South East focus RIIO-T3 Webinar

nationalgrid

Thank you for joining

Housekeeping

- Please note that this session will be recorded.
- Please add your questions via Q&A function for our dedicated session at the end of the talk – 30 minutes Q&A.
- Questions and Answers supported by Environmental, Connections, Responsible Business and Whole System Planning leads.
- Alternative for raising questions pathwaytonz@nationalgrid.com

Agenda

Introduction	5 mins
Forming Future Network Blueprints	10 mins
South East Future Network Blueprint	10 mins
Next Steps	5 mins
Environment commitments	5 mins
Update from SSEN and UKPN	15 mins
Update from NESO	10 mins
Questions and Answers	30 mins

Introduction

John Twomey
Director of Customer Connections

National Grid Electricity Transmission

Please post any questions you have for us via Teams Q&A function or through :
pathwaytonz@nationalgrid.com

We own and operate the transmission network that is the backbone of electricity system in England and Wales

The objective of today's webinar is to set out the South East view of the future network outlined in our business plan for 2026-2031.

Our £35bn business plan was submitted in December 2024 and will now be assessed by Ofgem.

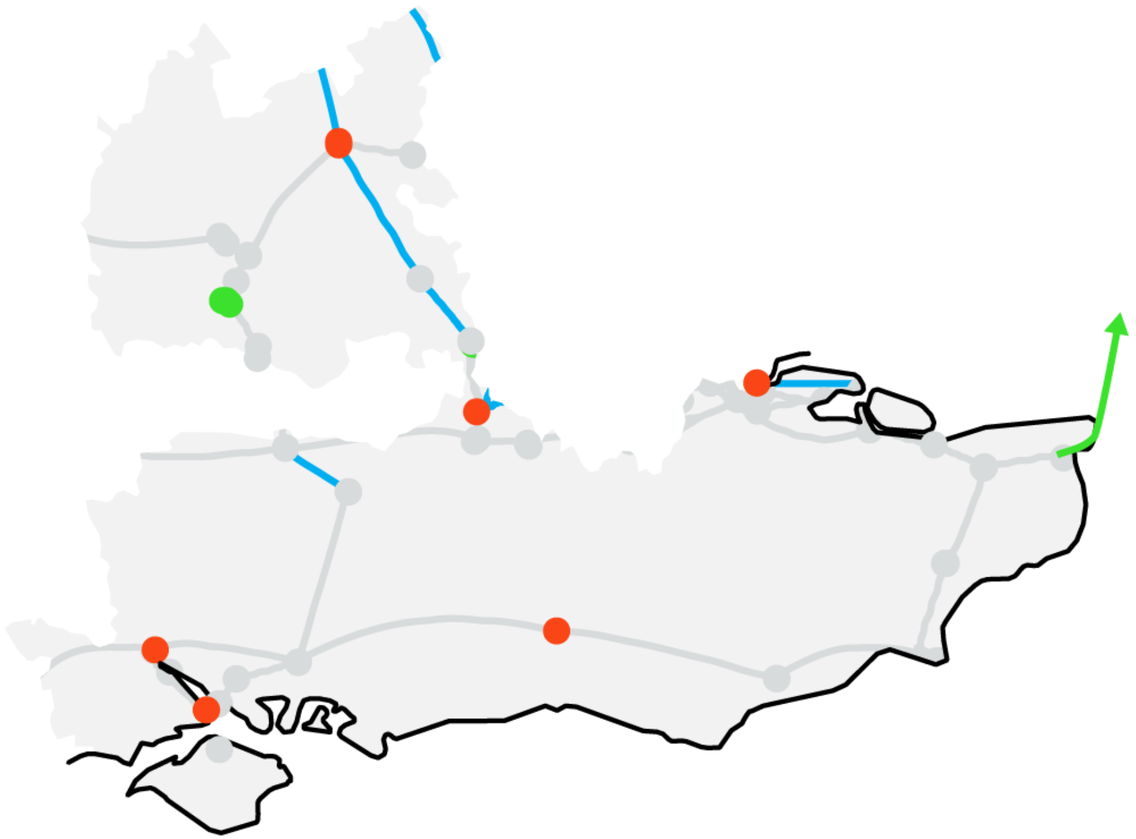
Our plan will nearly double the amount of power we can transfer across England and Wales and more than double the rate of connecting our customers.

We want stakeholders to be involved in the 'call for evidence' that Ofgem has opened as part of the RIIO-T3 price control process and to feel well-informed on what is included in our plan and why.

Context on our regional plans

This regional view considers electrical factors such as power transfers and access for planned outages and, where possible, aligned to the distribution network operator and local authority boundaries.

This webinar is not about the detailed project development, precise location, or technology options under consideration for individual network upgrades. That comes through individual project consultations, in line with Planning Act requirements.



Please contact us for project details at Communityrelations@nationalgrid.com

This webinar is part of our ongoing engagement. For the past couple of years we *held regionally focused workshops, bringing together local organisations, like local authority representatives, businesses, other network companies and the National Energy System Operator (NESO), to gather perspectives and co-create our network plans.*

Forming the Future Network Blueprints

Peter Beckley
Regional Strategy Engineer

National Grid Electricity Transmission

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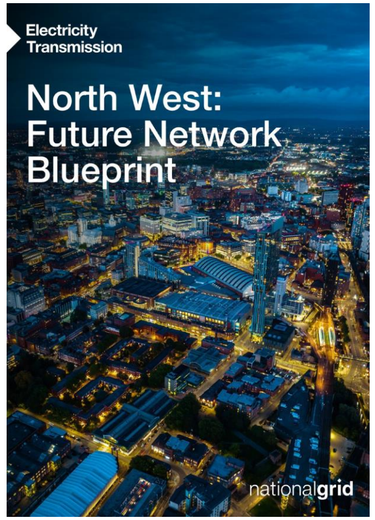
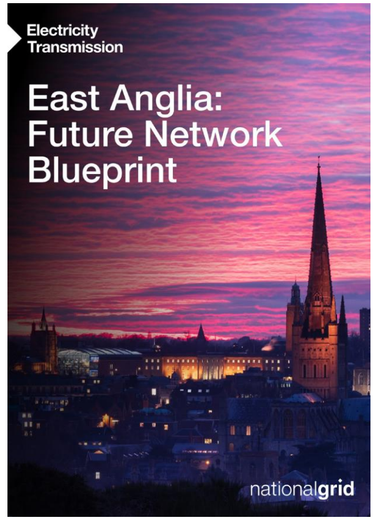
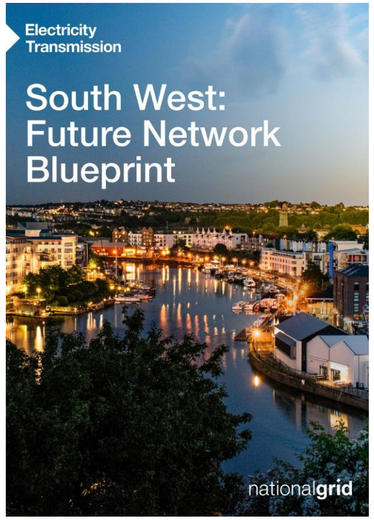
Future Network Blueprints







What are they?

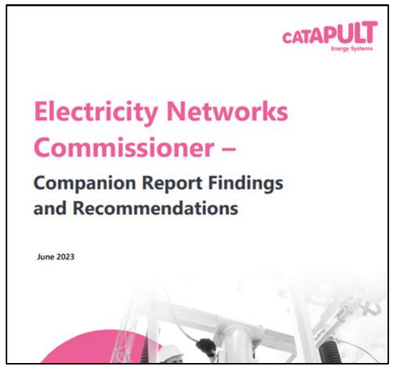
A single and coordinated ‘best view’ of the work needed across different regions of our network across England and Wales to enable the overall transition to net zero.

What do they do?

They help us to make coordinated decisions about where, when and how to upgrade the grid.

