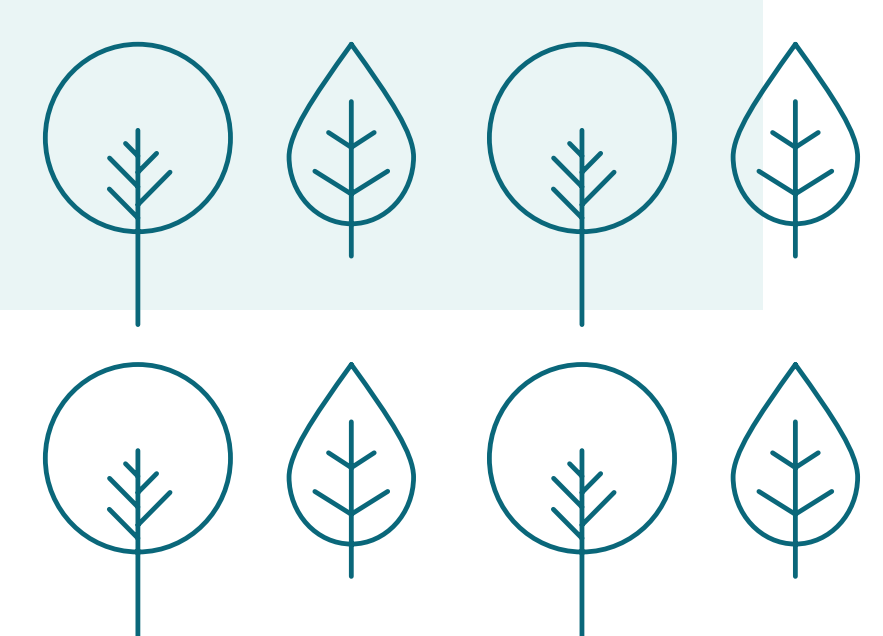
We want to hear your thoughts and opinions on our site selection options for the Knocknagael Substation extension and the STATCOM satellite site. We're also keen to understand where you think we can make improvements and any concerns about the impact of our work.



Who we are consulting with?

We are keen to hear feedback from a broad range of stakeholders including but not limited to residents, landowners, businesses, non-statutory consultees and statutory consultees such as local authorities, Nature Scot, SEPA and Historic Environment Scotland.

We would encourage all those with an interest to submit their views on our proposals presented at this consultation by **25 October 2026**. This can be done by submitting a feedback form which can be found at the end of this booklet or online via our webpage.



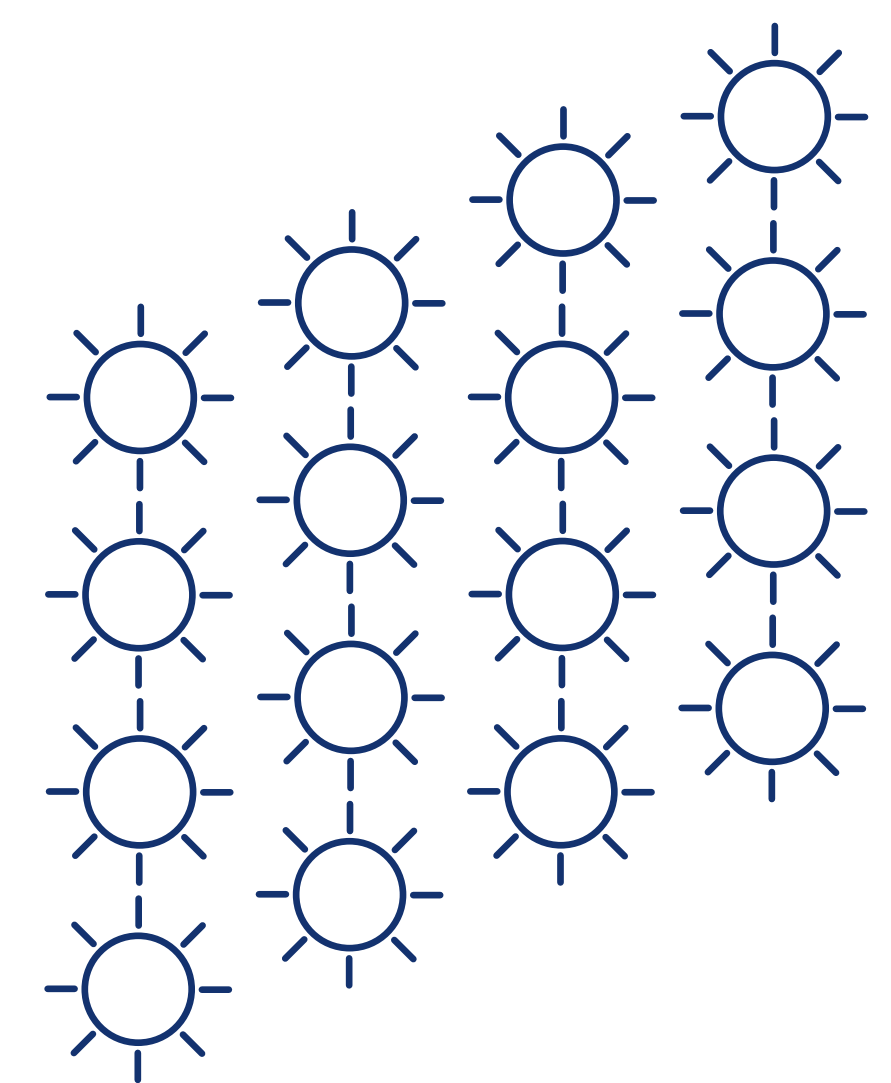
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The site selection process

We follow formal internal guidance to enable us to consistently and rigorously select sites for new substations and switching stations. Each process has a number of key stages, each increasing in detail and definition and bringing technical, environmental and cost considerations together in a way which seeks the best balance in accordance with our Transmission Network Operator's License and the Electricity Act 1989.

Pre-site selection activities

The starting point in all new projects is to establish the need for the project and to select the proposed strategic option to deliver it. This process is triggered by the preparation of a number of internal assessments and documents which identify the technology to be used.

Stage 1: Initial site screening

This stage identifies the potential Site Extension and STATCOM site options and these are evaluated using a combination of multi-criteria analysis, site walkovers, and desktop studies to identify the site options for progression to the Stage 2.

Stage 2: Detailed site selection

The purpose of this stage is to further refine the site selection process with the objective of defining an indicative proposed site which can be taken forward into the consenting and assessment process.

Pre-application stage:

This stage includes confirming the Proposed Site, concept design, consent design freeze, Environmental assessment, and the Proposed site consultation.

