

Electricity  
Transmission

# Sharing our 2026 - 2031 Business Plan for the East of England

8<sup>th</sup> October 2024

nationalgrid

2031 Business Plan



# Agenda

ID	Time	Discussion item	Lead
1	13:00	Welcome Poll 1-What is the main takeaway you hope to gain from today's workshop?	Theresa and Akram Akram /Rory
2	13:05	Exec Introduction to Our RIIO- T3 business plan	Sara Habib
3	13:15	T3 baseline plan- for the East of England Poll-How do you feel about the following statement – <i>'I am confident that the future energy network will reflect the needs of my organisation's journey to net zero</i>	Ben Haggerty, Jayesh Tailor & Sarah Harris  Akram/Rory
4	13:45	National Energy System Operator(NESO) introduction to the role of the Regional System Planner	Catherine Bock
5	14:00	Connections Reform	Richard Woodward
6	14:15	Connection projects in your region	Marta Wypych-Arvanitaki
7	14:30	Our responsible business	Anna Turrell
8	15:00	DNO update – UKPN Poll questions Please provide feedback on today's workshop . Did the workshop meet your expectations, and is there any additional information or clarification you require?	José Barros Akram/Rory
9	15:15	Q&A	Theresa

# 1

Welcome

Theresa Potter

national**grid**



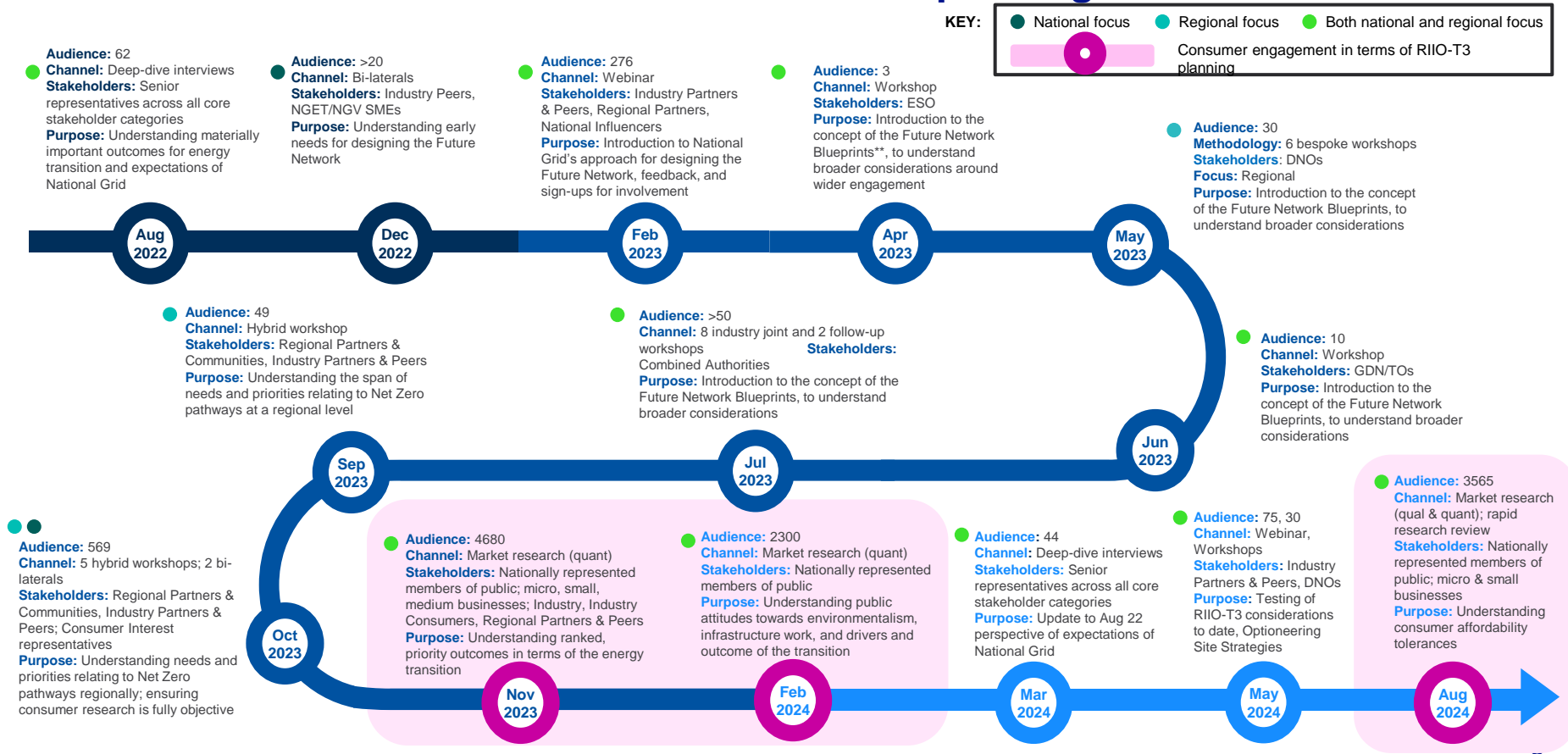
# Purpose of today

The purpose of today's meeting is to present the latest version of our RIIO-T3 investment plan and discuss its implications for the East of England, including key aspects related to connections, the environment and the local community. We would like to use this as a platform to discuss a whole system approach and work collaboratively with you. There will be an opportunity to ask questions at the end

