

H2Teesside Project

Planning Inspectorate Reference: EN070009

Land within the boroughs of Redcar and Cleveland and Stockton-on-Tees, Teesside and within the borough of Hartlepool, County Durham

The H2 Teesside Order

Document Reference: 8.60 Applicant's Response to NGET Submission

Planning Act 2008



Applicant: H2 Teesside Ltd

Date: February 2025

DOCUMENT HISTORY

DOCUMENT REF	8.60		
REVISION	0		
AUTHOR	PM		
SIGNED	PM	DATE	28/02/25
APPROVED BY	PM		
SIGNED	PM	DATE	28/02/25
DOCUMENT OWNER	PM		

TABLE OF CONTENTS

1.0	APPLICANT RESPONSE TO NGET'S DEADLINE 8 SUBMISSION	4
1.2	Engagement and 'Without Cowpen Bewley Scenario'	4
1.3	Compulsory Acquisition Tests	5
1.4	Serious Detriment – Practical Matters	6
1.5	Serious Detriment - Context	9
1.6	Protective Provisions (and interaction with NGET existing assets).....	9
1.7	Conclusion.....	13

APPENDICES

APPENDIX 1 NORTH-EAST REGIONAL PLAN

1.0 APPLICANT RESPONSE TO NGET'S DEADLINE 8 SUBMISSION

1.1.1 This document provides the comments of the Applicant in response to the Deadline 8 submissions of NGET.

1.1.2 This document supplements the Saltholme Interaction Report [REP7A-015] submitted by the Applicant at Deadline 7A. In so doing, the Applicant does not wish to repeat the points made in that Report. As such this report is focussed on key points of principle.

1.2 Engagement and 'Without Cowpen Bewley Scenario'

1.2.1 NGET makes a number of comments in its Deadline 8 submissions with which the Applicant fundamentally disagrees.

1.2.2 Firstly, the Applicant has demonstrated and been clear that it is NGET whose position has changed over time and in particular since the DCO application for the Proposed Development was brought forward. NGET cannot seek now to suggest that the Applicant should have considered alternatives, prior to recent weeks, when a proposal to expand Saltholme Substation was not made known to the Applicant until after the submission of the DCO application.

1.2.3 Secondly, the Applicant has set out in the Saltholme Interaction Report [REP7A-015], how it consulted with NGET over time. In particular it is noted that NGET did not engage with the Applicant's attempts to share information or access land to allow for substantive compromise positions to be brought forward, once NGET did reveal that the Saltholme extension was being brought forward. Furthermore, the fact that the Applicant's Order limits were (a) passing close to the substation and (b) would involve a pipeline corridor in this location, were clear from the Applicant's First Consultation (see e.g. Appendix 10-3 of the Consultation Report [APP-030]). It therefore cannot be credible to suggest that NGET would not have been aware of the risk of there being some form of overlap with their proposals as it brought them forward. The fact that NGET did not see the Land Plans until post application does not change this position.

1.2.4 Thirdly, NGET complains that it has taken a month for the Applicant to submit the Saltholme Interaction Report. In the context that between Deadline 5 (where NGET submitted its Engineering Reports) and the Change Notification, the Applicant had in the spirit of co-operation been focussing on exploring a compromise solution rather than rebutting the reports, it is the case that the Applicant focused on that report after submission of that Change Notification. Given the significance of the issue in question, to produce a robust report was always going to take an appropriate period of time. It cannot therefore reasonably be said that there has been any delay in producing that report.

1.2.5 Fourthly, and as also explained in the Applicant's response to the ExA's Rule 17 Request of 25 February, the documents submitted at Deadline 8 clearly provide for the removal of any plots owned by NGET, or which may be affected by the expansion of Saltholme Substation. The Applicant would therefore expect that NGET should

not be in a position to object (subject to its concerns on the Protective Provisions) to the Proposed Development.

1.3 Compulsory Acquisition Tests

Section 122

- 1.3.1 The Applicant considers that NGET is fundamentally mischaracterising its position in relation to the section 122 tests.
- 1.3.2 In terms of the *required* test: the plots which pass Saltholme Substation are required to deliver the connection to the offtaker north of the Saltholme Substation. There is therefore no doubt that they are required for the Proposed Development. Additional to this, it is also noted that whilst there is optionality as to whether or not the Proposed Development goes on to Cowpen Bewley AGI, clearly if that route is chosen, those plots are also required for that connection. Article 22 of the draft DCO ensures that the Applicant can only utilise those powers if that option is chosen. This is a position common on many other NSIP projects.
- 1.3.3 In terms of the compelling case in the public interest test, the Proposed Development is bringing forward a hydrogen distribution network to assist in the decarbonisation of Teesside and the East Coast Cluster (as delivered via connecting to Saltholme) and the achievement of Government objectives for hydrogen delivery on a regional and national basis of which this forms a part (the Cowpen Bewley AGI). These plots therefore aid in the delivery of Government policy. The Applicant considers that therefore cannot be a credible argument that this is not a compelling case in the public interest.
- 1.3.4 Turning then to NGET's concerns about specific plots:
- plots 3/23 to 3/25 utilise an existing road and so it is appropriate for the Order limits to match to that road. This road would still be needed in order to access the pipeline corridor west of the Saltholme Substation, which would become of considerable importance to the Applicant in performing its 'doubling up' duties. To the extent that the diversion of that road is necessary to facilitate an alternative substation expansion proposal, this can be provided for in the Protective Provisions (as discussed below); and
 - the Applicant's approach to plot 3/21 has been to be cognisant of the amount of constraints (as discussed in REP7A-015) which could influence its design, including NGET's operations which could be relevant. What the Applicant has done through the compromise solution is restrain its flexibility substantially to fit in two pipelines to seek to try and reach a position that can be acceptable to both parties. As the AGI west of the substation is now removed, plot 3/21 has taken the western half of it, to improve the deliverability of the two-pipeline approach.
- 1.3.5 In respect of the complaints in paragraph 2.18, clearly if the compromise solution is able to be agreed, then the Applicant would not impose a restrictive covenant on the relevant land to make the delivery of that compromise solution impossible. This is discussed further in the discussion on Protective Provisions below.

Section 127

1.3.6 Again, on this NGET mischaracterises the Applicant's position. Through the Saltholme Interaction Report, the Applicant has demonstrated that there are ways in which the Saltholme Substation can be delivered. NGET's case is that serious detriment is caused on the basis that it cannot.

1.3.7 It is for NGET, therefore, to explain why the Applicant is wrong to say that it can in fact be delivered. If NGET cannot, then no serious detriment can be found to be caused. None of the matters set out in section 1.5 demonstrate that the Saltholme Expansion is not possible, just that additional complexities will be caused.

1.4 Serious Detriment – Practical Matters

1.4.1 In considering the case of serious detriment, the Applicant notes that in its Deadline 5 and Deadline 8 submissions, NGET appears to be most concerned about implications to programme and cost arising from the compromise solution and that creating a risk to NGET being able to meet its statutory duties.

1.4.2 In this regard the Applicant notes NGET's conclusion that the different challenges it has raised are not insurmountable. Noting paragraphs 1.5.45 to 1.5.48 of NGET's submission, it remains the Applicant's view that careful planning and execution during construction, coupled with close coordination between the Applicant and NGET, will be essential to ensuring the successful delivery of the substation expansion. The Applicant considers that such coordination is a standard requirement for brownfield and expansion projects.

1.4.3 By way of example it is noted that:

- given that NGET is in control of network outages to enable new network connections, this is a matter squarely within its control to ensure it can be delivered, if they are required;
- NGET is in control of the ability to install smart valves elsewhere if that is what is required;
- the Applicant agrees that it is for NGET to decide what it does in relation to future connections, but there is no reason why such a decision should not be made in the context of critical national priority infrastructure also being built alongside it; and
- the civil engineering constraints listed on page 9 are all perfectly manageable through agreed construction methodologies between the two parties.

1.4.4 Turning to more detailed points, while not intended as a point-by-point response, the Applicant makes the following overarching observations.