This forward- thinking, holistic planning approach allows all parties to enhance efficiency through collaboration and coordination – with an aim to do it once, do it right.

RIIO-T3: a shared national endeavour



National Grid Electricity Transmission and other network companies

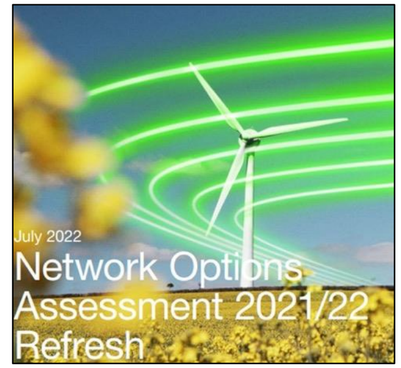
Ofgem

Mission Control

Customers
Consumers
Communities

National Energy System Operator

Department for Energy Security & Net Zero



Our overarching nationwide Stakeholder engagement approach

Since 2022 we have listened to and worked with those who are impacted by the design, timing, cost and delivery of the network upgrade…

Listening

Understanding the needs, priorities and perspectives of a broad spectrum of involved and impacted stakeholders, including household and business consumers

Optioneering and testing

Testing and challenging the emerging strategies during formation, including any trade-offs or optioneering required

Sharing

Sharing the next iteration of the strategies and how they have built on the stakeholder input to that point - with colleagues and the broader stakeholder network

Refining

Continuing to Refine and Share, maintaining the Future Network Blueprints and keeping them relevant through enhanced ongoing engagement

…And this approach continues beyond our December RIIO-T3 Business Plan submission to Ofgem, as we refine its details throughout delivery.

12,000
voices

We listened to over 12,000 voices representing all stakeholder groups

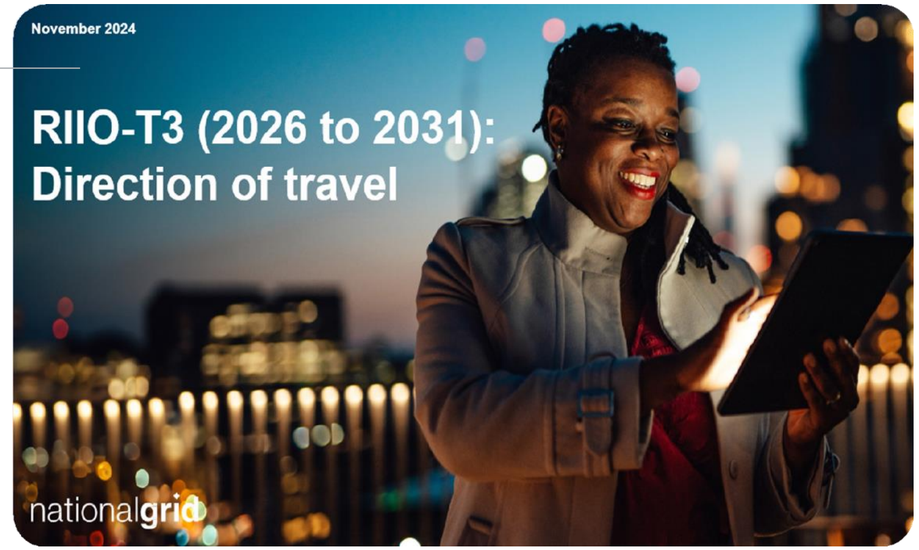
23,000
residents

We consulted with over 23,000 residents in communities already impacted

35
workshops

We held 35 region focussed workshops with our industry partners and peers

We hosted a playback webinar on our T3 plan in November



What we learnt – forming our network planning approach

With an ever-evolving energy landscape, we needed a more comprehensive approach to our network planning

During our listening phase we got to understand the detail…

By thinking differently, and working closely with stakeholders, we can help transform the electricity network to meet everyone's future energy needs.

- We need to work more closely than ever with all our stakeholder groups
- Local network needs differ, requiring a more focused approach
- Visibility of our investment planning is critical
- We need to coordinate and collaborate on our plans
- We need to be flexible to changes and not wait for 100% certainty

The process

Based on insights from our stakeholder engagement programme we set three ambitions which shape our plan

Ambition A
Deliver the grid of tomorrow, today

Deliver with urgency the Transmission Network needed for Great Britain's future growth and decarbonisation

Ambition B
Do the right thing for consumers, communities and the environment

How we deliver is as important as what we deliver

Ambition C
Transform the way we work

Transform our capabilities to deliver for consumers

We have developed a comprehensive framework to test and validate our investments against our new ambitions.

This encompasses **whole system planning;** focused on an integrated and collaborative approach.

Step 1
Information gathering

- Regional context
- Current network view
- Design the right network

Step 2
Insights and analysis

- Stakeholder engagement
- Connections
- Safe and reliable network
- Strategic infrastructure

We now go on to unpack Step 2

Step 3
Develop strategic options

- 2050 backwards
- Network design principles
- Network compliance

South East Future Network Blueprint

South East | Stakeholder Engagement

Step 2
Insights and analysis

Distribution networks

Scottish & Southern Electricity Networks

UK Power Networks

We are working with local distribution networks (DNOs) to understand the impacts and requirements in that region and develop 'whole-system' solutions.

17

Indicates the number of whole system opportunities we have already identified in the South East

What does the term 'whole systems thinking' mean to you?
(Pathway to Net Zero workshops, poll base: 115)

What did stakeholders in the South East initially tell us?

'We need **transparency** and clarity around how remodelling of energy storage connections is going to look.' (Commercial Property Developer)

'A **whole systems** approach involves power, transport and buildings, not electricity alone.' (Local Authority)

'We have to put fossil fuel heating into a new development when we're trying to hit Net Zero by 2030 as a result of there not being **network capacity.**' (Local Authority)

82%

Connections timescales have impacted my organisation's plans
(Pathway to Net Zero workshops, poll base: 96)

South East | Safe and Reliable Network

Step 2
Insights and analysis

A reliable network is a top priority for everyone.

Commitment
Maintaining a safe, reliable and resilient system through a period of growth and changing asset base.

Challenge
If we looked to do this portfolio of work in isolation, we would not have enough resource, supply chain support or access to the network to complete it.

Solution
Our approach aligns asset health and new infrastructure plans to optimise best use of our resources.

Natural hazard resilience
By the end of 2025, all relevant South East sites will be fully compliant with Energy Networks Association standard 138 on flood protection.

Physical security resilience
With increasing generation and demand we are investing in enhanced physical security at sites within the region.

3
High voltage substations identified in region that require enhanced asset health intervention

411 km
Overhead line in region that requires replacement in the next 10 years

Asset health intervention regional metrics

77
Circuit breakers

611
Bay Assets

66
Voltage management assets

South East | Customer Connections

We need to make it easy to connect and use the electricity network

Commitment

Enable the connection of new generation and demand customers to support Government targets.