## Key dates:

- The first draft of our RIIO-T3 business plan will be published **18<sup>th</sup> December** on our website.
- Between **18th December** and **10th February 2025** there will be a 'Call for Evidence' (a consultation period) where stakeholders can comment on our RIIO-T3 plan - Ofgem will publish a notice on how this can be done on the 18th December
- In **June / July 2025** Ofgem will publish their Draft determinations on our plan - to which we and stakeholders can respond
- Towards the **end of 2025**, Ofgem expect to publish their final determinations
- **1st April 2026** RIIO-T3 price control period begins

# Our enhanced engagement programme has enabled us to better understand the needs and drivers of consumers and our expanding stakeholder base



\*\* Future Network Blueprints are the Regional Network design strategies to achieve Net Zero by the government target date

# Our Stakeholder Centric Design Principles are at the heart of our plans

We combined the insight from all our engagement\* to date into five Stakeholder Centric Design Principles

to shape our Ambition and RIIO-T3 investments



\* We have engaged with over 9000 household consumers, 1000 small business consumers, 1500 stakeholders directly impacted by the design and timing of the network upgrade (industry, regional partners and communities, other sectors)

# 2

## Exec Overview

Sara Habib





# 3

## T3 baseline plan for the East of England

Ben Haggerty and Jayesh  
Tailor





# Interactions

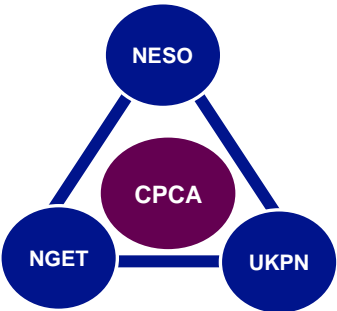


17 of the 26 projects identified by the Electricity System Operator (ESO) as needed to support targets to bring up to 50GW of offshore wind onshore by 2030. were allocated to NGET and form the initial wave our Great Grid Upgrade programme. Over 35 additional projects have since been identified and form future waves of delivery work.

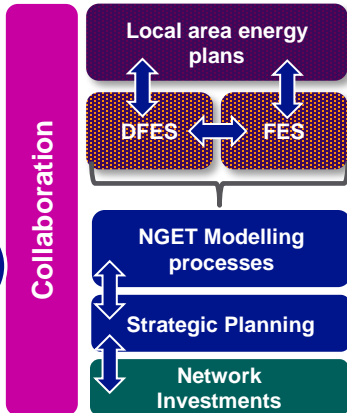
These projects also make significant contributions to mitigating energy security concerns, increasing constraint costs impacting consumer and longer-term Net Zero ambitions for GB. East of England's region hosts some of these, however:

This isn't everything...

- ✓ We need a sufficient energy mix to meet the decarbonised Powergrid requirements.
- ✓ We need a regional level understanding of demand for electricity to ensure we provide capacity ahead of time.
- ✓ We need to ensure our existing infrastructure remains secure and resilient throughout the transition.



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## RIIO T3 Planning

The information you all provide is fantastic and creates the foundation towards our strategic planning. The local area energy plans support Future Energy Scenarios to be developed.

These then support NGET in week 24 and B07 modelling processes. We have been undertaking whole system co-ordination as part of our RIIO T3 planning (and current RIIO T2) to plan and trigger investments to meet near term and future requirements of the CPCA.

The role of the Regional Energy System Planner will allow stronger coordination between us all and will improve spatial planning across all energy vectors.

We want to share early visibility of these co-ordinated plans with you.

# Customer Connections | Regional Overview

We use a mix of NESO's future energy scenarios and market intelligence to determine the pathway which will establish the energy mix required, and therefore corresponding investments in our plan. Beyond this we will continue to analyse the range of scenarios available and underlying drivers, to understand how the energy mix could continue to evolve feeding this into our regional assumptions.

The investments to achieve the energy mix required will drive how we think about these at site and regional level. For example:



**Standalone Connection** – usually a specific customer driver at a site. The connection tends to be less extensive in investment and fairly simple in terms of complexity

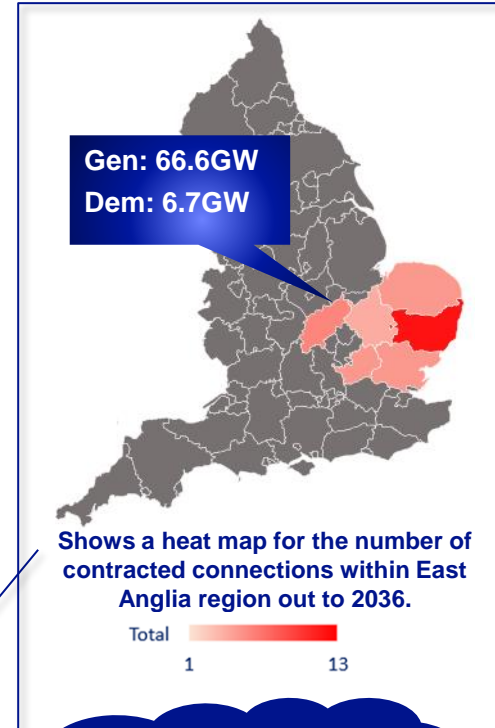


**Site Strategy** - Where ageing infrastructure, fault level restrictions or physical space is unavailable at an existing site we may not be able to connect the customers in, therefore a more holistic site strategy is required such as building a new substation.



