

North of Scotland

Delivering a Pathway to Net Zero

March 2022



Scottish & Southern
Electricity Networks

TRANSMISSION

Agenda

Topic:

Speaker:

Welcome & Introductions

Greg Clarke – Head of Corporate Affairs

Overview of SSEN Transmission & Net Zero

Rob McDonald – Managing Director, SSEN Transmission

Future Development Projects

Calum Watt – System Planning and Investment Manager

Projects in Construction

Kevin Smith – Project Director, Capital Development and Delivery

Supply Chain Regional Opportunities

Paul Leddie – Director of Procurement

Stakeholder Engagement & Future Events

Lesley Dow – Head of Community Engagement

Facilitated Q&A

Greg Clarke – Head of Corporate Affairs

Handling feedback and information



Everybody in SSEN Transmission works hard to encourage and demonstrate transparency around our projects, proposals and plans. All information and content in today's presentation, provided by us, can be shared with others outside of this engagement.

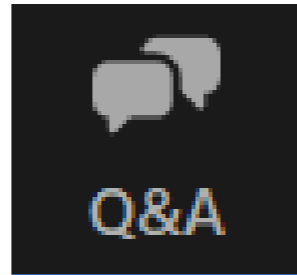


However, feedback gathered during today's engagement will not be associated with you specifically. As one of our contributing stakeholders, we may publish your feedback in any reports or submissions we subsequently produce, **but we will anonymise this**. Instead of quoting specific stakeholders, we will describe the origin of feedback using broad categories, such as "Local Resident" or "Landowner" as examples. We will also take care to avoid 'jigsaw identification'.

Thank you in advance for your honest feedback and constructive participation.

Ask a Question

To submit questions, click the Q&A button:



Then, type your question in the box below, and press send.

Your question(s) will only be seen by the SSEN Transmission team.

Type your question here...

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SSEN Transmission & The Pathway to Net Zero

Rob McDonald

Managing Director, SSEN Transmission

Who we are: SSEN Transmission

- Maintain and invest in the high voltage 132kV, 220kV, 275kV and 400kV electricity transmission network in the north of Scotland
- License area extends over a quarter of the UK's land mass, crossing some of its most challenging terrain
- Develop critical national infrastructure which is essential to deliver net zero and supports economic growth
- **5 Year Business Plan to 2026 “A Network for Net Zero”**
- Anticipated investment of £4bn in the five years to 2026*
- Part of SSE Group which also includes electricity distribution, renewable and thermal generation

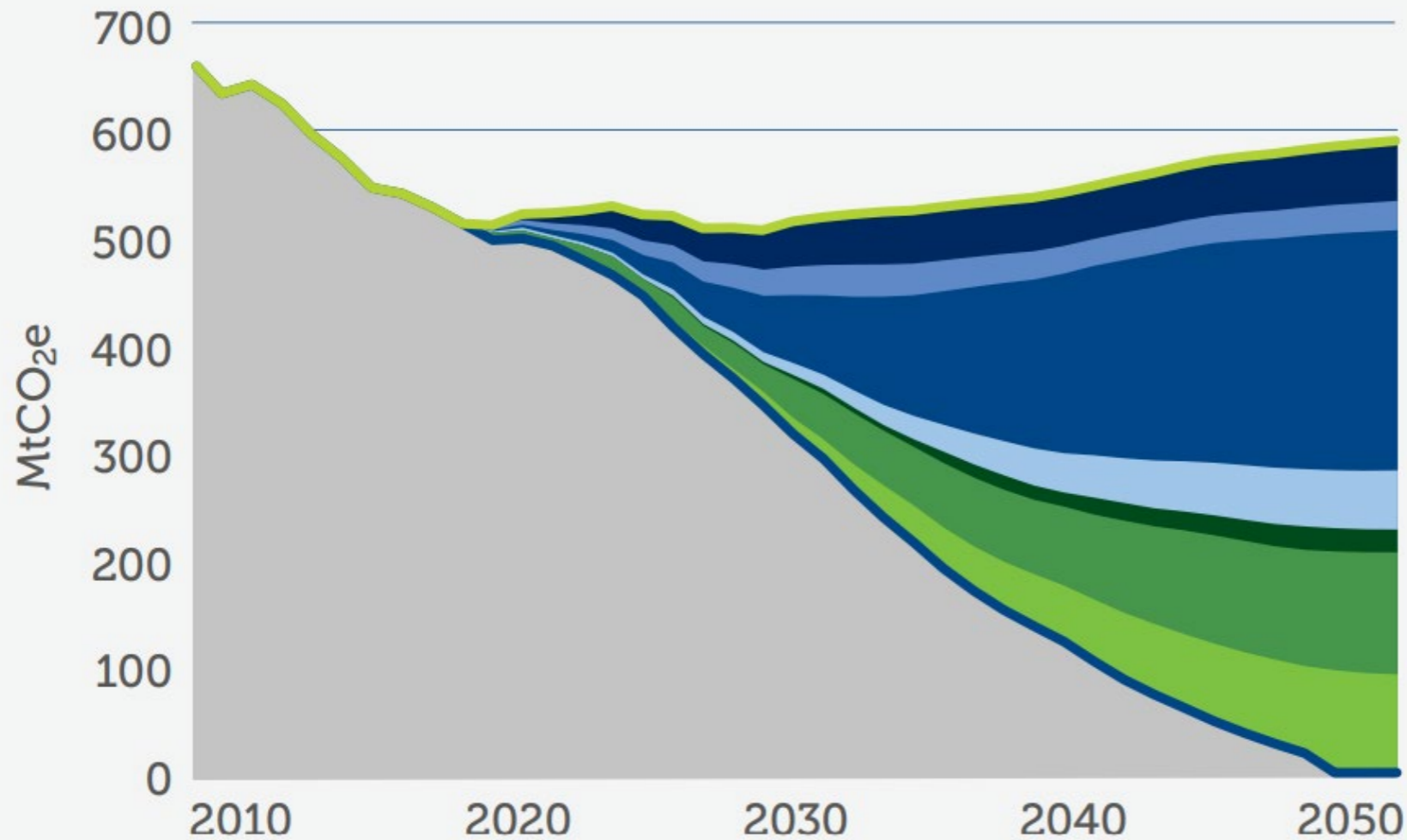
*subject to regulatory approvals

Five years Five clear goals

-  **Transport the renewable electricity that powers 10 million homes**
Our RIIO-T2 Certain View will deliver an electricity network with the capacity and flexibility to accommodate 10 GW renewable generation in the north of Scotland by 2026
-  **Aim for 100% transmission network reliability for homes and businesses**
By investing in new technology and ways of working, when cost effective for customers to do so, we will strive for 100% transmission network reliability for homes and businesses by 2026
-  **Every connection delivered on time**
By 2026 we will provide every network connection, tailored to meet our customers' needs, on time, on budget and to our customers' satisfaction
-  **One third reduction in our greenhouse gas emissions**
Reduce the controllable greenhouse gas emissions from our own operations by 33% by 2026, consistent with a net zero emissions pathway
-  **£100 million in efficiency savings from innovation**
Our RIIO-T2 Certain View includes £100 million of cost savings through productivity and increased innovation, and we aim to go further to save more

Getting to Net Zero

The critical contribution from energy generated in the north of Scotland



- Reduce demand
- Improve efficiency
- Low carbon solutions: electrification
- Low carbon solutions: hydrogen and other low carbon technology
- Low carbon solutions: CO₂ capture from fossil fuels and industry
- Produce low carbon energy
- Offset emissions using land and greenhouse gas removals
- Outturn and baseline
- Balanced Net Zero Pathway



Source [Getting to Net Zero: the critical contribution from electricity generated in the north of Scotland](#), SSEN Transmission, November 2021