Consent Application Stage



Selecting a site

The consideration of site options and design solutions brings together work by four main disciplines:

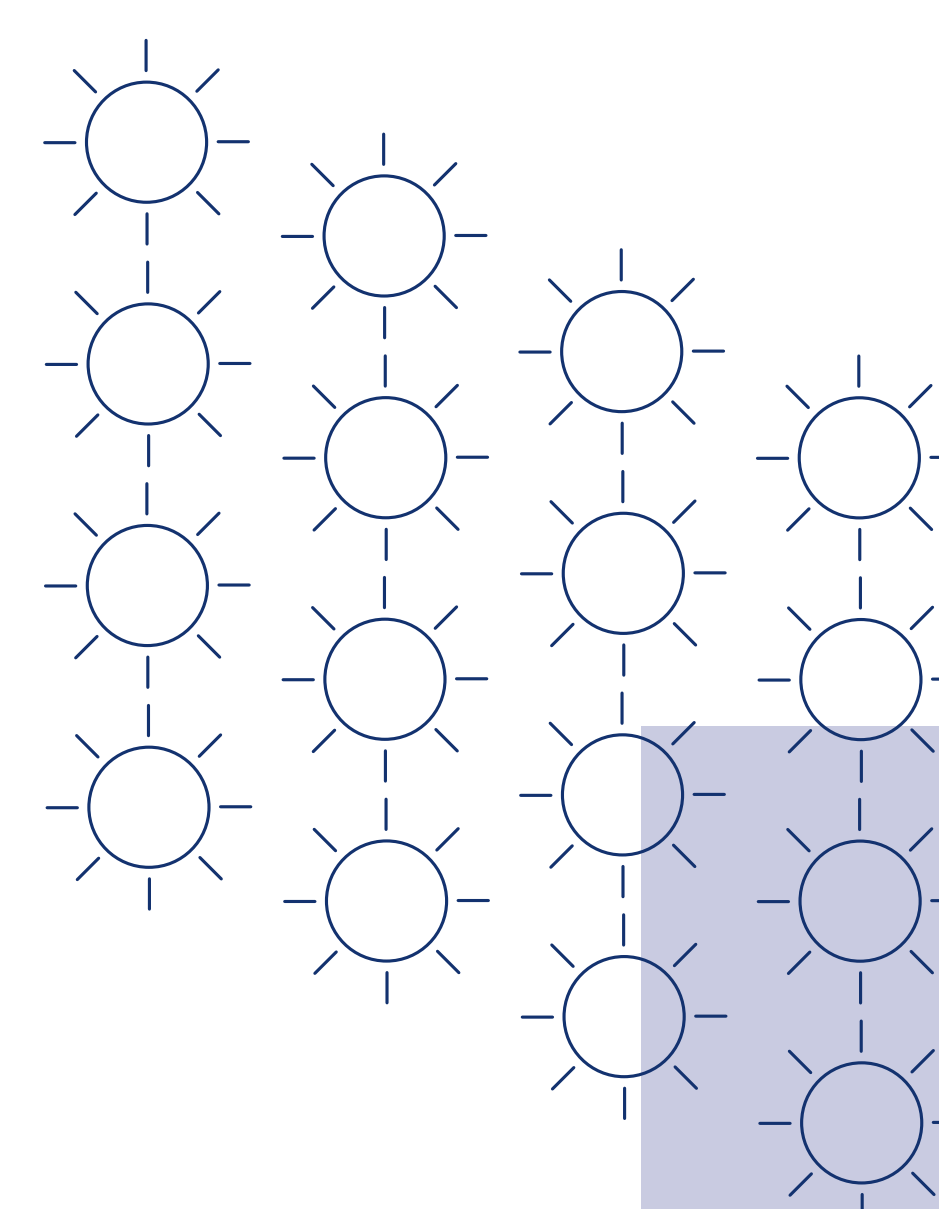
- **Engineering team**
Who identify engineering constraints and where the new infrastructure can be installed from a construction and operational perspective.
- **Consent and environment team**
Who identify local and national planning policy positions and key environmental constraints around the sites which the new infrastructure could impact upon.
- **Communities team**
Who work with communities and make sure that their feedback during the consultation process is closely considered during project refinement.
- **Land team**
Who engage with landowners to identify key land use constraints.

Striking a balance

When selecting a site, we need to carefully balance key considerations relating to engineering, environment, and cost aspects.

We then consider the likely effect and level of impact of each consideration, which will vary from section to section. This can be based on how populated the area is, the outcomes of environmental and engineering surveys, stakeholder and community feedback, the ground conditions, the local water environment, if there is existing infrastructure we need to avoid, if the effects on land and property can be mitigated and if a constructable proposal can be identified.

Ultimately, we need to balance a range of factors and present the option we consider most viable, which is then put forward for consultation.



