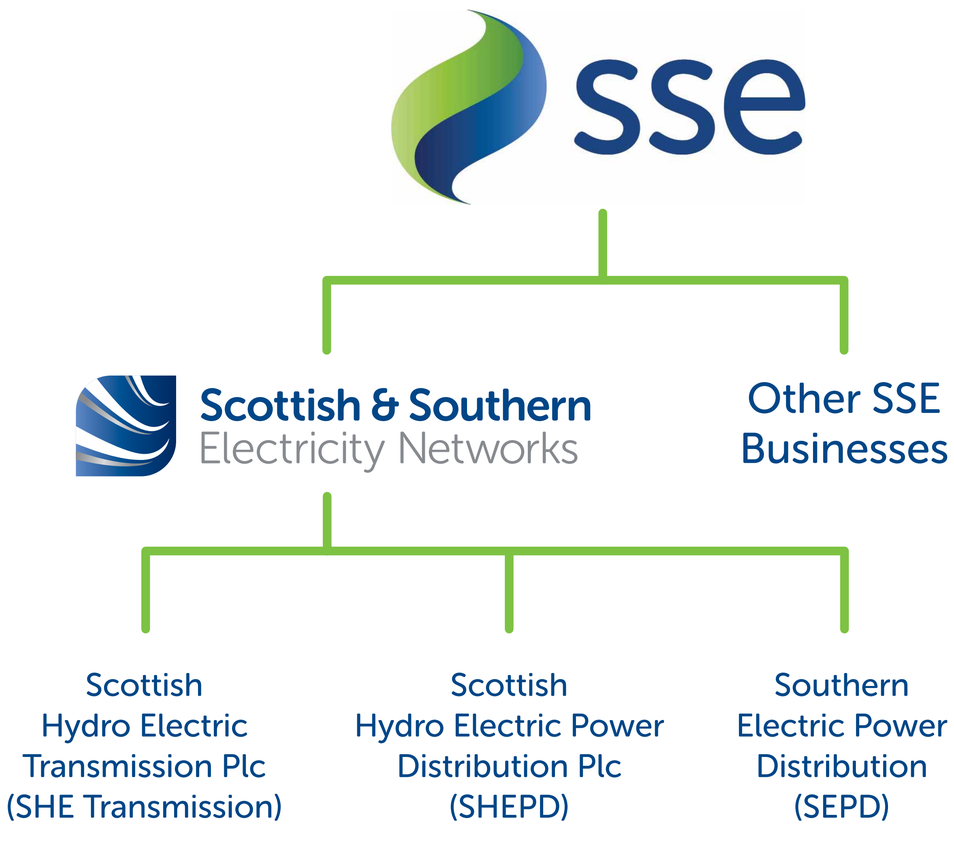
Who we are

We are Scottish and Southern Electricity Networks, operating under licence as Scottish Hydro Electric Transmission Plc for the transmission of electricity in the north of Scotland.



What is the difference between Transmission and Distribution?

Electricity Transmission is the transportation of electricity from generating plants to where it is required at centres of demand.

The Electricity Transmission network, or grid, transports electricity at very high voltages through overhead lines, underground cables and subsea cables. The transmission network connects large scale generation, primarily renewables, to central and southern Scotland and the rest of Great Britain. It also helps secure supply by providing reliable connection to the wider network of generation plans.

The Electricity Distribution network is connected into the Transmission network but the voltage is lowered by transformers at electricity substations, and the power is then distributed to homes and businesses through overhead lines or underground cables.

In total we maintain about 5,000km of overhead lines and underground cables – easily enough to stretch across the Atlantic from John O'Groats all the way to Boston in the USA.

Our network crosses some of the UK's most challenging terrain – including circuits that are buried under the seabed, are located over 750m above sea level and up to 250km long.