NETWORK IN 2026



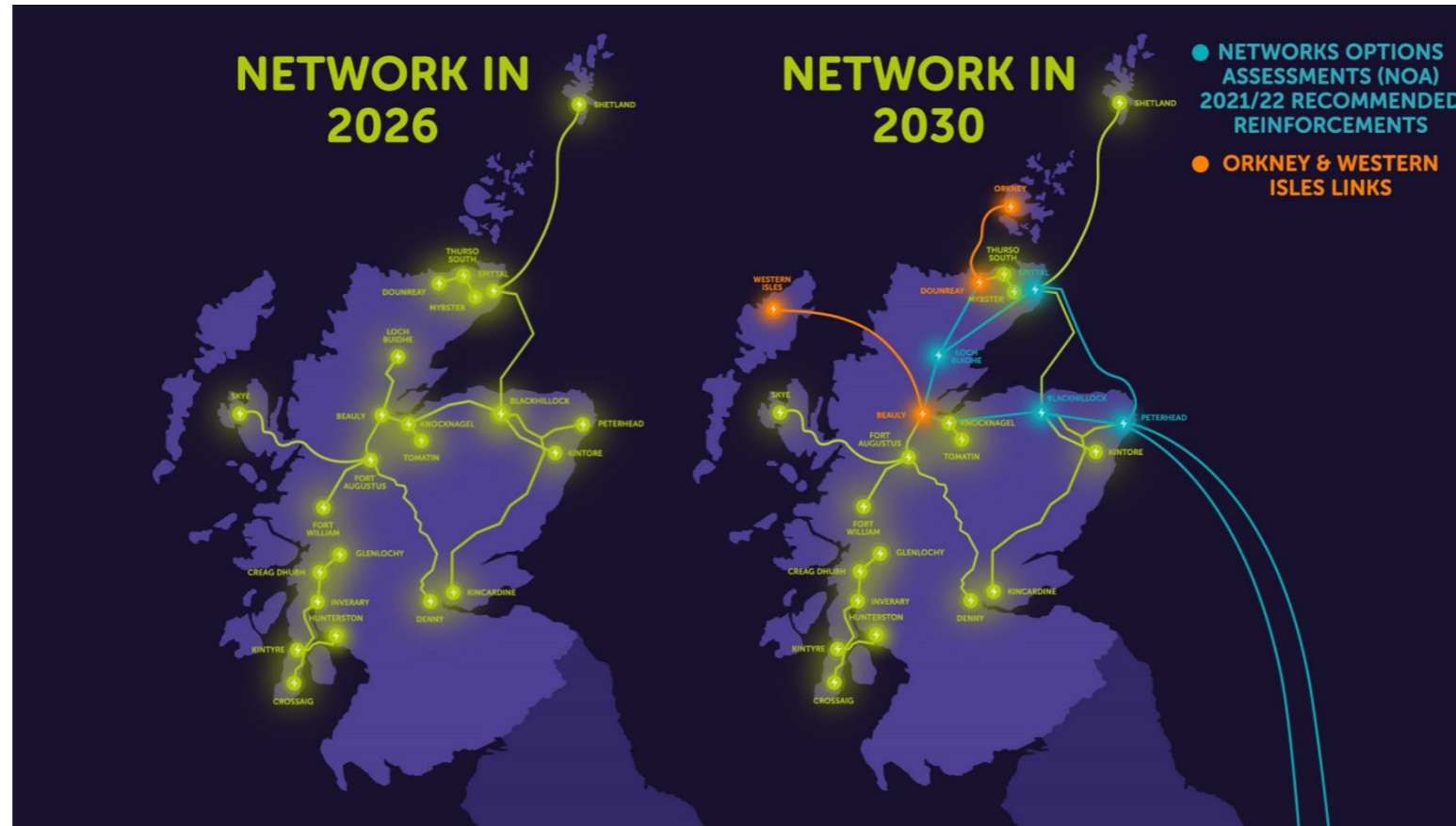
NETWORK IN 2030



● NETWORKS OPTIONS
ASSESSMENTS (NOA)
2021/22 RECOMMENDED
REINFORCEMENTS

● ORKNEY & WESTERN
ISLES LINKS

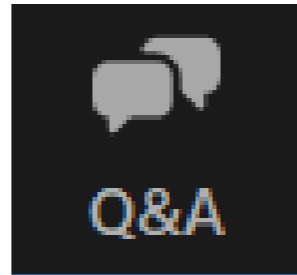
Video: Delivering a Pathway to Net Zero



<https://vimeo.com/692186953>

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Future Development Projects

Calum Watt

System Planning and Investment Manager

What drives network development?



New Connections

New Connections to the Transmission Network

Driven by customer request to access the Transmission System

Generation or Demand

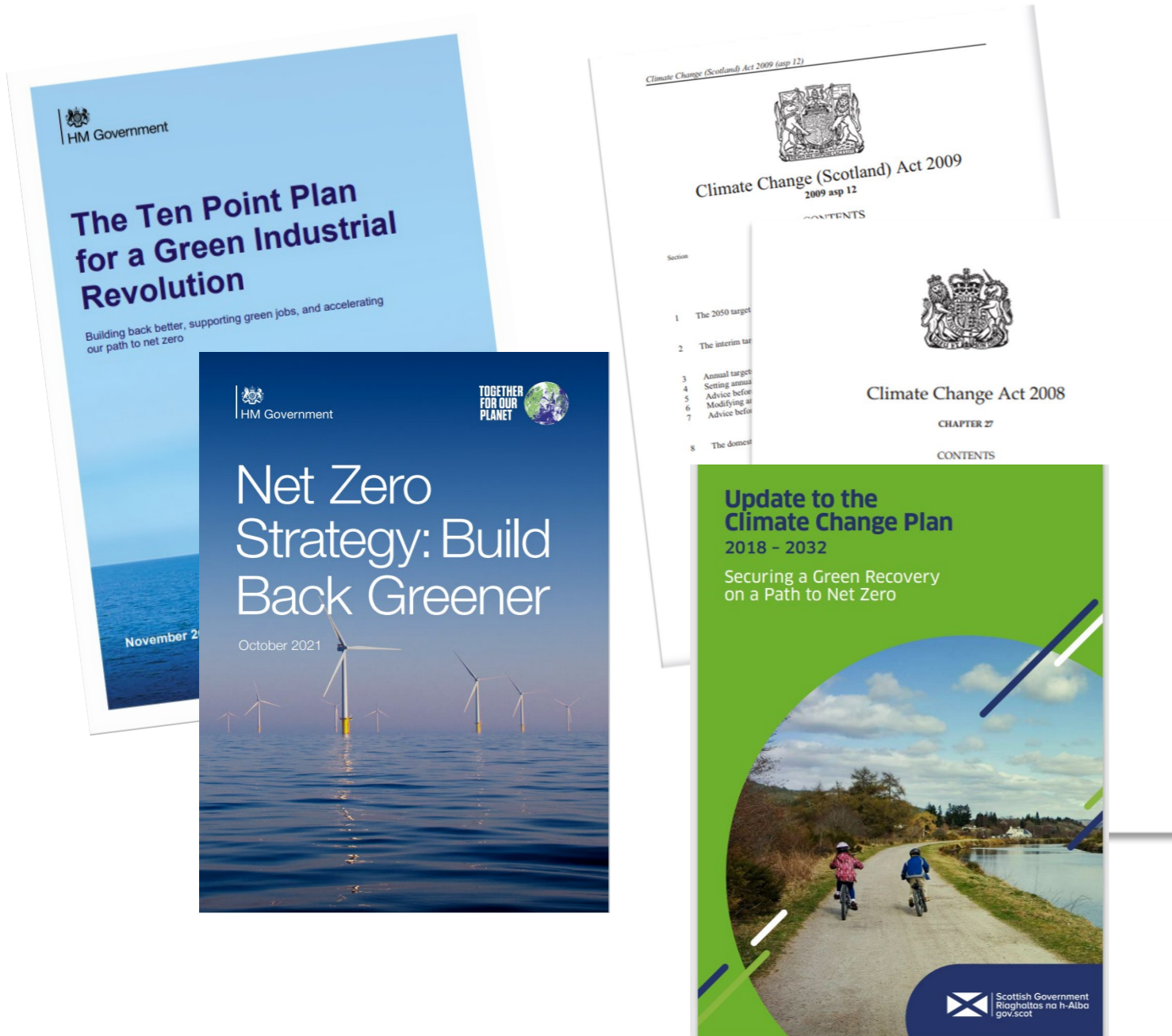


Asset Replacement

Primarily driven by Condition Assessment to maintain security of supply or equipment damage inc. storm damage