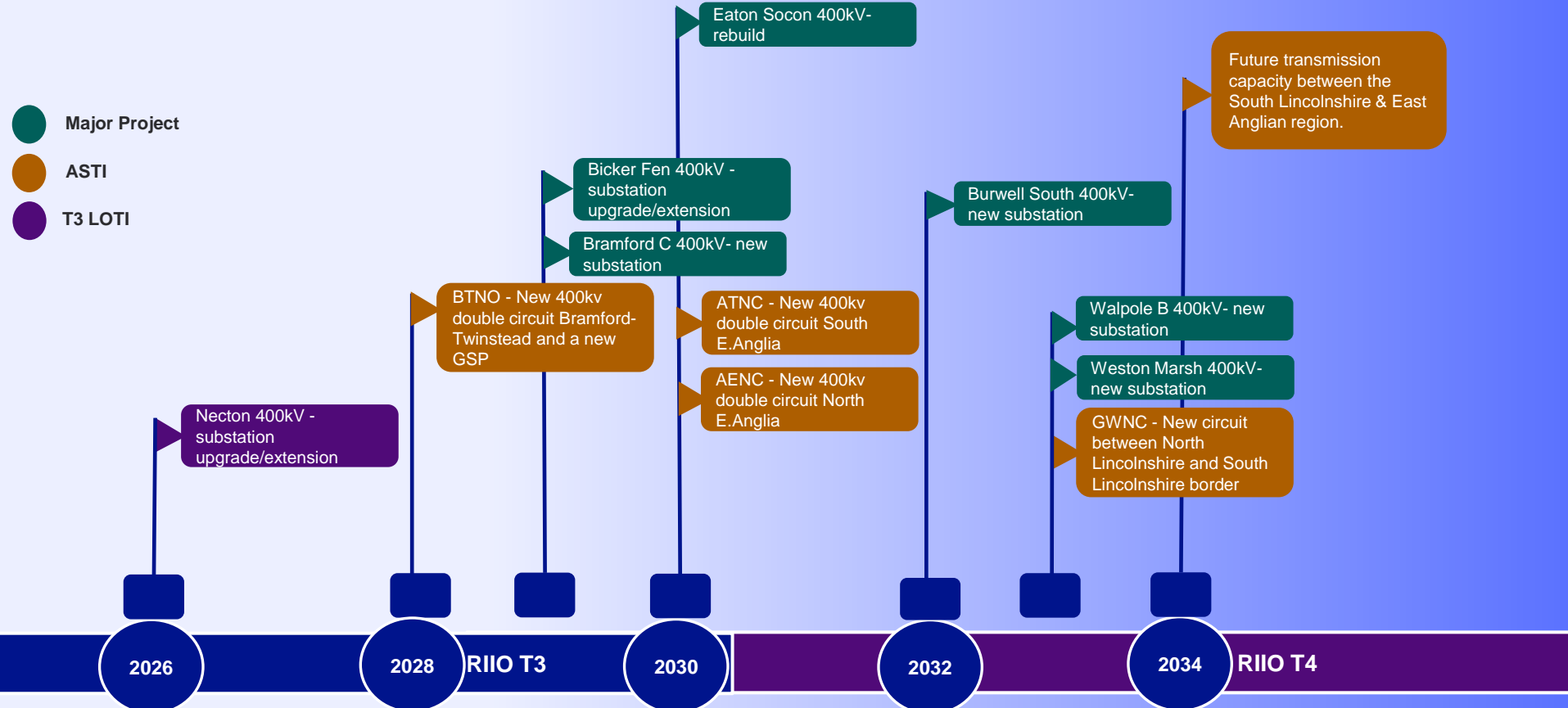
**Circuit Strategy** – When reviewing circuit health, we will look to assess the long-term growth and capacity needs within a region to either maximise the line ratings or to see whether we should uprate the voltage along with associated substations

Within East Anglia, there is around **66.6GW of Generation** contracted and **6.7GW of Demand** contracted out to 2035 to connect to NGET's infrastructure. This has resulted in 7 site strategies with the rest being standalone connections across the **Cambridgeshire & Peterborough Combined Authorities (CPCA)** Region. The CPCA region constitutes **17.8GW** of the 66.6GW Generation contracts and **3.0GW** of the 6.7GW of demand contracts.



