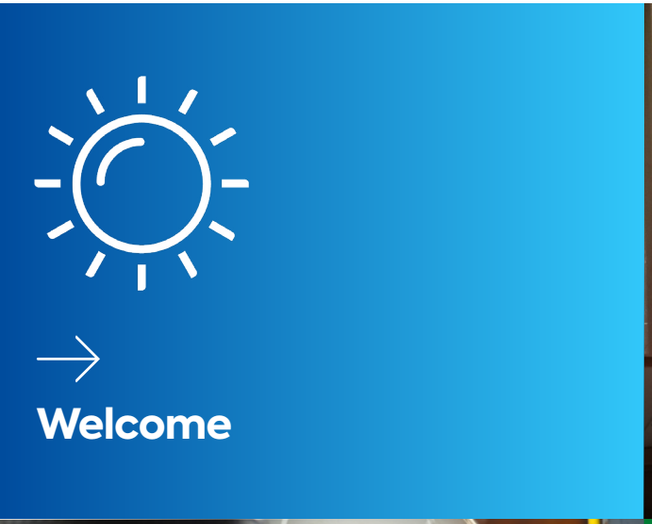
national gas transmission

Gas Ten Year Statement

December 2025



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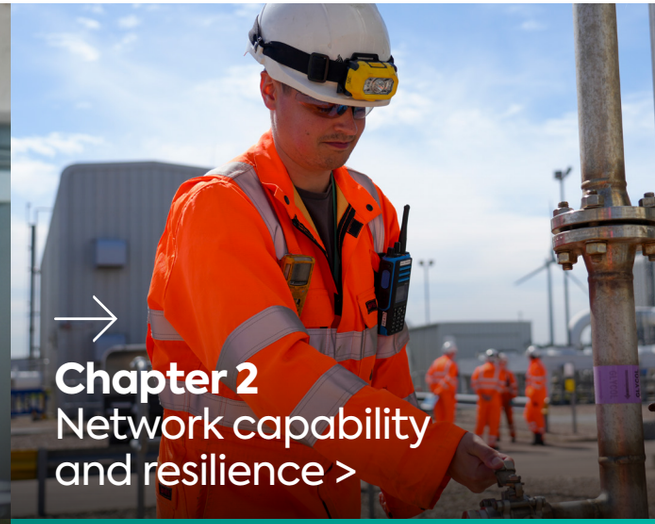

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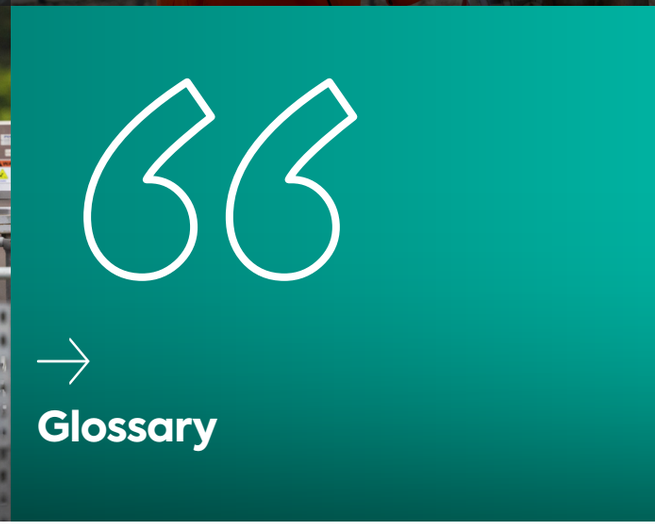

Glossary

Welcome

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We have published the 2025 Gas Ten Year Statement as an interactive document.

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Welcome to this year's Gas Ten Year Statement

The energy sector is constantly evolving. Whether it's changes in the economic landscape, developments in technology, or changing consumer behaviour; there's a constant need to remain mindful of our energy needs today, tomorrow, and in the future.

Over the past few years, energy markets have faced ongoing volatility, with geopolitical tensions, including the crisis in the Middle East, impacting supply security and price stability across Europe and beyond.

All key partners across networks, industry, government and regulators recognise that GB's gas supply landscape is changing with the ongoing decline in supplies from the UK Continental Shelf. It is important to be proactive in meeting these challenges together and we are already working in close collaboration to develop the solutions to ensure GB continues to have secure, reliable and diverse supplies:

- The Department for Energy Security and Net Zero (DESNZ) published their Gas system in transition: security of supply consultation on 26 November
- Under their new licence, NESO published a medium term Gas Security of Supply Assessment (GSSA) on 26 November, which focuses on 5 and 10 years ahead.

The publication timelines of both the GSSA and the DESNZ consultation meant they could not be factored into these investments. We are working closely with NESO, Ofgem and government on these issues and would expect them be a key consideration as we continue to develop our network in the future.

This publication takes a look at the next ten years for Gas Transmission, explaining the investments and improvements we're making, and plan to make, to the National Transmission System (NTS) to ensure we can continue to provide a safe, secure network that meets the needs of our customers.

We also share the progress and plans we're making for transitioning to net zero by 2050, in line with the commitment made by the UK government in 2019, and how any changes to legislation have impacted this.

This year also marks the first anniversary of the National Energy System Operator (NESO), whose formation represents a significant milestone for the energy sector. We congratulate NESO on its inaugural year and acknowledge the important processes it has established for the gas network, including support for RIIO-GT3, the successful completion of the first Gas Network Capability Needs Report (GNCNR) cycle and the publication of the first GSSA.

We look forward to continuing our close collaboration with NESO to deliver the right primary energy system for Great Britain's security of supply, and to shape how the network supports the transition to net zero while maintaining security of supply for all.

Introduction

Introduction

Our role

We are the owner and operator of the gas NTS in Great Britain – our licence is established under the Gas Act 1986.

We are required to develop, maintain, and operate an economic and efficient network and to facilitate competition in the supply of gas in Great Britain. Our primary responsibility is to transport gas safely, efficiently and reliably across the NTS, managing the day-to-day operation of the network. This includes maintaining system pressures within safe operating limits, ensuring gas quality standards are met and acting as the residual balancer for supply and demand if there is a market imbalance.

As the System Operator, we are responsible for identifying the long-term needs of the network and our customers. As Transmission Owner, we make sure our assets are fit for purpose and safe to operate.

This statement sets out the challenges on the gas transmission network now and into the future and provides our current view of the essential elements for development that should be undertaken to provide the required level of resilience. Our view is underpinned by stakeholder input from across the industry.

Our network

The NTS plays a vital role in the secure transportation of gas and the facilitation of a competitive gas market. It includes approximately 7,630 km of pipelines, presently operated at pressures of up to 94 bar.

Our network transports gas from entry terminals and storage facilities to exit points, where gas is transferred to four Distribution Networks (DNs) for onward transportation, or to directly connected customers such as storage sites, power stations and large industrial consumers.

The NTS also exports gas to Ireland and Continental Europe via connecting pipelines referred to as interconnectors.

Our Network Development Process

One of our key aims for this publication is to make our investment decisions as transparent as possible by outlining the various stages of our Network Development Process (NDP).

The NDP defines and manages our project life-cycles from inception through to closure. The process defines our methodology for optioneering, developing, sanctioning, delivering and closing projects that address our drivers of change.

The aim of this process is to deliver the best value, fit for purpose solutions for identified challenges or opportunities. The process also ensures we consider and meet the needs of legislation, our regulators, our customers and our stakeholders.

The NDP is central to our planning activities and informs the work that we carry out on the NTS. We therefore structure this publication in line with this process, with chapters covering our drivers of change, network capability, options and development.

We also provide information on our transition to net zero and the work we are undertaking with methane emissions and hydrogen.

Figure 1
Our Network Development Process.

1. Drivers of change

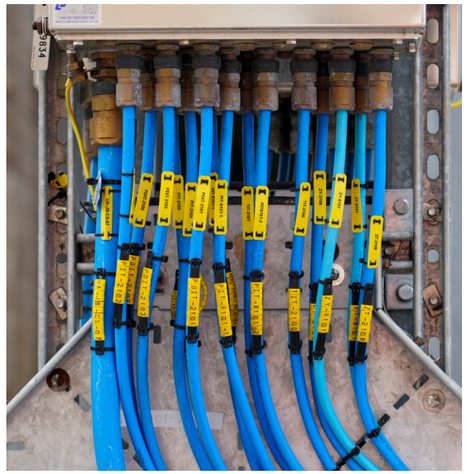
1.1 Introduction

This chapter describes the high-level drivers of change (figure 2) that can trigger stage 1 of our NDP (figure 1).

Figure 2
Drivers of change that can trigger our NDP (Roll over the magnifying glass icon to find out more information)

Customers' immediate and future needs

Asset management



Legislative change

Net zero by 2050

Gas Network Capability Needs Report (GNCNR)

1.2 Customer needs

1.2.1 Future supply/demand pathways

We utilise Future Energy Scenarios (FES) pathways and other industry information as the starting point for all our future network planning. The 2025 FES framework (figure 3) continues to use 'pathways' to explore narrower ranges and strategic, credible choices to propel Great Britain on the route to decarbonisation.

The high-level FES framework has been slightly amended this year and comprises four pathways, named as follows:

– Falling Behind
– Electric Engagement
– Hydrogen Evolution
– Holistic Transition.

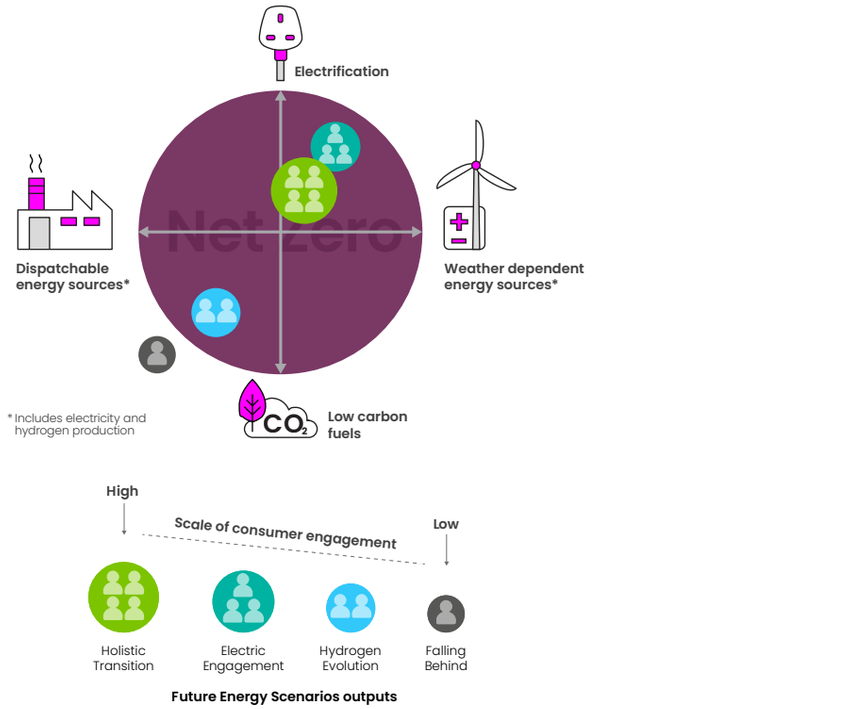
Falling Behind (previously Counterfactual) considers a world where some decarbonisation progress is made against today, but at a pace not sufficient to meet net zero.