1.4.5 In paragraphs 1.5.2 to 1.5.6, NGET asserts that the Applicant's proposed alternative would require an "online build" and "online decommissioning." The Applicant considers these terms to be misleading, as the alternative substation design option does not envisage any construction or decommissioning while the system remains

- energized. The Applicant maintains that the conceptual alternative design can be executed sequentially, as outlined in Section 5.2 of the Saltholme Interaction Report [REP7A-015].
- 1.4.5.1 In paragraphs 1.5.7 to 1.5.13, NGET suggests that the Applicant's alternative design would necessitate significant additional outages.
- 1.4.5.2 The Applicant considers that the alternative design would, subject to a minor amendment to avoid the requirement to replace tower YYJ036, require very similar outages to NGET's preferred Option 1a, i.e. this is a matter that NGET were already going to need to consider.
- 1.4.5.3 In particular, with reference to the potential impact on Hartlepool Power Station, the Applicant would note that the power station reaches the end of its design life in 2027. Nevertheless, should the design life be extended, the proposed works would only affect one of the four transmission circuits connecting Hartlepool to the National Electricity Transmission system. Furthermore, it would be necessary to take similar outages to transfer the existing Hartlepool – Saltholme and Norton – Saltholme 275 kV circuits to the new GIS substation to deliver NGET's preferred Option 1a.
- 1.4.6 In paragraph 1.5.15, NGET indicates that further analysis would be required to realise the Applicant's suggestion that a larger transformer could be utilised. While the Applicant concurs with this statement, it also highlights that 5x240MVA SGT arrangement as per NGET's preferred Option 1a is still feasible, given adequate space east of the NPG 132kV substation, as indicated in Figure 5.5 & 5.6 of the Saltholme Interaction Report.
- 1.4.7 In paragraphs 1.5.19 to 1.5.23, NGET asserts that its assessment is based on a realistic worst-case scenario for cable spacing. While the Applicant acknowledges that further ground investigations are necessary before determining the final cable spacing, it considers that, given the 240MVA SGT ratings, the associated 275kV voltage level, and the expected current flow, there is considerable potential to optimize spacing. The current layout occupies significantly larger land than an optimized solution would require.
- 1.4.7.1 In paragraphs 1.5.24 to 1.5.27, NGET states that the Applicant's proposed alternative would prevent the separation of road access between NPG and NGET. NGET further indicates uncertainty regarding how a new 275kV GIS substation could be accommodated alongside the rights the Applicant seeks to acquire.
- 1.4.7.2 The Applicant has highlighted in Figures 5.5 and 5.6 of the Saltholme Substation Interaction Report (marked in blue) a potential new road access. The Applicant considers that such a new access route, which could be agreed by NGET, combined with the reconfiguration of existing fence lines, would allow NGET and NPG to retain separate entry points to their respective assets
- 1.4.7.3 The Applicant suggests that both parties would need to reach a private agreement to facilitate the installation of the new substation at Location 'B' (as identified in Figures 5.5 and 5.6 of the Saltholme Substation Interaction Report) while ensuring continued maintenance access to the pipeline. This can be delivered through

- collaboration between the parties (see also commentary on the Protective Provisions below).
- 1.4.7.4 In paragraphs 1.5.34 to 1.5.38, NGET discusses the impact of designating the area marked as 'F' for construction laydown. While the Applicant acknowledges NGET's detailed assessment, it reiterates that Location 'F' is indicative only, as noted in paragraph 5.2.9 of the Saltholme Interaction Report. It is perfectly possible for alternative laydown areas may be investigated.
- 1.4.7.5 In paragraphs 1.5.34 to 1.5.38, NGET raises concerns regarding the proposed overhead line (OHL) gantry location west of the proposed 275kV GIS substation, as presented in Figures 5.5 and 5.6 of the Saltholme Interaction Report.
- 1.4.7.6 The Applicant emphasizes that the proposed location is indicative and suggests that there is available land further west that could also accommodate the new OHL gantry, ensuring compliance with the maximum deviation angle. The final gantry location would be able to be determined during the detailed design phase. If the maximum deviation angle cannot be maintained, as highlighted by NGET in Paragraph 1.5.40, an alternative solution involving installation of a new tower and a temporary diversion remains feasible.
- 1.4.7.7 In paragraphs 1.5.42 to 1.5.44, NGET raises concerns regarding the proposed connection point for the 400kV inter-bus transformer. The Applicant notes that its proposed connection location is similar to the one included in NGET's own preferred Option 1a. Therefore, the Applicant considers the proposed connection possible, based both on the initial technical assessment and also NGET's own preferred option.
- 1.4.7.8 In paragraphs 1.5.45 to 1.5.48, NGET identifies several potential civil and construction challenges associated with the Applicant's alternative design, as outlined in the Saltholme Interaction Report.
- 1.4.8 With regard to the planning matters set out in paragraphs 1.5.34 to 1.5.38, these are not an obstacle to expansion of the substation as:
- any breach of the 1977 planning permission could be regularised by a change to the existing planning permission via s.73 or s.96A TCPA 1990, or dealt with through any planning permission sought for the extension itself;
 - providing a solution to that issue through the planning application for the new substation would ensure NGET was not in breach of its statutory duties; and
 - if BNG was required, that is simply a matter of cost and/or through making ecological improvements to other landholdings in and around the substation.
- 1.4.9 In conclusion, therefore, it is clear that various approaches could be taken to deal with the concerns raised by NGET, but none of them mean that the expansion is not deliverable. As such, no serious detriment can be said to arise from these practical matters.

1.5 Serious Detriment - Context

- 1.5.1 It is also the case that NGET's concerns as to detriment need to be seen in the context of the following points.
- 1.5.2 NGET's Deadline 5 submission states that its in service contracted date is 20 October 2035, which is ten years away. NGET has provided no evidence to suggest that any increased timeline arising from the compromise solution would make that date actually unachievable.
- 1.5.3 Even though the Applicant does not consider that any delay to the contracted date would be required, no submission has been put forward to explain why that contracted date cannot be changed if it was required in any event.
- 1.5.4 The Applicant acknowledges that NGET's duty is to undertake a 'co-ordinated and economical system of electricity transmission'. However, that question of 'economical' does not sit in isolation – it is a question of what is economical in the context of the constraints that are facing NGET as it brings a scheme forward. If the compromise solution is accepted, then the duty on NGET is to bring forward an economic scheme in the context of that compromise solution. NGET could not be in breach of its duties due to a situation that is not of its own making.
- 1.5.5 It is also noted that in bringing forward economic proposals, NGET is constrained by the fact that it is a regulated entity, with large scale funding commitments, such as the expansion of a substation, subject to approval by OFGEM, i.e. the licence obligation does sit in isolation.
- 1.5.6 The Applicant has noted the Business Plan submitted by NGET for approval by Ofgem in 2025 under 'RIIO-3', including in particular the North-East Regional Plan (appended at Appendix 1) which sets out the schemes NGET wishes to get Ofgem approval to bring forward in the 2026-2031 period. Saltholme Substation Expansion is not included in this list. The Applicant understands that this would mean that in order to bring forward this expansion, NGET will need to get separate approval from OFGEM. At that time, OFGEM will specifically analyse the costs put forward by NGET, and crucially it is at that time that NGET would be able to put forward the costs, taking account of the reality of a compromise solution needing to be dealt with.
- 1.5.7 Taking all of this into account therefore, the Applicant considers that it cannot be said that the fact that NGET would need to account for some delay or increased costs would lead to NGET being in breach of its statutory duties, or serious detriment as (a) it has not shown this to be the case; and (b) NGET acts within a regulatory environment that would allow for it to account for the compromise solution in any event.

1.6 Protective Provisions (and interaction with NGET existing assets)

- 1.6.1 The Applicant considers that it will be able to provide the reassurances that NGET is looking for in section 2 of its Deadline 8 submission pursuant to the Protective Provisions for its benefit in the draft DCO, and the requirements of the Pipeline Safety Regulations and HSE processes.