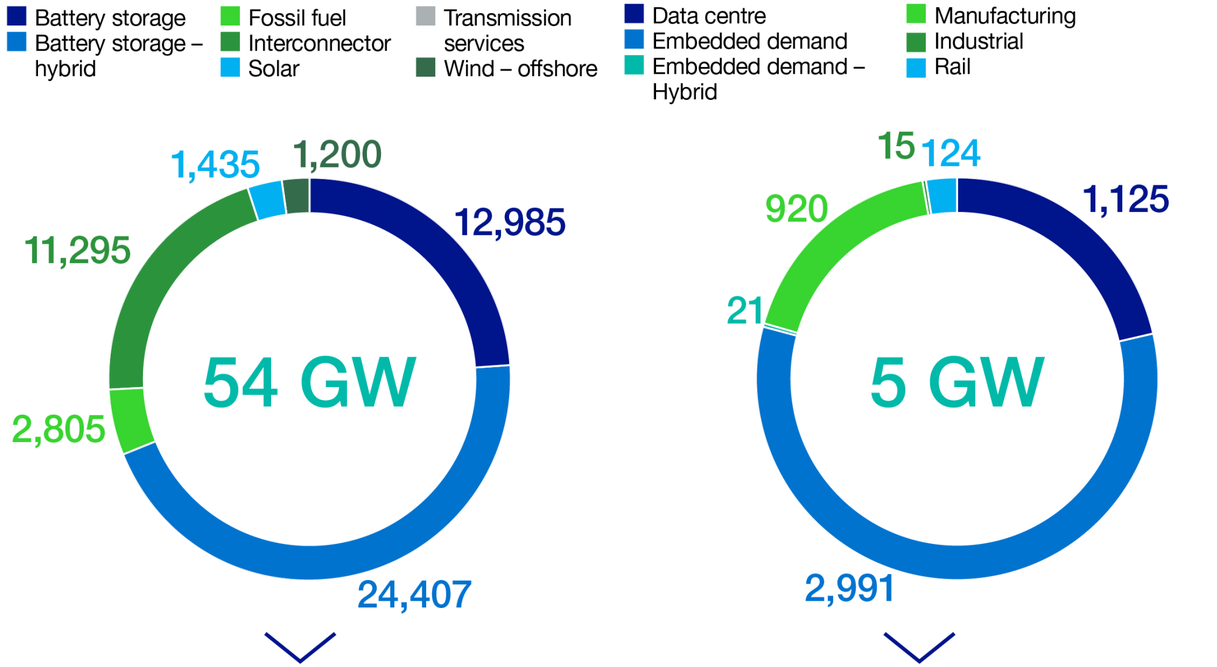
Challenge

Not all the connections in the queue will connect to the network.

Potential solutions

We have progressed a number of connections which form a baseline and pipeline plan of work.

Connections Reform will help enable connections to the network by reviewing the current connections queue.



1.7 GW of generation expected to connect in T3

1.6 GVA of capacity to be added in T3

Customers have contracts for new connections to 2034 that would deliver **54 GW generation** and **5 GW of demand connections** in this region.

South East | Strategic Infrastructure

Step 2
Insights and analysis

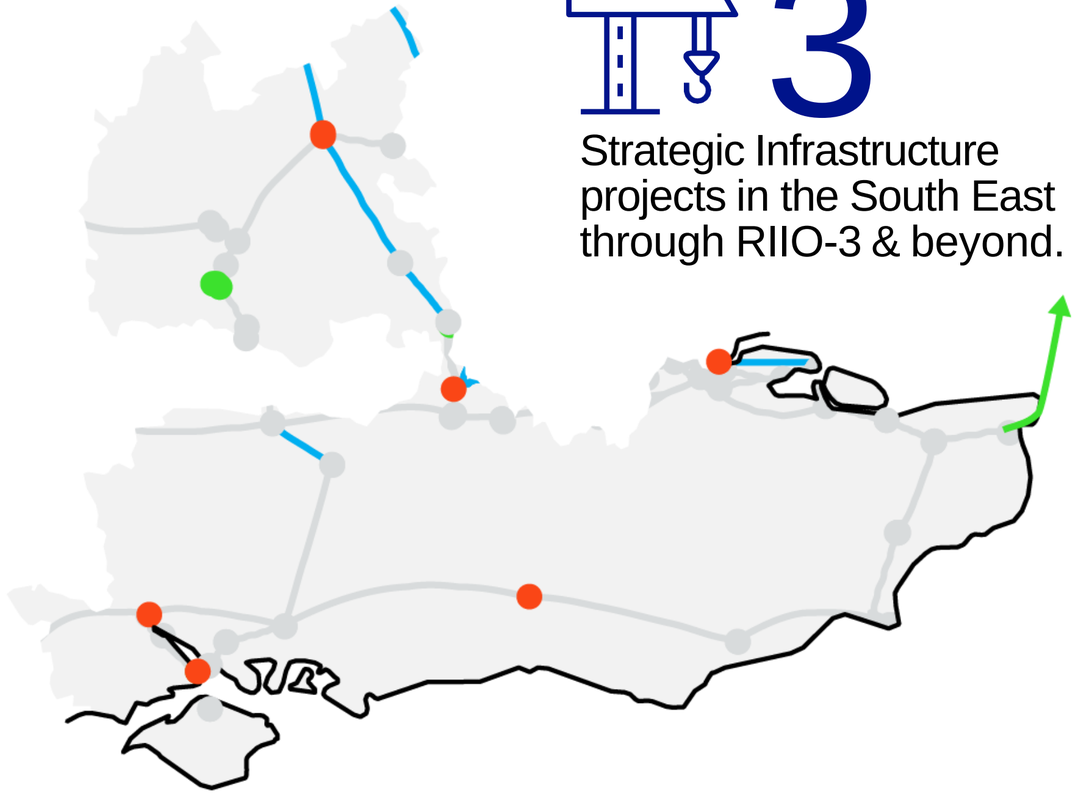
The National Energy System Operator (NESO) is responsible for identifying and timing of new strategic infrastructure on the electricity transmission network by incorporating;

- Energy scenario analysis
- Alignment with government policies on decarbonisation
- Market intelligence
- Stakeholder engagement to predict future energy needs.

The process is evolving to ensure that strategic infrastructure development is proactive, addressing both current and future challenges, and supporting the transition to a sustainable and reliable energy system.

3

Strategic Infrastructure projects in the South East through RIIO-3 & beyond.



In the South East we are maximising the use of existing infrastructure through upgrades, whilst also establishing new to support increasing power flows in the region.

South East | Plan Overview

In the South East, we are focusing on upgrading and expanding several substations to accommodate new connections including new interconnectors from continental Europe which help secure UK energy supplies and resilience.

Along the South Coast we are undertaking work at Fawley and developing cable replacements to strengthen network resilience and increase capacity in the Solent area.

Sea Link is a proposed electricity transmission network reinforcement between Kent and Suffolk. This project forms part of The Great Grid Upgrade, which will help with the transition to more affordable, secure, and cleaner forms of energy, helping to meet the UK's net zero target.

Further north, we are rebuilding sites and investing to strengthen the circuit network in Oxfordshire and Buckinghamshire areas to enable increasing demands in both.

£2.7bn
of investment
to maintain, upgrade and develop our network in T3

5 GW
demand
contracted to connect*; **1.6 GVA** of additional capacity expected to be installed in T3

54 GW
generation
contracted to connect*; **1.7 GW** estimated to connect in T3

319 km
of overhead line
reconductoring planned within T3, equating to 17% of the region

11
substation investments; 5 new and 6 major interventions

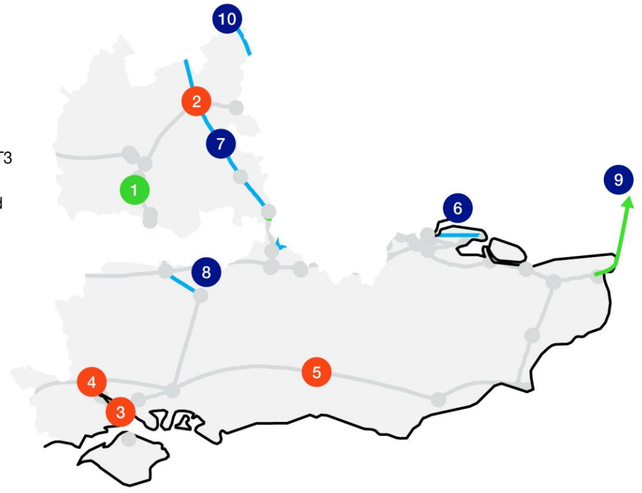
3
strategic infrastructure projects within the region

South East Strategy

Substations

1. **Didcot 132 kV** New Substation – T3 period
2. **East Claydon 400 kV and 132 kV** Rebuild – T3 period
3. **Fawley 400 kV and 132 kV** Rebuild – Beyond T3
4. **Nursling 400 kV** Upgrade/extension – Beyond T3
5. **Bolney 275 kV** Upgrade/extension – T3 period

5 new substations proposed in the region.