9.6GW of the 17.8GW of the CPCA region generation relates to Solar & Battery

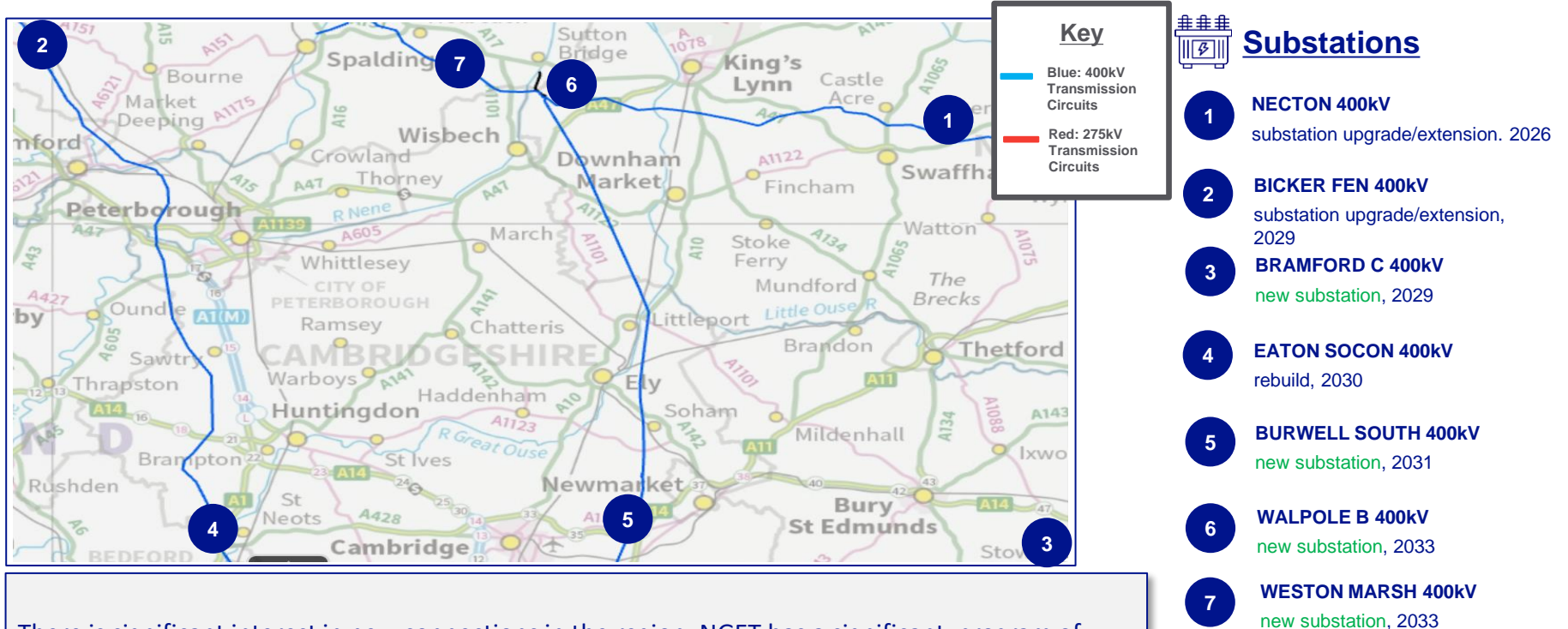
# Cambridgeshire and Peterborough Combined Authority Blueprint



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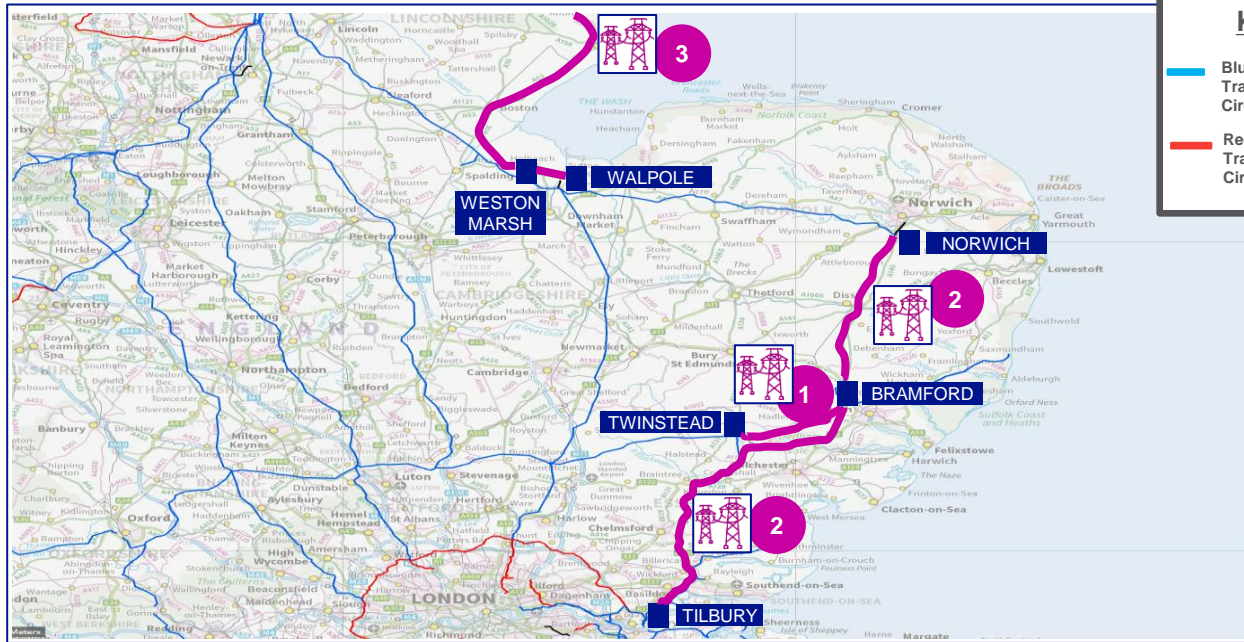
The major project types shown above align to the Cambridgeshire & Peterborough network strategy: enabling the region's decarbonisation and connection of new customers including data centres and battery storage

# Cambridgeshire & Peterborough | Strategy (Substations)



There is significant interest in new connections in the region. NGET has a significant program of substation builds and extensions to create capacity for new renewable generation and meet increasing demands. We are working collaboratively with the DNOs; UKPN & NGED to ensure their needs both now and future are factored as part of these substation builds.

# Cambridgeshire & Peterborough | Strategy (Circuits)



**Key**

- Blue: 400kV Transmission Circuits
- Red: 275kV Transmission Circuits



## Circuits

1

**BTNO (BRAMFORD – TWINSTEAD)**  
New 400kV double circuit, 2028. Approved network reinforcement between Bramford Substation in Suffolk and Twinstead Tee in Essex.

2

**NORWICH – TILBURY**  
New 400kV double circuit, 2030. Proposed network reinforcement between the existing substations at Norwich Main in Norfolk, Bramford in Suffolk, and Tilbury in Essex, as well as connecting new offshore wind generation.