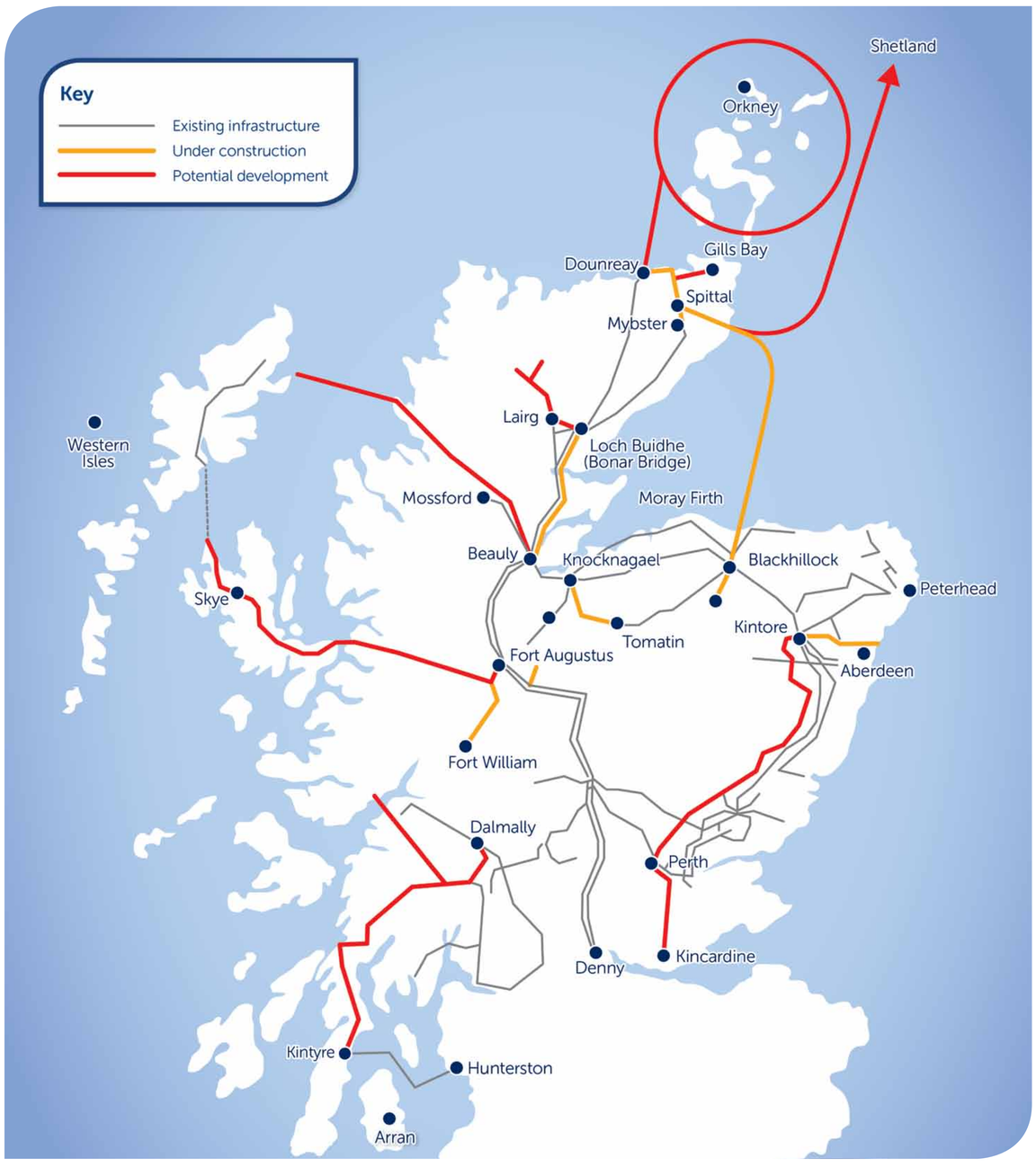
The landscape and environment that contribute to the challenges we face also give the area a rich resource for renewable energy generation. There is a high demand to connect from new wind, hydro and marine generators which rely on Scottish and Southern Electricity Networks to provide a physical link between the new sources of power and electricity users. Scottish and Southern Electricity Networks is delivering a major programme of investment to ensure that the network is ready to meet the needs of our customers in the future.

Our responsibilities

We have a licence for the transmission of electricity in the north of Scotland and we are closely regulated by the energy regulator Ofgem.

Our licence stipulates that we must develop and maintain an efficient, co-ordinated and economical system of electricity transmission.

Overview of Transmission projects



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Project overview

Project Requirement

A number of significant generation projects connecting to the North East transmission network has triggered the need for a new 275kV substation near Rothienorman. The reinforcement is also set to replace the existing conductors (wires) on the existing double circuit overhead line between Rothienorman and Kintore.

These works are required to allow this increased generation capacity access to the transmission system, while keeping the network fully operable and compliant with all necessary technical standards.

Without these necessary reinforcements, the network cannot facilitate all generation connections. The configuration of the existing 275kV network, with Overhead Lines between Blackhillock, Peterhead and Kintore all converge on an existing tee tower at Rothienorman.