Electric Engagement utilises a model where net zero is achieved mainly through electrified demand. Consumers are highly engaged in the transition through smart technologies that reduce energy demand.

Hydrogen Evolution assumes widespread access to a national hydrogen network. Net zero is met through fast progress for hydrogen in industry and heat. Widespread access to a national hydrogen network is assumed. Some consumers will have hydrogen boilers, although most heat is electrified. There are low levels of consumer engagement within this pathway.

Holistic Transition assumes widespread access to a national hydrogen network. Net zero is met through a mix of electrification and hydrogen, with hydrogen mainly used around industrial clusters. Hydrogen is not used for heat except as a secondary fuel for heat networks in small quantities. Consumer engagement is very strong through the adoption of energy efficiency improvements and demand shifting.

Figure 3
The 2025 FES framework



1.2 Customer needs (continued)

1.2.2 Peak daily demand

Gas peak day (1-in-20) demand is illustrated in figure 4. The 10 year forecast for gas peak day (1-in-20) sits halfway between the Falling Behind and net zero scenarios and does not indicate a significant decrease in the peak day demand over this period.

Trends in peak natural gas demand generally mirror annual natural gas demand in each pathway, as many of the factors which influence annual demand also influence peak demand, but the declines are more rapid in annual gas demand.

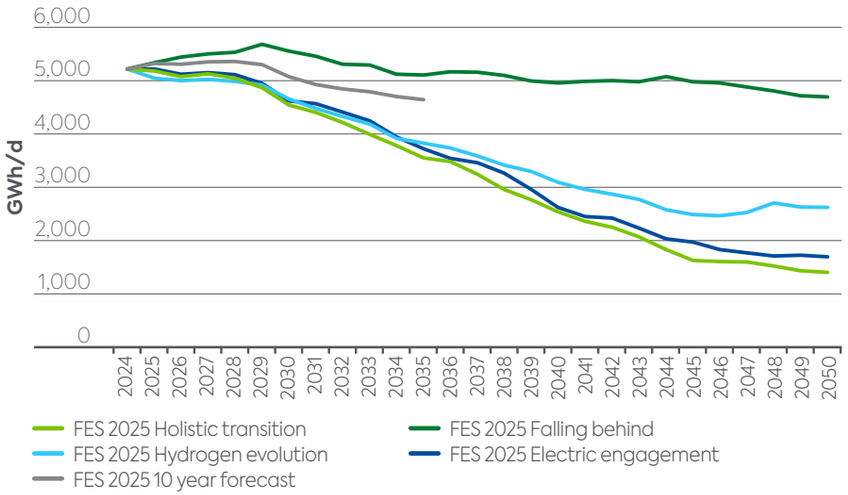
On cold winter days, peak demand will continue to be high while large numbers of homes still rely on gas boilers. As the heat sector decarbonises in the net zero pathways, with greater use of technologies such as heat pumps and hydrogen boilers, the peak demand for natural gas is expected to reduce.

Gas remains essential for electricity generation when renewable output is low, serving as a critical alternative to support Clean Power 2030 goals. It is also used for heating and hydrogen production, depending on the scenario. At the same time, the expansion of data centres and biomethane sites is increasing both demand and supply on the NTS.

We are currently implementing the findings of a review of the Gas Demand Forecasting Methodology (GDFM), with a change to the Uniform Network Code (UNC)* implemented and some of the changes being included in the production of 2025 FES.

Work is still ongoing to improve the approach taken regarding the interactions between weather, electricity demand, interconnector transfers and UK gas fired power generation demand.

Figure 4
2025 FES peak day (1-in-20) gas demand scenario comparison



* Amendments to UNC to align with Gas Demand Forecasting Methodology | Joint Office of Gas Transporters – Gas Governance

1.2 Customer needs (continued)

1.2.3 Gas supply

We have diverse sources of supply provided by seven entry terminals (figure 5) onto the NTS. These deliver natural gas from the UK Continental Shelf (UKCS), the Norwegian Continental Shelf (NCS) and continental European interconnectors, as well as Liquefied Natural Gas (LNG) from the world market.

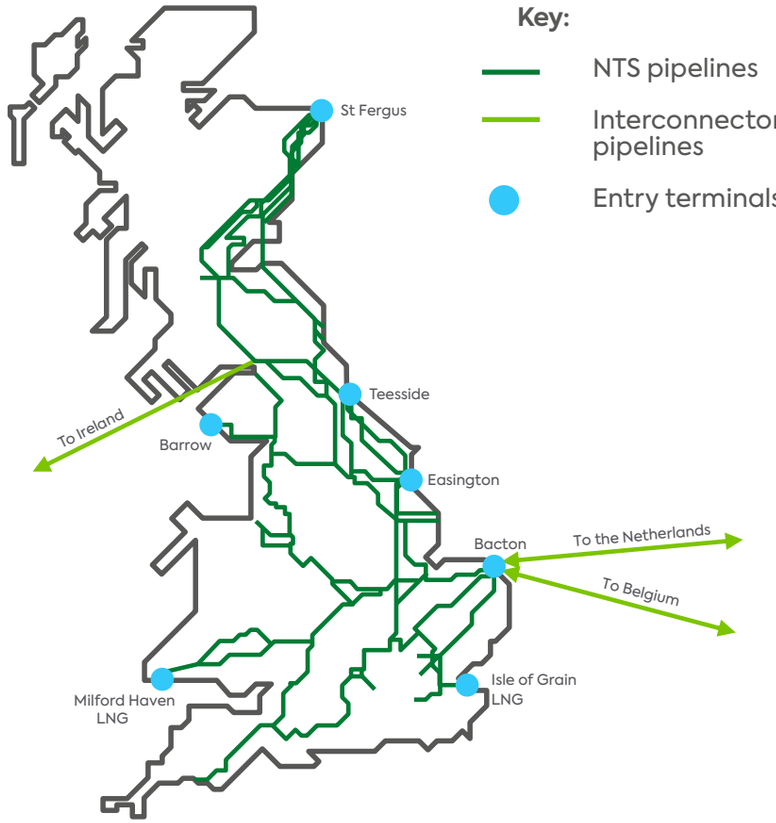
GB is now dependent on imported gas for around 60% of our gas supply to meet demand. As our import dependency has increased, the use of our network has changed – with a greater proportion of supply entering the network in the south.

We are now seeing a greater reliance on the compression that supports the flexible supply import terminals in the south at Bacton, Isle of Grain and Milford Haven. With some of the compression supporting these terminals impacted by emissions legislation and the need for greater levels of asset health work, it is critical we retain the correct level of network capability and resilience going forward.

NESO confirmed an entry capability need in South Wales in GNCNR. This is detailed further in the Network Capability and Resilience section.

UK shale gas is no longer considered as a viable supply of gas in any scenario.

Figure 5
NTS gas supply terminals



1.2 Customer needs (continued)

1.2.4 Security of Supply

The supply and demand outlook in GTYS is based on long-term scenarios for network planning and is not focused on security of supply. As such it does not reflect operational or market-based measures that could significantly influence margins. As a result of this the margins calculated using these scenarios are not reflective of the GB security of supply position. For this reason, while previous GTYS reports have included N-1 margin projections for future years, this year these figures are not included.

There are several other publications which show different measures for security of supply over the next ten years.

- The National Gas Winter outlook, published 9 October 2025, includes an assessment of the margins for the winter ahead. For 2025/26 this showed an intact margin of 83 mcm and under N-1 conditions this was 11 mcm.
- On 26 November 2025, NESO published their first Gas Security of Supply Assessment (GSSA). This includes an assessment of the margins based on de-rated supply during an 11-day cold snap for the years 2030/31 and 2035/36. When assessed under N-1 conditions all scenarios in 2030/31 and the Ten-Year Forecast and Falling Behind scenarios in 2035/36 showed negative margins.
- The Department for Energy Security and Net Zero (DESNZ) published their Gas system in transition: security of supply consultation on 26 November 2025. The consultation is seeking views on ensuring resilience of supply and infrastructure for the gas market.

In the GSSA report, NESO highlighted the value of extending security of supply analysis to the intermediate two to five year period.
We support this initiative and are working closely with government, NESO, and Ofgem to clarify responsibilities in this area.

We will continue to monitor the margins, considering any further developments with supply and demand. It is important to be proactive in meeting these challenges and the Government, NESO, National Gas and Ofgem are working closely together to consider necessary next steps.

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1.2 Customer needs (continued)

1.2.5 Summary

From 2025 FES and figure 4, it can be seen there are a broad range of potential pathways to net zero in 2050, with three of the pathways achieving the target. Therefore, in terms of supply and demand, it is important that we plan for all eventualities and invest and maintain the gas network to deal with the expected range of demands, including the worst-case higher demand scenarios such as Falling Behind*.

Under our licence, we are required to plan and develop the pipeline system to meet the peak 1-in-20 demand.

The Falling Behind pathway provides the highest demand forecast. There is progress on decarbonisation compared to today, however it is slower than in the other pathways and fails to meet the UK's net zero target by 2050. As a prudent operator, the system should be planned for the most challenging demand pathway to ensure we remain compliant with our licence.

As UKCS and NCS supplies decrease with uncertain import levels from Europe, there will be increased reliance on imported LNG supplies via Milford Haven and Isle of Grain. Therefore, we requested investment in our assets to ensure the resilience and flexibility of the network in our RIIO-GT3 Business Plan submission. These investments will enable us to deal with the changing flows across the network, and the need to be able to respond flexibly to deal with an increased range of flow requirements day-to-day, not just in a 1-in-20 situation. We have recently received Ofgem's Final Determination and in the coming weeks, we will undertake a more detailed review of Ofgem's decision to ensure it enables us to deliver a safe, resilient network that secures Britain's energy, maintains our industrial competitiveness and supports the country's clean energy ambitions.

* As per 2025 FES P27

1.3 Asset management

The age of the NTS means that levels of maintenance and capital investment need to increase, with many parts of the network being more than 50 years old. Carefully managing our asset health is an increasingly important driver of change and trigger for our NDP.