1.6.2 **However, to assist initial understanding, the Applicant can confirm that:**

- impressed voltages will be taken into account in detailed design. Impressed voltages are a known type of pipeline integrity risk that can be managed through appropriate Integrity Management (IM) practices during the operational phase of a pipeline's lifetime. In fact, the Applicant does manage this risk actively in the context of some of its pipelines in its vast pipeline network globally. The Applicant also notes that this risk to integrity is not a function of the medium that the pipeline is carrying, meaning that the existing pipelines in this area carrying various mediums are also subject to the same risk;
- with the AGI adjacent to the substation now removed, dispersion is of relevance only from the AGI located to the north. Initial analysis indicates that any dispersion is localised and will not fall within NGET land or close to NGET pylons;
- the hazardous area classification will be undertaken in accordance with Energy Institute Model Code of Safe Practice Part 15: Area Classification for Installations Handling Flammable Fluids (5th Edition). Plan and elevation drawings have not yet been finalised, however zone distances have been determined with the majority of source of release within the AGI being classified as Zone 2 extending to a maximum radius of 3m. This does not extend outside of AGI Fenceline(s). Any Zone 1 releases would likely be limited to releases around the pig launcher door and would be less than 3m. No Zone 0 releases have been identified at AGIs or along the pipeline, which is typical for Pipeline AGIs;
- in relation to risk transects, they are in development, however, based on the preliminary Quantitative Risk Assessment, the Individual Risk associated with accidental events occurring along the H2 pipeline or at AGIs is not expected to exceed 1×10^{-4} per year at any location within the development.;
- separation distance to other pipelines in the 'Link Line corridor' will be based on constructability and maintenance access. Escalation of events from the hydrogen pipeline to existing pipelines, or vice versa, is being considered in this phase of work and will be included in the Applicants notification to the Health and Safety Executive.
- any planned venting of hydrogen will be intermittent and of short duration limited only to, manual depressurisation of the Pig Launcher at the AGI, or activation of the pressure safety valve at the AGI in the event of an unforeseen emergency. In such circumstances, there would be a highly localised plume, with the extent of the Lower Flammable Limit concentration remaining directly near or above the AGI dependant on wind condition. When determining the minimum vent stack height and safe location for an atmospheric vent, accidental ignition and the resulting thermal radiation arising from combustion of hydrogen gas is calculated through consequence modelling. This is to ensure thermal radiation limits

as specified within Applicant's own depressurisation and relief guidance and American Petroleum Institute (API) Standard 521 limits are not exceed both onsite (i.e. within the AGI fenceline) and offsite / public areas;

- aside from pressure safety valve, there are no other automatic / potentially unattended venting scenarios foreseen for the AGI(s). There is no scenario where the gross inventory of the pipeline would be vented or 'blown down' to a remote AGI during start-up, normal operation or decommissioning. If such an operation would be required, the intention is to undertake this at a remote safe location (i.e. the main H2Teesside plant) with consideration for the local impact of noise, thermal radiation and/or flammable gas risk.;

1.6.3 The Applicant therefore considers the proposed development will not cause more than marginal and manageable process safety risks which are within industry guidance and norms in and around the Saltholme substation (either existing or expanded).

1.6.4 On the Protective Provisions more generally, to provide further reassurance to NGET given the concerns it has expressed, the Applicant has also updated the Protective Provisions for NGET's benefit in the following respects (with reference to the table in Annex 3 of NGET's Deadline 8 submission).

1.6.5 The Applicant is willing to provide for NGET to have approval rights over the design of the compromise solution to ensure that it can be constructed and designed in a way that can align with a modified design for a substation extension brought forward by NGET. This ensures that the parties will keep in liaison with each other as both schemes continue to develop.

1.6.6 However, it considers that this requires bespoke drafting, not the amendment to paragraph (2) suggested by NGET. The paragraph (2) amendment (such that any expansion would be caught by the definition of 'apparatus') is also not considered appropriate as it would apply the full range of the Protective Provisions to such proposals. This is not considered appropriate given that the expansion does not yet exist and is likely not to until after the Proposed Development has been constructed.

1.6.7 As such, the Applicant has proposed the following wording:

Saltholme Substation Expansion

(1) Not less than 56 days before the commencement of Work No 6.A.1 within plots 3/18, 3/20, 3/21 and 3/22 on the land plans the undertaker must submit to National Grid for approval plans of the works to be executed.

(2) For the purposes of this paragraph X only 'plans' must include the undertaker's proposals for how Work No 6.A.1 within plots 3/18, 3/20, 3/21 and 3/22 is proposed to be accessed during construction, maintenance and decommissioning of those works.

- (3) *The undertaker must not commence any works to which sub-paragraph (1) applies until National Grid has given written approval of the plan so submitted, such approval not to be unreasonably withheld or delayed.*
- (4) *For the purposes of sub-paragraph (3) "approval" includes the entering into of any necessary property agreements for use of the property of NGET outside of the Order limits that may be necessary to facilitate access to Work No 6.A.1 within plots 3/18, 3/20, 3/21 and 3/22 during construction, maintenance and decommissioning of those works.*
- (5) *In relation to any work to which sub-paragraph (1) applies, National Grid—*
- (a) *may require such modifications to be made to the plans as may be reasonably necessary for the purpose of enabling the expansion of Saltholme Substation to be delivered and accessed once built; but*
- (b) *may not require such modifications to be made to the plans such that two pipelines within the limits of deviation of Work No. 6.A.1 within plots 3/18, 3/20, 3/21 and 3/22 are not able to be delivered.*
- (6) *For the purposes of sub-paragraph (5) "delivered"—*
- (a) *includes the works in question being able to be constructed, maintained and operated in accordance with all relevant safety legislation; but*
- (b) *does not include the works in question being able to be constructed without programme or cost implications.*
- (7) *Works executed under sub-paragraph (1) must be executed in accordance with the plans, submitted under sub-paragraph (1) as approved by National Grid, or as approved following arbitration under paragraph 14, and National Grid will be entitled to watch and inspect the execution of those works.*
- (8) *Nothing in this paragraph precludes the undertaker from submitting at any time or from time to time, but in no case less than 56 days before commencing the execution of the works for which a plan has been submitted under sub-paragraph (1) a new plan for such works, instead of the plan previously submitted, and having done so the provisions of this paragraph shall apply to and in respect of the new plan.*
- (9) *In paragraph 10 of this Part of this Schedule "property of National Grid" does not include plots 3/18 and 3/20 – 3/25 on the land plans.*

1.6.8 Additionally in respect of the Protective Provisions, the Applicant will make the following changes:

- the typos in NGESO in paragraph 2 will be deleted as suggested by NGET; and
- the addition of 'ground monitoring scheme' to paragraph 9(2) is agreed.

1.6.9 However, the Applicant does not accept the following:

- the addition of the compulsory acquisition paragraph (their paragraph (6)), for the reasons given in REP7A-016;

- the changes to paragraphs 7(3) and 11(6) for the reasons given in REP7A-016 – the Applicant does not consider that the drafting it has asked for here puts NGET in a worse position, it just asks for reasonable behaviour to be taken;
- the changes proposed at paragraph 9(2). This is not accepted as the matters set out in the drafting proposed by NGET will all be dealt with by application of the Pipeline Safety Regulations; and
- the changes 11(7) and 11(8) proposed by NGET in respect of an acceptable security and acceptable insurance, which are completely unacceptable to the Applicant. The Applicant notes that the solar farm precedents given by NGET are for a completely different kind of applicant than H2 Teesside, which is backed by a state sovereign fund and a global economic powerhouse. This does not form part of any of the other Protective Provisions in the draft DCO.

1.6.10 The updated PPs accounting for the above, in clean and track changes from the Applicant's Deadline 7A submissions [REP7A-016], are submitted alongside this document.

1.7 Conclusion

1.7.1 In conclusion, the Applicant considers that it has acted properly and appropriately throughout its discussions with NGET. Despite the fact that NGET have, late in the day, required the Applicant to develop a new design for this part of the Proposed Development, it has done so.