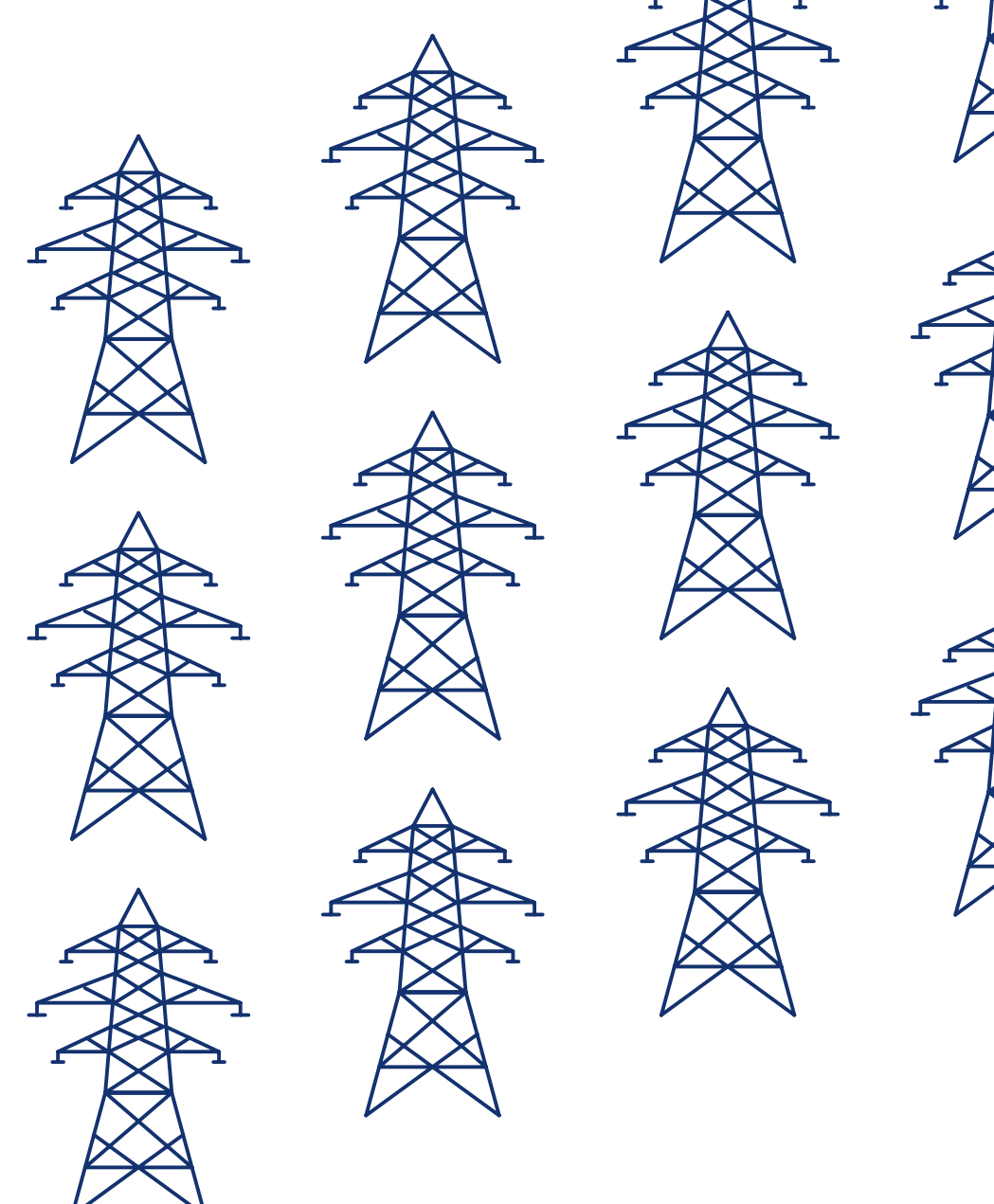
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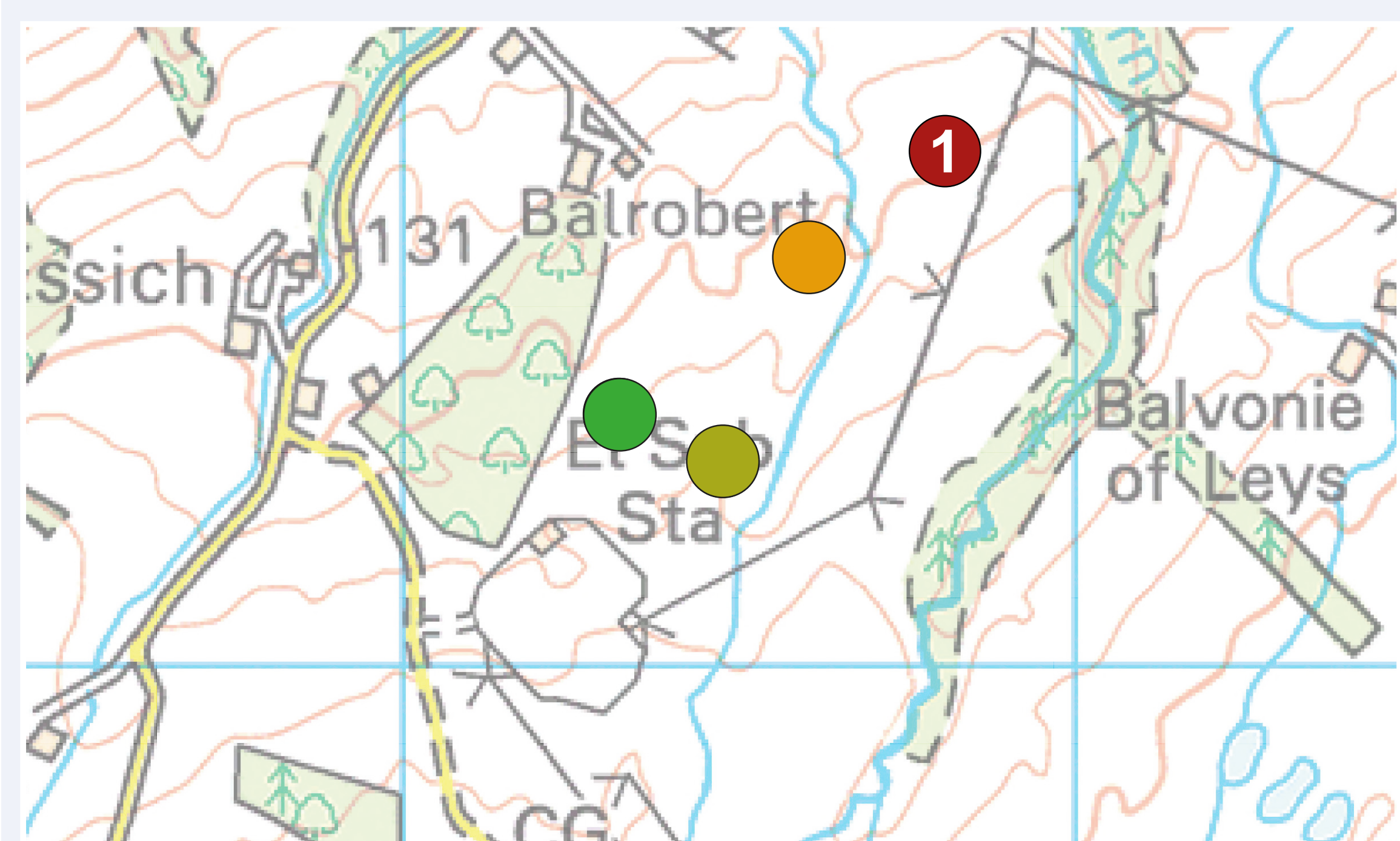
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Statcom detailed site selection

Following the completion of Stage 1, STATCOM site options 1-4 were identified and taken forward to Stage 2. The following demonstrates a summary of the key considerations from an engineering, environmental, and cost perspective for each site.

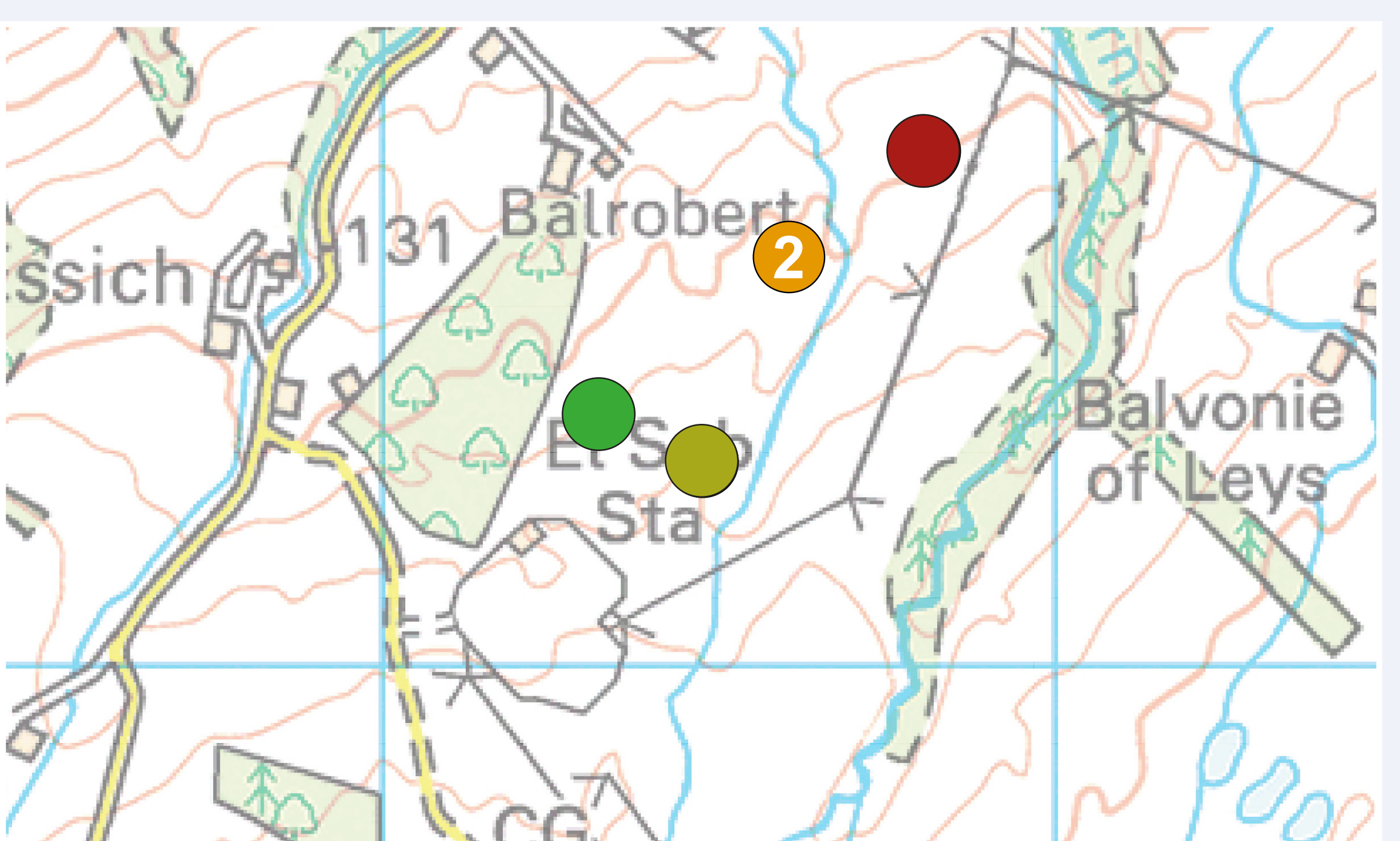
A Red Amber Green (RAG) scoring assessment table for each site can also be viewed within our Consultation Document available at our consultation event or to download from the project webpage: ssen-transmission.co.uk/knocknagael.