We have developed asset maintenance and asset health programmes to maintain the health of the NTS. Our asset maintenance programme focuses on delivering routine maintenance and monitoring the health of our assets. The asset health programme intervenes strategically on assets at all stages of their useful life, and usually involves refurbishment or replacement, once we have assessed that the asset is still required. These programmes ensure that we can consistently deliver a safe and reliable system to meet the needs of our customers and stakeholders.

Figure 6 describes the measures of risk that comprise our monetised risk-based asset management approach. This framework, called Network Asset Risk Metrics (NARMs), is being used to consistently assess and prioritise all our asset health investment and ensure that we deliver the work that is most beneficial to our customers and stakeholders.

1.3.1 Developing our asset management approach

Our approach to asset management is based on the ISO 55001 framework and has continued to evolve over recent years. This sustainable, risk-based approach to managing assets is crucial for ongoing realisation of value for money for customers and consumers.

During 2023/24, we developed our RIIO-GT3 plan and used our decision support tool software (Copperleaf) to optimise that plan against our NARMs Methodology.

After developing the plan, we conducted delivery optimisation to ensure the plan we submitted in December 2024 is feasible and can be efficiently executed. This process also identified opportunities to adjust resources and coordinate outages, minimising the impact on customers.

We have begun planning the next stage of improvements for our Asset Management Plan, taking all the learning from the previous one. A series of Asset Management Improvement work packages have been developed to leverage opportunities provided by people, process and technology changes that are either already ongoing or planned across the organisation. Together, these incremental improvements will facilitate the next step change in quality between price control submissions.

Figure 6
Measures of risk

Category	Service risk measure
Safety	Health and safety of the general public and employees
	Compliance with health and safety legislation
Environment	Environmental incidents
	Compliance with environmental legislation and permits
	Volume of emissions
	Noise pollution
Availability and reliability	Impact of network constraints
	Compensation for failure to supply
Financial	Shrinkage
	Impact on operating costs
Societal and company	Property damage
	Transport disruption
	Reputation

1.4 Legislative change

This section summarises the key legislative changes that can trigger our NDP, as these changes will impact how we plan and operate the NTS over the next ten years.

1.4.1 Emissions legislation

The Industrial Emissions Directive (IED) is the mandatory minimum emission standard for large combustion plant (> 50 MWth) that all European countries had to comply with by 2023 and applies to our larger gas-powered compressors.

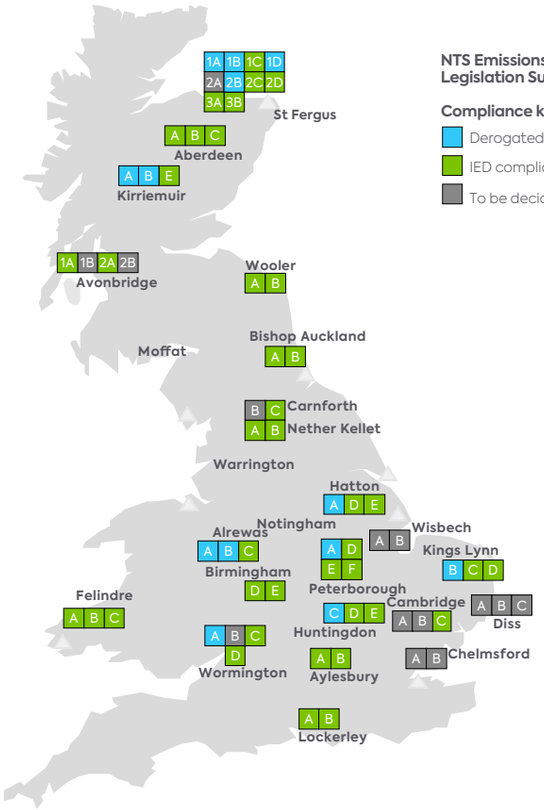
The Medium Combustion Plant Directive (MCPD) has a compliance date of 1 January 2030 and applies to the remainder of our gas-powered compressors (> 1 MWth and < 50 MWth).

All our compressors are compliant with current legislation, but many of our compressors require intervention to ensure compliance with new legislation. These interventions could include decommissioning, replacement with new compliant units, fitting emission abatement technology, or Emergency Use Derogation (i.e. having strict run hour limits).

Work is in progress at several sites to deliver projects under IED legislation, which should be mostly completed by the end of RIIO-T2. Details on decisions and progress we have made at individual sites are available in the Options and developments section of this publication.

The map, figure 7, shows the units where funding is yet to be agreed, or further analysis is required, in grey. Units that have been derogated or will be derogated in the future are shown in blue. Green denotes units that are compliant with future emissions legislation and do not require intervention.

Figure 7
Compressor fleet status as of 1 January 2030 (MCPD compliance date)



1.4 Legislative change (continued)

1.4.2 Cyber security

The upcoming Cyber Security and Resilience (CSR) Bill provides the Government with a crucial opportunity to bolster the UK's cyber defences and safeguard Critical National Infrastructure (CNI). With an increasingly complex cyber-threat landscape to defend against, we welcome the Government's ongoing work on the CSR Bill to ensure that the Network and Information Security (NIS) Regulations support businesses to defend against attacks. The bill, set to be published this year, will expand the scope of UK NIS to include managed service providers (MSPs); introduce new duties around supply chain security for operators of essential services; and align the UK's incident reporting requirements with the EU's NIS2 regime.

We welcome the CSR Bill's expansion of the NIS regulatory scope to include our MSPs, ensuring a baseline of security across CNI supply chains which, as the Government recognises, has become an increasingly attractive target for hostile actors. The potential economic impact of any downtime, due to an attack, makes ensuring CNI resilience essential to achieving the Government's mission of economic growth.

1.4 Legislative change (continued)

1.4.3 Gas quality developments

In January 2022, following an industry review, the Health and Safety Executive (HSE) published a consultation and impact assessment on proposals to change the Gas Safety (Management) Regulations 1996. In April 2023, this work resulted in the Gas Safety (Management) (Amendment) Regulations entering into force.

Whilst most changes took immediate effect, a reduction in the lower limit for Wobbe Index was subject to a 2 year leadtime, entering into force in April 2025. We have been working to implement this revised limit into the contractual arrangements with five terminal operators that wish to do so via UNC Modification 0870. Based on discussions with these operators, we do not expect lower Wobbe Index gas to flow consistently into the network at these locations; rather, the extension to the range will be used temporarily when steady-state conditions are disrupted. We notify the industry when a change to a gas quality parameter is made in a Network Entry Agreement and publish such notices on the website of the Joint Office of Gas Transporters.

Modification 0870 also enabled a reduction to the lower limit for Wobbe Index in respect of the Bacton interconnectors which was consequentially necessary to support interoperability of gas flows to Continental Europe. We are currently working with the relevant adjacent Transmission System Operators (TSOs) to implement these amendments into the relevant interconnection agreements.

We are mindful of concerns held by some of our stakeholders, particularly those operating Combined Cycle Gas Turbine (CCGT) plants, that a wider Wobbe Index range increases their level of operational and commercial risk. Additionally, in recent years, there has been a trend of increased limits at NTS entry points for other parameters, notably carbon dioxide and oxygen content.

Improving gas quality transparency has therefore been an additional focus for us. Modification 0870 made provision for publication of a rolling five year forecast of both calorific value and Wobbe Index provided to us by the terminal operators of the NTS entry points that wished to access the new lower Wobbe Index limit. Additionally, in September 2025, we began to publish the gas quality data that is measured at points within the network (GDN offtakes, compressor stations and multi-junctions). This means that our customers and stakeholders can now access historical and current measurements at these locations for calorific value, Wobbe Index, specific gravity, carbon dioxide and nitrogen. All this information can be accessed on our gas data portal.

1.4 Legislative change (continued)

1.4.3.1 Oxygen specification

The current GS(M)R specification for oxygen, set at 0.2 mol%, is a barrier for biomethane injection into the NTS. We have therefore continued our work on an evidence case for a GS(M)R exemption, to be submitted to the HSE, that would allow us to offer an elevated oxygen specification of up to 1 mol%. Gas with this elevated level of oxygen content could be detrimental to the operations of some of our customers that offtake gas from the NTS, most notably underground storage operators. To address this, during 2025, we consulted on and published a methodology within our Connections Document Library for determining how we would respond to non-standard gas quality limit requests. This methodology is designed to balance the benefits to upstream parties of a more relaxed specification with potential risks to downstream parties that may be sensitive to a particular parameter. Aligned to this, UNC Modification 0882 was implemented, which has increased transparency where a new NTS entry point wishes to have a gas quality limit that, whilst GS(M)R compliant, would be outside the standard NTS specification.

1.4.3.2 UNC Gas Quality Workgroup

In recognition of the increasing importance of gas quality, a new UNC Gas Quality Workgroup was created in January 2025. Among other issues, this group has progressed a standard scope of analysis that should be completed when a terminal operator requests a change to a gas quality parameter, promoted understanding and consideration of NGT's GS(M)R compliance regime and served as a vehicle through which we have kept the industry informed about our gas quality-related initiatives. We are currently engaging with this workgroup on potential options for additional gas quality information provision.

1.5 Net zero: the three-molecule approach

As we progress from RIIO-T2 towards RIIO-GT3, we need to begin meeting Government deadlines for decarbonisation, initially looking at ways to reduce electricity production's reliance on fossil fuels and increase focus on renewables.

Reaching this target still requires a maintained gas power system, but its use is limited to times when renewable sources are unavailable. This changes the usage scenario for our gas network and could require us to support winter level gas flows in the middle of summer.

How are we doing this?

We're currently assessing the impact of these changes on the natural gas network and are considering innovative solutions to support these ambitions.

To help us transition to net zero, we're adopting a three-molecule approach. This encompasses the continuation of natural gas delivery, while reducing the carbon content through biomethane and hydrogen blending with the use of Carbon Capture, and Storage (CCUS) to capture emissions, as well as the rollout of 100% hydrogen pipelines.

National Gas flagship projects

Project Union: repurposing existing gas transmission pipelines and building new pipelines to create a hydrogen 'backbone' for the UK.

FutureGrid: providing vital insights into hydrogen transportation and blending, to support the full-scale conversion to hydrogen.

SCO_2T Connect: supporting the development of Carbon Capture and Storage (CCS) in the Scottish cluster.