1.7.2 The results of the compromise solution mean that there may be cost and programme implications to expansion of the Saltholme Substation, but no evidence has been proven to show that it means that it cannot be delivered at all.

1.7.3 NGET does have statutory duties, but they are not static and exist within a regulatory framework, both of which will be able to respond to the existence of the compromise solution, rather than the compromise solution itself meaning that NGET would be in breach of its statutory duties.

1.7.4 This should also be seen in the context of precedent (as discussed in REP7-011) that the question of serious detriment is not one of equivalence. This means that in this case, that the Applicant is not required to leave NGET in a position where it is in an equal position as to the cost and programme for the expansion post development of the Proposed Development compared to the cost and programme without the Proposed Development in place.

1.7.5 In the context of these factors, there is therefore no credible claim that can be made that a 'serious detriment' to NGET's undertaking arises.

1.7.6 However, the Applicant is committed to continue working with NGET on this matter, and has put in place a new Protective Provision to secure this.

APPENDIX 1 NORTH-EAST REGIONAL PLAN

An aerial night photograph of a city, likely Pittsburgh, showing a river winding through the urban landscape. The city is illuminated with warm yellow and white lights, contrasting with the dark blue night sky. The text 'Electricity Transmission' is overlaid in the top left corner.

Electricity
Transmission

North East: Future Network Blueprint

nationalgrid

Contents

Executive summary



- 03 Purpose
- 04 Our future network blueprint strategy
- 05 Key regional highlights

Information gathering



- 07 Regional context
- 08 Current network view
- 09 Design the right network

Insights and analysis



- 12 Our approach
- 13 Stakeholder engagement
- 14 Safe and reliable network
- 15 Connections
- 17 Strategic infrastructure

Develop options



- 20 Our strategy
- 21 Strategy map

Executive summary



Executive summary

Purpose

Our whole system vision

To collaborate with our stakeholders to optimally plan, develop, and operate the transmission network, protect vulnerable customers, and deliver whole system benefits while ensuring the delivery of the energy transition by 2050.

In alignment with our national Business Plan, these Future Network Blueprints (FNB) serve to deliver a strategy centred on our whole system vision*, while addressing the unique needs and opportunities within each area. By focusing on national and regional differences and leveraging local opportunities, whilst minimising local impact, we aim to succeed in delivering the grid that is needed by all in the future.

The circumstances in which we build and operate our network are changing rapidly, driven by:

- greater reliance on electricity across various sectors to achieve a decarbonised society and economy
- rising numbers and diversity of customers requiring connections at specific locations
- need for expansive network development to address the requirements of multiple sites and circuits within a region, rather than isolated solutions
- increasing complexity of the network with more variable power flows.

We recognise our FNB ‘regions’ do not fully reflect the geographic or administrative borders that one might expect to see. This is because in defining these regions we have also had to consider electrical factors such as power transfers and access for planned outages. However we have aligned to Distribution Network Operator (DNO) and local authority boundaries where feasible to do so.

‘Whole system’ – A collaborative and integrated approach with networks and other stakeholders.



More information can be found in our [short video](#).

* <https://www.nationalgrid.com/electricity-transmission/our-future-network/our-whole-system-approach>

These changes require a new approach to network development, which is where our Future Network Blueprints play a crucial role. The strategy outlined in these documents detail our process and projected outcomes, ensuring readiness for future requirements.



“Our Future Network Blueprints embed a forward-thinking approach, offering a pathway to enhance efficiency, boost collaboration, and improve visibility for whole system working at the local level.”

Ben Haggerty
Head of Whole Systems,
National Grid Electricity Transmission

Executive summary

Our future network blueprint strategy

In developing our Future Network Blueprints, we used the following process:

Step 1

Information gathering



Regional context

Review the region as a whole, understanding broader interactions beyond the network to ensure alignment and identify interdependencies.

Current network view

Collect key data on the current NGET network in each region to understand the baseline for future development.

Design the right network

We place stakeholders at the heart of our network planning process. This approach helps us navigate uncertainties and ensures we have a comprehensive regional understanding of network needs.

Step 2

Insights and analysis



Stakeholder engagement

Enhance our understanding along the way through ongoing engagement and partnerships, enabling us to better foresee forecasts, identify risks and explore opportunities.

Connections

Provide perspective on customer demand and generation trends, helping us forecast future service requirements and growth areas.

Safe and reliable network

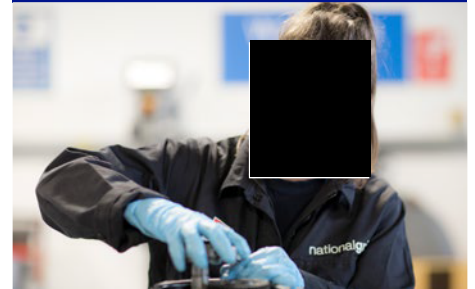
Provide critical asset health, maintenance, and operational performance data to ensure the blueprint delivers a dependable network throughout the journey to Net Zero.

Strategic infrastructure

Align with government initiatives and the National Energy System Operator (NESO) to provide input on large-scale projects, shaping long-term infrastructure investments.

Step 3

Develop strategic options



2050 backwards

Step back assessment to ensure we are being ambitious enough to meet our 2050 commitments.

Network design principles

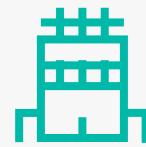
Check we are applying the three NGET Design Principles: are we enabling investments; do it once, do it right; and whole system network planning.

Network compliance

Ensure all projects meet with network security and quality of supply standards [National Electricity Transmission System (NETS) Security and Quality of Supply Standard (SQSS)] to maintain secure and reliable supplies.

Executive summary

Key regional highlights



18

substation investments; 15 new and 3 major interventions



£8.6bn

of investment

to maintain, upgrade and develop our network in T3



13 GW

demand

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



114 GW

generation

contracted to connect*; 9.9 GW estimated to connect in T3



831 km

of overhead line

reconductoring planned within T3, equating to 25% of the region



24

strategic infrastructure projects within the region



*Including T3 and beyond

Information gathering



In this section

07 Regional context

08 Current network view

09 Design the right network

North East Regional context

The North East transmission network region, encompasses Northumberland, Tyne and Wear, County Durham, Cleveland, North Yorkshire, West Yorkshire, South Yorkshire, Humberside and parts of Lincolnshire. The North East and Yorkshire region has a strong industrial heritage, with areas like Teesside, South Yorkshire, and West Yorkshire historically known for steel production, chemical industries and manufacturing. These industries have high energy demands, necessitating a robust transmission network.

The transition from heavy industry to more diversified economies has influenced the energy landscape, with a shift towards service industries, advanced manufacturing, and tech sectors, which have different energy needs. Heavy industries in these regions are expected to undergo significant decarbonisation by 2040, using technologies like carbon capture and storage (CCS), electrification, and hydrogen fuel switching. This aligns with the UK's target to reduce greenhouse gas emissions by 81% by 2035 compared to 1990 levels, as part of its broader goal to achieve net zero emissions by 2050.

The North Sea, adjacent to the North East, Yorkshire and Humberside, is a key location for offshore wind energy. Major wind farms like Hornsea, Dogger Bank, and Teesside are either operational or under development. These wind farms feed directly into the North East region's transmission network. Upgrading current infrastructure and building new,

allow this renewable power to be transported to where it is required.

The Humber and Teesside are pivotal in the UK's hydrogen strategy, aiming to produce 10 GW of low-carbon hydrogen by 2030, with large-scale projects like the Humber Zero initiative. These areas are set to be major centres for both green (from renewable energy) and blue (from natural gas with CCS) hydrogen production.

Carbon capture and storage (CCS) technology is essential for decarbonising the heavy industries in the Humber and Teesside areas. The UK government aims to capture and store 20-30 million tonnes of CO₂ per year by 2030, with these regions hosting key infrastructure like the East Coast Cluster, which will transport and store CO₂ under the North Sea.