Statcom Option 1

From an environmental perspective, Option 1 has a moderate private water supply constraint due to potential indirect connectivity to Knocknagael Cottages via the Big Burn. The UGC cable connection would require a watercourse crossing and would interact with areas of broadleaved woodland. Overall, ecological, ornithological, cultural heritage and visual constraints are considered low.

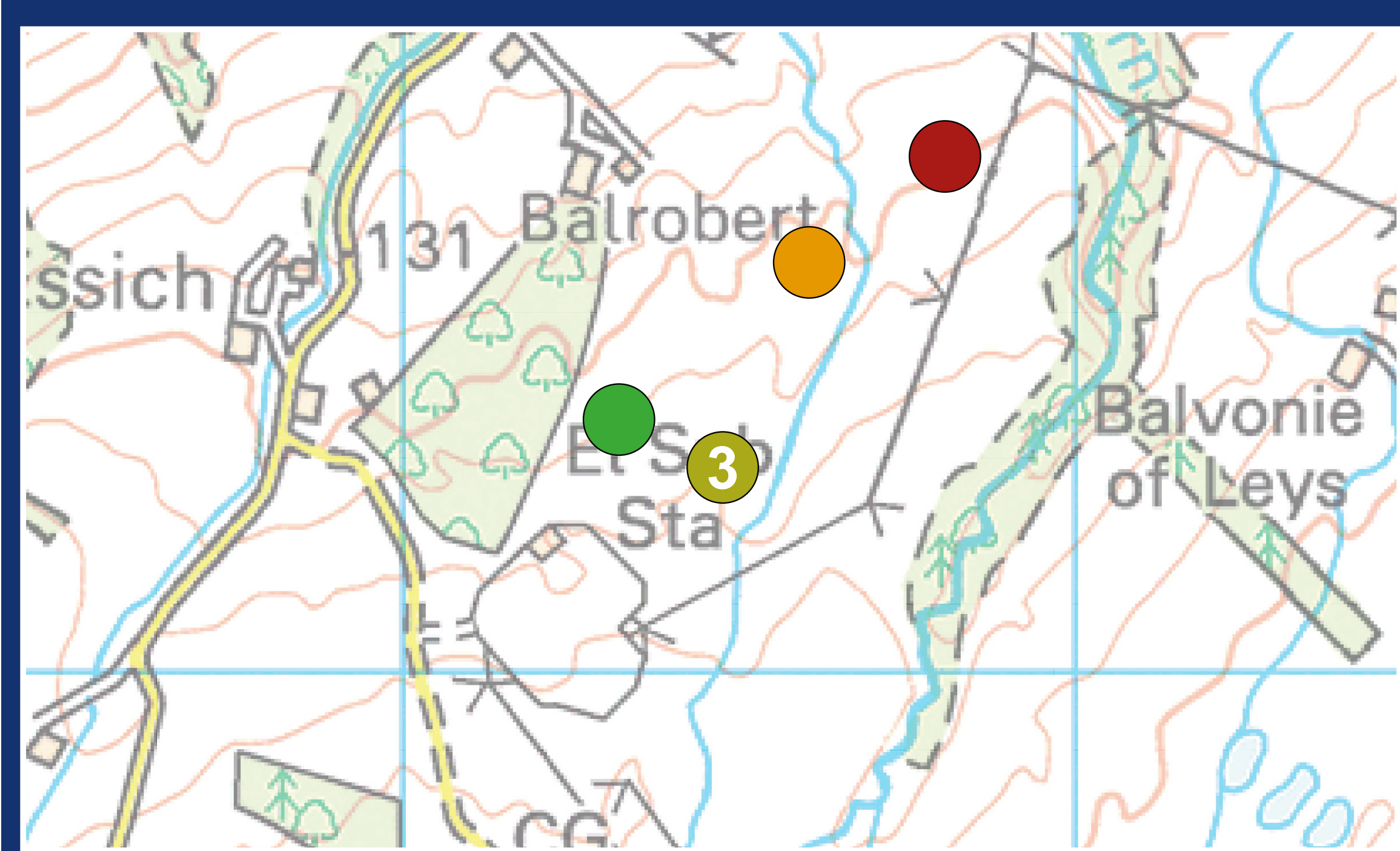
From an engineering perspective, Option 1 is located furthest from the existing Knocknagael Substation and is close to the 1 km cable length limit. This limit has been introduced to maintain the effectiveness of the STATCOM's performance and minimise cable-related operational constraints, which reduces routing flexibility. While technically feasible, it is the least favourable option due to increased earthworks, access requirements and reduced routing flexibility. Careful compound positioning and detailed cable design would be required.



Statcom Option 2

From an environmental perspective, Option 2 is the least favourable option due to the presence of a nearby bat roost feature, a badger sett within the site footprint and its proximity to a watercourse, resulting in higher surface water constraints. It is also predicted to have one of the highest visual impacts of the four options.