Methane

- Natural gas resilience and flexibility
- Low carbon gas through biomethane and hydrogen injection

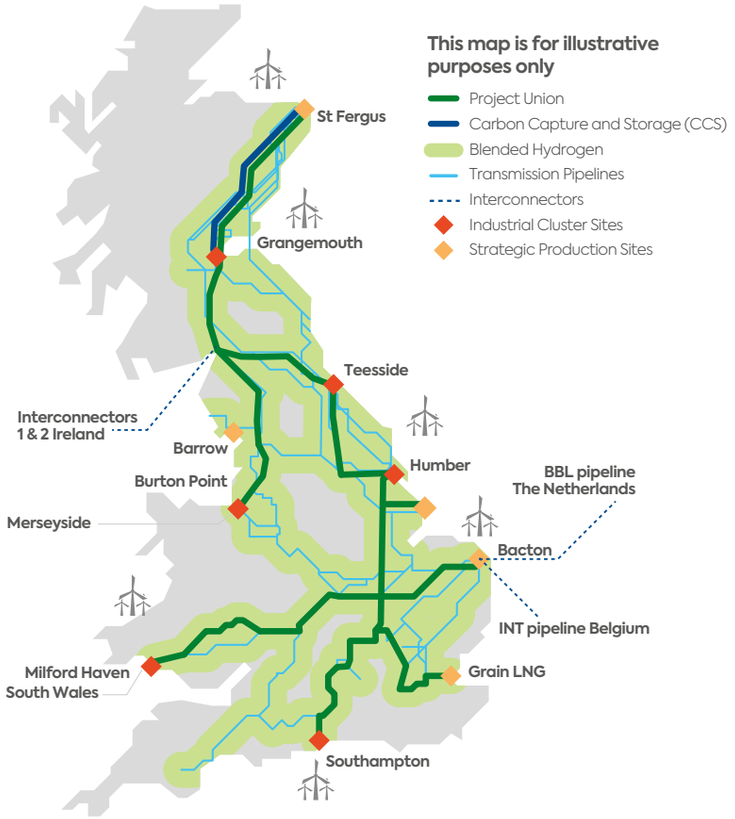
Hydrogen

- Multiple hydrogen production routes
- Core hydrogen network through repurposed and new build transmission pipelines

Carbon dioxide

- Carbon capture and transportation of industrial/power blue hydrogen production emissions

Figure 8
National Gas flagship projects



1.5 Net zero: our HyNTS programme

Reducing the carbon intensity of natural gas in the National Transmission System (NTS) has been discussed for many years, with biomethane injection a key focus. The opportunity to blend hydrogen into the network alongside a low carbon certification scheme could enable demand to decarbonise before hydrogen and electrification infrastructure is available. Hydrogen blending also plays an important part in hydrogen market development, enabling hydrogen production to scale and produce consistently without being impacted by variations in demand.

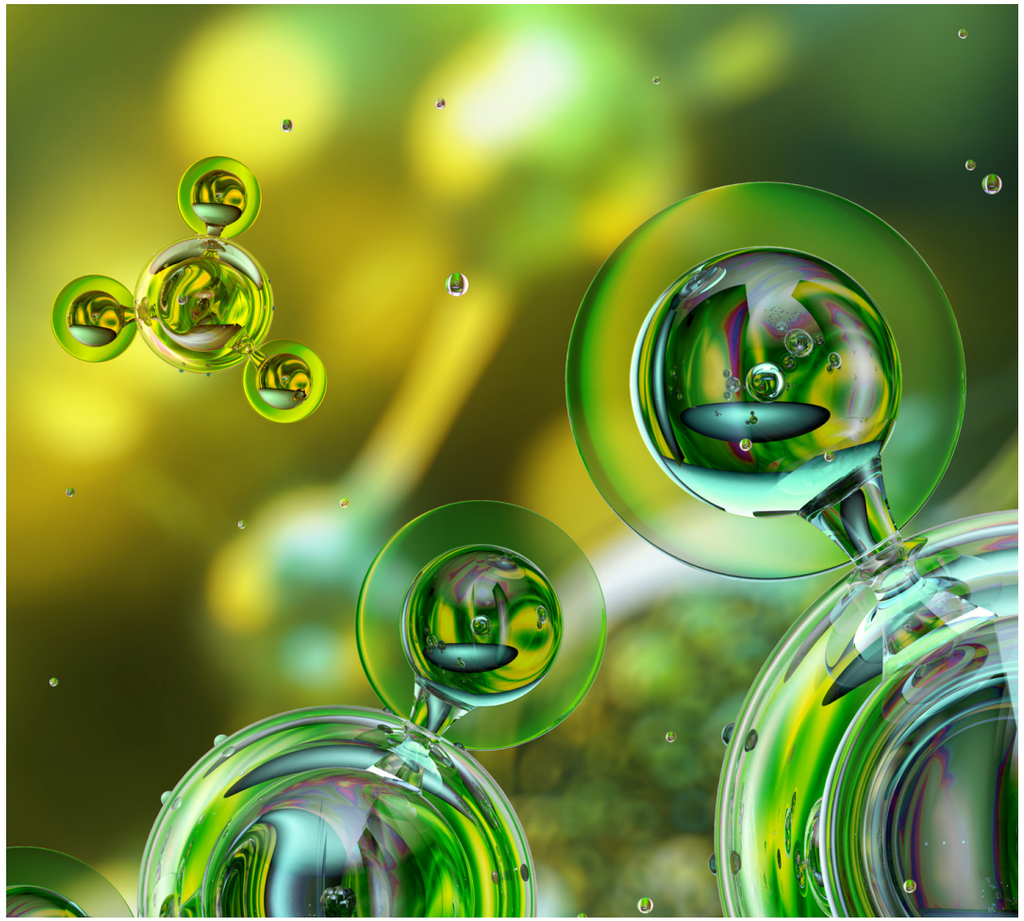
Alongside the UK targets, Europe is progressing its decarbonisation approach and has concluded a 2% cross-border blend will be enabled. Each European country is now considering the impact of this to their network and updating their standards appropriately. We will need to ensure that we are aligned with this to enable import and export between ourselves and Europe, maintaining security of supply.

Following significant modelling, testing and feasibility work, we've developed a body of empirical evidence to strengthen the safety case for the use of hydrogen blends on the NTS. We've also developed a significant portfolio of projects to understand the implication of hydrogen blends on the NTS. This portfolio is referred to as the Hydrogen in the NTS (HyNTS) programme.

Projects that have involved building our evidence on blending have been a major part of our hydrogen evidence portfolio since RIIO-T1. We've actively worked to understand the viability of the NTS to enable blending to ensure a more resilient net zero transition for Great Britain and our customers.

The projects covered topics including gas analyser feasibility studies, deblending feasibility and demonstration, linepack studies, variable composition measurement studies, and understanding blending infrastructure r equirements for our hydrogen blended future.

The projects undertaken as part of the HyNTS programme are focused on proving the capability for repurposing our network, rather than relying solely on new build assets.



1.6 Gas network strategic planning process

Following the introduction of the Energy Act 2023, the National Energy System Operator (NESO) was formed on 1 October 2024. It is responsible for the strategic planning of the whole energy system, meaning different activities on gas and electricity networks and the future hydrogen network. On the gas network, NESO is engaging in the area of network capability as part of these strategic planning activities.

NGT have been actively engaging with NESO, and will continue to do so, to ensure that the organisation is able to deliver on its accountabilities in relation to strategic planning, including the production of the Gas Network Capability Needs Report (GNCNR), Gas Options Advice (GOA) document and the Centralised Strategic Network Plan (CSNP) moving forward. As of 2024, NGT will no longer be producing and publishing the Annual Network Capability Assessment Report (ANCAR), but we will produce a Strategic Planning Options Proposal (SPOP) to assist NESO and Ofgem with the new process, as can be seen in figure 9.

Further details and information on the requirements for GNCNR and GOA can be found within the Independent System Operator and Planner and Gas System Planner Licence Conditions.

Figure 9
Gas planning process flow showing deadlines, cadence and audience

Further details and information on the requirements for SPOP can be found in the National Transmission System Gas Transporter Licence part C Special Conditions.

2. Network capability and resilience

2.1 Introduction

This chapter explores the second stage of our Network Development Process (figure 10). Here, we give details of how we analyse and assess the required capability of the NTS to address the drivers of change in each zone.

The Network Capability Process enables us to demonstrate the physical capability of the NTS and how that capability compares to the needs of our customers, now and into the future.

This assessment is carried out against a range of future supply and demand scenarios, initially using the Future Energy Scenarios (FES).

Figure 10
Our network capability and resilience process

2.2 Resilience and the network capability assessment

As described in the previous section, we no longer publish an Annual Network Capability Assessment Report (ANCAR). The requirements for the ANCAR have been absorbed into the GNCNR, which NESO publish every two years and is linked to the future developments of CSNP.

The first GNCNR produced by NESO, published in December 2024, assessed the physical capability of the NTS and how that capability compares to the needs of our customers now and into the future. This assessment was carried out against a range of future supply and demand patterns.

Dissimilarly to ANCAR, the GNCNR looks beyond the 10-year horizon, out to 2050, so the needs of the NTS to transition to net zero by 2050 can be assessed.

The key findings of GNCNR were that:

- For everywhere except the South Wales region, the probability of constraints remains very low over the next ten years.
- In the South Wales region, due to the potential increase in LNG imports predicted by FES, at low (summer) demand levels, there is an increased probability of constraints at the Milford Haven LNG terminal.

In line with our Gas Transporter Licence special conditions, we have provided NESO with our best view of options that would mitigate the above capability need in South Wales in our SPOP. The SPOP is not a public report due to the commercial and operational sensitivity of the data it contains.

NESO is currently in the process of assessing these options to make a recommendation to Ofgem on what it thinks is the most suitable option in its Gas Options Advice (GOA) document which is due to be published by the end of December 2025.

Network resilience continues to be a high priority area for us, and our RIIO-GT3 Business Plan submission in December 2024 reflected this with several improvements requested for sites that have lower resilience than needed to provide adequate resilience for an entry or exit zone.

Specific projects currently being undertaken in each zone are summarised on the next page, and further information about each individual project can be found in the Options and developments section.

2.3 Summary of changes by zone

Scotland and the North (zone 1)

The trend of supplies into the St Fergus entry terminal continues to reduce over the coming years, which could result in low pressures or exit constraints. We continue to review our compressor strategy in Scotland and the North. The investments requested in RIIO-GT3 and driven by network exit capability involve compressor re-wheels and site reconfiguration to enable us to meet our obligations.

North West (zone 2)

To comply with emissions legislation, we have applied for funding in RIIO-GT3 to re-wheel Alrewas unit C, as units A and B will be derogated from 1 January 2030.

North East (zone 3)

For RIIO-GT3, investment is required for compressor re-wheels in this zone for network capability requirements. There is also a legislative compliance project at Hatton compressor stationrequiring a new compressor unit to be commissioned which was funded from RIIO-T2.

South Wales (zone 4)

Due to forecast LNG supply increases at Milford Haven, there continues to be a growing number of occurrences where supply may be above physical capability, especially in summer months when local demand is lower, as also identified by NESO. As part of our RIIO-GT3 Business Plan we submitted a request for increasing this zone's capability in the form of the Western Import Resilience Project (WIRP). There is also an ongoing legislative compliance project at Wormington compressor station requiring a new compressor unit to be built and commissioned.