Network design requires co-ordinated approach

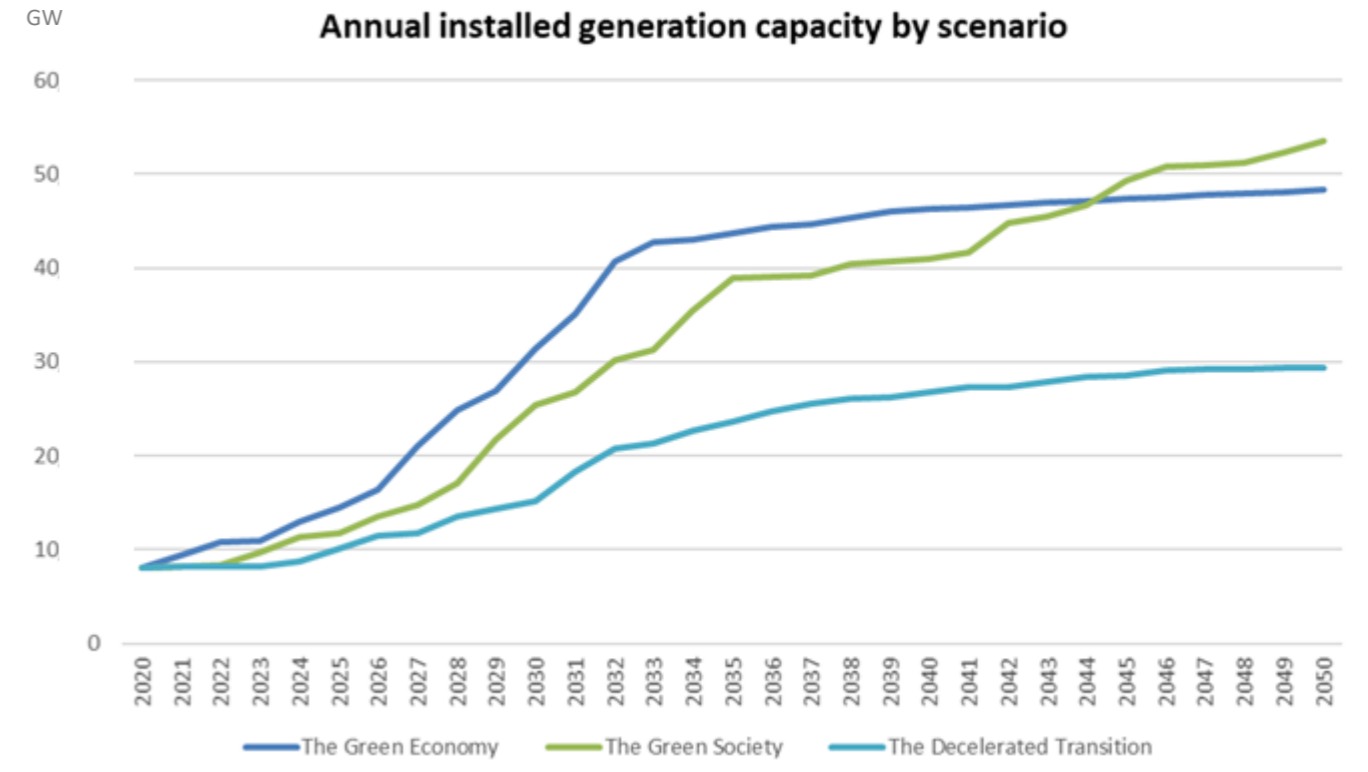
Renewable Generation and Net Zero Targets



- Scottish Government's Net Zero goal by 2045
- UK Government's Net Zero Targets by 2050
- UK Government's 40GW by 2030 offshore wind target
- Scottish Government's 11GW offshore wind by 2030 target
- Scottish Government's 8-12GW of onshore wind by 2030 target

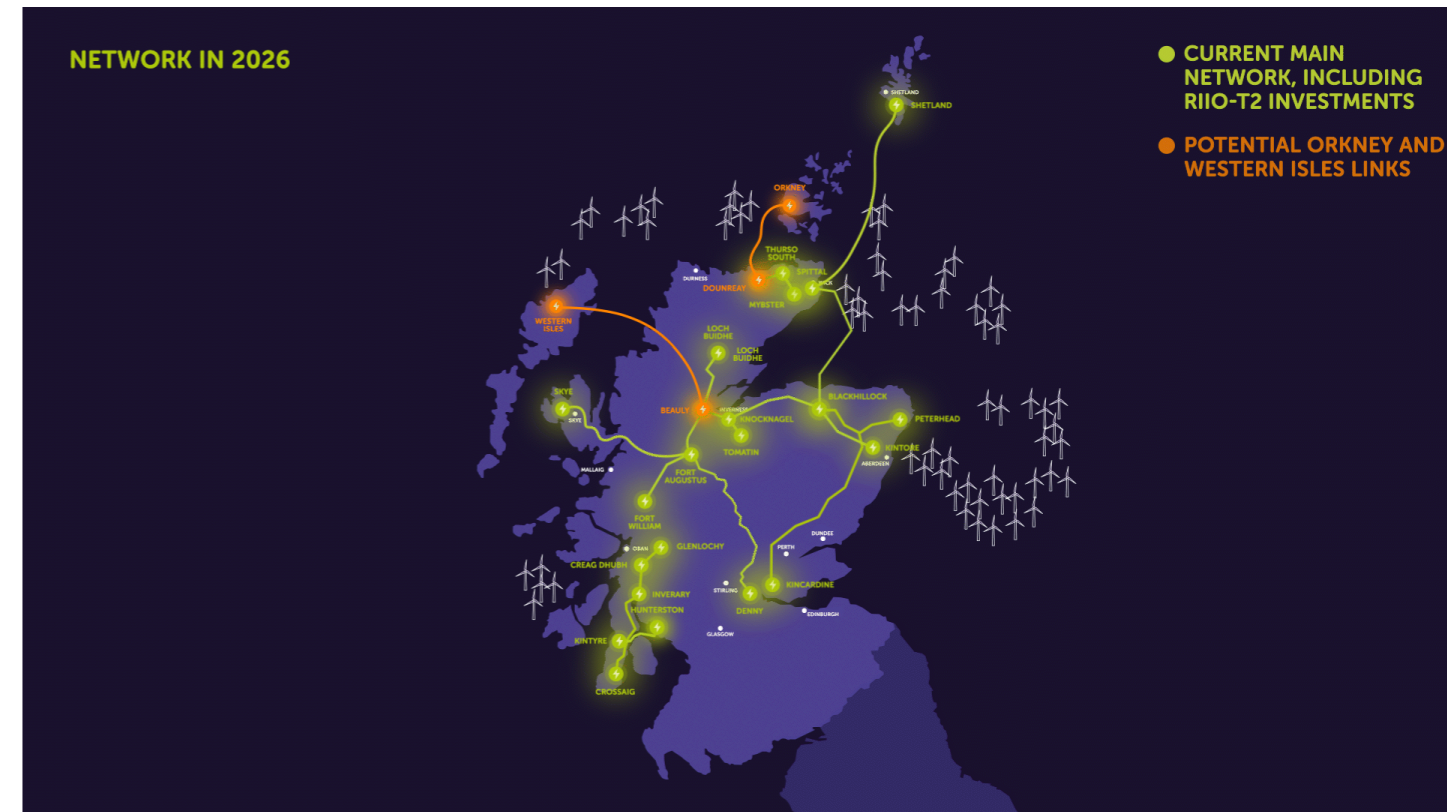
North of Scotland: Renewable Generation Growth

- There is currently c.8GW of renewable generation capacity connected to our network
- This is expected to grow to between 30GW to 50GW by 2050 (an increase of 3 to 5 times existing)
- Wide range of technology type expected to connect including:
 - Onshore Wind
 - Offshore Wind
 - Pumped Storage Hydro
 - Solar
 - Battery/Storage Technology
 - Hydrogen
 - Interconnectors



ScotWind: Connecting Scotland's Offshore Windfarms

- Will play a significant role in achieving UK and Scottish Government's offshore wind and net zero targets
- 25GW of offshore capacity awarded in January 2022 through ScotWind
- This year's Network Options Assessment (NOA), set out onshore strategic reinforcement requirements
- Holistic Network Design (HND) for 10.7GW to be published in June 2022
- HND being developed to deliver offshore wind in a more coordinated manner, while ensuring an appropriate balance between environmental, social and economic costs
- NOA will be published in conjunction with the HND
- Follow up exercise to the HND to be completed in Q1 2023 for the remainder of ScotWind Projects enabling connection of up to 25GW



Network Options Assessment: 'The NOA'

What is it?