This current arrangement does not allow equal sharing of power flows on the transmission system between these substations, which in turn puts limitations on the circuits capabilities.

Establishing a substation at Rothienorman addresses this issue and increases the networks efficiency and capability. Power sharing across these circuits becomes more important as generation load increases on the system.

A new 275/33kV Grid Supply Point (GSP) at Rothienorman has also been requested by Scottish Hydro Electric Power Distribution (SHEPD) who plan to transfer embedded generation as well as some local customer load onto the transmission system. A significant increase in connection applications of small scale generators seen by SHEPD has resulted in the need to reinforce their network.

Rothienorman substation was originally part of a large 400kV upgrade scheme of wider works proposed by SSEN in 2012. Although the substation will be run at the current system voltage of 275kV, the equipment installed will be capable of running at 400kV.

The wider system upgrade to 400kV is not currently guaranteed, however is something that is being reviewed by SSEN.

Planning Application

The proposal for a new substation at Rothienorman was first granted planning permission in February 2012 and was the subject of a recent application under section 42 of the Town and Country Planning Act 1997 (as amended) to modify a planning condition of consent which was granted on 1 May 2018.

SHE Transmission's project team have taken the view that the proposed changes to the consented proposals are likely to constitute a material change to what was originally approved by Aberdeenshire Council (AC). Although we are of the view that the changes proposed are not deemed to be significantly different from what has been consented, there are fundamental changes in terms of the site layout due to changing network requirements.

The number of transmission circuits coming into the substation has not altered, however the substation configuration and overhead line tie in arrangements have.

The new proposed substation now incorporating a GSP has led to a small increase to overall footprint. The changes to design however will have a minimal visual impact.

Project Timeline

Aug 2018
Revised Planning Permission Submitted

Jan 2019
Public Road Improvements Commence

Feb 2019
Revised Planning Application Approved (anticipated)

March 2019
Substation Site Set Up

July 2019
Overhead Line tie in from West

Sept 2019
Main Substation Construction Commences

Sept 2020
Overhead Line tie in from East

June - October 2021
Completion and Commissioning

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Our proposed solution

The site chosen for location of the new substation is adjacent to the Wood of Middleton near Rothienorman.

This site was preferred as it is close to the existing junction tower where the existing 275kV overhead line between Blackhillock, Kintore and Peterhead is located.

Proximity to the existing junction tower has the benefit of reducing overhead line diversions therefore is beneficial from a technical and cost perspective.

The site benefits from natural visual screening from the Wood of Middleton and has limited environmental constraints.

The following additional factors were considered during the site selection appraisal; ecology, drainage, topography, flood risk, ground conditions, access constraints, proximity to the existing transmission network, connectivity to services and security.

Substation

A new 275/33kV substation is required to reinforce the existing 275kV SSEN transmission network. The substation will break into the existing Overhead Line circuits from Kintore, Blackhillock and Peterhead. The 33kV Grid Supply Point element will provide the local distribution network a connection point onto the transmission network, reinforcing links between Keith, Macduff and Kintore.

The main components of the substation will be Air Insulated Switchgear (AIS) running at 275kV, built to a 400kV standard. The 33kV switchboard will be wholly enclosed within a small control building, connecting to the 275kV substation via two 275/33kV Super Grid Transformers (SGTs).

Overhead line tie in

The 275kV Overhead line tie ins are all existing circuits, which together form an important part of the SSEN transmission network. Due to their importance and the nature of the electricity network, these circuits need to be kept live throughout the delivery of this project. To facilitate this, two temporary bypass designs have been developed. This will require temporary towers to be erected in close proximity to the existing lines. The final substation design will have an additional 5 towers to facilitate the connection.

Rothienorman to Kintore Reconductoring

It is proposed to re-conductor the existing Overhead Line between the new substation at Rothienorman and Kintore. This reconductoring work is required to allow increased power flows on these circuits. Existing towers will be retained with the conductor (wires) replaced for a new – higher capacity equivalent.