South West (zone 5) and East Midlands (zone 6)

In RIIO-GT3, we have requested network capability driven investments for compressor re-wheels. We have delivered legislative compliance projects at two of our compressor sites in the South West. Two new compressor units have been commissioned at both Huntingdon and Peterborough. Work is ongoing to deliver MCPD related work at both stations, including an additional new compressor unit at Peterborough.

South East (zone 7)

There continues to be uncertainty about the level of entry and exit flows we may see going forward via the Bacton interconnectors and Isle of Grain LNG terminal. Therefore, there is the potential for future entry and exit capability constraints. This is a key area of focus for us and a number of projects are ongoing: Grain Power Station PARCA, Bacton terminal asset health Campaign and King's Lynn compressor re-wheeling. We received baseline funding in RIIO-GT3 for performance testing at Diss and Cambridge compressor stations.

Cambridge and Chelmsford are also included in our RIIO-GT3 plan to allow us to respond to changing supply and demand needs. By reconfiguring these sites we can enable increased SE Entry Capability necessary as the network becomes more reliant on both LNG and continental imports.

3. Options and development

3.1 Introduction

This chapter summarises the options and development stages of our NDP, where options are identified and the preferred option is progressed to address the drivers of change (figure 9). The chapter focuses on specific project details and their current development status.

Stage 3 of our NDP comprises the identification of options using a mix of rules (industry frameworks), tools (commercial arrangements and operational strategies) and assets (physical solutions to ensure we retain the required level of network capability). Each option can have a mixture of solutions, with elements of asset solutions alongside both rules and tools.

Stage 4 of our NDP is only reached if the optimal solution to a driver of change cannot be found within our existing network capability. The aim of this stage is to further develop the preferred options based on the direction of travel decided in stage 3. It may be necessary to progress multiple options at the same time to ensure the optimal final solution is progressed to completion. The specific projects being developed are detailed throughout this chapter.

Figure 11
Our Network Development Process

3.2 St Fergus MCPD

Zone 1:
Scotland and the North

Location:
St Fergus Gas Terminal

Category:
Legislative change

Background

St Fergus is an entry point into the UK in the north of Scotland. The terminal was built in the mid 1970s in a coastal environment which accelerates corrosion degradation. Across the St Fergus terminal, ongoing investments are being made through multiple workstreams to address existing safety-related issues, while also ensuring adequate compression availability and capability, and meeting key environmental objectives.

Our RIIO-GT3 plan for St Fergus seeks to optimise investment aligned with manageing safety and reliability risks on ageing assets with the efficient delivery of our future compression strategy for the terminal.

Status

This project focuses on investment in our St Fergus Gas Terminal to comply with the MCPD. Ofgem approved our RIIO-T2 Uncertainty Mechanism proposed options of new compression units and asset health investments. In line with the approved position in RIIO-T2, investment in other asset health works, such as high voltage transformers and distribution boards, is underway in the short term.

Next steps

Final cost submission in 2025 for MCPD works, including installation of three new units by 2030, delivery of distribution boards and HV transformers' during RIIO-T2 and continued into RIIO-GT3 regulatory period along with other associated works such as plant II aftercoolers

3.3 Alrewas re-wheel

Zone 2:	Location:	Category:
North West	Alrewas compressor station	Network capability

Background

Alrewas is the oldest compressor station on the network. It is also a central compressor and is configured in a way where gas can be pushed in any direction to provide additional network capability where needed. The station consists of three gas-powered units. Unit C is the Best Available Techniques (BAT) unit on site, while Units A and B are SGT-A20 units (Avons) affected by MCPD legislation and will require some intervention to either be derogated or made compliant by 1 January 2030.

In our RIIO-GT3 submission, a baseline request has been made to conduct a re-wheel on Alrewas C to meet new Process Duty Specification (PDS) points driven by changing supply and demand patterns. If Units A and B are derogated in 2030, Unit C cannot currently run at the same flow levels as the smaller units. Re-wheeling Unit C will allow the compressor to take some of the duty of the A/B units so they are under their 500-hour limit.

Status

We have received Ofgem's Final Determination which approves funding for this investment.

Next steps

Process duty specification points have been determined for Alrewas C. These will be provided to the original equipment manufacturer (OEM) for the units to be re-wheeled.

3.4 Hatton IED

Zone 3:	**Location:**	**Category:**
Northeast	Hatton compressor station	Legislative change

Background

Hatton compressor station provides network entry capability in the North East and supports network exit capability in the South East and South West. The station consists of one electric unit and four gas-powered units. Units B and C have had an extension agreed to operate the units on a limited life derogation until 31 March 2026 and should be decommissioned before then. The new unit, Hatton Unit E, is going through commissioning.

Status

Funding was awarded through RIIO-T2 final determination for a single large gas-powered compressor (Unit E) and decommissioning of two older non-compliant units (Units B and C). These works are still underway and should be completed before the commencement of RIIO-GT3 in 2026.

Next steps

The unit will be operational in December 2025 with full handover in February 2026 and asset acceptance due March 2026.

3.5 West Import Resilience Project (WIRP)

Zone 4:	**Location:**	**Category:**
South Wales	Felindre to Churchover	Network capability

Background

The West Import Resilience Project is a strategic investment designed to strengthen the NTS, improve network resilience and mitigate identified network constraints. The WIRP will improve gas flows and support maximum entry capacity onto the existing NTS from Milford Haven Aggregated System Entry Point (ASEP) to Churchover and further eastwards to the wider NTS.

The key components of the WIRP include:

- Construction of 9 km pipeline between Wormington and Honeybourne
- Construction of 2 km pipeline between Churchover Compressor Tee and Multijunction
- Flow modifications at Churchover, including control system design and upgrade and review of associated pipework to facilitate reverse flows
- Securing a store of spares for the electric powered compressor at Wormington and
- Pressure uprating of the existing Feeder 28 between Felindre and Three Cocks.

Status

We have received Ofgem's Final Determination which approves funding for the components of this project using a mixture of funding mechanisms.

Next steps

Proceed to final cost submissions in the agreed UM reopener windows, progress investment delivery in the pipeline and other components as agreed in the RIIO-GT3 final determinations.

3.6 Wormington MCPD

Zone 4:
South Wales

Location:
Wormington compressor station

Category:
Legislative change

Background

Wormington compressor station supports network entry and exit capability in South West and Wales. The station consists of one electric unit and two gas-powered units. The latter two units are within scope of the MCPD and therefore will need to be replaced, decommissioned or operate with restricted running hours by January 2030 to remain compliant.

Status

In August 2022, through the RIIO-T2 Wormington UM, we submitted proposals to achieve MCPD compliance. In March 2023, Ofgem subsequently published confirmation of the Final Preferred Option*, comprising of the installation of a new gas turbine compressor unit and asset health works for the retained SGT-A20 unit (Avon).

Next steps

Proceed to final cost submission in December 2025 for MCPD works. We are also investigating the feasibility of retrofitting dry low emissions (DLE) technology for units currently non-compliant with MCPD and will continue to assess the future requirements at the site.

* Ofgem final determination

3.7 Huntingdon and Peterborough IED and MCPD

Zone 5:	**Zone 6:**	**Location:**	**Category:**
South West	East Midlands	Huntingdon and Peterborough compressor stations	Legislative change

Background

Peterborough and Huntingdon compressor stations are key to support network exit capability and meet our 1-in-20 demand obligations in the South West. They have been considered together due to their operational interdependence.

Peterborough compressor station consists of five units (three SGT-A20 and two Solar Titans). Two SGT-A20 units have been disconnected in 2025 and are due to be decommissioned in 2026.

The third SGT-A20 unit will be decommissioned once the new MCPD compliant unit is operationally accepted (subject to Ofgem's re-opener decision, expected by the end of 2025). The two new Solar units built under the IED project have been operationally accepted in 2025.

At Huntingdon, two units have been installed, while two SGT-A20 units have been decommissioned and the third SGT-A20 is to be derogated and receive asset health investment (also subject to Ofgem's decision).

Status

We have completed works at these compressor sites, delivering two new MCPD-compliant gas turbines at Peterborough and two at Huntingdon and are in the process of decommissioning redundant units. These works should be completed before the start of RIIO-GT3 in 2026.

Next steps

Completion of IED driven projects before the end of RIIO-GT3 and awaiting draft and final determination from Ofgem with regards to MCPD UM submissions to ensure work remains on track to achieve compliance by 1 January 2030.

3.8 King's Lynn MCPD

Zone 6:
East Midlands

Location:
King's Lynn compressor station

Category:
Legislative change

Background

King's Lynn compressor station supports network entry and exit capability in the South East and East Midlands. The station consists of four gas-powered units. Two of these units are not compliant with MCPD (Units A and B) and therefore will need to be replaced, decommissioned or operate with restricted running hours by January 2030 in order to remain compliant.

Status

In our RIIO-T2 Business Plan, we proposed that two compliant gas-powered units should be installed at King's Lynn to maintain existing capability and resilience at this station. Following further development, we submitted a UM in January 2023 which proposed one new unit. Ofgem published their final determination in November 2023 not supporting a new unit, but approved asset health works and re-wheels on Units C and D.

We have subsequently submitted a funding request which would help maintain existing capability and ensure compliance with MCPD.

These investments consisted of decommissioning Unit A, derogation and asset health work on Unit B and re-wheeling Units C and D to handle lower flow situations to reduce the reliance on the MCPD non-compliant Unit B.

Next steps

We are currently engaging with the original equipment manufacturer on re-wheeling works for Units C and D and are awaiting final determination from Ofgem on the asset health work on Unit B.

3.9 Bacton FOSR cost reopener

Zone 7:	**Location:**	**Category:**
South East	Bacton terminal	Asset Management

Background

The Bacton terminal is a key strategic gas entry terminal into the UK and will continue to operate until at least 2050 under our current FES scenarios. The site commenced operation in 1968, within a coastal environment which accelerates degradation, and has operated continuously since, with no site-wide outages. Examination of the risks and consideration of the needs case work at Bacton has identified issues that should be prioritised in the short, medium and long term and as part of the work completed during the Final Option Selection Report (FOSR) process, NGT have now selected a preferred option of base case asset health for 2035-2050.

Status

The Bacton FOSR was submitted in February 2024, presenting our preferred option of base case asset health up to 2050, along with comparisons with additional options to validate this as the most cost-effective solution to consumers. NGT's investment areas consist of valves, low voltage and control instrumentation, and cathodic protection system replacements. Ofgem consulted on the FOSR and provided a minded to position to accept our option in August 2024.

In October 2024, NGT submitted the cost re-opener following the approved option and continue to make progress with Ofgem on the outcome of our submission.

Next steps

Proceed to tender launch and contract award (detail / conceptual design) for delivery works, we expect a final determination on our October 2024 cost submission to be reached before April 2026.