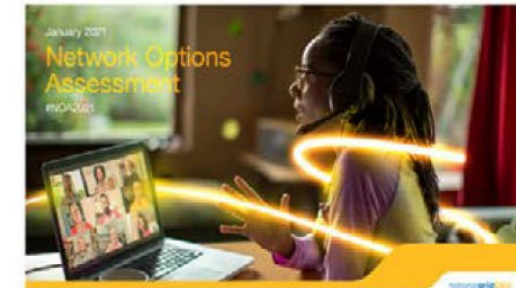
- The Network Options Assessment (NOA) is the System Operators recommendation for which reinforcement projects should receive investment
- These projects are major electricity transmission network reinforcements
- It looks at the whole of the GB electricity network system to decide which reinforcements are in the best interest of GB consumers



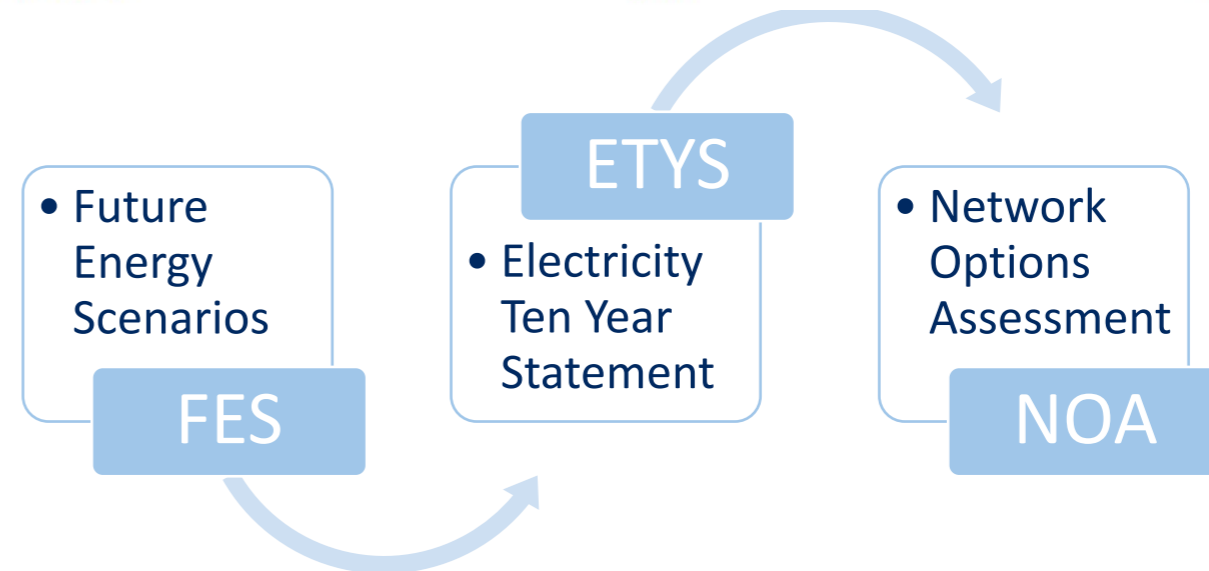
Future of Energy Scenarios (FES)
July 2020
Range of credible pathways for the future of energy from today to 2050.



Electricity Ten Year Statement
November 2020
The likely future transmission requirements on the electricity system.



Network Options Assessment
January 2021
The options available to meet reinforcement requirements on the electricity system.



The Consenting and Approval Process

Our development pipeline continues to evolve and to ensure we are delivering the right reinforcement at the right time, each project can be subject to the following:

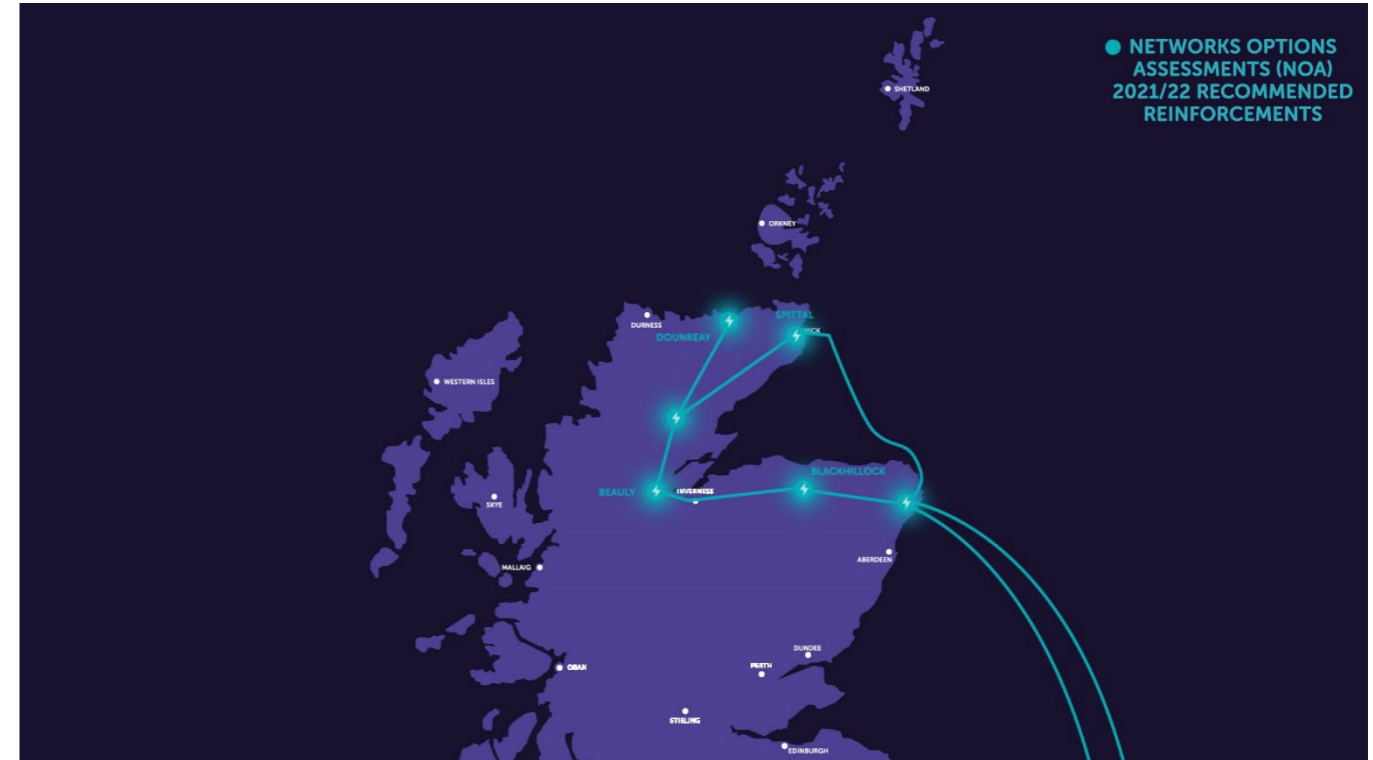
- Refinement and engagement from SSEN Transmission with a wide range of local and national stakeholders
- Further assessment by the Energy System Operator (ESO)
- Regulatory approval from Ofgem
- Scottish Government and/or Local Planning & Environmental Consents