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Project details

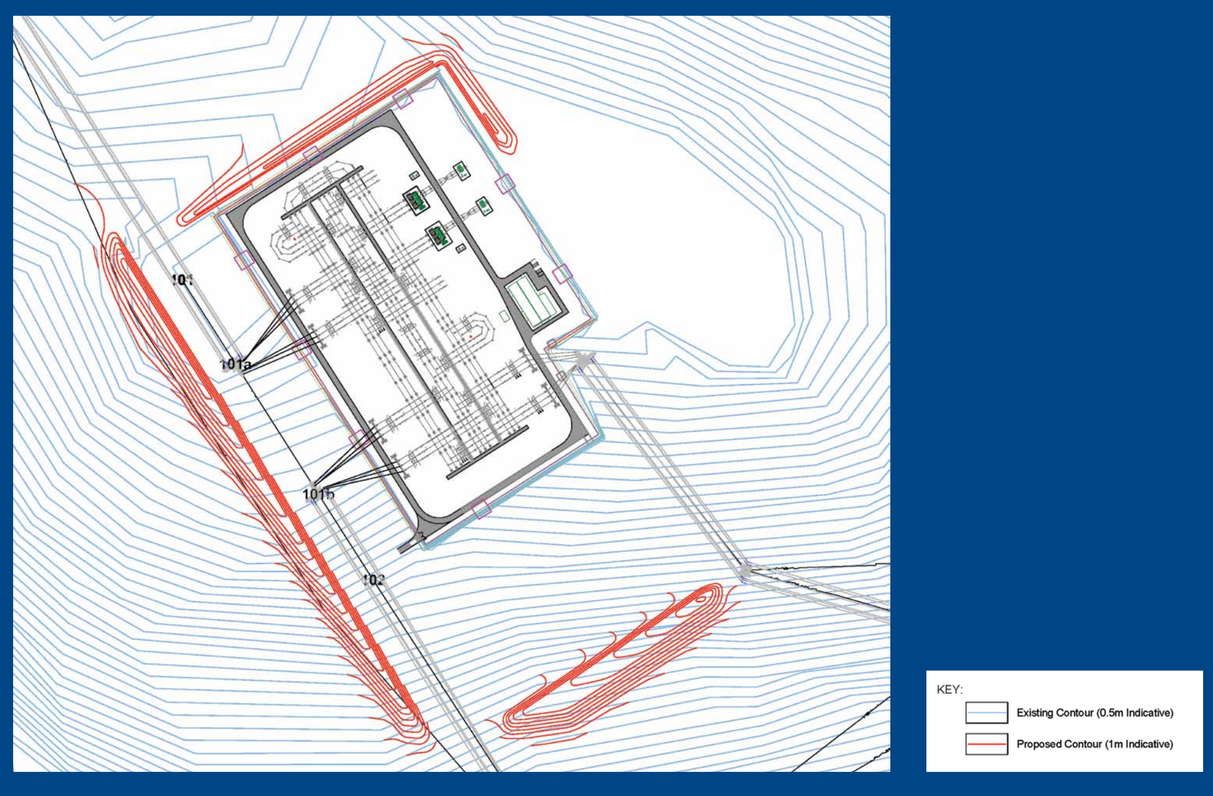
Screening

In order to minimise the visibility of the substation, landscape mitigation measures will be implemented which have been assessed as part of the landscape and visual impact assessment.

The substation screening mitigation will include bunding and planting of trees to reduce the landscape and visual impact of the proposed substation. Tree species likely to be planted are still to be verified however will be detailed within the Environmental Appraisal that accompanies the planning application.

Trees removed to allow the diversion of the overhead line from Peterhead into the substation will be mitigated by the planting in the gap where the existing line crosses the shelterbelt.

The map adjacent provides an indicative example of proposed screening for the proposal.



Transport, Infrastructure and Construction Methods

Transport Infrastructure and Construction Methods

Construction of the substation will require plant and machinery, along with vehicles to transport materials and workers to the site. The largest plant items for the substation would be two 275/33kV transformers. These types of transformers are likely to weigh approximately 170 tonnes each when transported.

Vehicle access during construction would be via the A920 and C46(S) adjacent to the site. These routes would be subject to minor improvements ahead of construction, such as widening carriageway and junctions from the A920/B992 junction to the substation. The C46 will not be made any wider than the adjoining B992 and traffic calming measures will be put in place to help ensure no change in driving behaviour between the B992 and C46.

A new bridge to cross the Black Burn is also proposed. These improvements are captured under separate planning applications. A new permanent access track would be required from the C46(S) for use during construction and to provide ongoing access and maintenance to the substation during its lifetime.

Earthworks

Building the substation platform which is approximately 350m x 250m in size will require significant volumes of graded stone. Our intention is to have 100% retention on site.