3.10 Site Reconfiguration Projects

Zone:
Scotland and the North (Zone 1) and South East (Zone 7)

Locations:
Nether Kellet, Bishop Auckland, Cambridge, Chelmsford

Category:
Multiple

Background

We need to enable the network to move more gas from South East terminals, including LNG from Isle of Grain, as reliance on imports grows and UKCS gas declines. We also need to ensure our northern compressors, which currently transmit gas north-south, have the capability to transmit gas towards the north to meet demand in the event of low UKCS supply. We have previously identified sites where reconfiguration of the inlet and outlet would enable these changes in capability.

Status

For RIIO-GT3, Ofgem has approved two re-openers which could support these investments. The Gas Strategic Planning Re-opener accounts for any changes required following the publication of the GNCNR, GOA document and the CSNP, including any changes required due to the Clean Power 2030 plan, and Security of Supply considerations. The Network Capability Re-opener captures investments that improve the performance envelope of existing compressor units, upgrade site configurations and decommission redundant compressor units. This ensures appropriate network capability and resilience to deal with changing flow patterns and lower network emissions.

Next steps

Continue with the assessment of the causes and impact of flow pattern, UKCS and import needs on the affected areas of the network. Based on the successful demonstration of network need and development of solutions, we will progress re-openers in RIIO-GT3.

3.11 Physical Protection

Location:
Nationwide

Category:
Legislative change

Background

As an operator of CNI, we invest in our security in a proportional manner as part of our RIIO business plans and in accordance with the NIS regulations and other relevant security standards and frameworks. The RIIO business plan for security is intelligence and risk-led to ensure the best timing and level of investments to achieve the control coverage and maturity necessary to respond appropriately to the threat – both in the current security climate and in future years. At its core, the security investment strategy seeks to eliminate, reduce, isolate and control risks where possible.

Status

The Physical Security Scope of Works (PSSW) upgrade programme is a Department for Energy Security and Net Zero (DESNZ) led national programme that commenced in RIIO-T1 (previously known as the Physical Security Upgrade Programme – PSUP) to enhance physical security at critical sites. Our RIIO-T2 investments cover the latest phase of sites agreed with the Government and continue into our RIIO-GT3 Business Plan agreed with Ofgem.

Next steps

Given the lifespan of the hardware and technical assets, we have continued with a rolling asset replacement programme to ensure that all PSSW sites have state-of-the-art security solutions commensurate with known vulnerabilities and the prevailing threat.

3.12 Cyber protection

Location:
Nationwide

Category:
Legislative change

Background

As an operator of CNI, we invest in our security in a proportional manner as part of our RIIO-GT3 business plans and in accordance with the NIS regulations and other relevant security standards and frameworks. The RIIO-GT3 business plan for security is intelligence and risk-led to ensure the best timing and level of investments to achieve the control coverage and maturity necessary to respond appropriately to the threat – both in the current security climate and in future years. At its core, the security investment strategy seeks to eliminate, reduce, isolate and control risks where possible.

Status

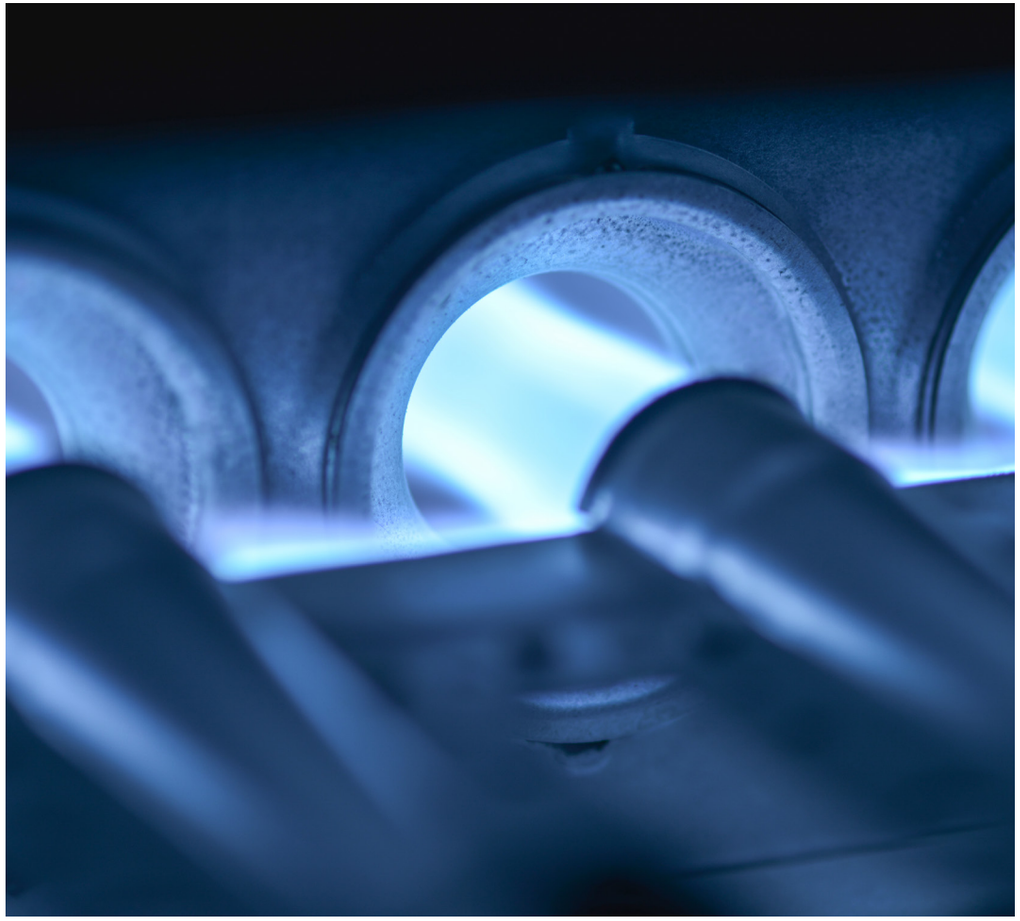
The broader security environment remains challenging. Our network is subject to a multitude of security threats, which are ever-changing and increasing in sophistication and persistence. These threats include criminality, espionage, sabotage, activism, terrorism and insider action. A mixture of technologies of varying maturity levels are introducing new complexity at the very moment when energy transition is accelerating, and security of supply continues to come under pressure. Together. these changes can create new vulnerabilities or magnify existing weaknesses, making them more exploitable.

Next steps

We are investing to be in a strong position to protect National Gas and detect and respond to security threats – both in the current security climate and in future years – given the energy sector's increasing significance as a central component of CNI and national security.

We continue to deliver the plan that has been agreed with Ofgem and DESNZ.

3.13 Methane emissions



Location:
Nationwide

Category:
Legislative change

Background

At COP26, the UK Government, along with 121 other governments, committed to the Global Methane Pledge with the aim of reducing global methane emissions by 30% from a 2020 baseline.

Rapidly reducing methane emissions will significantly help global efforts to reduce carbon emissions and contribute to efforts to limit global warming to 1.5°C, preventing the worst consequences of climate change.

Status

Our three UM submissions, developed collaboratively with Ofgem and containing investment proposals at reducing methane emissions from the NTS, saw a decision reached by Ofgem in March 2024.

Find out more in Ofgem's decision document.

Our expanded fugitive gas escape detection and quantification programme is progressing and on track for providing the evidence required to establish a measurement based fugitive emission performance baseline for the NTS by the end of year one of RIIO-GT3. An order has been placed for the new pipeline recompression assets funded by Ofgem in its decision; delivery is expected in spring 2026. For our trials of operational vent reduction assets for the compressor fleet, a tender exercise has been undertaken to appoint a main works contractor for delivery. Following appointment, we will then progress on to detailed design.

Next steps

NGT reports on progress with its methane emission reduction investments annually within the Regulatory Reporting Pack (RRP).

In the coming year, NGT will continue with delivery of a measurement-based fugitive emission performance baseline for the NTS, commission into service its new mobile recompression assets, and progress with the operational compressor vent reduction trials.

3.14 Redundant assets

Location:
Nationwide

Category:
Asset management

Background

As the requirements on the NTS change, there are assets on the network that are no longer required by National Gas or our customers to operate the network – these are defined as redundant assets. Assets that remain on the network for longer than required represent an ongoing maintenance commitment and operational cost, as well as having the potential to cause detrimental impacts to the environment.

Within our RIIO-GT3 business plan, we requested funding for an additional 30 redundant asset projects to be delivered across RIIO-GT3. These projects included decommissioning of Kirriemuir C which had previously been disconnected in RIIO-T2, decommissioning of Wisbech Units A and B and disconnection of Carnforth C.

Status

A range of scopes to decommission redundant assets and sites were identified and funding awarded through the RIIO-T2 final determination. In the first four years of RIIO-T2, we have completed 16 outputs against the redundant asset price control deliverable.

We have received Ofgem's Final Determination which approves funding for most of our proposed RIIO-GT3 redundant asset investments.

Next steps

An additional 44 outputs are in progress with delivery planned to be undertaken prior to the end of the RIIO-T2 period.

3.15 CCS SCO_2T Connect

Location:
Scotland

Category:
CCS

Background

SCO_2T Connect aims to deliver ~340 km of repurposed and new build pipeline to connect hard-to-abate CO_2 emitters in Scotland's central belt with offshore storage at St Fergus. Connecting the CCS value chain in Scotland enables the capture of up to approximately 3.5 Mtpa, (~8% of Scotland's emissions by 2035) and up to 16% of Scotland's emissions by 2045 in an expansion scenario. The Scottish Cluster is one of the first four low-carbon industrial clusters in the UK Government's Cluster Sequencing Process, tasked with catalysing the CO_2 market in the UK.

Status

The Pre-Front End Engineering Design (Pre-FEED) phase was completed in 2024, delivering initial engineering designs and assessing provisional land requirements. In June 2025, following the UK Government's Comprehensive Spending Review, the Scottish Cluster was awarded £200 million in development funding support, subject to affordability and value-for-money assessments. National Gas has been working closely with the Acorn project and the UK Government to navigate the process of unlocking this funding and is provisionally planning to progress into the FEED phase in 2026, subject to a successful conclusion.

Next steps

The next phase of work will concentrate on progressing the engineering design in greater detail, while simultaneously advancing land and consenting activities appropriate for a scheme of this scale. This will involve a structured approach to identifying and engaging all relevant stakeholders ahead of the initial ecological and environmental surveys. In parallel, we will continue to collaborate with government to help shape their long-term vision for a competitive CO_2 market in the UK.

3.16 Innovation at the heart of everything

3.16.1 Our project portfolios

Our innovation work is focused around five technology portfolios that feed into our business-as-usual and energy transition targets. Our team structure is also aligned to these themes, to ensure efficient project delivery.