Map is illustrative

- Major site strategy
- New substation
- Coastline
- Existing network
- Upgrade existing
- New build
- Developing only*

Circuits

6. **TKRE Grain to Tilbury** Reconductor/upgrade – T3 period
7. **Amersham – East Claydon – Iver 1 and 2** – Reconductor OHL circuit – T3 period
8. **Bramley – Fleet 1 and 2**, Reconductor OHL circuit – T3 period
9. **SCD1 – Sea Link** – HVDC link between Suffolk and Kent – Beyond T3
10. **SGRE** Replace the conductors on the existing circuit between Grendon and Sundon with higher capacity conductors – T3 period

*Including T3 and beyond

Next Steps

What’s next for the South East Future Network Blueprint?

We want to be transparent about our plans today and into the future. Planning is an ongoing, evolving process and we want to ensure we incorporate the needs and expectations of those impacted by their shape, direction and timing.

- Outcomes from Clean Power 2030 and Connections Process reform – We have designed our plans to be adaptable to changes.

- We continue to work with our network partners UK Power Networks (UKPN) and Scottish and Southern Electricity Networks (SSEN), stakeholders and the newly formed National Energy System operator (NESO) RESP team to evolve our ‘Whole System’ planning approach and regional plans.

Environmental Update for the South East

Paul De Jong
Head of Environmental Sustainability & Energy

National Grid Electricity Transmission

Please post any questions you have for us via Teams Q&A function or through :
pathwaytonz@nationalgrid.com

Delivering a sustainable electricity transmission network

Our ambition

The changes we are proposing to our Environmental Action Plan in T3 will support the energy transition in a way that achieves **sustainable operations** and **contribute to a nature positive future,** whilst being **respectful of planetary boundaries.**

How we deliver is as important as what we deliver

Pillars	Goals	Metrics
Net Zero	**We will achieve net zero by 2050, ensuring alignment to climate science and industry best practice to avoid the worst effects of climate change on people and the planet.**	• **50%** reduction in scopes 1 and 2 emissions from 2018/19 baseline; • **50%** reduction in SF6 emissions by 2030 from a 2018/19 baseline; • **20% substation energy efficiency improvement** from a 2022/23 baseline; • Purchase **100% zero emission vehicles** for our light-duty fleet; • Deliver our **construction projects as low carbon intensity** as possible; • Achieve **net zero emissions** for our corporate property **office estate.**
Nature positive	**We will contribute to the preservation, restoration and enhancement of the natural environment and contribute to the wider global Nature Positive goal to 'halt and reverse nature loss by 2030'.**	• Deliver at least **10% or greater Biodiversity Net Gain** (or equivalent in Wales) plus wider environmental and societal benefits. • Advance understanding in the development and delivery of effective **marine restoration and enhancement;** • Work with grantors **to deliver nature connectivity.** • Disclose our material **nature-related risks and opportunities.**
One planet living	**We will operate within the limits of our planet by seeking to eliminate pollution and restrict the use of finite resources, so that humanity can continue to develop and thrive for generations to come.**	• Improve our circular economy maturity levels and aim to be in the **'engaged' level in BS8001** circular economy standard; • Deliver **zero avoidable waste in construction** • Requirements for **10% recycled / reused content** in key construction materials.

Delivering in the South East

Case study

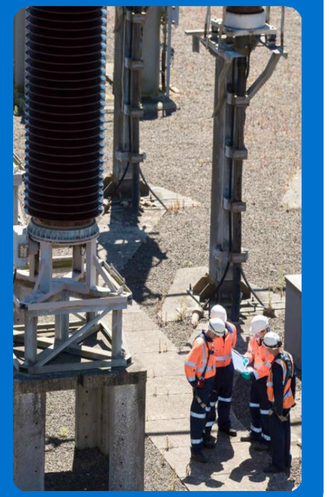
Trialling a new SF_6 leak repair technology at Sellindge

To be successful in reducing SF_6 emissions, it is critical that we have an array of SF_6 leak repair technologies and strategies, including solutions that allow the equipment to remain in service.

We're working with a company called Mastergrid, trialling a new SF_6 leak repair solution at our Sellindge 400kV substation.

Mastergrid started works on site where they installed their solutions, and fixed the leak in Oct 2023.

So far the fix appears to have successfully stopped around 35kg of SF_6 emissions per month – around 9,879 tCO2e.



Update from the DNOs

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pathwaytonz@nationalgrid.com

Update from Scottish and Southern Electricity Networks

Andy Wainwright
Whole System Manager

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pathwaytonz@nationalgrid.com

SSEN APPROACH TO NET ZERO

Scottish & Southern Electricity Networks

DSO Powering Change

THE SSEN STRATEGIC PLANNING PROCESS

Making decisions today in light of long-term and whole system needs.

Forecasting needs → **Create strategic plan** → **Develop detailed options** → **Deliver projects**

Baringa

COWLEY GSP EXAMPLE

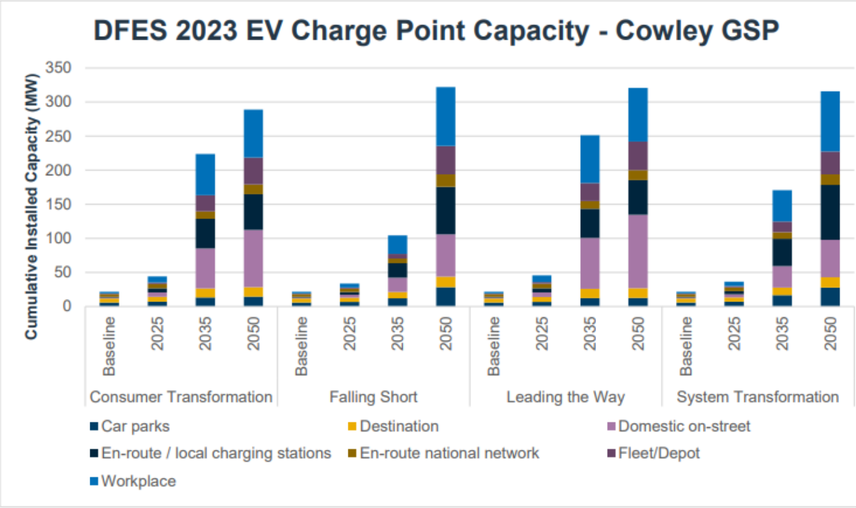
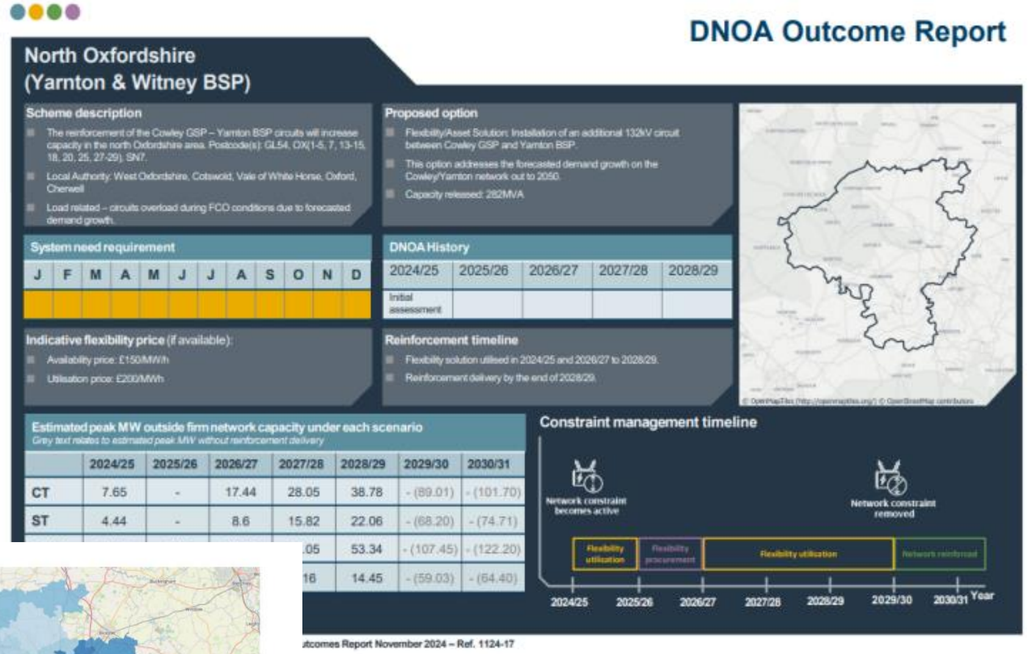