3

**GRIMSBY TO WALPOLE**  
New 400kV double circuit, 2033. Proposed network reinforcement between a new substation at Grimsby West in North East Lincolnshire and a new substation in Walpole in Norfolk.

Across Cambridgeshire & Peterborough and the wider region, NGET has a significant program of reinforcements underway to enable the integration and transmission of renewable generation connecting along the east coast of England. These projects contribute significantly towards meeting the UK's energy security and net zero ambitions. Where possible, we are looking to reconductor existing overhead lines to increase capacity and where not, we are installing new.



# NGET Capital Plan | Risks & Uncertainties

## Navigating the challenges of long-term infrastructure investment:

- We are embarking on a transformative journey to modernise and maintain the network to align with net-zero objectives.
- We are undertaking thorough delivery assessments of the T3 investment plan.
- Long-term, large-scale projects like this carry significant risks and uncertainties, both internally and externally to NGET.

### Key challenges include:

- 1. Planning and Legal Frameworks**  
Lengthy approval processes could result in delays or additional compliance
- 2. Community & Social Acceptance**  
Resistance from local communities on infrastructure changes/disruption
- 3. Regulatory and Policy Changes**  
Clean Power 2030 & Connections Reform may change investment priorities
- 4. Environmental Challenges**  
Ecological, archaeological, and ground condition risks
- 5. Economic Fluctuations**  
Global economic factors, supply chain constraints, and contractor shortages

We have successfully delivered significant upgrades in the East of England over the last decade thanks to your support and look forward to working with you to deliver the next tranche.





# 4

## NESO - introduction to the role of the Regional System Planner

Catherine Bock

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Connections Reform

Richard Woodward

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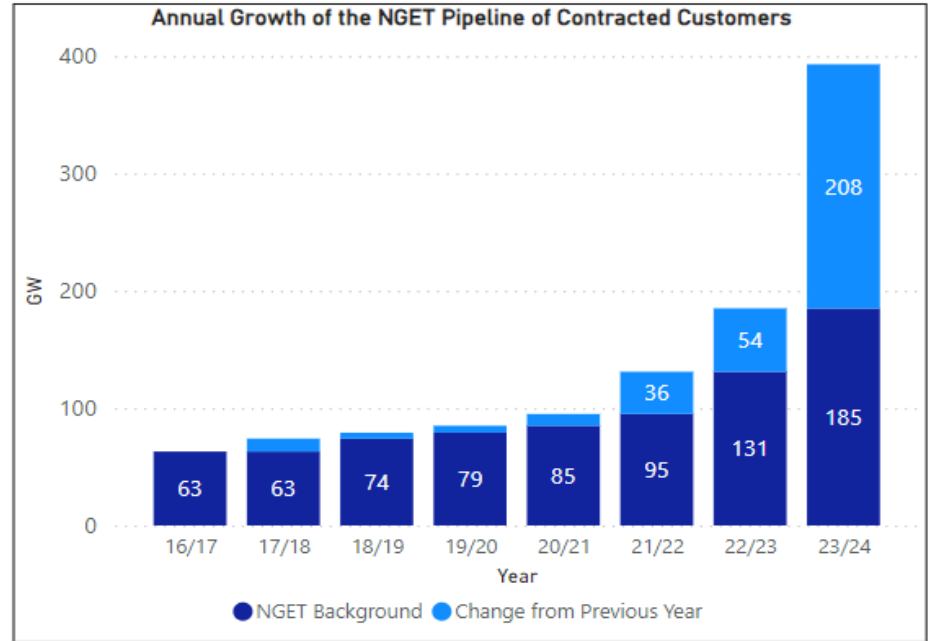


# Connections Reform – the context for change

## The 'existing' connection process



- Projects can apply for connections at any time, with low barriers to entry.
- Everyone receives a fully-worked connection offer.
- Capacity is allocated on a 'first come first served' basis.
- Transmission capacity availability is considered an infinite resource



What our customers experience:

**Inefficient connection process** + **huge volume of applications** = **long lead times for connections**

# We have a clear view of the problems the challenge causes and what needs to be achieved by Connection Reform

## Key challenges;



The pipeline contains over 3x the number of projects required to connect by 2050.



The pipeline is not aligned to a Government strategy and will not efficiently achieve decarbonisation targets



Speculative applications trigger unnecessary works, which further distorts timelines for our customers.

## What reform needs to deliver

①

The current pipeline is **reduced and reordered** to reflect the **mix of technologies required for both the energy system and to meet Governments decarbonisation targets**

②

A new connections process which sees only **viable projects entering into connection agreements** and progressing through the process

③

**De-coupling of network design and the connections process** to enable strategic decisions about where to create capacity and provide connection locations

# Do the current 'TMO4+' proposals deliver our ambition for change?

The design of the process is centred around splitting contracted customers into **two categories based on their progression**;



## Indicative offer

For customers who **HAVE NOT yet secured exclusive land** for their development, they receive;

1. A potential connection date (indicative)
2. Indicative connection location (not a confirmed sub or bay)

## Final offer

For customers who **HAVE secured exclusive land** for their development, they receive;

1. A firm connection date
2. A confirmed substation and bay for their connection

This categorisation is also to be **applied to the existing pipeline** reducing 'final offers' down to **less than 200GW (the new contracted background)**

## NGET Recommendations

1. **Stronger criteria is needed to guarantee receiving a final 'firm' offer at Gate 2.**
  - a. Technology considerations
  - b. Commercial viability checks
2. **Proactive management of the volume of contracted projects to provide greater certainty of network investment and connection timescales.**
  - a. National or regional caps on technology
  - b. Stronger levels of queue management
3. **Ensuring the impact of customer connections on TO investment can be adequately assessed prior to Gate 2 offers.**



# What's next?

## 1. Consider Ofgem's recommendations on Clean Power 2030

We agree with Ofgem that CP2030 could provide a route to strengthen the criteria for allocating firm capacity under TMO4+. How could this be facilitated via the future connection arrangements? Are we comfortable with the assumptions to form the underlying CP2030 pathways?