In our latest strategy, we've created interactive roadmaps for each of these themes which show the different challenge areas that our future projects will focus on. These roadmaps, as well as more detailed information on each of the technology themes can be found in our strategy document.

1

Asset development: developing net zero ready, resilient assets with optimised maintenance systems.

2

Automation and measurement: developing the inspection and monitoring systems required for the future of gas.

3

Digital systems and simulation: providing accessible, accurate data models of the UK energy network, improving network efficiency.

4

Materials and processing: ensuring robust materials and processes extend the lifetime of our assets and enable the repurposing of the network.

5

Business development: enabling future markets and customers of the gas network, by ensuring business systems and processes are relevant for net zero.

3.16 Innovation at the heart of everything (continued)

3.16.2 Our FutureGrid programme

FutureGrid is a global world class test facility with the sole purpose of demonstrating the ability to transition our NTS to decarbonised energy. At the forefront of all the work we do is our focus on how we can repurpose existing assets that have been in natural gas service for many years, at the lowest possible cost to UK consumers.

To date, the programme has built the Phase 1 test facility (figure 12), demonstrating the ability of a wide range of our assets to be operated with hydrogen at blends including 2%, 5%, 20% and at 100% hydrogen. These outputs have fed into the critical evidence case submitted to the Health and Safety Executive (HSE). The facility provides a platform for testing hydrogen and exploring other opportunities such as Carbon Capture and Storage (CCS).

Beyond this, we are also exploring the opportunity for third parties to utilise the facility for additional testing, which provides commercialised opportunities and a return of revenue to UK consumers. The Phase 1 facility acts as a vital platform to generate key safety evidence for the NTS, at the lowest possible cost to UK consumers, by providing an efficient platform that can be developed to further suit testing needs.

Figure 12
The FutureGrid test facility at DNV Spadeadam in Cumbria

3.16 Innovation at the heart of everything (continued)

3.16.3 HyNTS Deblending for Transport

The HyNTS Deblending for Transport project focuses on demonstrating a future new industry where hydrogen refuelling stations are directly connected to the gas network. This will enable them to benefit from a secure supply of low-cost, high-purity hydrogen, helping to promote the hydrogen transport sector and serve the large-scale needs of rail, bus, heavy haulage, marine and aviation sectors.

Demonstration of this opportunity is vital to enabling hydrogen refuelling infrastructure and should be commenced now to align with the Industrial Cluster and Project Union activities.

Construction of the deblending facilities is underway with a hydrogen refuelling station and hydrogen vehicles already live on site for trials. Demonstration of the deblending activities is due to commence at the start of 2026 with continued stakeholder engagement and the production of a commercial requirements and strategy document ongoing throughout 2025 and into 2026.

More information on the Deblending for Transport project can be found in the 2025 Progress Report.

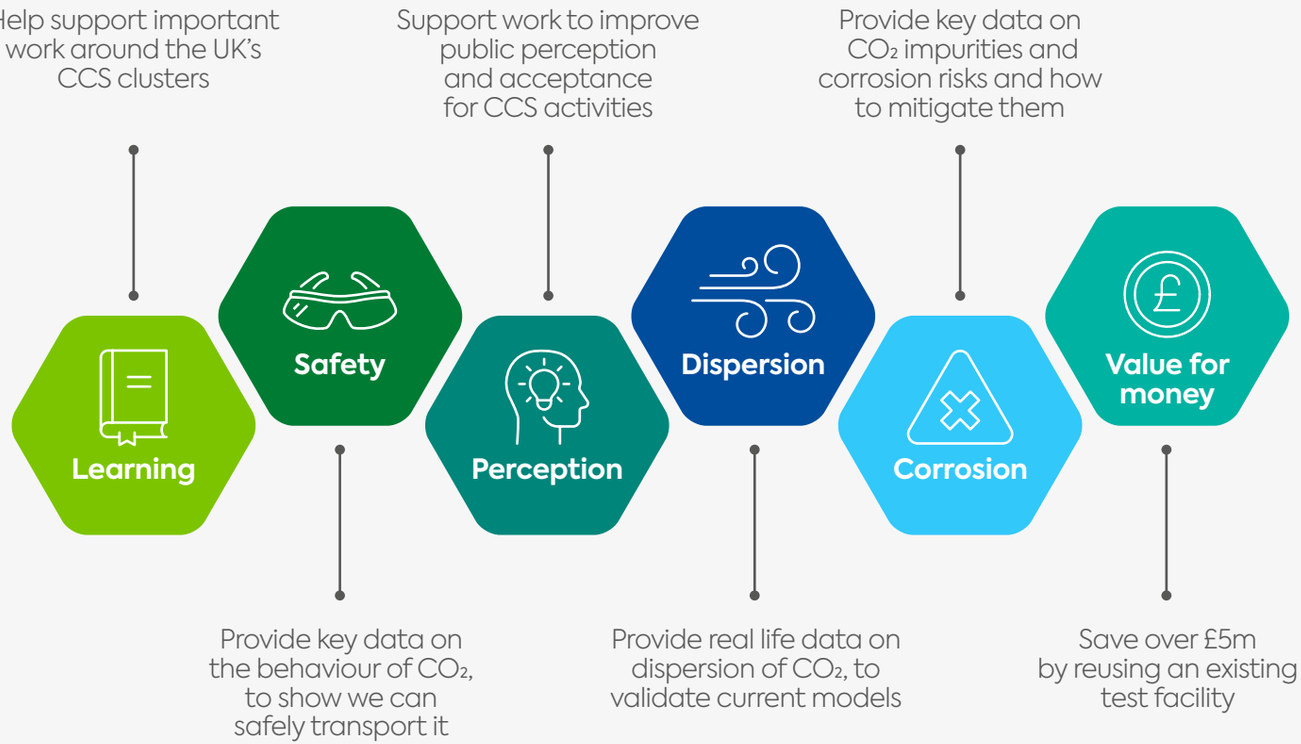
3.16 Innovation at the heart of everything (continued)

3.16.4 FutureGrid CO_2

Using the world-first high-pressure hydrogen test facility, made up of decommissioned transmission assets, to demonstrate the NTS can transport carbon dioxide safely and reliably.

Our FutureGrid CO_2 project will conduct a physical demonstration of our network's capability for CCS, by carrying out a series of tests at our existing test facility at DNV Spadeadam.

The project will:



3.16 Innovation at the heart of everything (continued)

3.16.5 Case study: Operational methodologies – Phase 1

Project reference:
NIA_NGT0222

Funding type:
Network Innovation Allowance (NIA)

Supplier(s):
DNV and Murphy's

Start date:
July 2024

End date:
June 2025

Project duration:
11 months

Innovation theme:
Asset development for risk mitigation

Project lead:
Matthew Hammond

Project description:

As a business, we currently use a suite of policies and procedures, both internal and external, to safely operate our gas transmission network.

The HyNTS programme helped establish baseline technical knowledge to understand how these policies and procedures will need to be updated, to enable the safe transportation of hydrogen in the NTS, as part of our decarbonisation plans.

The Operational Methodologies project built on this work by undertaking a thorough review of existing internal policies and operating procedures used across the whole organisation and gas transmission system, to gather the required evidence to update them using the HyNTS innovation portfolio or identify where new policies may be required.

This work was crucial to further building our knowledge on how we can repurpose our assets to meet net zero targets in a way that drives consumer value and maintains safety and resilience across our network.

We're following this work with a series of physical testing projects which form our HyNTS Operational programme, to make progress on the remaining evidence required.

3.16 Innovation at the heart of everything (continued)

3.16.6 Case study: Hydrogen repurposing process for the NTS

Project reference:
NIA_NGT0217

Funding type:
Network Innovation Allowance (NIA)

Supplier(s):
Pipeline Integrity Engineers (PIE)

Start date:
July 2023

End date:
March 2026

Project duration:
32 months

Innovation theme:
Materials and processing

Project lead:
Steve Johnstone

Project description:

As part of the work within FutureGrid Phase one, we undertook a review of the standards and procedures for maintaining and operating the network.

We're now focusing on developing a new process for repurposing our network assets to transport hydrogen. This project focuses on the development of this process.

There are two existing standards (TR/7 and TR/8) that are used in the uprating of natural gas assets. This refers to increasing the maximum operating pressure of the assets to improve their capacity to handle increased gas flow.

TR/7 addresses the technical assessments required to demonstrate it is safe to uprate. TR/8 is the accompanying management procedure.

This project uses the methodologies and assessment criteria set out in TR/7 to formulate a new process to support the repurposing of an existing natural gas system to hydrogen. Alongside this, TR/8 will be reviewed and used as a blueprint to formulate a new management procedure for a hydrogen system.

The repurposing approach and associated process will enable us to safely and efficiently transition our network to hydrogen.

3.17 ProjectUnion

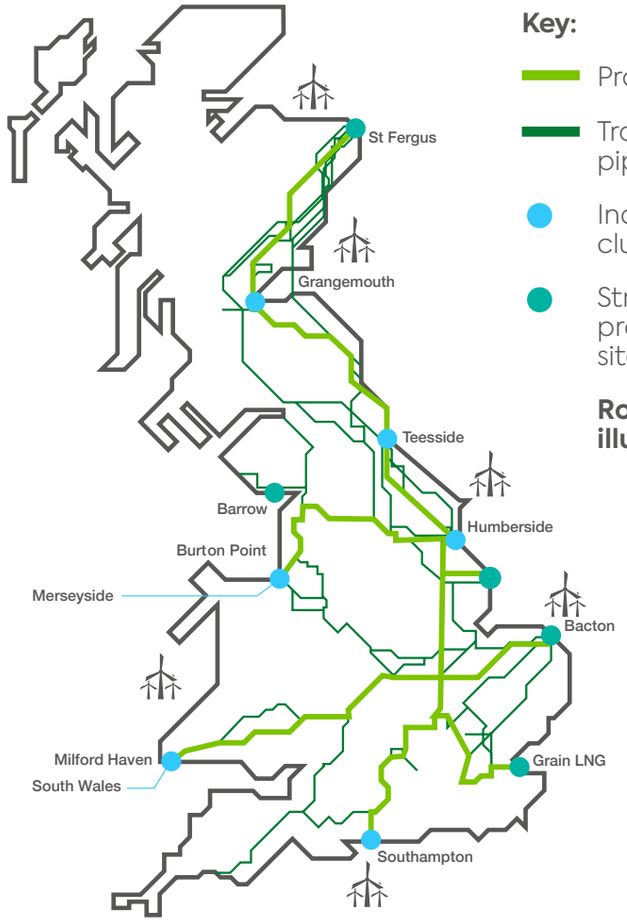
ProjectUnion is a pioneering project, led by National Gas Transmission (NGT), which will create a core hydrogen network for the UK, facilitating the transport of 100% hydrogen. By the mid-2030s, the network will connect strategic hydrogen production sites, industrial clusters, and hydrogen storage facilities, while serving major industrial customers and power generation sites directly, as well as through Gas Distribution Network (GDN) connections. Through a combination of repurposed existing assets and new infrastructure, a hydrogen network of up to 2,500 km will be created. A core hydrogen network will be at the heart of a net zero future, acting as a key enabler for developing a hydrogen economy and realising key UK Government targets.