This would mean there would be a mass balance of material on site to minimise vehicle movements in the local area, however local sources of stone are also being investigated as part of our development works into the platform design. This will need to be established during detailed design. Utilisation of localised sources provides a more sustainable construction method whilst significantly reducing the number of potentially disruptive construction operations.

Laydown and Office

Temporary offices, welfare and storage facilities for the main work force will be established during the planned construction period. These will be located in close proximity to the platform and overhead line access routes.

Visualisation of proposed substation from the C86 without screening.

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Environment

Landscape and Visual

The appearance of the substation within the landscape, and how it would be seen from nearby homes and roads, has been carefully considered as part of a landscape and visual impact assessment. The substation would increase the extent of electrical infrastructure within the landscape, but the gently rolling landscape and nearby trees would help to screen views. There are also plans to introduce landscape mitigation measures as part of the substation proposal including bunding and new tree planting to help "screen" the development.

Historic Sites

The nearest identified designated historic site is the B-listed dovecot at Home Farm of Blackford (3027). Twelve other listed buildings of grade A to C are situated within 5km of the substation. The Williamston House Garden and Designed Landscape is situated out with 5km, to the southwest. Six Scheduled Monuments are present within 5km, including the Ythan Wells Roman camps. Archaeological assessment of the substation site has previously been undertaken, including trial trenches and sampling, which revealed an almost complete absence of artefacts or archaeological features.

Ornithology

There is limited suitable habitat for protected bird species at the site, as arable cropped fields and improved pasture areas provide little in the way of suitable habitat for breeding or nesting birds.

A colony of Jackdaws was noted in the mature Beech trees south of the public road neighbouring the site.

Swallows, House martins and Skylark were observed within the vicinity of the substation.

Noise

Construction noise is considered to be short term and intermittent and can be controlled through the implementation of a noise management plan, which would include working hours agreed with Aberdeenshire Council.

Noise monitoring surveys are being undertaken at noise sensitive receptors within the vicinity of the Proposed Development along the C46(S). The purpose of these surveys is to establish a pre-development baseline prior to a noise impact assessment being undertaken.

Appropriate mitigation measures will be considered dependent on the results of the survey.

Hydrology and Soils

The footprint of the Proposed Development is not in an area identified as being at risk from flooding. Sustainable Urban Drainage Systems would be incorporated into the design to account for any increased surface level water resulting from the development.

Private water supply infrastructure is present serving properties within the vicinity of the Proposed Development. Further survey effort would be undertaken to identify private water supply infrastructure and ensure appropriate mitigation measures are put in place to protect private water supplies. No peat soils have been identified within the footprint of the development.

Ecology and Nature

The proposed substation site lies within four large enclosed fields, all dominated by arable crops. Field boundaries are stock-fenced, and there are narrow (<1m) margins of neutral grassland or tall herb communities along the boundaries, as well as along the public roadside verge.