## 2. Support timely completion

The incorporation of a CP2030 steer, along with more timely development of supporting methodologies, has necessitated a few months delay to go-live.

We will be supporting ESO to ensure timely implementation of TMO4+, including provision of any necessary data/information needed to support Ofgem with making a swift decision.



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Connection Projects in your  
region

Marta Wypych-Arvanitaki

nationalgrid



# How we determine a connection today



## Customer applies to NESO

*Incl. information on what they want to connect, when, and where*



## NGET studies works required to enable

*Both: network reinforcements to support the power flow and manage safety of the system, and substation works required to provide a connection point*



## NGET uses a set of runways, for the different asset types, to estimate lead time to connect

*Determine critical path projects to determine connection date*



## Connection offer provided to NESO to Customer

*The work that has the longest runway to complete sets the critical path and thus the connection date*

### *How we determine the works required*

'Wires' (infrastructure such as OHL or underground cables):

- Power system analysis is conducted to identify network reinforcements required to enable the connection and maintain secure network supply.
- This includes thermal and contingency studies to test the limit at which the network would be unable to handle the new connection power flows.

'Sockets' (connection point for the customer):

- Customer Connection team identify whether additional bay and/or substation extension or new build is required to enable the connection.

**Important to note:** *The analysis completed is done respecting the contracted background. i.e., we take into consideration the background that's ahead of this request in the queue, respecting the 'first come, first served' principle. This is presented in the form of a Construction Planning Assumption (CPA) from the ESO which dispatches a subset of the contracted background in that local area.*

# Contracted background

- Anglia's region is an area of high customers' interest
- **'Energy clusters'** on the network due to high volume of connections for generation, demand and energy storage
- Contracted capacity is growing at an unprecedented rate
- Our contracted background exceeds energy scenarios and drives the need for network investment that won't be required
- Connections Reform needed to build higher levels of certainty for future network development



# We have developed a two-stage approach to delivering connections that are required for a NetZero future

## Phase 1 Rationalise the pipeline of connections

**Immediate action** to address the issues faced by significant volume of contracted customers

**We need more confidence that those in the pipeline will connect, we need to;**

- Address areas of apparent oversubscription
- Influence Government Policy that drives market behaviour
- Change treatment and modelling of applications to accelerate connections

**Longer term strategic action** to enable successful reform of the connections arrangements, this includes;

- Reforming the process for contracting customers (ESO)
- Developing **innovative connections products**
- **De-coupling network design from individual customer applications**

## Phase 2 Deliver connections for future demand

Alongside this phased plan, we will continually support and coordinate with wider industry groups set up to reform connections arrangements such as the ENA Strategic Connections Group and the NESO connections process reform

# 7

## Our Responsible Business- Anna Turrell





# Being a responsible business is at the heart of everything we do

## Our environment



### Deliver a clean energy future

- Invest in the **decarbonisation** of the future of energy
- Net zero **carbon** emissions
- Use **resources** responsibly
- Caring for the natural **environment**
- Adapt to **climate** change

## Our customer and communities



### Support a fair and affordable transition

- Support an **affordable** energy transition
- Accelerate **social mobility** in the communities we serve
- Engage directly in our communities through **volunteering**
- Act on feedback we receive from our **customers** on the service we provide

## Our people



### Build the net zero workforce

- **Invest in our people & build the skills needed** to deliver the clean energy future
- **Reflect the communities we serve**, especially ethnic & female representation
- Create an **inclusive culture**, where it is safe to speak up
- Lead the industry on colleague **health & wellbeing**
- Ensure all colleagues receive **fair & equitable pay**

- Network **reliability**
- **Health & safety**
- **Digitalisation & innovation**

## Responsible Business fundamentals

Be a responsible business in our operations

- **Supply chain** engagement
- **Cyber security & data** protection
- **Compliance & ethics**



# Our vision for Responsible Business in RIIO-3

The investment NGET will deliver during the next price control and beyond is critical to turning the UK's Net Zero ambitions into reality. But the network we are building and the way in which we deliver that investment also needs to be sustainable.



## Environmental sustainability

Our ambition is to **achieve a net zero, nature positive future, respectful of planetary boundaries.**

By connecting renewable energy sources and expanding the grid, we are in the midst of making history to enable the low-carbon energy transition. The investment NGET will deliver during the next price control and beyond is critical to turning the UK's Net Zero ambitions into reality.

At the same time, the network we are building and the way in which it is built must also be sustainable. We believe that by unlocking the potential of our assets, and through our role in convening others, we are in a pivotal position to drive action in a way that creates lasting and shared prosperity.

## Social sustainability

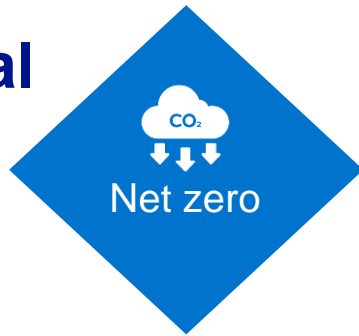
Our ambition is to **maximise the social value created through our operations and construction to leave a lasting, positive legacy for our communities and ensure a Fair Transition**

Aligned to business priorities and core values, we will focus on initiatives that benefit communities and society with tangible targets, backed up by action. We will mitigate the impacts and enhance the benefits of our work, seeking input from our stakeholders and communities to understand their needs and preferences, represent their perspectives and ensure that we do not leave anyone behind.