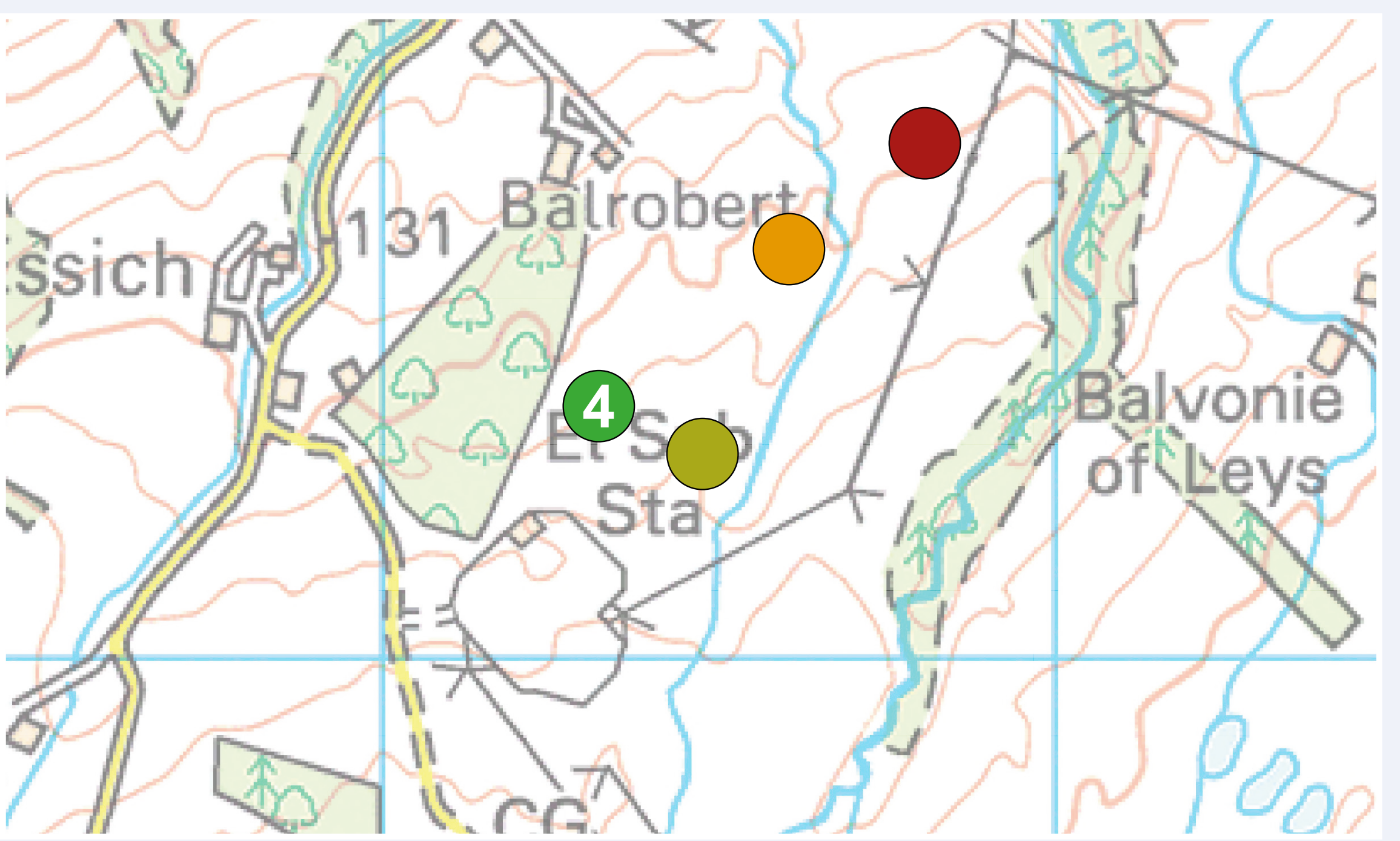
From an engineering perspective, Option 2 remains within the 1 km cable limit. However, it is the most physically constrained option due to clearance requirements from existing assets and the proposed Beauly to Peterhead 400kV overhead line, which may restrict ancillary infrastructure.



Statcom Option 3

Option 3 performs well against both environmental and engineering criteria. While it is located close to a watercourse, it would result in the lowest level of visual impact and is located furthest from noise-sensitive receptors.

From an engineering perspective, Option 3 benefits from practical access from the existing substation infrastructure, good space availability and minimal engineering conflicts. It also requires the shortest cable route of the options considered, making it the preferred option overall.



Statcom Option 4

Option 4 performs well against the environmental criteria and is the least constrained site from a hydrology perspective. However, it has greater potential for visual impact. From an engineering perspective, it remains within the 1 km cable limit and benefits from good access potential, including the shortest construction and operational access route of the four options. It is technically feasible with manageable clearances, although a standard arrangement would be physically constrained by existing assets on either side of the proposed location. Careful compound placement would therefore be required to manage interfaces with existing and proposed electrical infrastructure.

Results and preferred solution for STATCOM:

Overall, the four STATCOM site options performed similarly across most environmental criteria, with generally low ecological, cultural heritage and landscape constraints. Option 1 was discounted due to its proximity to the 1 km cable length limit and less favourable engineering position. Option 2 was discounted because of greater environmental constraints and limited development flexibility arising from existing and proposed infrastructure. Options 3 and 4 performed best overall. However, **STATCOM option 3 is the preferred option** as it provides the best balance between engineering feasibility and environmental considerations. While some environmental constraints remain, these are manageable through considered design and appropriate mitigation.



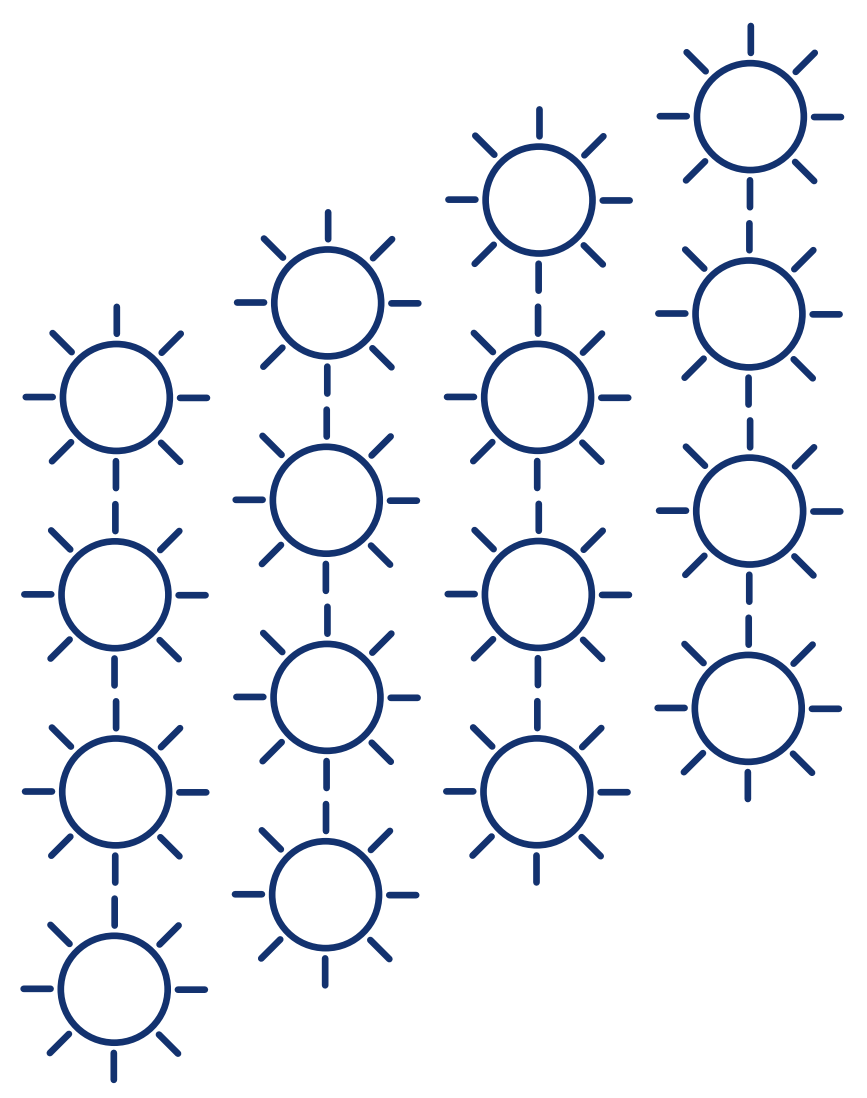
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Substation extension detailed site selection

Following the completion of Stage 1, both substation extension options were identified and taken forward to Stage 2.