Major cities in this region, including Leeds, Sheffield, Newcastle, Hull, and York, are significant population and economic centres, driving substantial electricity demand. Urban growth and modernisation efforts, such as the development of smart cities, further impact the electricity distribution and transmission network. Working alongside the electricity distribution networks we know things like the transport network in these urban areas is also becoming more electrified, with increasing use of electric vehicles (EVs), necessitating additional infrastructure to support EV charging.



Offshore wind

The North East and Yorkshire, is a key location for offshore wind energy



North East

Current network view

Network overview

The North East 400 kV and 275 kV transmission network is principally designed for transfer of North-to-South power flows.

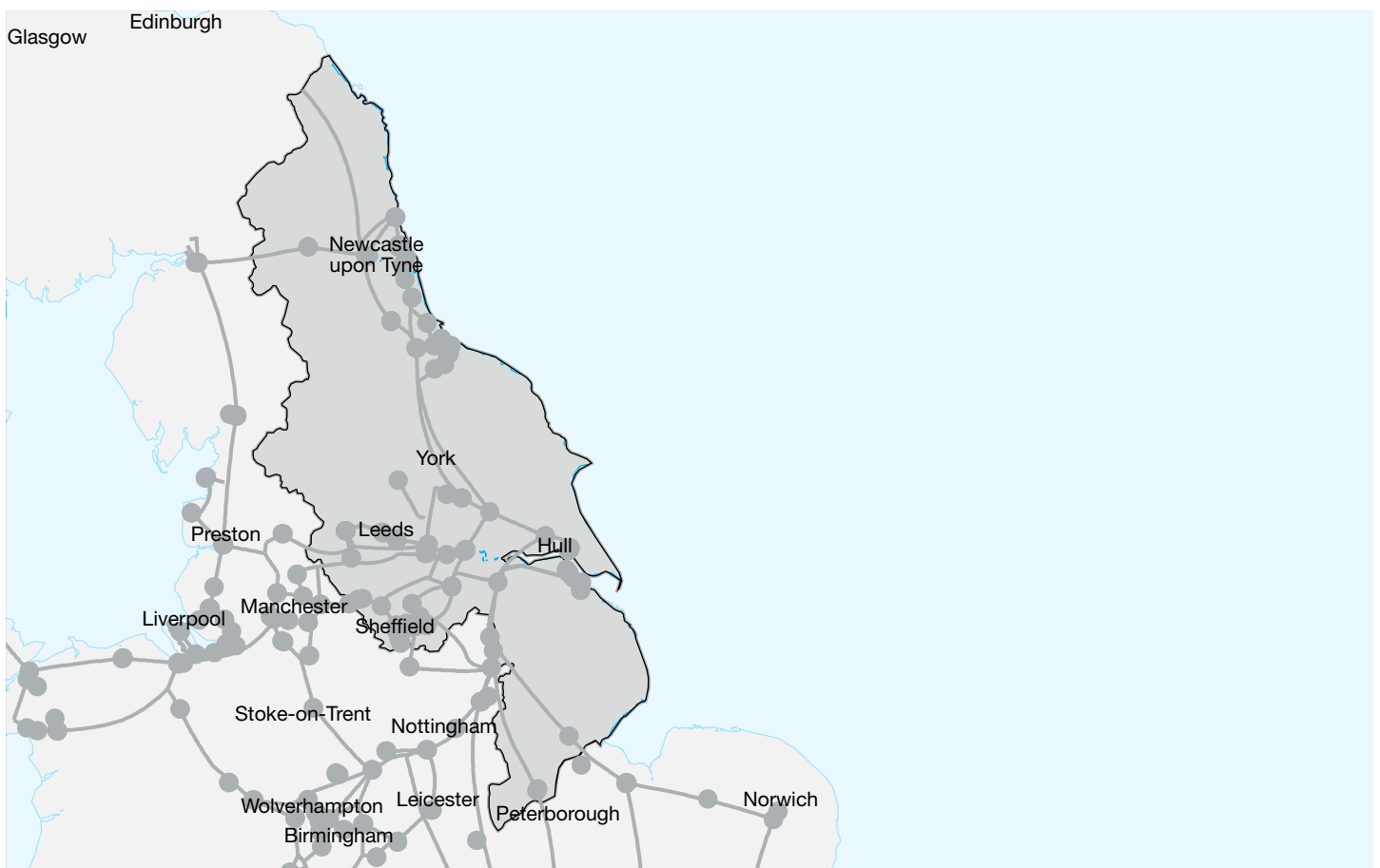
At present, the network supports the transfer of renewable energy from Scotland while integrating the historically high levels of fossil-fuel-based generation from power stations such as Teesside, Drax and Ferrybridge as it channels electricity south.

This part of the network now has significant wind generation connected, and during periods of high wind, excess power naturally flows through the Midlands and towards the South East, potentially exporting via the sub-sea interconnectors. Interconnectors are high voltage cables that are used to connect the electricity systems of neighbouring countries. They allow excess power to

be traded between different countries providing valuable export capability for excess renewables.

The North East is home to key UK industries, including manufacturing, steel production, automotive, and historically, shipbuilding—all of which consume large amounts of power.

The increasing volume of intermittent generation and additional interconnectors in the region will create dynamic network challenges. Electricity demand is expected to grow over the next 20 years as the North East continues its decarbonisation journey. Balancing demand growth with increasing embedded generation from things like solar power will be a key focus for both the transmission and distribution networks. It will provide opportunity to optimise how we utilise existing infrastructure.



Design the right network

Stakeholders

Context

As we embark on our RIIO T3 journey, we recognise that the landscape has evolved significantly since our last price control period. The UK Government's ambitious targets for a decarbonised power system, coupled with the devolved Government powers now enabling regional energy decarbonisation planning, necessitate a fresh, collaborative, and holistic approach.

We made a commitment to place stakeholders at the centre of our network planning and listened to over 12,000 stakeholders representing all regions and stakeholder types.

This helped us in getting a balance of needs and priorities across all our stakeholder groups – from those impacted by the upgrade, those dependent on it (across each region) and those funding it (all consumers).

This insight formed our overarching ambition and created stakeholder design principles to initially assess the approach we took to each network blueprint, ensuring we had a fair and consistent approach to planning from the start.

This is our starting position, but we have also been forming partnerships with those representing the region to help inform and shape what we design and build locally.

This includes the new Regional Energy Strategic Planner (RESP) role set up by the NESO in which we have already started aligning and working with.

Local priorities and needs are crucial to our planning process, which is ongoing and continuously evolving.



>12,000

We have received feedback from >12,000 stakeholders as part of the listening phase of our price control engagement programme



Design the right network

Our ambitions

Ambition A

Deliver the grid of tomorrow, today

A1: Maintain world class levels of network performance and resilience, ensuring that the new network we build is designed to reflect future security and climate challenges

A2: Deliver the capacity our customers need now, looking holistically across multiple investment drivers to deliver at the pace and scale required to support the Government's ambition on growth and decarbonisation

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

A3: Future-proof our network with strategic capacity and flexibility for the longer term, using the network modeling capabilities we developed in RIIO-T2 to surface insights and inform strategic decisions

A4: Invest in the next generation of innovative technologies to make sure that we are planning and building a network that is ready for tomorrow

Ambition B

Do the right thing for consumers, communities and the environment

B1: Maximise the value we create by controlling our costs as our network grows, seek opportunities to create additional value for consumers

B2: Play a leading role in accelerating a net zero, nature positive future, including by reducing our own emissions and environmental impact

How we deliver is as important as what we deliver

B3: Support vulnerable consumers and have a positive impact in our communities through our operations and construction, leaving a lasting legacy

B4: Represent the diverse communities we serve by maintaining our sector-leading record on workforce diversity and inclusion

Ambition C

Transform the way we work

C1: Transform our asset management, network development, and network operation capabilities to ensure we can deliver the step-up in work required during this period, and manage a larger, more complex, decarbonised network

C2: Grow our workforce capability by positioning National Grid as the best place to work in the electricity sector

Transform our capabilities to deliver for consumers

C3: Put into practice new supply chain strategies to secure the long-term capacity we need

C4: Leverage digital and data capabilities to transform how we work with our stakeholders to maintain and operate our network

Insight and analysis



In this section

- 12** Our approach
- 13** Stakeholder engagement
- 14** Safe and reliable network

- 15** Customer connections
- 17** Strategic infrastructure

Insight and analysis

Our approach

To develop a comprehensive and informed strategic plan, we engaged in a process of data collection and analysis, leveraging insights from both internal departments and external stakeholders. This involved a combination of analysing technical data as well as incorporating feedback from engagement workshops, which ensured a balanced and holistic approach.