Next Steps for Reinforcing the Transmission Network

Delivering a network to support Net Zero

- All the following projects recommended to proceed in Jan 2022 via annual Network Options Assessment (NOA), published by Energy System Operator (ESO)
 - Beauly to Dounreay 400kV Double Circuit
 - Beauly - Blackhillock - Peterhead 400kV Double Circuit
 - Beauly - Loch Buidhe - Spittal 275kV Double Circuit
 - HVDC Link Spittal - Peterhead
 - HVDC Link Eastern 1
 - HVDC Link Eastern 2
- At early stage of development in line with overhead line and underground cable routing guidance and substation selection guidelines
- Stakeholder consultations will be carried out to inform key project decisions throughout the development phase



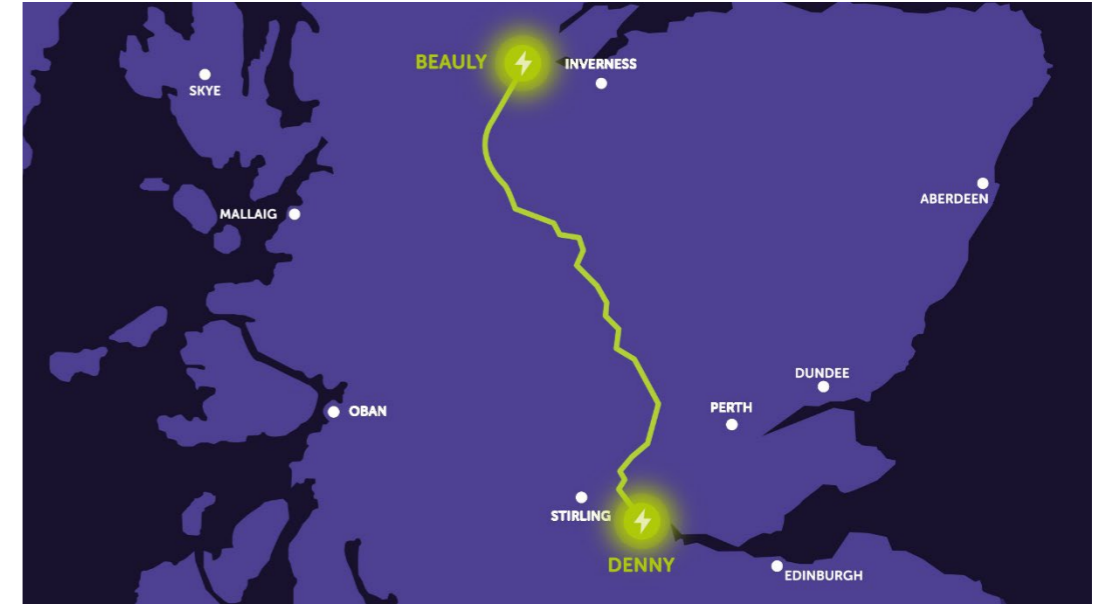
Development from 2022 onwards

Construction 2026 - 2031

Enhancing our Existing Network

Beauly to Denny Overhead Line 275kV to 400kV Upgrade

- Project required to facilitate connection of further onshore generation, primarily pumped hydro in the Fort Augustus area
- Towers are already constructed to 400kV capability under the Beauly to Denny project completed in 2014
- No new additional overhead lines in relation to this project
- Focus will be existing substation upgrades to accommodate the higher voltage and required voltage transformation up from 275kV



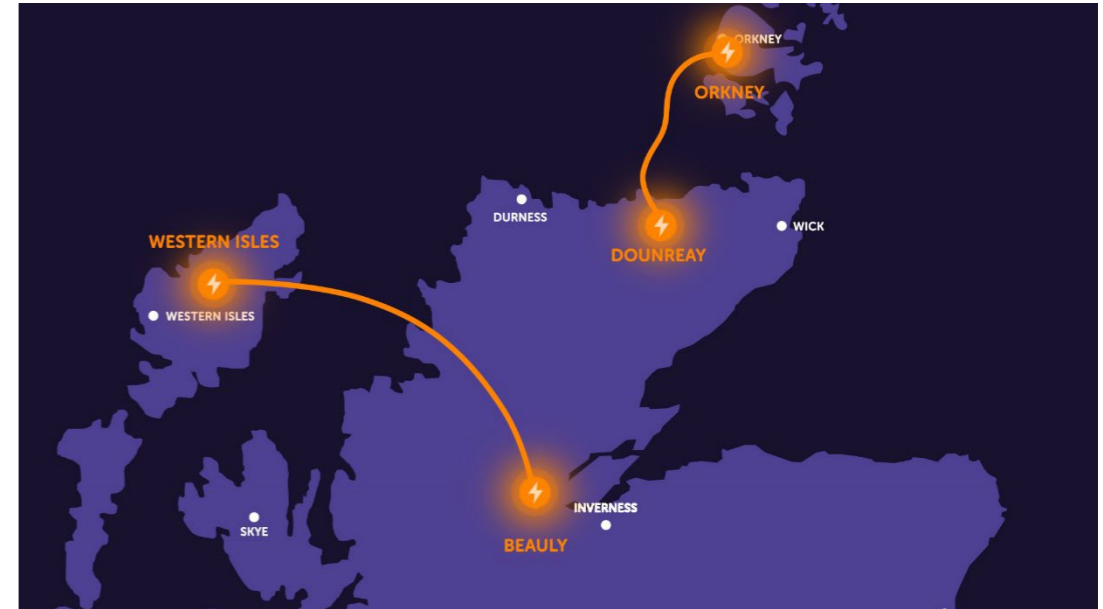
Development from 2022 onwards

Construction 2026 - 2029

Connecting the Islands

Western Isles & Orkney

- We continue to work with stakeholders to develop and take forward advanced proposals to enable mainland transmission connections
- Both links remain subject to regulatory approval, which in turn is dependent on island developers demonstrating their commitment to progress, in line with Ofgem's expectations
- We are hopeful developers will make positive progress meeting Ofgem's expectations this year, allowing us to seek final regulatory approval in the summer