The following demonstrates a summary of the key considerations from an engineering, environmental and cost perspective for each site.

A Red Amber Green (RAG) scoring assessment table for each site can also be viewed within our Consultation Document available at our consultation event or to download from the project webpage.



Substation extension Option 1

Option 1 requires greater landform modification than Option 2, resulting in increased landscape and visual effects. It would also impact an area of broadleaved woodland. From an engineering perspective, Option 1 is less favourable due to increased complexity, including significant earthworks, greater outage constraints, a higher carbon footprint, and additional interfaces with existing infrastructure.



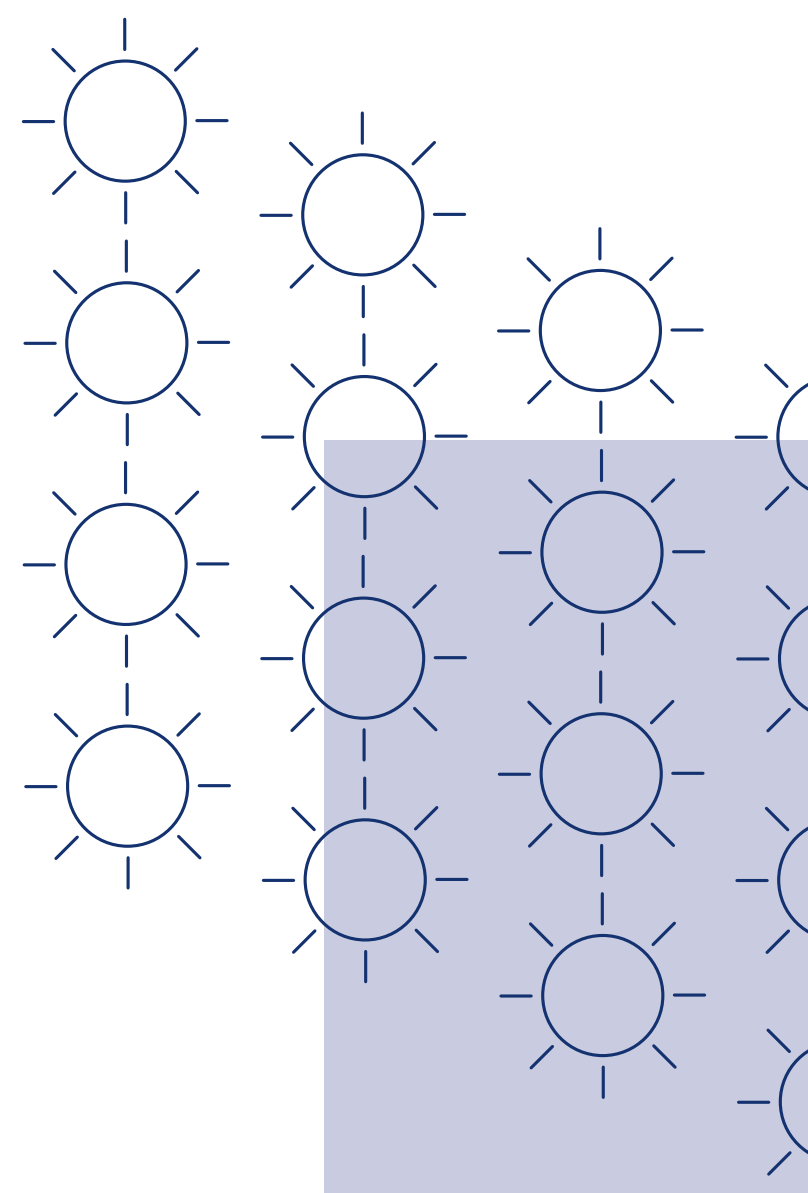
Substation extension Option 2

Option 2 would have a greater impact on habitats as it is located within Annex 1 Wet Heath habitat and has the potential to affect Groundwater Dependent Terrestrial Ecosystems (GWDTE's). It is less favourable from a hydrology perspective than Option 1 due to its proximity to a watercourse. However, it would result in lower landscape impacts and require less extensive earthworks due to the local topography and fewer space constraints, resulting in reduced construction-related traffic. Option 2 also presents fewer engineering and utility conflicts and provides greater flexibility for the substation layout. Opportunities to coordinate these works with the adjacent Loch na Cathrach project are currently under review.

Substation extension preferred solution:

Substation Extension Option 2 is the preferred option following consideration of the project constraints.

While environmental constraints remain for both options, within Option 2 these are considered manageable through further design development and appropriate mitigation measures. Option 2 offers fewer engineering conflicts, greater layout flexibility, reduced earthworks requirements, and more manageable outage coordination, making it the most practical and efficient option to deliver.