We will integrate social value in daily and strategic decision-making, measure impact and report transparently, to build trust. We recognise the importance of collaboration, both internal and external, to co-create our strategy, evaluate progress in its implementation, and effectively communicate the outcomes.



# Environmental focus areas



*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.*

- Sustainable operations
- Infrastructure for net zero
- Sustainable supply chain and offices

## Achieving a net zero, nature positive future, respectful of planetary boundaries



*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'.*

- Environmental improvement
- Embodied ecological impacts
- The Natural Grid



*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.*

- Resources and circularity
- Water stewardship
- Excellent environmental management

# Social Sustainability focus areas



*We will deliver community benefits informed by local needs analysis and stakeholder engagement and invest in skills in our communities and supply chains to build fair, resilient talent pipelines for the future workforce*

- Education, skills & employment
- Nature for communities
- Local community benefits

## Supporting a fair and affordable energy transition



*We will build a net zero workforce that represents the diverse communities we serve, creating a culture centred around safety, equity and inclusion*

- Diverse attraction & recruitment
- Invest in our people
- Safe, inclusive culture



*We will work with our partners to grow local markets and capabilities, generate new or improved skills and employment opportunities for local communities and deliver environmental, social and economic benefits*

- Local & diverse business
- Local skills development & employment
- Community engagement

# CASE STUDY: London Power Tunnels 2 – paving the way to net zero

## Ultra-low carbon concrete

In FY24, we mandated the use of low carbon concrete (defined as LCCG rating grade B or above for structural concrete and A or above for non-structural) on all new projects.



National Grid is one of the first organisations to adopt this industry-wide benchmarking system, published as part of the Institution of Civil Engineers' (ICE's) overall route map to decarbonising concrete.

The new standard will apply to all new projects and all existing projects as they transition to the Supplier Requirements suite. We estimate that this policy change will help us to achieve up to a 4 per cent reduction in emissions from concrete use across the portfolio.

London Power Tunnels 2 is a £1 billion project, to rewire South London via deep underground tunnels.

Starting in 2020 and still in construction, LPT2 has embedded carbon management from the start. By optimising the design, switching to lower-carbon material, and improving the way we deliver, we've achieved an 18% reduction on emissions from our baseline, a saving of 18,867 tCO<sub>2</sub>e across our tunnel and shafts works.

In April 2023, the world's largest ever pour of sustainable, cement-free concrete (736m<sup>3</sup>) was used to fill the base of a 55m-deep tunnel drive shaft at National Grid's Hurst Substation in South London. This is enough to fill around two 25m swimming pools. This concrete reduces carbon by around 64%, saving an estimated 111kg of CO<sub>2</sub> per cubic metre poured in comparison to concrete that would have traditionally been used.

Tunnel construction is well underway, with the project due to be complete and fully operational in 2027.



The earth-friendly concrete pour at Hurst Substation was the largest continuous cement-free concrete pour in the world.

# CASE STUDY: Environmental enhancement and Biodiversity Net Gain

## 15% Biodiversity Net Gain at Uxbridge Moor

We are developing plans to build a new electricity substation ('Uxbridge Moor') on land bordering our existing substation in Iver. This is needed to connect several customers to our electricity network to the west of London.

We are at the heart of the energy transformation. We have a duty to ensure that the construction projects that we're working on will not only deliver a greener future, but also avoid as much environmental harm as possible and deliver a positive outcome for biodiversity and local communities.

In order to do this, we apply the principles and tools of biodiversity net gain (BNG) to underpin and inform our actions and deliver wider environmental benefits. This approach sets out to leave natural environments in a better condition than prior to development.

We are aiming to deliver 15% BNG at Uxbridge Moor, exploring opportunities to work with the Environmental Education Centre at Iver, to extend the reach of their site and provide more access to nature for communities.

Onsite Landscaping scheme provides Nature Based Solutions for surface water management via SUDs, aspects of visual screening delivered via a planting scheme, and engagement with the Env Education Centre to provide natural resources.



**Planned interventions: Grassland, heathland and scrub, woodland and tree habitats will be enhanced on site and offsite.**

**>10%**  
We're committed to delivering a net gain of at least 10% or greater in environmental value (including biodiversity) on all construction projects.

## Environmental Education Centres

National Grid has supported a Network of Environmental Education Centres for over 25 years, all of which are located on non-operational land adjacent to four electricity substations: Bishops Wood, Iver, Skelton Grange, and West Boldon.

The centres are managed by Non-Governmental Organisations as part of long-term partnerships: Field Studies Council, Groundwork South, The Conservation Volunteers and Groundwork South Tyneside and Newcastle. National Grid funds the Network a total of £125,000 annually to contribute towards running costs and site maintenance



**The Environmental Education Centres are pivotal in helping National Grid Bring Energy to Life; delivering extensive societal benefit through volunteering and education programmes while ensuring our environmentally valuable sites are managed safely and responsibly for the benefit of our business and communities.**

# Grid For Good - Empowering communities and fostering inclusion

## Grid for Good

**Grid for good is a flagship programme providing training and employment opportunities for young people, aged 16-25, who come from disadvantaged backgrounds.**



Since the launch of our Grid for Good Skills and employability programmes we have helped over **3000 young people** and have over **1000 registered volunteers**.