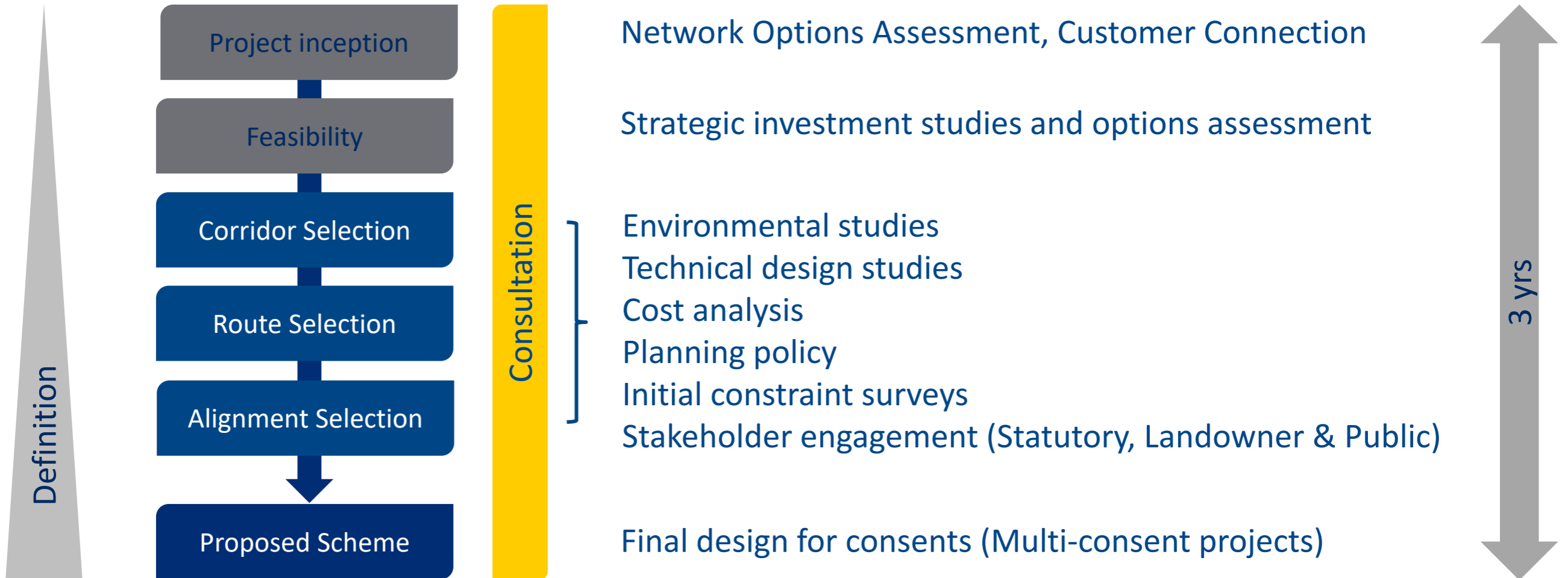


Ongoing Development

Earliest Completion 2027

Routing & Site Selection Process

Development & Consultation Stages



Our Commitment to the Environment

Protecting Local Habitats

Our commitments:

- Delivering a greener grid focusing on habitat restoration and creating bio-diversity growth as we invest in our network
- Embedding biodiversity considerations into our project development process and project lifecycle
- No Biodiversity Net Loss on our new sites
- Biodiversity Net Gain on all new sites from 2025
- Compensatory tree planting for all major projects, working with suitable not-for-profit organisations and using native species where possible, ensuring that any loss of trees as a result of our projects are replaced

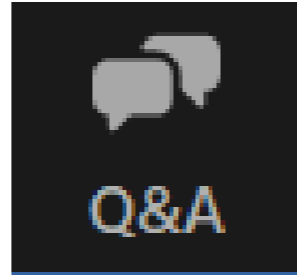
Our commitment ensures that we don't just restore our natural habitats but actively improve them for the benefit of local communities, wildlife, flora and fauna

[Find out more here: SSEN Transmission - Biodiversity Net Gain on Vimeo](#)



Any Questions?

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Type your question here...

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Delivering a Network for Net Zero

Projects in Construction

Kevin Smith

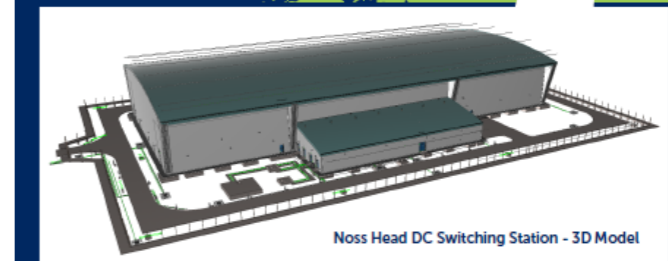
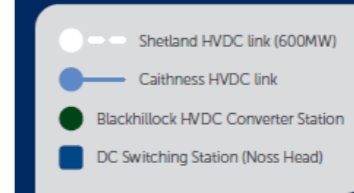
Project Director, Capital Development and Delivery

Connecting Shetland to the GB Grid

Shetland High Voltage Direct Current (HVDC)

- Project driver is connecting island renewable energy
- Connects Shetland to the GB Transmission Network
- 600MW HVDC Converter station and 132kV AC Substation at Upper Kergord
- 257km of subsea cable, 12km onshore
- Tie in to the Blackhillock/Spittal cable in 2023 at Noss Head DC Switching station

Project Overview



Works Start
Sept 2020

Onshore cable works
commenced
Spring 2021

Hitachi start on site
Feb 2022

Offshore cable
installation campaigns
commence
June 22

Completion
July 2024

Network Reinforcement Connecting Renewable Generation

Lairg Loch Buidhe Substation & Overhead Line



- Reinforcement to facilitate connection of renewable generation
- New 132kV Substation at Dalchork, Lairg
- 15km 132kV double circuit overhead line (OHL) from Dalchork to existing Loch Buidhe substation
- Overhead line routed taking account of local stakeholder feedback, consideration of local wildlife, Site of Special Scientific Interest (SSSI) and Species Protection Area (SPA) (hen harriers)
- Dismantling 10km existing 132kV OHL from Lairg grid supply point to Shin substation

Works Start
June 2020

OHL works complete
March 2022

Full energy
May 2022

Works complete
October 2022

Connecting New Wind Generation

Creag Riabhach Windfarm



- New 22Km 132kV Trident wood pole overhead line (significant helicopter work)
- Underground cable adjacent to Crask Inn
- Overhead line routed to avoid deep peat and other sensitive areas
- Re-purposed insulator crates into bird boxes, installation of bat poles
- 132kV connection substation at windfarm site
- Connection into new Dalchork substation



Network Reinforcement Connecting Renewable Generation

Fort Augustus Substation

- Reinforcement to accommodate increased renewable generation
- Reducing carbon by installing our first 132kV g3 (Sf6 alternative) gas insulated switchgear
- Diversion of 132kV overhead lines and underground cables into new switchgear
- New super grid transformers & g3 busbar
- Flood prevention scheme for the site
- Community Liaison Group established to share project progress and seek feedback



Works Start
March 2020

400kV Outages Complete
September 2021

132kV Energisation
March 2022

Energisation Complete
May 2022

Upgrading the North East Scotland Network

Increasing network voltage to 400kV to transport growing renewable generation



Reinforcements works planned for 2023 completion include:

- Significant substation works at Peterhead, *New Deer, *Rothienorman and Kintore
- Upgrade of the overhead line from 275 to 400 kV

*works at Rothienorman and New Deer not yet commenced

North-East 400kV Overhead Line

Reducing overloading and congestion on the transmission network



- Conductor replacement and re-insulation to 400kV of 83km of double circuit overhead line
- Foundation upgrades and tower strengthening
- Diversion of the overhead line away from Keith, improving visual amenity in the area
- An increase of overhead line capacity of almost 100%



Works Started
May 2021

Overhead Line Works
Complete
January 2023

Full Energy
October 2023

Works Complete
December 2023

Reinforcing the Network in the North of Scotland

Peterhead 400kV Busbar



- New 400kV/275kV Substation
- Built with space to connect future projects in the area
- SF6 free gas (Econiq) used in the busbars to reduce carbon emissions
- 2 high voltage cable circuits to connect to existing 275kV Substation
- 2 new overhead line tower to connect 400kV circuits

Works Started
November 2021

Gas Insulated Switchgear
Contractor Mobilises
April 2022

Pre-Stage 1 Commissioning
Complete
January 2023

Works Complete
October 2023

World's First SF6 Free 400kV Substation

Reducing carbon at Kintore substation



Kintore Phase 1 North East 400kV and Kintore Phase 2 East Coast 400kV are being delivered as a single project

North East 400kV scope:

- Build new substation with 2 Super Grid Transformers
- Connect Rothienorman overhead line to existing Kintore @275kV

East Coast 400kV scope:

- Construct World's first SF6 free 400kV Gas Insulated Switchgear substation to reduce carbon emissions
- Divert overhead line circuit from Cairnford to underground cable

Works Start
August 2021

Complete Cut and Fill
March 2022

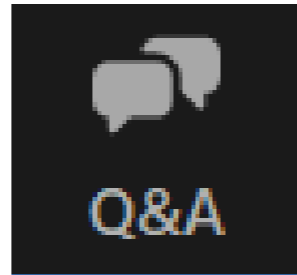
Phase 1 Energisation
(NE 400kV)
Aug 2023

SF6 Free Switchgear
Delivery
Nov 2024

Phase 2 (East Coast
400kV) Energisation
Summer 2026

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Type your question here...