Figure 9 Projected EV charge point capacity across Cowley GSP. *Source: SSEN DFES 2023.*



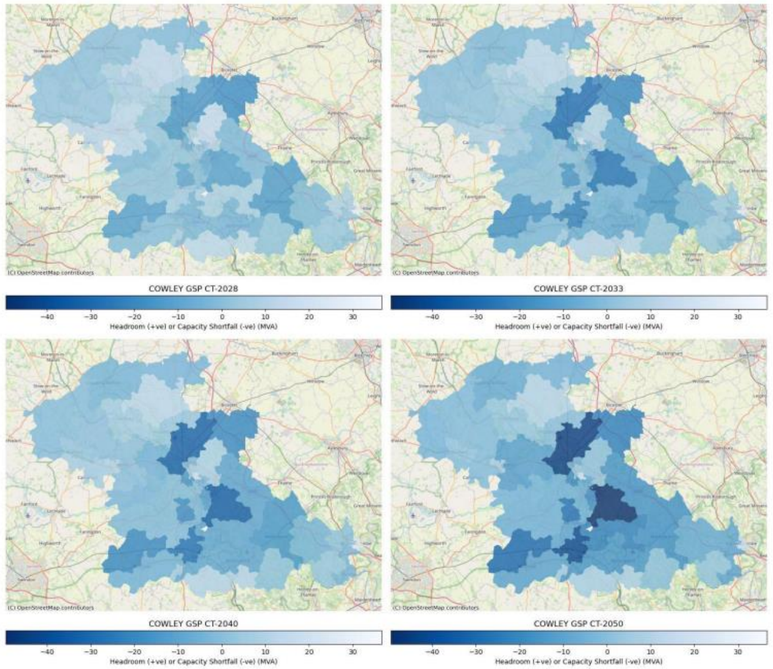


Figure 13 Cowley GSP - EHV/HV Spatial Plan - Consumer Transformation

Update from UK Power Networks

Veronique Martre
Regional Planning Manager

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About UK Power Networks

8.5 M homes and businesses

28% of UK Total

9.3GW+ Distributed Generation Connected

32% of UK Total

16GW+ Peak Demand

28% of UK Total

UK Power Networks
Delivering your electricity

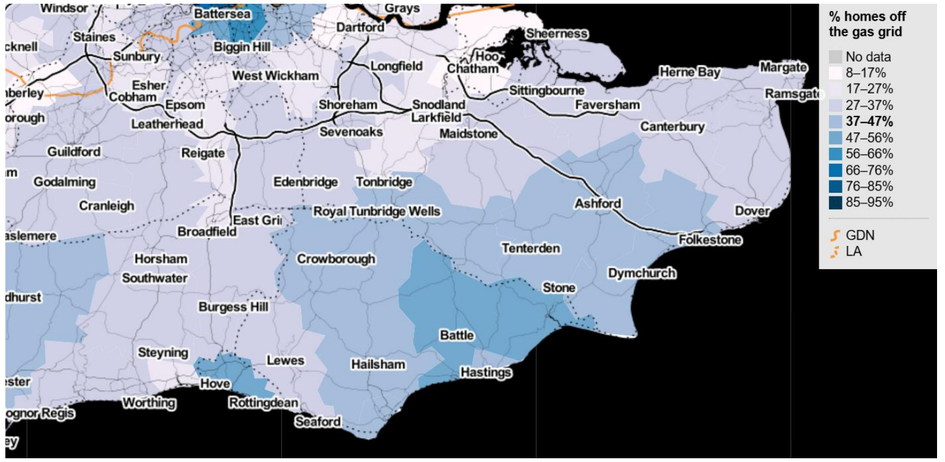
Regional Focus

- Ensuring we provide the best service and provide capacity for the future, three key focus areas across London and the South East:
- **Local Engagement**
  - Understanding growth across the region both in terms of energy use and future development areas.
- **Detailed Forecasting Models**
  - Developing and sharing class leading forecasts which support co-ordinated collaborative working.
- **Efficient Targeted Delivery**
  - Where investment is needed a flexibility first approach is driven to ensure rapid provision of cost effective capacity.

UK Power Networks
Delivering your electricity

Examples of Work Underway

- Local Area Energy Planning
- Local Growth Enabling Projects
- Motorway Service and EV Hub capacity
- Capacity for off gas grid homes
- Enabling the Clean Power 2030 transition



Above: New transformer installed at Wingham primary

Left: Off Gas Grid Map (source nongasmap.org.uk)

UK Power Networks
Delivering your electricity

Introduction to the NESO

Public

NESO update on Strategic Energy Planning (SEP)

January 2025

Paul Roberts – Stakeholder Engagement Senior Lead

Strategic Energy Planning (SEP)
National Energy System Operator

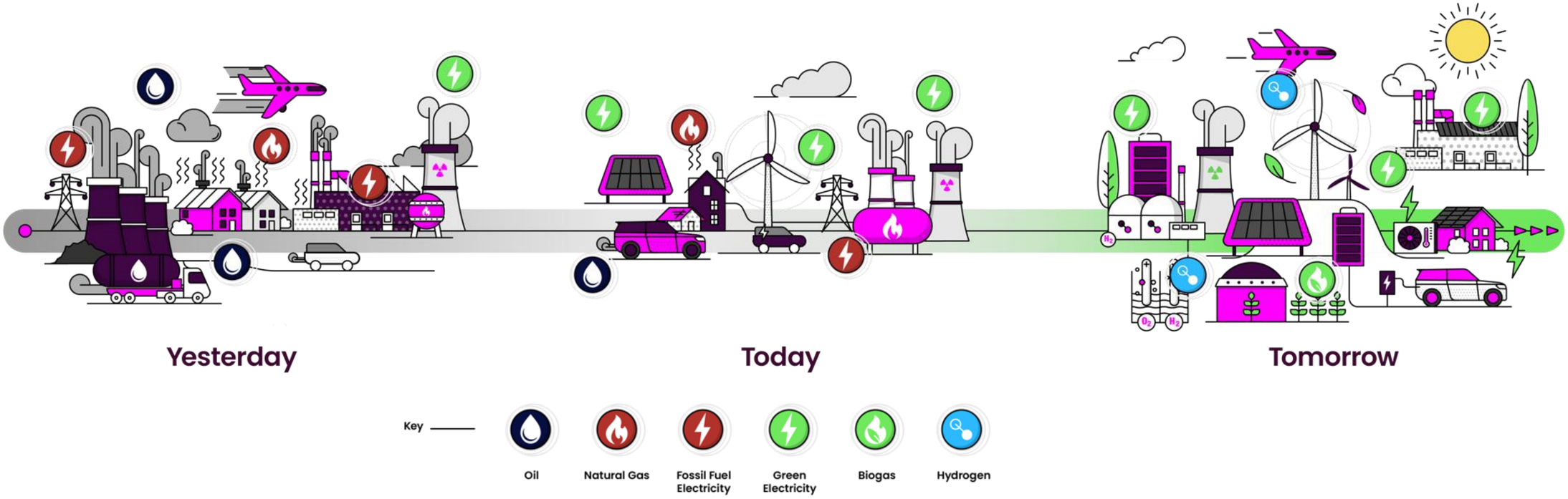
NESO
National Energy System Operator

Overview

1. National Energy System Operator overview
2. Strategic energy planning (SEP) overview
3. Next steps (milestones)

A changing energy landscape

- The energy system is critical to almost all aspects of our daily lives and fundamental to decarbonising the economy.
- The way we use, store and source energy is significantly changing and we have an opportunity in this period of change to shape an energy system that fosters economic growth and prosperity for Great Britain, creating jobs and building skills.
- This valuable opportunity will help protect the environment for current and future generations and ensure energy is affordable for everyone.