The combination of external feedback and internal insights, allowed us to create a blueprint that is responsive to both operational realities and future national and regional transmission needs.

Stakeholder engagement	Safe and reliable network	Connections	Strategic infrastructure
Local regional stakeholder input from bodies such as the Distribution Network Operators, local authorities, and community representatives gathered understandings on market dynamics and future expectations at a local level.	Provided critical data on asset health, maintenance, and operational performance, ensuring the blueprint aligns with current capabilities and future needs.	Offered insights on customer demand and generation trends, helping us forecast future service requirements and growth areas.	Delivered input on large-scale projects and alignment with government initiatives, plus network compliance which are pivotal in shaping long-term infrastructure investments.



Stakeholder engagement North East

Distribution networks

nationalgrid Electricity Distribution

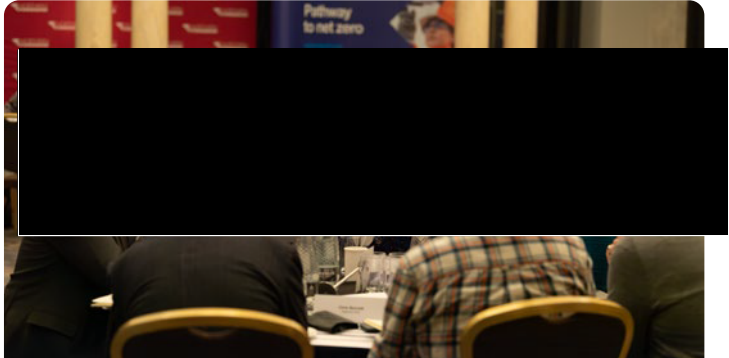
NORTHERN POWERGRID.



Within your region, what do you see bringing the greatest demand for connections to the electricity network over the next 10 years?



The engagement sessions found that Parts of the North East have the opportunity to upgrade existing 275 kV and 66 kV networks. This will also give opportunity to make the network more resilient addressing some of the older technology types at the same time co-optimising the solution alongside the Distribution Networks.



What did stakeholders in the North East tell us?

‘Being able to share data and accessing information is key. Open and accurate data are key to facilitating the path towards net zero and to getting stakeholders more involved in this.’ – (Electricity & Gas)

‘There are people nationally and internationally who want to bring money into the electricity system... but we’re not able to offer the reassurances.’ – (Electricity & Gas)

‘Safe and reliable network and ease of connection are the priorities for me.’ – (University Estate manager)

‘Standardisation would help ease up the manufacturing pipeline.’ – (Construction)

We are working with local distribution networks (DNOs) to understand the impacts and requirements in that region. Working with the DNOs, we collaboratively and continually make certain that a whole system approach is always considered in our planning. We have been engaging with DNOs to strengthen our regional strategic partnerships and develop robust whole system capabilities.

39

The above number indicates the amount of whole system opportunities we have identified in the North East.

A ‘whole system opportunity’ refers to areas where we can collaborate to find more integrated solutions. This could involve infrastructure planning, enhancing the quality and depth of data, or improving network design.

Safe and reliable network

There are over 500 substations, 7,200 km of overhead line (OHL) and 1,400 km of high voltage (HV) cable on the NGET network.

Our Asset Management Strategy provides direction to the management of these.

For RIIO T3 we are required to submit a portfolio view of our assets with supporting narrative providing justification on the level and type of investment.

Typically, the default position in asset operations is to incrementally upgrade and replace assets as and when required.



In developing our strategic plan, our Asset Operations colleagues conducted a thorough review of the asset health data across the region relating to:

- **Reliability:** Network growth will be at its highest in T3, we will proactively identify, manage, and address asset failure risk ensuring reliability across our network is maintained at the current industry leading level.
- **Risk:** Our plan delivers value to consumers by achieving a significant reduction in risk
- **Environment:** We will seek to maximise environmental benefits by identifying and replacing assets which contribute to environmental harm

Key metrics across North East

We continuously monitor and maintain our assets on a regular basis, undertaking replacements or refurbishments of assets when determined necessary to ensure the reliability of the network.

We have identified eight high voltage substations in the region with enhanced asset health requirements. Apart from requiring asset replacements due to condition, these sites also have other site-level structural and equipment issues. These will be addressed via a combination of portfolio asset interventions and major projects.

A total of 637 km of overhead line in North East require replacement in the next 10 years. Some of this will also be updated alongside other work.

Natural hazard resilience

By the end of 2025, all relevant North 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.

 8

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

 637 km

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

Asset health intervention regional metrics

 4

Super grid transformer

 204

Circuit breakers

 176

Voltage management assets

 698

Bay equipment replacements

Customer connections

Regional overview

We leverage National Energy System Operator (NESO)'s future energy scenarios and market intelligence to chart the pathway that defines the required energy mix and informs our investment plans. Beyond this, we continuously analyse various scenarios and their underlying network drivers to understand how the energy mix might evolve, incorporating these insights 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:



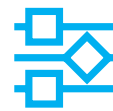
Standalone connection

Typically there is a specific customer need at a site. The connection usually requires less investment and is relatively straightforward 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 customers, therefore a more holistic site strategy is required such as building a new substation.



Circuit strategy

When we review circuit health, we will assess the long-term growth and capacity needs in a region. This will help us determine whether to maximise the line ratings or consider increasing the voltage and upgrading the associated substations.

Regional demand and generation

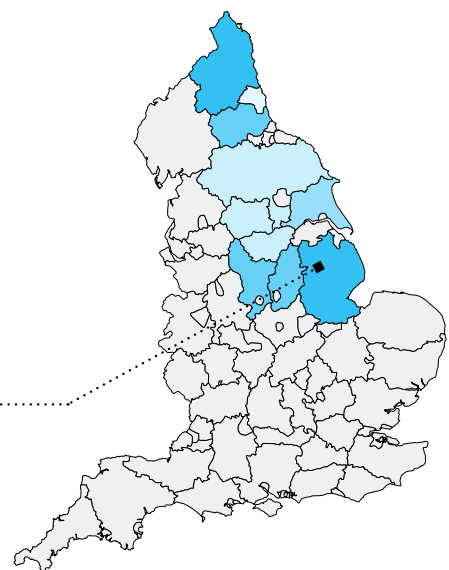
Demand connections – where power is taken from the grid

Generation connections – where power is added to the grid

Demand:
13 GW

Generation:
114 GW

Shows a heat map for the number of contracted connections within the North East region out to 2034.



No. of Customer Contracts

1

10

Customer connections North East demand and generation breakdown

New connections in the region: Generation

The North East is predominantly a net exporter whereby excess generation and power from the Scottish Transmission Network flows through this region towards demands centres in the Midlands and the South of England during periods of high wind and solar generation in the UK.

We have contracts for our customers to deliver into the mid 2030s which would connect up to 114 GW of generation. However, not all of this is expected to connect to the network.