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Regional Supply Chain Opportunities

Paul Leddie

Director of Procurement

The Need for a Sustainable Supply Chain

- SEN Transmission anticipated spend of £4bn in the five years to 2026
- Part of SSE Group spend of £12.5bn NET ZERO ACCELERATION PROGRAMME
- ScotWind auction and Networks Options Assessment (NOA) indicate transformative programme of investment that will provide significant growth including for our supply chain
- Vital that we engage with our stakeholders and suppliers now to develop a strategy
- To secure a sustainable and resilient supply chain which supports the delivery of projects critical to deliver Net Zero
- Ensuring opportunities are maximised



Sustainable Supply Chain

Driving improved performance and local sourcing

Procurement Process

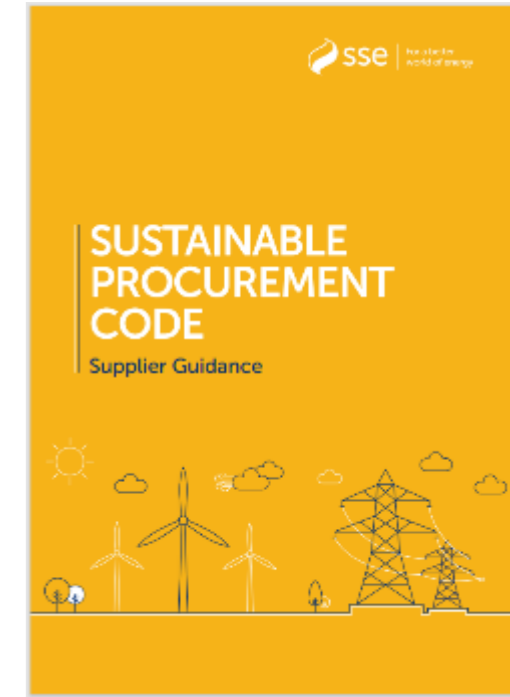
- Regulated business operating under the Utilities Contracts (Scotland) Regulations 2016
- Larger contracts compliant with regulated procurement process
- More flexible approach for smaller contracts
- Encourage Meet the Buyer events with our Tier 1 supply chain

Sustainable Procurement Code

Operate in line with SSE's Sustainable Procurement Code which outlines our:

- core principles
- expectations on our supply chain
- the role of our supply chain in delivering common sustainability goals

Our ambition is to influence and drive improved sustainability performance from the supply chain and minimise the potentially negative impacts our operations can have



[sustainable-procurement-code.pdf \(sse.com\)](https://www.sse.com/sustainable-procurement-code.pdf)

[sustainable-procurement-code_supplier-guidance.pdf \(sse.com\)](https://www.sse.com/sustainable-procurement-code-supplier-guidance.pdf)

Meet The Buyer & Contractor Events

Local Supply Chain commitment made within our Tier 1 supply chain contracts

Enable local businesses and the local economy benefit from our construction projects

A key output of these events is to:

- Increase our use of local suppliers
- Increase our local spend on projects – using agreed measurement tools
- Increase the number of contractors taking part in our Meet the Buyer events
- Increase our visibility to the local community/supply chain
- Provide a clear communications structure for local suppliers to engage



Supply Chain Roadshow 11th March

For any enquiries further information on how to register your business with SSEN Transmission Procurement, please contact transmission.procurement@sse.com

Growing Our Workforce

Our Transmission team is growing

The next four years will see significant growth in SSEN transmission, it's an exciting time to join the business and be part of delivering net zero

We're looking to expand our workforce through:

- 'Earn and learn' placements, such as apprenticeships and trainee/graduate schemes
- Engage with schools, colleges, universities to deliver STEM opportunities
- Develop pipeline programmes with specialist partners



January 2022
873 people



March 2023
1294 people

March 2026
1368 people



Recruitment Opportunities

Join our team

We are currently recruiting across a wide range of disciplines

Current job opportunities include:

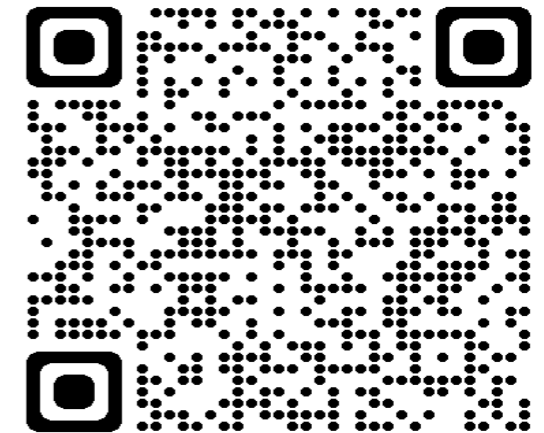
Job Title	Location	Closing Date
Forestry Manager	Scotland	3 April
Community Liaison Manager	Scotland	3 April
Development Project Manager	Scotland	5 April
Project Information Officer	Scotland	11 April
Planning Engineer	Scotland	18 April

Jobs coming soon include:

- Engineers
- Project Managers
- Stakeholder Engagement

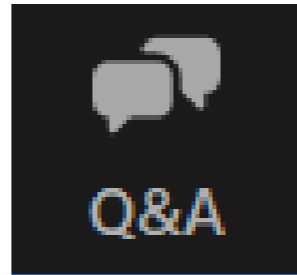
Visit the **SSE Careers** page to find out more:

www.careers.sse.com



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Stakeholder Engagement

Lesley Dow

Head of Community Engagement

Look Back...

Keeping Critical National Infrastructure Projects on schedule during a global pandemic



Over **130 Interactive Virtual Public Consultation** events held, gathering feedback and valued input on **54 Projects**



To date – we have held approx. **60 online meetings** with Community Liaison Groups, Community Councils, Ward Council Meetings and Community Enhancement Groups



Thank you! Many thanks to everyone that took the time to join a virtual consultation or online meeting, your input is greatly appreciated

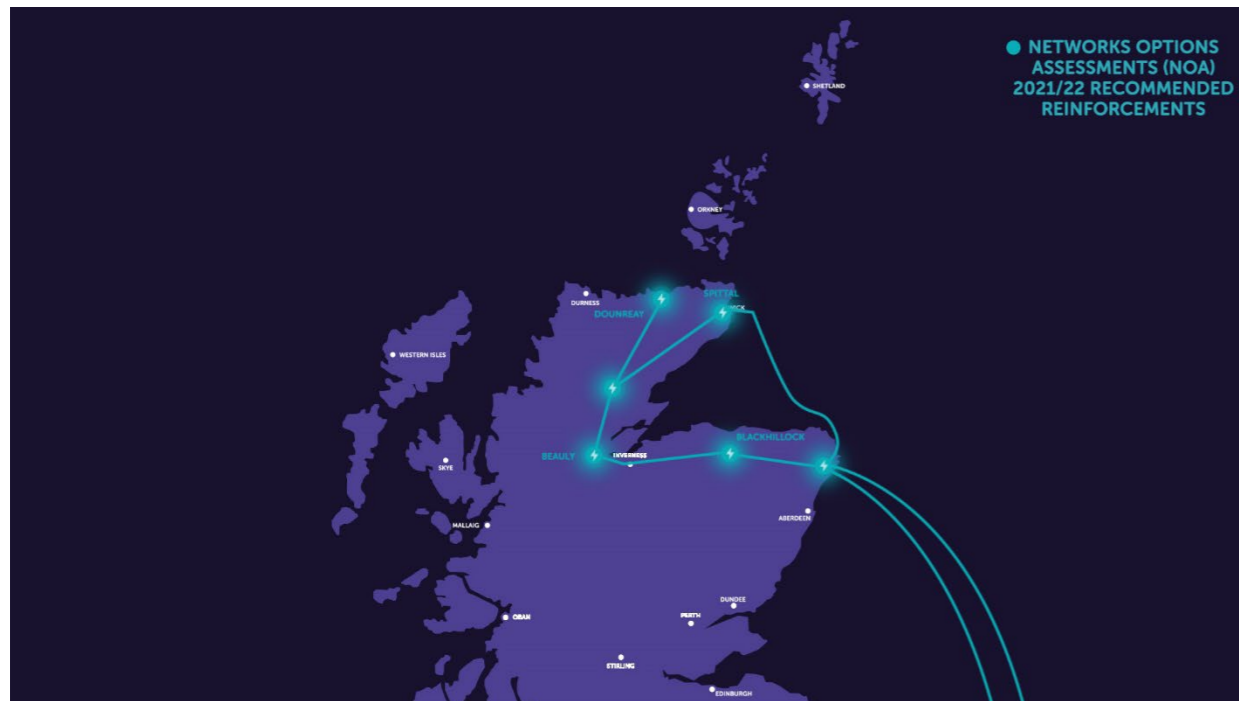


In-person Events

When it was safe to do so, we were able to host a number of in-person consultation events for the Skye – Fort Augustus Project, Shetland Wind Farm Connections, Melgarve Cluster, Elchies Wind Farm Connection, Peterhead and Kintore Substations. Many thanks to those that attended.