We must work collectively at a local, regional and national scale to realise the benefits of the energy transition for Great Britain, and the people who live here.

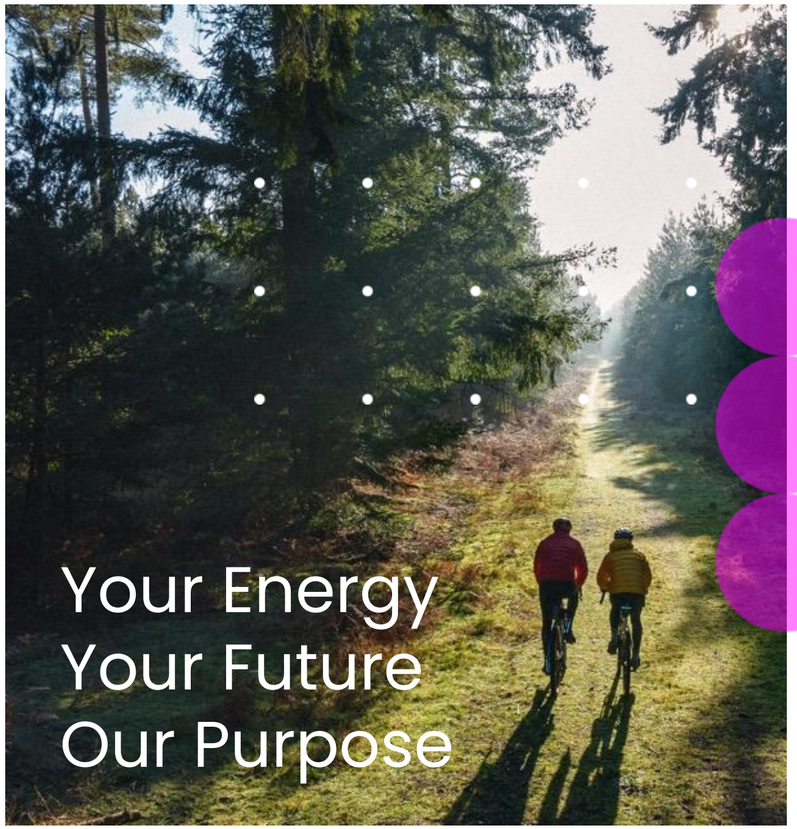
NESO
National Energy System Operator

1. National Energy System Operator overview

Who we are:

The National Energy System Operator, NESO, is an independent, public corporation at the centre of the energy system taking a whole system view to create a world where everyone has access to reliable, clean and affordable energy.

Our work will be the catalyst for change across the global community, forging the path to a sustainable future for everyone.



NESO
National Energy System Operator

Our Purpose, Vision And Values

Our purpose is to forge the path to a sustainable future for everyone.

Our vision is a future where everyone has access to reliable, clean and affordable energy; our work will be a catalyst for change across the global community.

Our values are what define us, setting the foundation for our purpose and guiding us as we move towards achieving our vision.

Accelerate Progress
We deliver better outcomes at pace when we take accountability, are courageous and progress the bigger picture.

Be Curious
We achieve more when we demonstrate a growth mindset, being curious, asking questions beyond and within our organisation to develop, learn and innovate.

Build Trust
We build trust when we listen to and understand the needs of our colleagues and customers, are transparent with our actions and deliver on our commitments.

Create Belonging
We perform at our best when we can be our true selves, embrace diversity and are truly inclusive.

NESO
National Energy System Operator

Our Governance

NESO is operationally independent of government. We plan the electricity and gas systems and operate the electricity system.

Being independent means we can give impartial recommendations to the government and the regulator.

Our shareholder

Department for Energy Security & Net Zero

The Department for Energy Security & Net Zero is responsible for national policy and providing strategic direction and targets in relation to UK energy

Our regulator

ofgem
Making a positive difference for energy consumers

Ofgem is the energy regulator for Great Britain

Independent NESO Board

The NESO Board oversees our strategic direction, ensuring compliance with regulations and mitigation of corporate risks.

The Board ensures that we build strong relationships with customers and it evaluates performance.

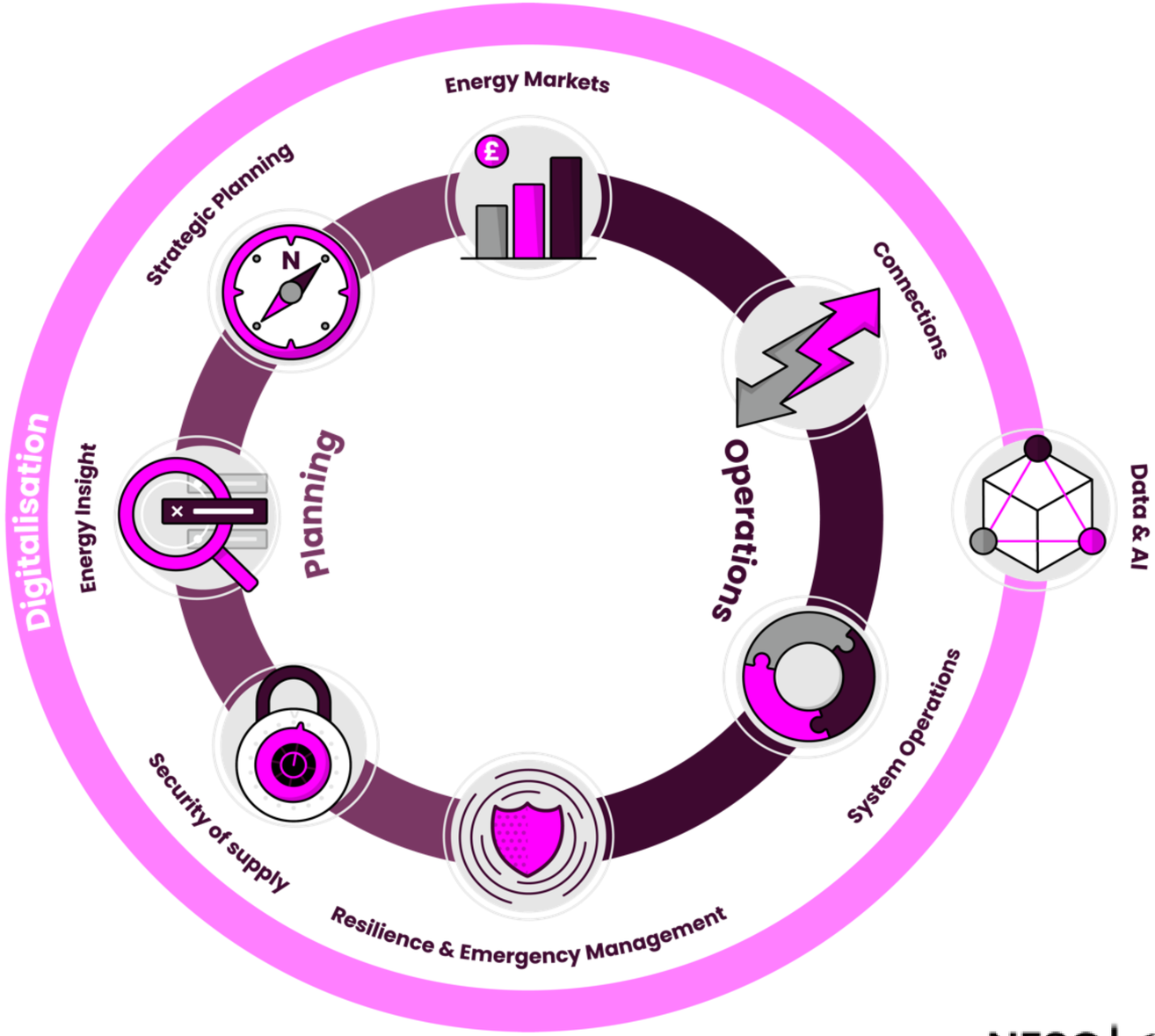
NESO
National Energy System Operator

What we do:

We bring together eight activities required to deliver the plans, markets and operations of the energy system of today and the future.