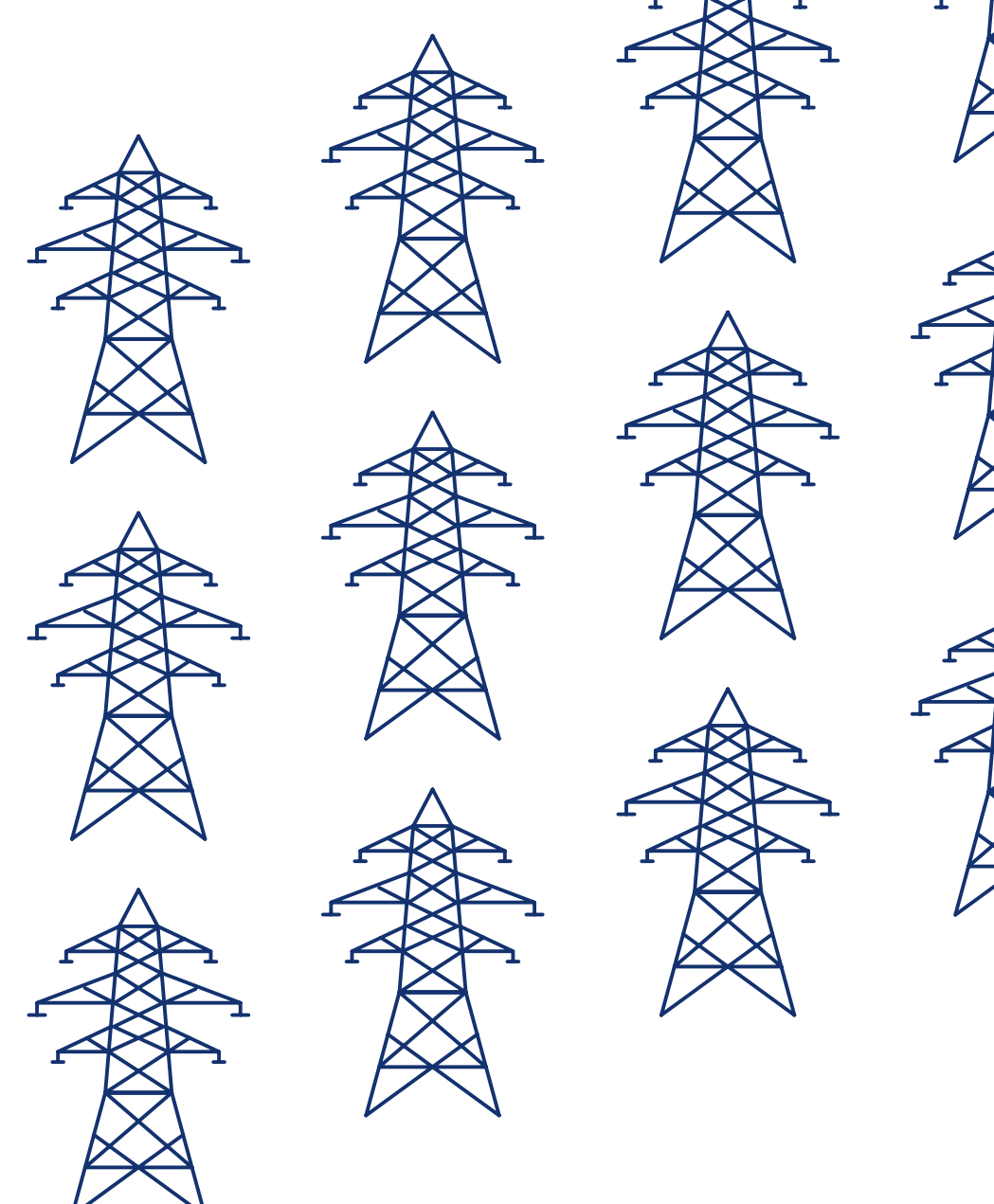
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Meeting our obligations

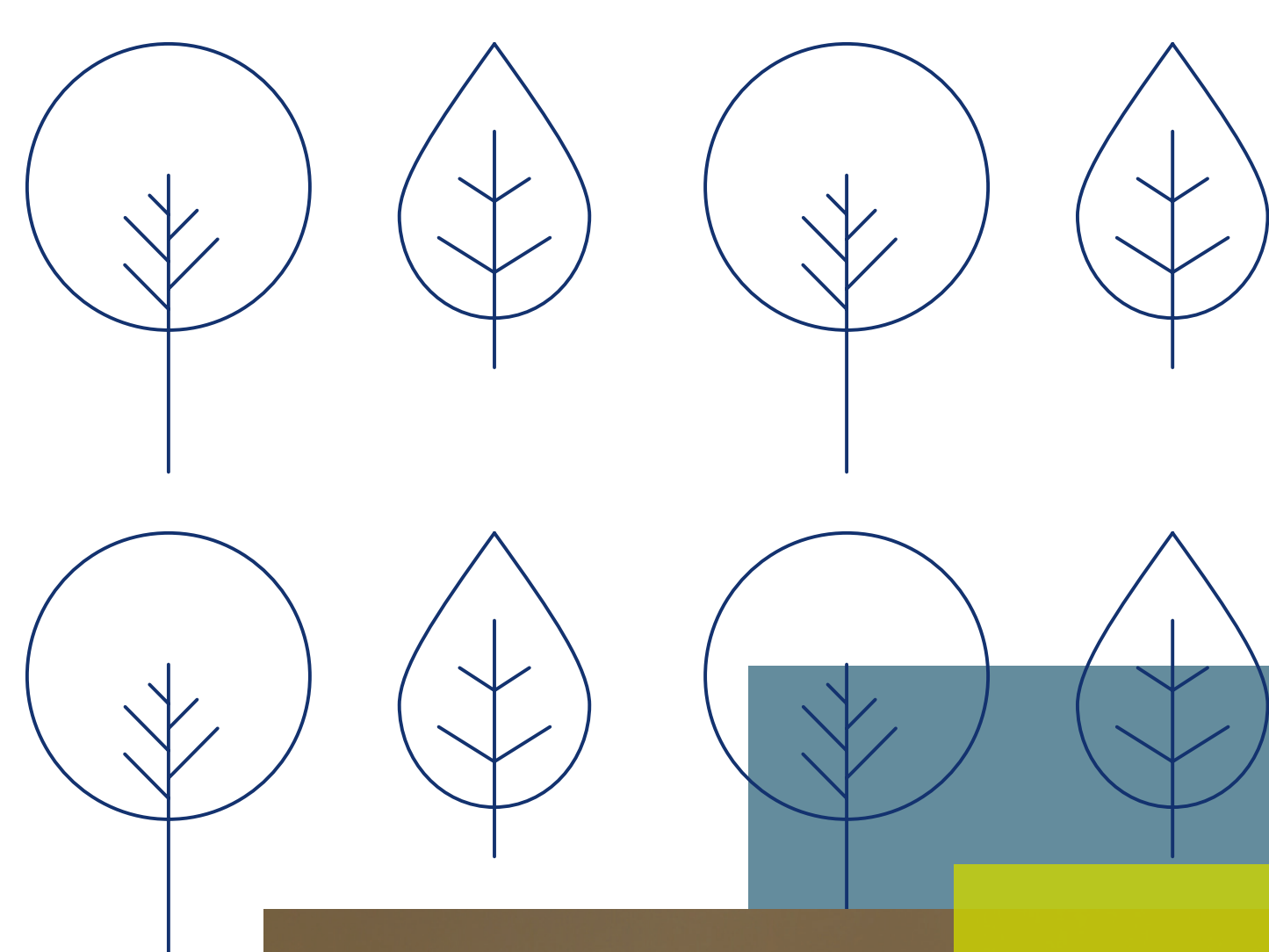
Environmental assessments

Desk-based assessments using available mapping and GIS (Geographic Information Systems) data, together with initial site walkovers by specialists, have been undertaken to gather baseline information. This is crucial to enable us to understand the key environmental constraints and sensitivities within the area of search around the substation.

This work has been undertaken during 2026 and has helped to identify key environmental issues including; landscape and visual amenity, sensitive habitats, protected ecology and ornithology, forestry, hydrology, hydrogeology, recreation and cultural heritage. Following the confirmation of a preferred site selection for the STATCOM and substation extension, further detailed studies and assessments are ongoing to support the consenting process.

Consenting

This development will likely be subject to a town and country planning application, submitted to the Local Planning Authority (LPA). As part of this process, there may be a need to submit an environmental impact assessment (EIA) screening opinion request to the LPA to understand if it is EIA development.



Engineering and economic considerations

In addition to the suite of environmental assessments undertaken, the following engineering and economic considerations form a key part of our site selection process:

- Construction costs and buildability (largely affected by ground conditions, such as peat/rock/flooding/contaminated land, etc).
- Operations and maintenance requirements.
- Outage requirements and network constraints.
- Vicinity to other electrical assets
- Vicinity to any other utility, overhead or underground.
- Urban development.
- Forestry, woodlands and biodiversity.
- Technology costs and design parameters.
- Site accessibility.