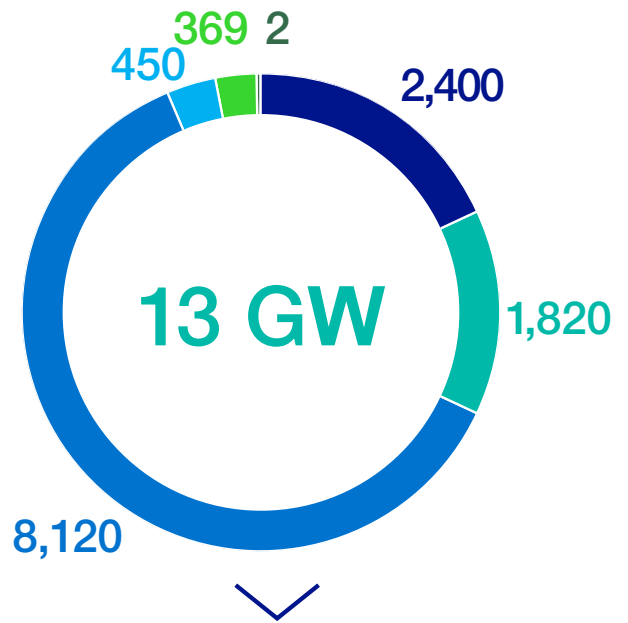
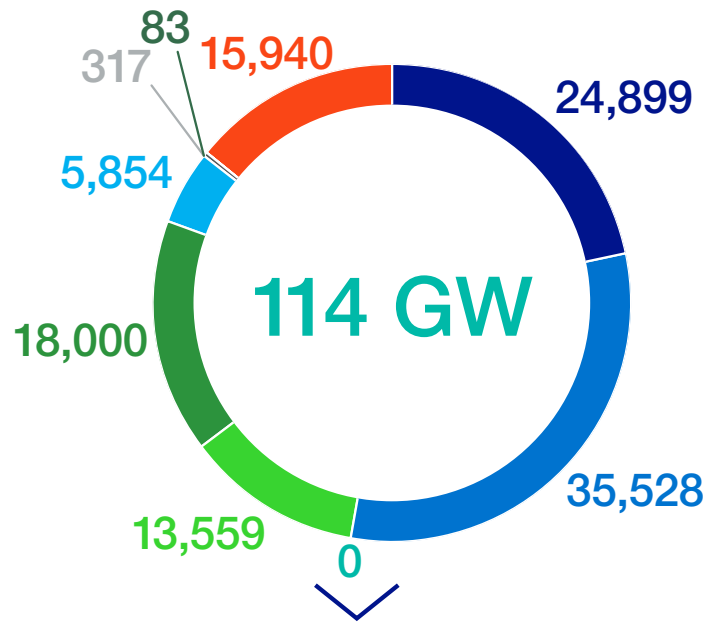
New connections in the region: Demand

There is about **13 GW of demand connections** in the North East. However, not all of this demand is expected to connect.

We expect to add 1.6 GVA of additional capacity in T3.

- Battery storage
- Fossil fuel
- Solar
- Battery storage – hybrid
- Hydrogen
- Waste
- Interconnector
- Wind – offshore
- Biomass

- Commercial
- Data centre
- Embedded demand
- Hydrogen
- Industrial
- Pathfinder



9.9 GW of generation expected to connect in T3

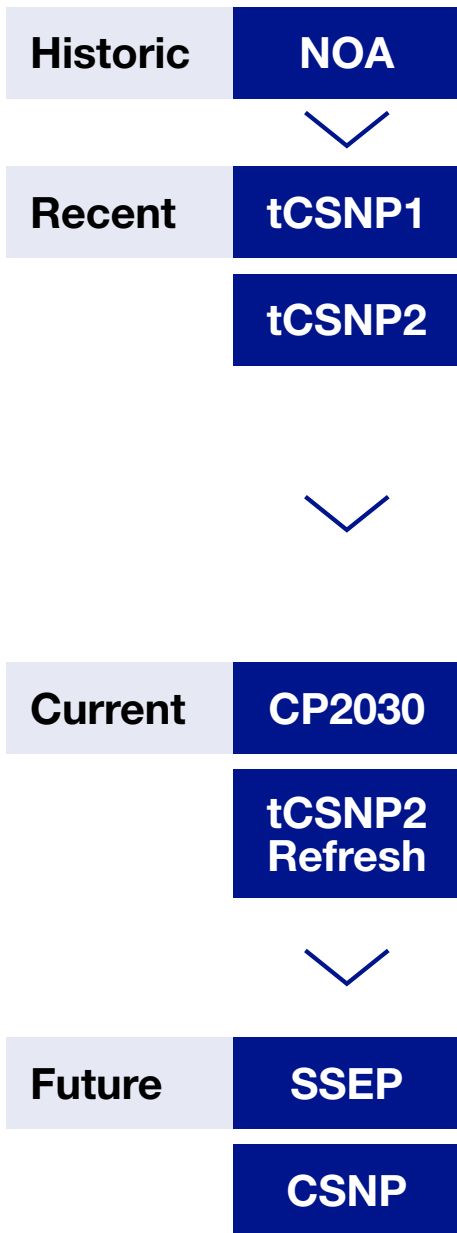
1.6 GVA of capacity to be added in T3

By providing a future ready system through our investments we are also creating options for additional connections.

Strategic infrastructure Background

The National Energy System Operator (NESO) process for identifying strategic infrastructure on the electricity transmission network has significantly evolved to meet the changing demands of the energy landscape. NESO incorporates scenario analysis, market intelligence, and stakeholder engagement to predict future energy needs.

This includes integrating renewable energy sources, enhancing network resilience, and aligning with government policies on decarbonisation. The evolved process aims 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.



Network Options Assessment (NOA):

The NOA is the annual process through which the ESO (now NESO) provided its recommendation for which network reinforcement projects should receive investment, and when.

Transitional Centralised Strategic Network Plans (tCSNP1 and tCSNP2)

In recent years, the planning processes managed by the NESO has started to take a more holistic approach to network reinforcement with the introduction of the Holistic Network Design (HND), which has combined with the NOA to create the ‘transitional Centralised Strategic Network Plans’.

- tCSNP1 is the combination of HND1 and the NOA 2021/22 refresh and identified the ‘Accelerated Strategic Transmission Investment’ (ASTI) projects. The report published by the NESO is also referred to as “Pathway to 2030”.
- tCSNP2 is the combination of the HND Follow up Exercise (HND FUE) and the NOA, published in 2024 and facilitates the connection of an additional 21 GW of offshore wind, plus other low carbon generation across Britain. The report published by the NESO is also referred to as “Beyond 2030”.

Clean Power 2030 (CP2030)

In November 2024, the NESO provided advice to government on how to achieve clean power by 2030. The Government published its Clean Power Action Plan in December 2024. This will inform the policies, investments in renewable energy and network, and technological advancements required to achieve clean power by 2030.

tCSNP2 Refresh

NGET is developing the options recommended in the tCSNP2 to a greater level of maturity and those options will be re-assessed by NESO through the tCSNP2 Refresh.

Strategic Spatial Energy Plan (SSEP):

The NESO will produce the SSEP with the first plan being published by the end of 2026. It will assess the optimal locations, quantities and types of energy infrastructure required to meet our future energy demand, helping enable the clean, affordable and secure supply, and be a key input into the CSNP.

Centralised Strategic Network Plan (CSNP):

The CSNP will be produced on a 3-year cycle, allowing a more integrated approach to network planning and more developed recommendations than the NOA. It will provide a more strategic, long-term view of the transmission network’s development, using the SSEP as a key input. The first CSNP is due to be published by the end of 2027.

Strategic infrastructure

North East projects

In the **North East** we will develop new infrastructure and enhance existing networks to ensure adequate capacity for electricity transmission in and out of the region. This plan includes establishing new circuits whilst upgrading current circuits and infrastructure.