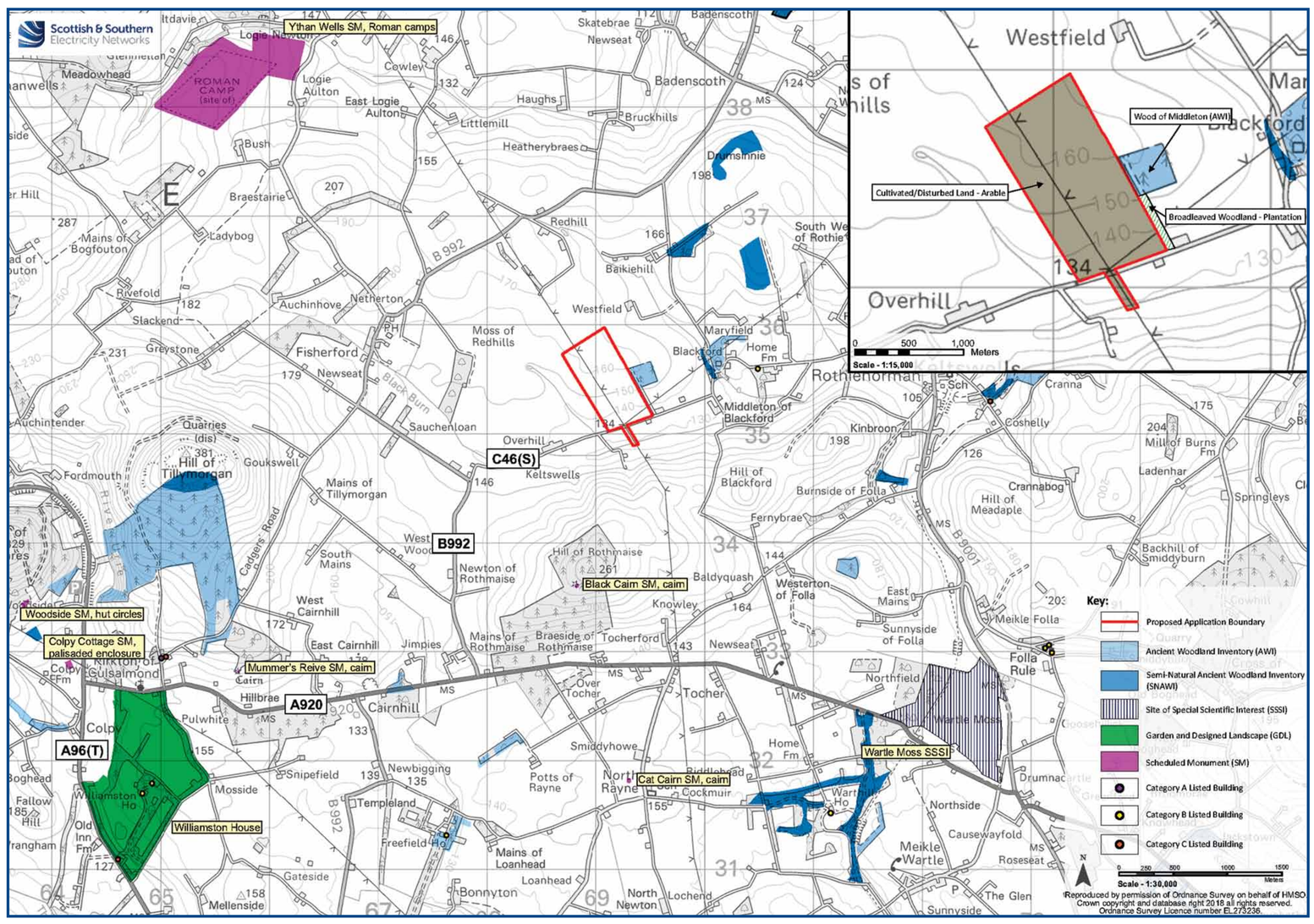
To the east of the substation site is a tree-lined access track, with tree cover dominated by Beech, beyond which lies a small mixed woodland (Wood of Middleton) dominated by Sitka spruce and mixed broadleaved trees. To the north lies a small shelterbelt dominated by Sitka spruce.

The Proposed Development does not pass through any sites designated for their natural heritage. Wartle Moss Site of Special Scientific Interest (SSSI) situated 3.8km to the southeast is the closest designated site.

The nearest European designated sites are the Hill of Towanreef Special Area of Conservation (SAC) and the Sands of Forvie SAC/Ythane Estuary Special Protection Area (SPA), both of which are over 25km away.

A recent protected species survey at the site did not identify any signs or places of shelter for protected species, and there is little obvious habitat suitable for protected species.

Some mature trees may provide suitable roosting habitat for bat species, but no potential roost features have been identified.



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What happens now and how do I have my say?

We understand and recognise the value of the feedback provided by members of the public during all engagements and consultations.

We are keen to receive your views and comments in regards to the following questions:

- Has the requirement for the project been clearly explained?
- Have we explained the approach taken to select the proposed substation site adequately?
- Are there any additional factors, or environmental features, that you consider important and should be brought to the attention of the project team?

Community Liaison Manager
Kelly Scott

kelly.scott@sse.com

07443 772 946

Kelly Scott
Scottish and Southern
Electricity Networks,
1 Waterloo St,
Glasgow, G2 6AY

www.ssen-transmission.co.uk/projects/
rothienorman-substation

Comments

Your views and comments can be provided to the project team by completing a feedback form or by writing to Kelly Scott, Community Liaison Manager.

Please note that comments made to SHE Transmission are not representations to Aberdeenshire Council, as planning authority at this stage. The opportunity for lodging representations will be when the application is formally submitted to Aberdeenshire Council for formal consideration.

We will be seeking feedback from members of the public and Statutory Bodies until 16:00, Friday 27 July 2018.

Information

Information will also be made available via the project web page and social media channels:

Project Website:
www.ssen-transmission.co.uk/
projects/rothienorman-substation

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