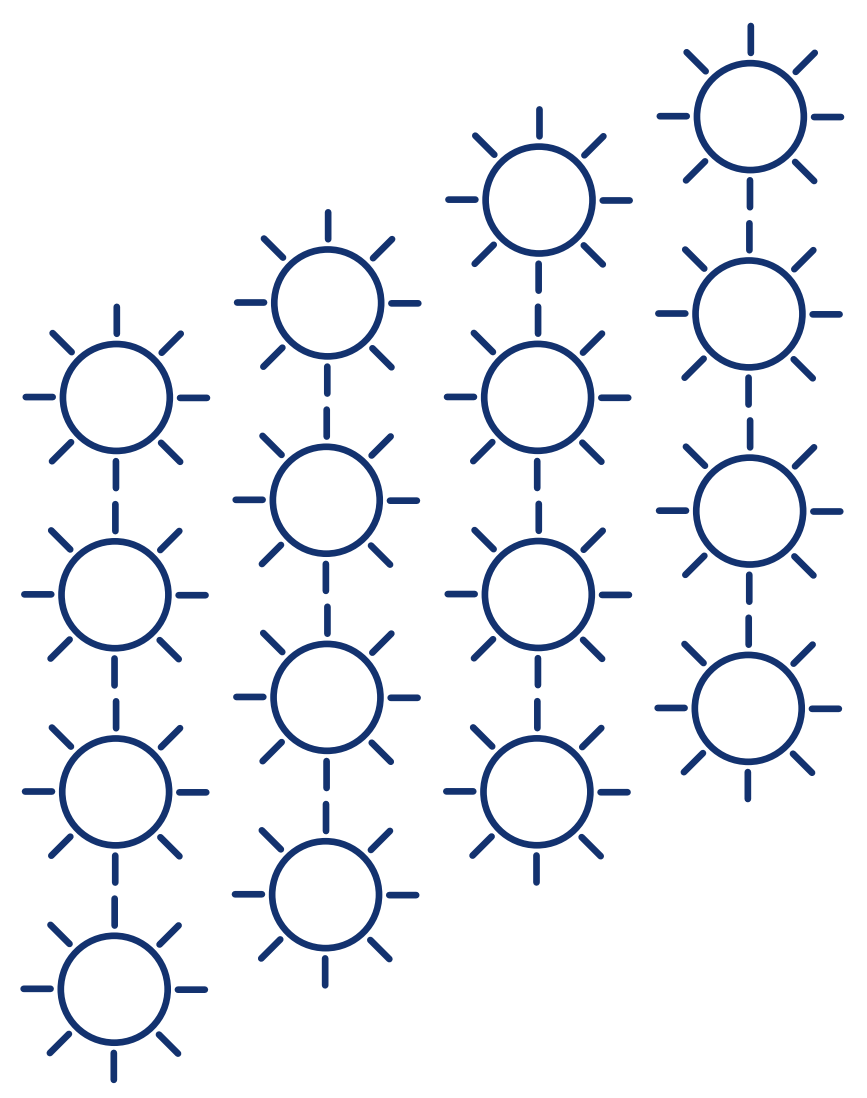
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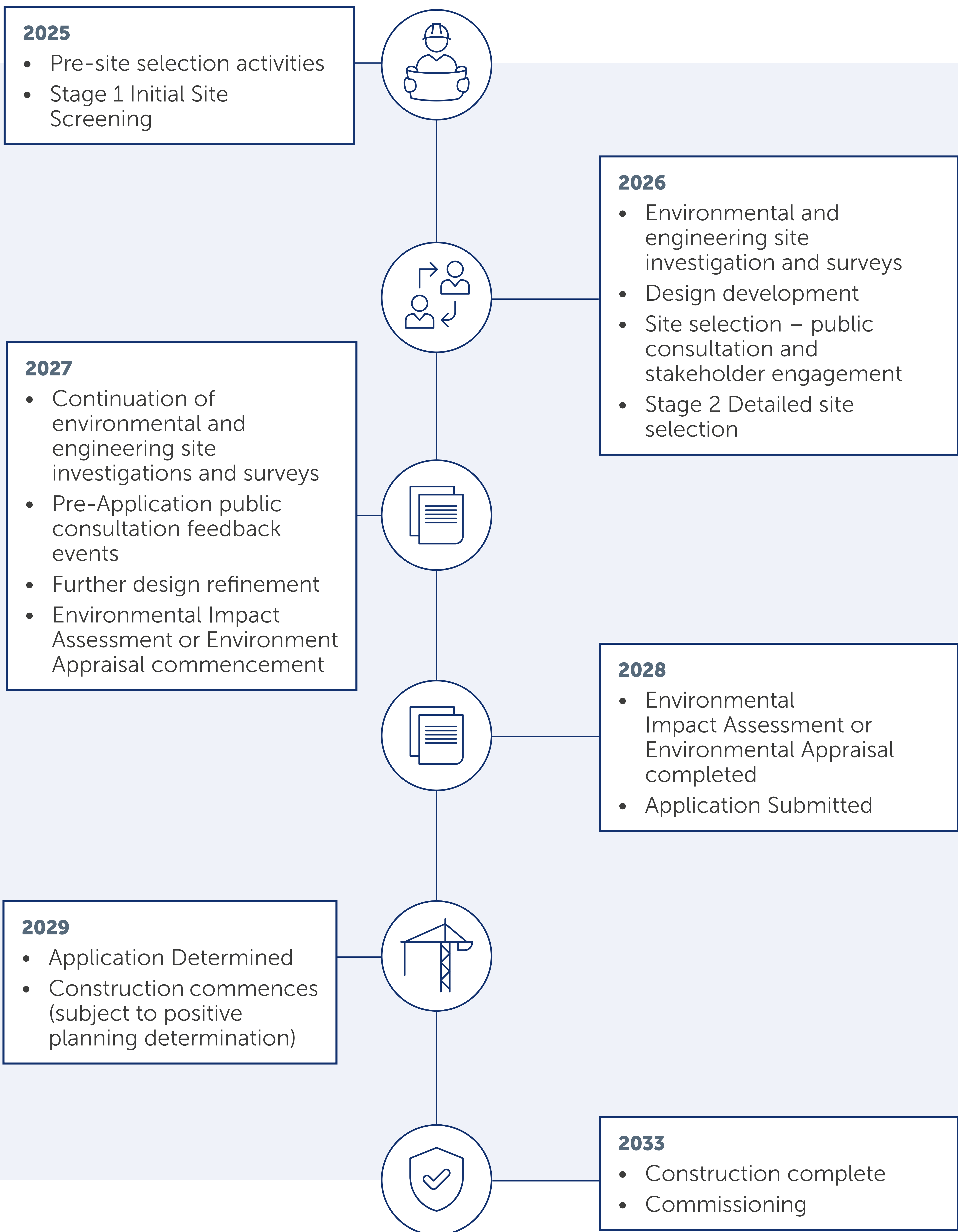
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Project timeline



**All dates are subject to changes in program*



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