Specific projects include:

AC4

HVDC offshore cable between Scotland and Lincolnshire – Post-T3

BTR2

Upgrade existing circuits between Brinsworth and Thorpe Marsh to allow for more capacity – T3 period

CGNC

New 400 kV double circuit North Humber to High Marnham – Post-T3

EDN3

Replace the conductors with higher capacity conductors on the existing circuits between Brinsworth-Thorpe Marsh, Brinsworth-Chesterfield, Chesterfield – Ratcliffe – Post-T3

E2DC

Eastern Green Link 1 (Torness to Hawthorn Pit) – T3 period

E4D3

Eastern Green Link 2 (Peterhead to Drax) – T3 period

E4L5

Eastern Green Link 3 – Post-T3

TGDC

Eastern Green Link 4 – Post-T3

ETRE

Upgrade existing circuit between Eggborough and Thorpe Marsh to allow for more capacity – T3 period

GWNC

New 400 kV circuit Grimsby to Walpole – Post-T3



HNRE

Replace the conductors on the existing circuits between Hawthorn Pit and Norton with higher capacity conductors – T3 period

JTHW

Carry out thermal upgrading on the existing circuit between Thurcroft and West Melton – T3 period

LTRE

Upgrade the existing circuits between Lackenby and Thornton to allow for more capacity – T3 period

NOR6

Replace the conductors on the existing circuit between Norton and Osbaldwick with higher capacity conductors – T3 period

OPN2

New 400 kV double circuit – Yorkshire GREEN – T3 period

OTHW

Carry out thermal upgrading on the existing circuit between Osbaldwick and Thornton – T3 period

SHNS

Substation works at Grimsby West – T3 period

SNRE

Replace the conductors on the existing circuit between Spennymoor to Norton with higher capacity conductors – T3 period

SPRE

Replace the conductors on the existing circuit between Spennymoor to Stella West with higher capacity conductors – T3 period

TDP4

Add power control devices to the existing circuit between Drax and Thornton – T3 period

ESCF

Reconfigure the network between Stalybridge and Thorpe Marsh – Post-T3

TMCF

Reconfigure Thorpe Marsh substation – Post-T3

TMCF2: Reconfigure the network between Keadby and Thorpe Marsh – Post-T3

TMPC

Add power flow control devices to the existing circuit between Thorpe Marsh and West Melton – Post-T3

Develop options



In this section

20 Our strategy

21 Strategy map

Develop options

Our strategy

We carry out 3 simple steps to test our thinking around strategic options.

'2050' Backwards

We take step back and look across the network region by region to understand if we are being ambitious enough.

- Q. Are we embedding the stakeholder design principles that have been set?
- Q. Have we provided a long-term focus?
- Q. Have we addressed possible operability challenges in the future?
- Q. Have we considered all known and potential drivers for the site/circuit?

Network compliance

System analysis is undertaken to plan and develop the network to meet the requirements of the **Security and Quality of Supply Standards (SQSS)**.

- Ensure the transmission network can withstand equipment faults and failures.
- Determine network solutions that provide the necessary transmission infrastructure to maintain the long-term secure and resilient supply of electricity to consumers.
- Deliver new connections to the transmission network.

Network design principles

We then test our view against our **Network Design Principles**.

- **Enabling investments** – We will plan and build a network platform today that is ready for future requirements, making sure we are not the blocker to the energy transition.
- **Do it once, do it right for the future** – We will plan the scope and timing of network investments to address multiple drivers at once. We will coordinate delivery to reduce system access requirements, increase efficiency and minimise disruption to communities.
- **Whole system network planning** – We will work with other utilities, across vectors and with stakeholders at all levels to ensure planning and delivery of our future network is coordinated and optimised for the UK.

Our plan

National Grid's electricity transmission strategy in the North East focuses on upgrading and expanding the network to support substantial renewable energy integration and enhance grid resilience. Several regional projects are part of our Great Grid Upgrade, facilitating the transition to more affordable, secure, and cleaner energy forms, and helping to meet the UK's net zero target.

The North East is a key area for offshore wind generation and will play an increasing role in transporting surplus wind energy from Scotland. We are investing heavily in upgrading existing sites and building new ones to integrate the significant offshore wind power landing in the Humber region as well as new onshore generation connections.

In Lincolnshire we are building critical new infrastructure to enable transmission of clean power whilst at the same time creating capacity for new generation and demand connections within the region.

We are also upgrading and expanding other transmission routes in the region to export the clean energy to the Midlands and further south.

North East Strategy

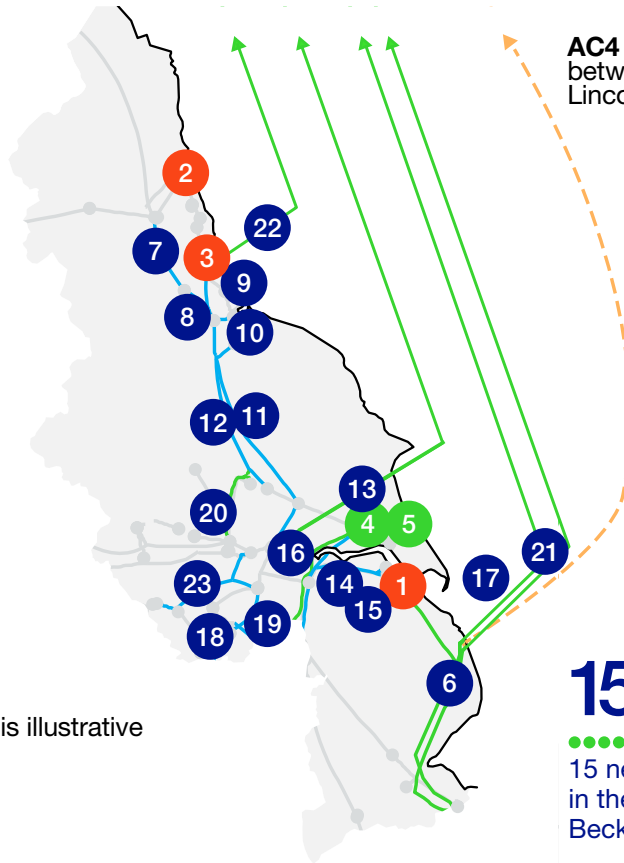


Substations

- 1 Grimsby West 400 kV**
Rebuild – Beyond T3
- 2 Blyth 400 kV**
Upgrade – T3 period
- 3 Hawthorn Pit 400 kV**
Rebuild – T3 period
- 4 Wanlass Beck 400 kV**
New substation – T3 period
- 5 Birkhill Wood 400 kV**
New substation – T3 period

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

Map is illustrative



AC4 – HVDC offshore cable between Scotland and Lincolnshire – Beyond T3

15

15 new substations proposed in the region including Wanlass Beck and Birkhill Wood.



Circuits

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> 6 GWNC – Grimsby to Walpole – New circuit – Beyond T3 7 SPRE – Spennymoor to Stella West – Upgrade circuit – T3 period 8 SNRE – Spennymoor to Norton – Upgrade circuit – T3 period 9 HNRE – Hawthorn Pit to Norton – Upgrade circuit – T3 period 10 Lackenby-Norton 1 – Reconductor OHL circuit – T3 period 11 LTRE Lackenby – Thornton 1 and 2 – Reconductor OHL circuit – T3 period | <ul style="list-style-type: none"> 12 NOR6 – Norton to Osbaldwick – Upgrade circuit – T3 period 13 E4D3 – Eastern Green Link 2 – New circuit – T3 period 14 Creyke Beck – Humber Refinery – Keadby – Reconductor OHL circuit – T3 period 15 Creyke Beck – Keadby – Killingholme – Reconductor OHL circuit – T3 period 16 CGNC – North Humber to High Marnham – New circuit – Beyond T3 17 TGDC – Eastern Green Link 4 – New circuit – Beyond T3 | <ul style="list-style-type: none"> 18 Sheffield ring cable replacement – Beyond T3 19 BTR2 – Brinsworth to Thorpe Marsh – Upgrade circuit – T3 period 20 OPN2 – Yorkshire Green – New circuit – T3 period 21 E4L5 – Eastern Green Link 3 – Beyond T3 22 E2DC – Eastern Green Link 1 – T3 period 23 ETRE – Upgrade Eggborough – Thorpe Marsh to increase capacity – T3 period |
|--|---|--|

Map is illustrative. New build and some upgrades are subject to planning permission. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects. Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh. This network region reflects the geographical area of East Anglia, but includes some network from parts of neighbouring regions.

*As indicated by NESO; final network solution/route may differ.