Bringing these activities together in one organisation encourages holistic thinking on the most cost-efficient and sustainable solutions to the needs of our customers.

https://www.neso.energy/what-we-do



NESO
National Energy System Operator

2. Strategic Energy Planning (SEP) overview

Pre 2030 → **Post 2030**

CP2030

Advise government on which network upgrades, market and policy decisions could accelerate the development of a clean power electricity system by 2030.

UK Government response to CP30 advice to be published by end of 2024

Adopted Clean Power 2030 advice by Government feeds into the background assumptions underpinning all three Strategic Plans.

Supply and demand projections from Future Energy Scenarios (FES)

DESNZ data inputs and assumptions

SSEP

Spatially maps out the energy assets necessary to meet 2050. Focus on optimisation of cost, environment, community impact.

Key stakeholder inputs

Environmental, societal and technical perspectives

Long term feedback loop

CSNP

Whole system plan for the development and assessment of high-level investment options for transmission networks.

RESP

Focus on developing whole system, cross-vector regional plans with input from local actors.

NESO National Energy System Operator

Strategic Spatial Energy Plan (SSEP) overview

Accelerate clean, affordable, secure energy through certainty

The SSEP will accelerate and optimise Great Britain's transition to clean, affordable and secure energy by taking a holistic approach and providing greater certainty for key stakeholders.

Zonal approach, taking account of environment and communities

Splitting Great Britain's energy system into zones to assess the optimal locations for electricity generation and storage of electricity and hydrogen.

Options identified using economic, environmental and technical input, with considerable societal, stakeholder and political engagement planned.

SSEP will not focus on specific projects, leaving the energy market or subsequent processes to determine the specific projects and exact locations.

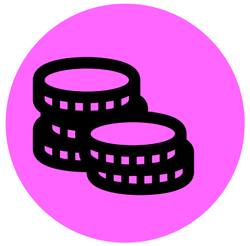
CSNP framework

Our vision

Provide an **independent, coordinated, and longer-term approach to wider network planning** in GB to help meet the government's net zero ambitions

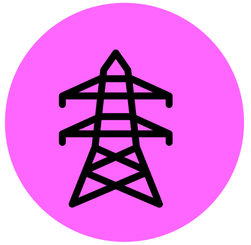
Provides a network blueprint for the country, mapping demand and optimal locations for onshore and offshore transmission infrastructure to support a decarbonised energy grid.

25-year horizon, on a three-year cycle



Co-ordinate reinforcements and anticipate investments ahead of infrastructure delivery

Balance development against environment/ community impacts to maximise benefits



Understand transmission infrastructure needed for onshore/offshore electricity transmission and interconnectors

NESO
National Energy System Operator

Regional Energy Strategic Plans (RESP)

Why?

To achieve local and national net zero targets we need:

1. **To accelerate electricity network investment** – enable heat & transport decarbonisation
2. **Consistency** – same approach for all network companies
3. **Whole system** – joined-up plan for all aspects of energy system

Where? (proposed)

Map A1 – Ofgem's preferred GB RESP settlement

Who? (proposed)

Ofgem – defining role

NESO – delivering role

Strategic Boards & Working Groups

Local authorities:
England: CAs, CCs, unitaries
Scotland & Wales: unitaries

Networks: DNOs & GDNs

Other local actors: relevant to energy system & spatial planning

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Draft RESP Outputs

Ofgem have outlined 3 building blocks that the NESO RESP must deliver. So far, we have identified **6 key outputs** that will enable the NESO RESP Team to deliver credible whole energy regional plans. These outputs will be refined and validated when developing the RESP Methodology.

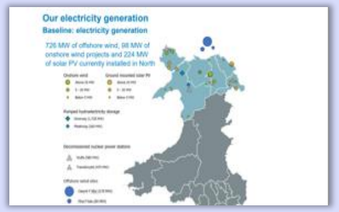
The Regional Energy Strategic Plans

The RESPs will develop future energy pathways and hotspots where strategic investment need is likely to arise to meet the regional energy visions

1

Regional Energy Vision

RESP will enable distinct Regional Energy Visions, reflecting local needs, to collectively support national objectives

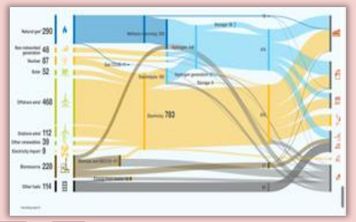


a

2

Regional Pathways

RESP will create Regional Pathways built from bottom-up that are coherent with national needs. NESO will also develop consistent planning assumptions



a b

3

Spatial System Need

RESP will identify strategic investment needs as well as spatial cross-vector system needs, resulting from the pathways considering network constraints

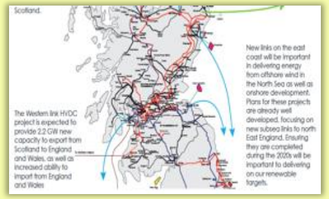
b

Support for price controls

4

Network plan Technical coordination

RESP will assure that regional network investment plans are integrated across vectors, built on consistent assumptions and deliver regional needs at pace, within national constraints



c

5

Regional Geospatial Energy Plan

RESP Team will develop geospatial regional plans that provide transparency and visibility to local communities and national stakeholders. The RESP Team will continue to track and monitor the delivery of the RESPs including Strategic Investments.

b c

6

Societal Impact Assessment

The RESP Team will review the societal impact at a local level of the energy transition (including jobs, transport, industry, environment etc.)

Ofgem consultation building blocks	a Modelling supply and demand	b Identifying system need	c Technical coordination