How we engage with our stakeholders

Focus on Beauly – Blackhillock – Peterhead 400kV Reinforcement



In-person Public Consultation Events, 8 - 10 locations between Beauly and Peterhead

Interactive Online Events for those unable to attend in person



Direct engagement with Community Liaison Groups, Community Councils, Elected Members, Statutory Consultees and Local Authorities



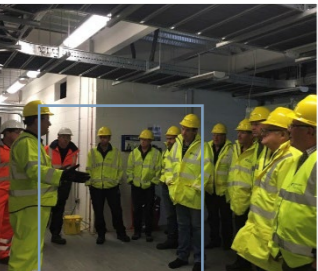
Comprehensive Advertising Campaign across print and social media

Attendance at Agricultural Shows across the summer

Working with Local Communities



RIIO-T2 Infrastructure Stakeholder Engagement Survey



FINDINGS

	94% of stakeholders had contact with SSEN Transmission in the last 12 months
	70% were happy with the level of engagement on infrastructure projects
	82% of stakeholders felt that our engagement was proactive
	95% of stakeholders affected by infrastructure projects had at least some knowledge of the project
	38% suggested that our engagement helped reduce the impact caused by infrastructure projects
	66% of stakeholders had attended consultation events for projects. 17% said they didn't know about consultation event
	62% of stakeholders lived within a mile of the infrastructure project 78% said the project had a negative impact on them

Upcoming Engagement Opportunities

Confirmed dates and venues will be published on our website and emailed to those on our email distribution lists.

Please email:

transmission.stakeholder.engagement@sse.com

to be added to our engagement email distribution list.



Scottish & Southern
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Over the coming months we will be consulting on the following projects and topics –

- Coire Glas Hydro Pumped Storage Connection
- **Kintore 400kV Substation**
- Eastern Green Link 2 Marine Scheme
- **Red John Pumped Storage Hydro Scheme Connection**
- Beaulay Cluster Project (Kilmorack, Aigias, Culligran and Deanie)
- **Beaulay – Loch Buidhe 275kV Reconductoring**
- Arbroath GSP Upgrade
- **Western Isles HVDC Converter Station**
- Willowdale Substation Upgrade (Aberdeen City)
- **Beaulay – Blackhillock – Peterhead 400kV**
- Annual Stakeholder Engagement Plan

Our Annual Engagement Plan Initiatives

NET ZERO

- Inc ScotWind, NOA, Likely View & Advocacy
- End Consumer Engagement
- Carbon Reduction inc. SF6

SUSTAINABILITY, LAND & ENVIRONMENT

- Bio-Diversity Net Gain & VISTA
- Land & Wayleaves
- Environmental & Social Value

COMMUNITIES

- Over 100 projects in construction & development
- Cluster projects
- Local engagement & local value

WHOLE ENERGY SYSTEM AND FUTURE SCENARIOS

- Whole Energy System Strategy
- Local Area Energy Plans
- Future Scenarios inc. hydrogen, repowering & land use

SUPPLY CHAIN

- Sustainable Supply Chain
- Local Supply Chain
- People Supply Chain

WORLD CLASS ASSET MANAGEMENT

- Data & Digitalisation in network info management
- Network Resilience
- Responding to climate change

CUSTOMERS

- Customer Strategy
- Improving standards of service
- Addressing barriers to connection

ENERGY MARKET REFORM

- Role of ESO
- Fragmentation
- TNUoS

Keeping in Touch



SSEN Transmission generation customer connection enquiries - transmission.commercial@sse.com



Supply Chain enquiries – transmission.procurement@sse.com



SSEN Transmission Communities & Landowner enquiries – <https://www.ssen-transmission.co.uk/>



Any other queries - transmission.stakeholder.engagement@sse.com



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SSEN-Transmission



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Eastern HVDC Link



Project overview

Project updates

Project documentation

FAQs

Project Type: Transmission reinforcement
Location: Aberdeenshire

Contact Details

Liaison Manager

Land Manager

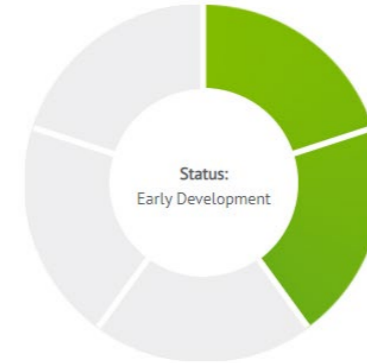
Dav Lynch

Title: Community Liaison Manager

Email: Dav.S.Lynch@sse.com

Telephone: 07918 404443

Address: Inveralmond House, 200 Dunkeld Road, Perth, PH1 3AQ



Latest



Regional Webinar - 'SSEN Transmission- North of Scotland: Delivering the Pathway to Net-Zero'

Date: 14 Mar 2022

[View article](#) / [View all articles](#)



SSEN Transmission, SPEN and NGET unite to deliver underwater energy super-highway

16 Nov 2020

[View article](#)



About the Project

The Eastern HVDC Link project is a proposal to install a sub-sea high-voltage direct current (HVDC) cable from Sandford Bay, at Peterhead, to Drax in England.

There is currently a large amount of forecasted generation that will require connection to the electricity network in the coming years and as such we are proposing several upgrades to the transmission network across the north of Scotland to facilitate this. The Eastern HVDC Link will play a key role in helping achieve our Net-Zero targets.

Along with the installation of the sub-sea cable we will



Visit our website

www.ssen-transmission.co.uk

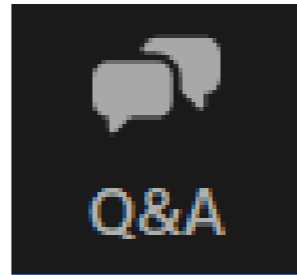


Scottish & Southern
Electricity Networks

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Any Questions?

To submit questions, click the Q&A button:



Then, type your question in the box below, and press send.

Your question(s) will only be seen by the SSEN Transmission team.

Type your question here...

Cancel

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Video: SSEN Transmission - Getting to Net Zero

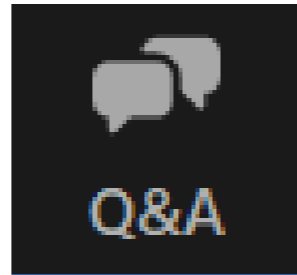


<https://vimeo.com/647279628>

Q&A Session

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Cancel

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Thank you for joining us

A recording of this webinar and the associated slide pack will be available on www.ssen-transmission.co.uk in the next few days

Sharing your views

We'll now share with you a short feedback survey

We're keen to discover:

- Your views on the usefulness of this webinar
- Which subjects you'd like engage with us on e.g.net zero, communities, environment, supply chain
- Which engagement methods you find most suitable and how frequently you'd like to engage e.g. webinars, newsletters, roundtables, townhalls
- You can request to be added to our distribution list to receive updates from us, you can unsubscribe from these communications at any time



SSEN Transmission committed to continuing to improve our stakeholder engagements. We work to achieve the externally accredited AA1000 Stakeholder Engagement Standard and is proud to be operating within the 'Accomplished' level of AccountAbility's Stakeholder Engagement Maturity Ladder