### **This has resulted in:**

- **Over 120 young people from the Grid for Good programme received work experience placements across National Grid**
- **Almost 100 young people applied for graduate and apprentice roles**

...and seven have started other early-career roles in National Grid

**Grid for Good, powered by our charity partners and volunteers from National Grid and the energy industry, exemplifies our purpose-led organisation. It embodies our vision and values, bringing energy to life and ensuring that no one is left behind.**

In the face of significant social and employment challenges, our commitment to supporting communities is stronger than ever. We strive to build and cultivate an inclusive culture within our workforce, one that fully reflects the diverse communities we serve. We recognize that achieving our NetZero goals by 2050 requires an inclusive workforce, as the two are intrinsically linked.

We believe that diverse minds are essential in leading the way towards a sustainable future.

Young people who join Grid for Good embark on a transformative journey through our seven-stage pathway. We provide them with valuable insights into the wide range of roles within the energy industry, equipping them with essential work-readiness skills and specific industry expertise. They gain experience in team building, networking, and engage in paid work experiences.

Through Grid for Good, we demonstrate our unwavering commitment to empowering communities, fostering inclusion, and nurturing the next generation of leaders in the energy industry.

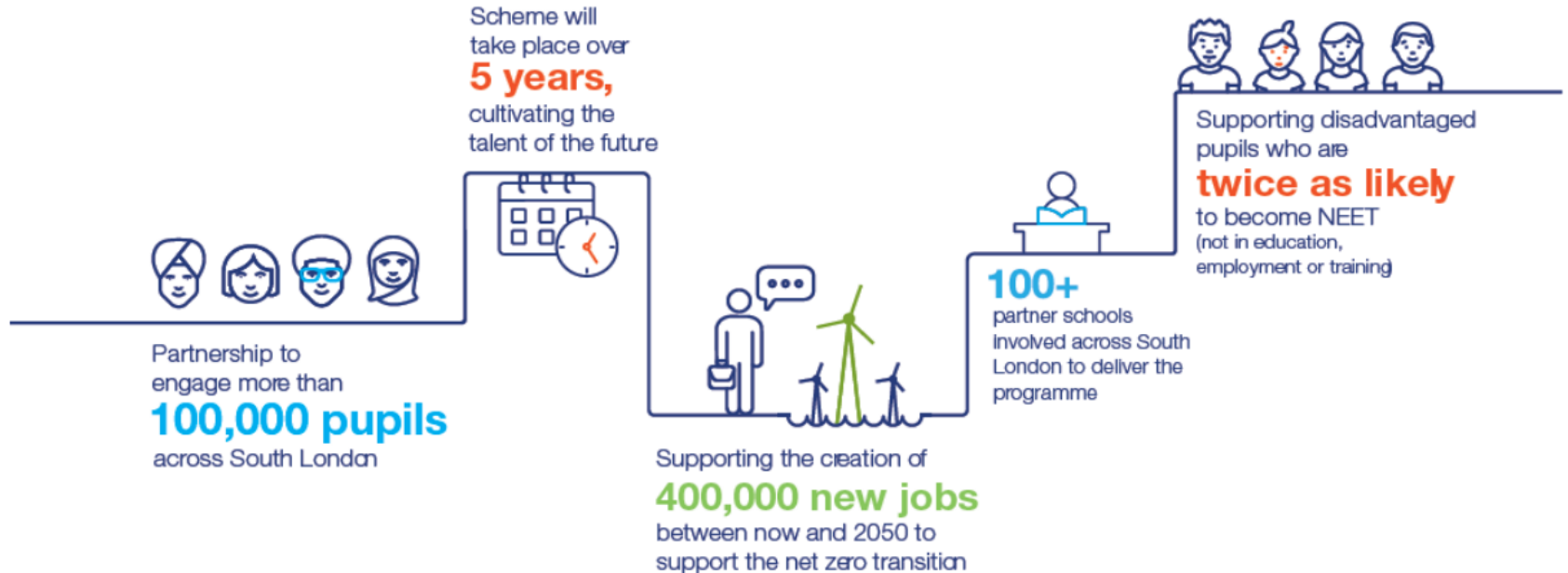
Our workforce planning teams are working hand-in-hand with the Grid for Good team to identify future skills and employment requirements and use our partnerships to create opportunities for those that need them most.





# CASE STUDY: Green skills community partnership

Our London Power Tunnels 2 project partnered with *Connectr*, setting an ambition target of working with 100,000 secondary school pupils in South London

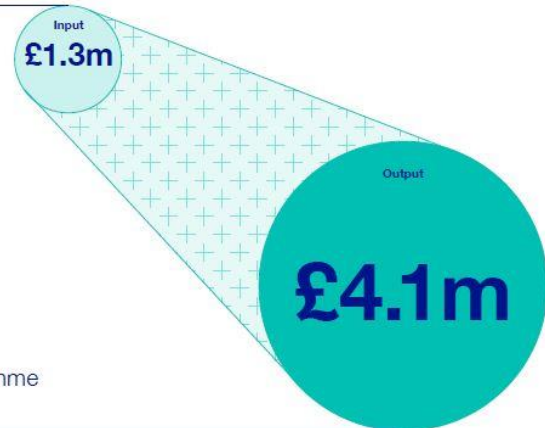




Economic value invested by NG = £1.3m

(£1.3m investment over three years and £1.8m investment for the five-year programme).

Economic output of programme after 3 years = £4.1m



**120,000**  
**pupils helped so far**

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DNO update

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Q&A

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