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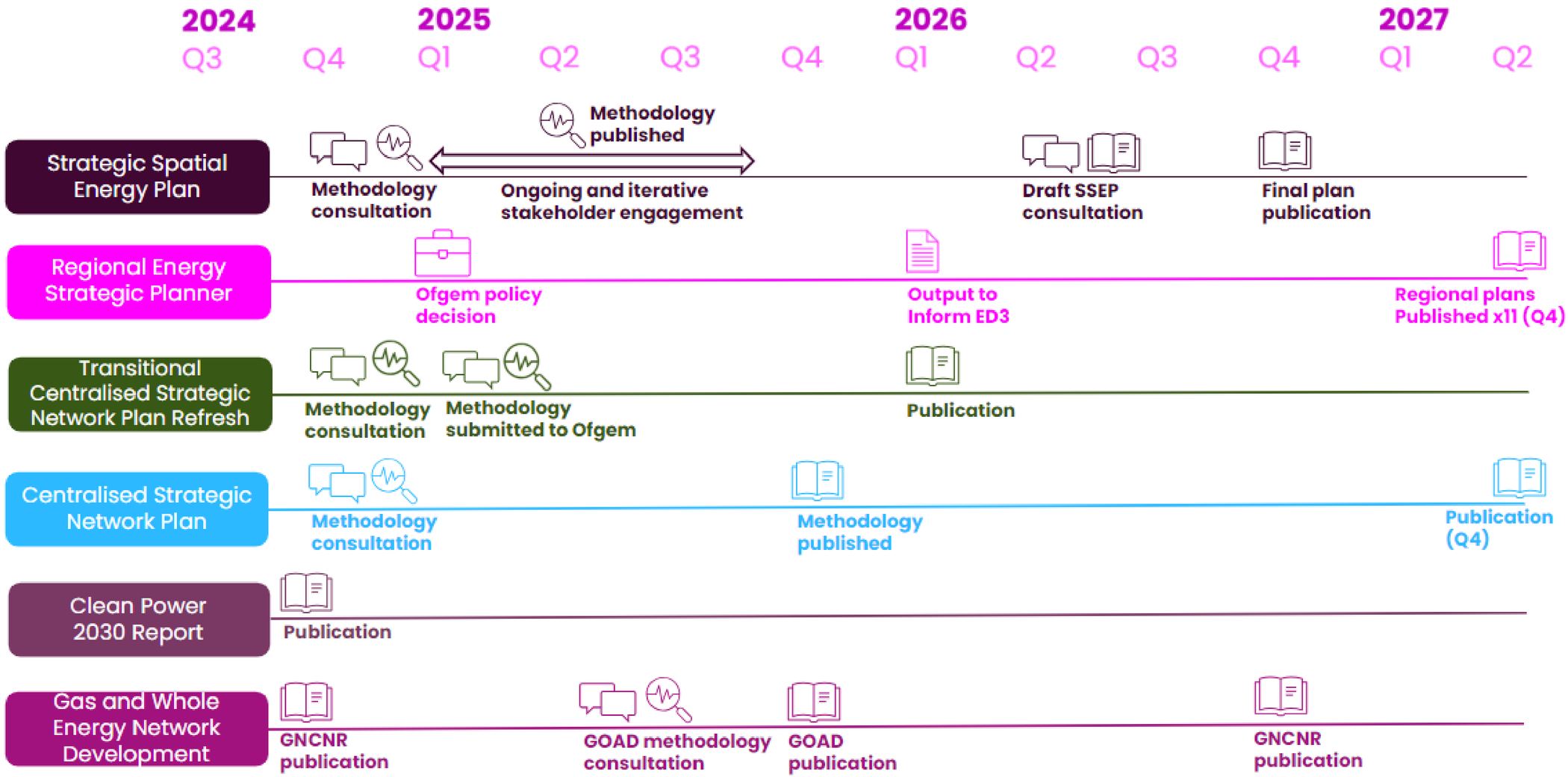
3. Next steps - High level milestones*

***These are indicative dates and subject to change.**



NESO
National Energy System Operator

Thank you

NESO
https://www.neso.energy/what-we-do

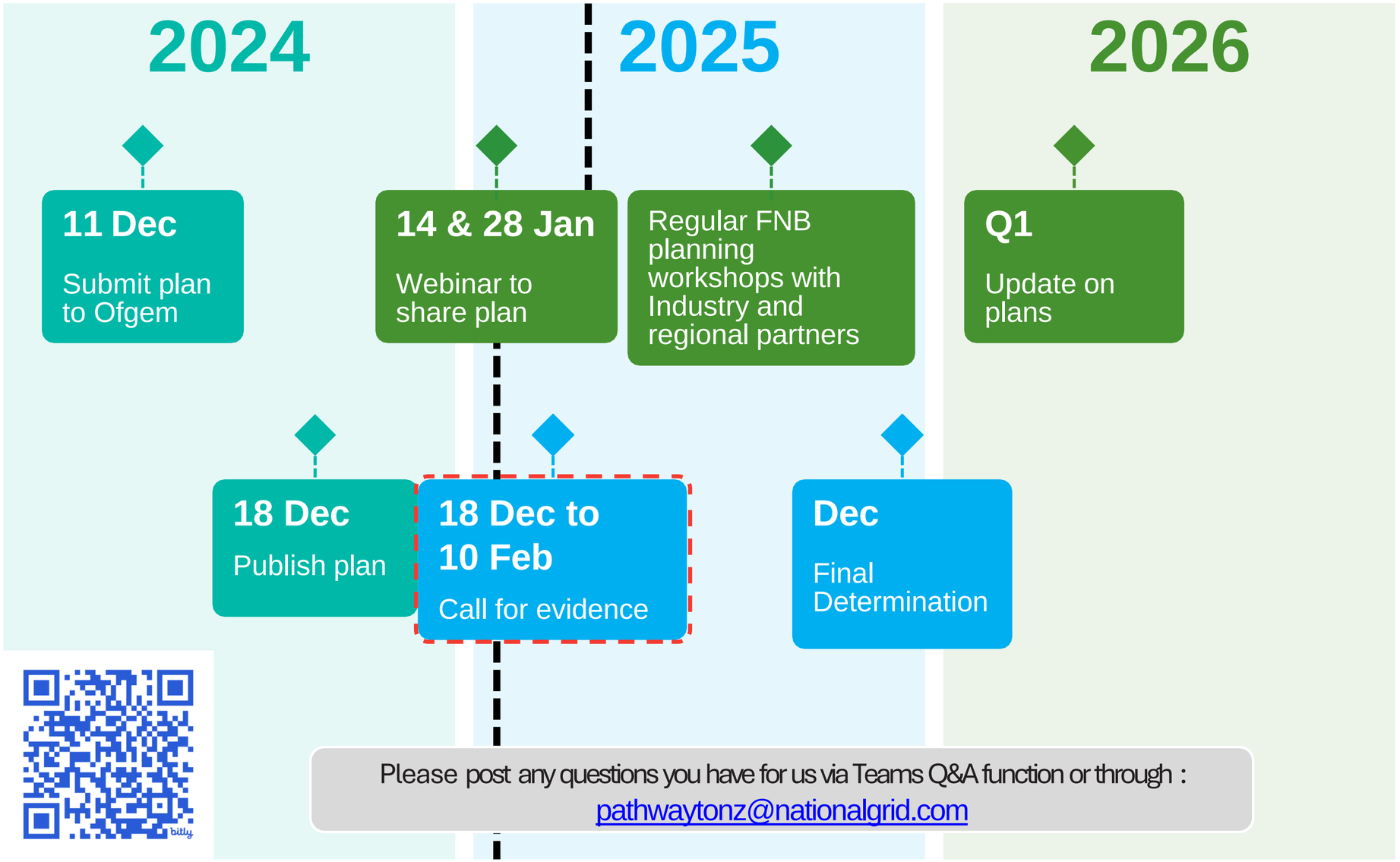
Strategic Energy Planning
https://www.neso.energy/what-we-do/strategic-planning

Contact
paul.roberts10@nationalenergyso.com

Timeline

Please post any questions you have for us via Teams Q&A function or through :
pathwaytonz@nationalgrid.com

Planning next steps for the South East



Ofgem's Call for Evidence 18 December to 10 February

All responses welcomed

Your response will help to inform Ofgem's Final Determinations.

Please send your response to RIIO3@ofgem.gov.uk

More information at Ofgem Call for Evidence RIIO-3

Q&A

Please post any questions you have for us via Teams Q&A function or through :
pathwaytonz@nationalgrid.com

We welcome your feedback on what you have heard today, our FNB process and how we can work better together ?

Please get in touch via pathwaytonz@nationalgrid.com

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Appendix

Our approach to local engagement

We consult and work with local residents, their representatives and statutory stakeholders through all stages of the planning and construction process.

Our approach is underpinned by the 5Cs:

- **Communities** play a vital role and should see the benefits from hosting new infrastructure.
- We undertake the highest standards of **consultation**.
- We identify and **collaborate** with partners to deliver tangible community benefits.
- Our communications **campaigns** will clearly explain the need for a reliable decarbonised grid, and greater energy security for Britain.
- Our **colleagues** are experts in the energy sector, land, planning and the environment.

How we engage with local communities

We consult and work with local residents and their representatives through all stages of the planning and construction process.

- Consultation and information events
- Stakeholder briefings
- Public webinars
- Community newsletters
- Dedicated e-mail and phone services
- Project websites

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