Project Union will support a whole UK energy system approach to decarbonisation by providing critical resilience and flexibility to the electricity system during periods of low renewable electricity generation.

The Feasibility Phase, completed in 2024, delivered several key outputs, including the development of a Phasing Strategy that set out a staged approach to delivery, beginning with the East coast, and the completion of pre-FEED (Front-End Engineering Design) for the full hydrogen network, identifying hybrid and new-build routing options.

This phase also included market-enabling activities, such as work on regulatory frameworks, commercial models, and stakeholder engagement, addressing evidence gaps and ensuring operational readiness. These activities provided critical insights to inform subsequent FEED programmes, ensuring alignment with UK Government policy objectives and a robust evidence base for delivery.

Project Union will now take a phased approach to delivery starting in the East coast region. Project Union: East coast will provide hydrogen transmission infrastructure by connecting two of the largest industrial clusters, Teesside and Humber. In June 2025, Ofgem awarded funding through the Net Zero Pre-construction Work and Small Net Zero Projects (NZASP) reopener to progress FEED for Project Union: East coast, marking a critical step in the phased delivery of a core hydrogen network.



3.17 ProjectUnion (continued)

The supporting partners across several disciplines including FEED delivery, legal, communications and PMO were appointed in July 2025. This has enabled mobilisation of a two-year programme of work focused on developing conceptual designs, refining routing options identified during pre-FEED, and advancing land and consent processes. Alongside these technical activities, procurement planning and early stakeholder engagement have commenced to ensure alignment with the Phasing Strategy and regulatory requirements.

Based on the outputs of the Phasing Strategy, additional FEED funding requests for St Fergus to Teesside and North West phases were submitted and approved by Ofgem in November 2025. These FEED programmes will follow a similar two-year structure, ensuring consistency in design and delivery across all regions. This phased approach will enable the timely development of a core hydrogen network that connects key industrial clusters, enhances system resilience, and supports the UK's decarbonisation ambitions.

Project Union is committed to supporting the integration of clean power within the UK energy system. By enabling large-scale hydrogen transport and storage, Project Union will underpin the decarbonisation of power generation and facilitate the development of hybrid energy solutions, ensuring that hydrogen infrastructure works in synergy with clean electricity to deliver a secure, affordable, and sustainable energy future.

Progressing FEED studies represents a major step towards realising the ambition of a core hydrogen network that meets the needs of customers and stakeholders while aligning with UK Government policy targets. Through a combination of technical innovation, regulatory alignment, and stakeholder collaboration, Project Union will play a central role in enabling a whole-system approach to decarbonisation.

3.18 Clean Power 2030

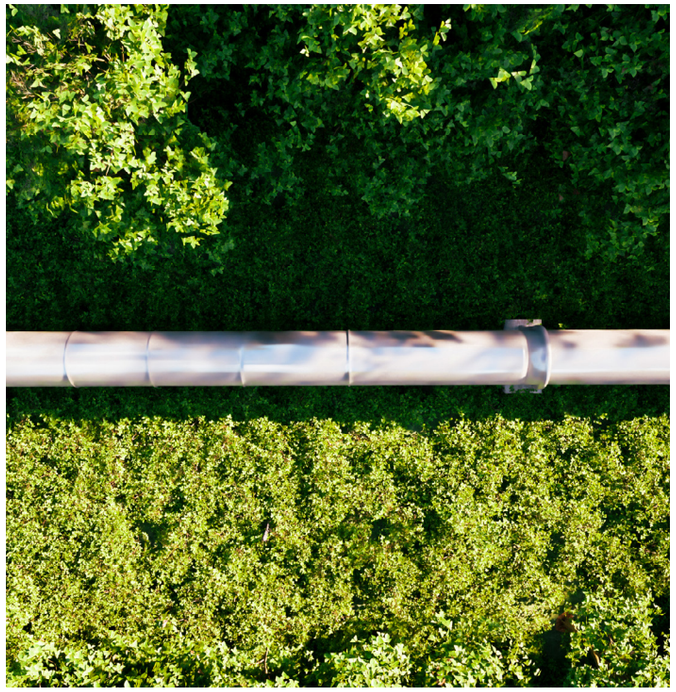
Our activities for Clean Power 2030 include working alongside DESNZ and NESO to support the Clean Power targets of 2030 through decarbonisation of the transmission system and ensuring flexibility and resilience.

We are running collaborative projects with the electricity transmission networks to review novel methods to enable flexibility across the energy system.

Hydrogen blending connections are being developed alongside HSE and DESNZ evidence review.

Biomethane connections on the NTS are being accelerated to enable a maximised volume of biomethane in the gas network.

Hydrogen and Carbon projects are looking to support future clean power requirements but are unlikely to meet the 2030 target.



PROTECT

Natural gas

Supporting dispatchable power generation by ensuring flexibility and resilience across the network

Low carbon gas

Biomethane and hydrogen blending enabled and accelerated alongside certification for power generation

GROW

Carbon capture

Capturing carbon emissions from power stations to enable continued use of natural gas and biomethane without emissions

Hydrogen

Enabling power stations to link to the core hydrogen network and decarbonise gas fired power stations

4. Contact us

Continuing the conversation

Continuing the conversation

Your feedback is really important to us.

Letting us know what you think of the information we share with you, and how we're sharing it, helps us shape our future communications to ensure we're communicating what matters most, in a way that suits you.

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Appendices/ supporting information

Appendix 1: Useful links

Capacity explained & methodologies
https://www.nationalgas.com/our-businesses/system-operation/capacity

Capacity reports
https://data.nationalgas.com/reports/capacity

Connections process
https://www.nationalgas.com/our-businesses/connections

Constraint management
https://www.nationalgas.com/our-businesses/system-operation/capacity/constraint-management

Entry capacity
https://www.nationalgas.com/our-businesses/entry-capacity

Exit capacity
https://www.nationalgas.com/our-businesses/exit-capacity

Gas customer hub
https://customerhub.nationalgas.com/s/

Gas data portal
https://data.nationalgas.com

Gas quality
https://www.nationalgas.com/our-businesses/gas-quality

Network maps
https://www.nationalgas.com/our-businesses/network-route-maps

Appendix 2: Import infrastructure

Table A2.1
Existing import infrastructure

Facility	Operator / Developer	Type	Location	Capacity (bcm/year)	Website
Interconnector	Interconnector	Pipeline	Bacton	21.2	https://www.fluxys.com/en/about-us/interconnector-uk
BBL Pipeline	BBL Company	Pipeline	Bacton	8.0	https://www.bblcompany.com/about-bbl
Isle of Grain 1-3	National Grid	LNG	Kent	26.5	https://www.nationalgrid.com/national-grid-ventures/grain-lng/operational-information
South Hook 1-2	Qatar Energy, ExxonMobil and TotalEnergies	LNG	Milford Haven	21.0	https://www.southhooklng.com/about/commercial/
Dragon 1	Shell / Petronas	LNG	Milford Haven	9.0	https://www.dragonlng.co.uk/2029capacity
Langeled	Gassco	Pipeline	Easington	26.3	https://www.norskpetroleum.no/en/production-and-exports/the-oil-and-gas-pipeline-system/
Vesterled	Gassco	Pipeline	St Fergus	14.2	https://www.norskpetroleum.no/en/production-and-exports/the-oil-and-gas-pipeline-system/
Tampen**	Gassco	Pipeline	FLAGS/St Fergus	9.9	https://www.norskpetroleum.no/en/production-and-exports/the-oil-and-gas-pipeline-system/
Gjoa**	Gassco	Pipeline	FLAGS/St Fergus	6.2	https://www.norskpetroleum.no/en/production-and-exports/the-oil-and-gas-pipeline-system/
			Total**	**138.3**	

**Both Tampen and Gjoa connect to FLAGS pipeline offshore. This limits total capacity of these pipelines and any UKCS gas to around 12.0 bcm/y.
https://www.shell.co.uk/business/oil-and-gas/segal-system

Appendix 3: Storage infrastructure

Table A3.2
Existing storage infrastructure

Site	Operator / Developer	Location	Space (mcm)	Approximate max delivery (mcm/d)	Website
Aldbrough	SSE/Equinor	East Yorkshire	295	29.9	https://www.ssethermal.com/energy-storage/aldbrough/
Hatfield Moor	Scottish Power	South Yorkshire	116	1.8	https://www.scottishpower.com/userfiles/file/Hatfield-Site-Information-2014.pdf
Hill Top Farm	Kistos Energy Storage	Cheshire	53	13.3	https://kistosplc.com/operations/hill-top-and-hole-house-uk/
Holehouse Farm*	Kistos Energy Storage	Cheshire	22	0.0	https://kistosplc.com/operations/hill-top-and-hole-house-uk/
Holford	Uniper	Cheshire	239	21.9	https://www.uniper.energy/united-kingdom/power-plants-in-the-united-kingdom/holford
Hornsea	SSE Hornsea	East Yorkshire	311	6.4	https://www.ssethermal.com/energy-storage/atwick/
Humbly Grove	Humbly Grove Energy	Hampshire	283	7.2	https://www.humblyenergy.co.uk/
Rough	Centrica Storage	Southern North Sea	1509	8.0	https://www.centrica.com/our-businesses/upstream/centrica-energy-storage-limited-cesplus/
Stublach	Storengy	Cheshire	402	27.3	https://www.storengy.co.uk/storengy-uk-stublach-site
		Total	**3229**	**115.8**	

Data Source: https://data.nationalgas.com/find-gas-data/view
Based on max values reported between 01/09/2025 and 06/11/2025
*Not Operational.

Glossary

List of glossary terms

Glossary

1-in-20 obligation
This is the highest level of gas demand that we should expect to experience only once in every 20 years. We are obliged to plan and develop the network to meet the 1-in-20 level.

Annual Network Capability Assessment Report (ANCAR)
This annual report contains an assessment of our Network Capability. Assessing our Network Capability enables us to calculate and demonstrate the physical capability of the NTS and how that capability compares to the needs of our customers now and into the future. This assessment is carried out against a range of future supply and demand scenarios using the Future Energy Scenario (FES) outputs produced by the National Energy System Operator (NESO). The output of this assessment helps inform potential changes to market rules, commercial tools or physical assets, to ensure continued safe and economic operation of the NTS in meeting our customers' needs.

Asset
Any physical part of the network and includes such things as compressors, pipelines, flow valves and regulators.

Asset Management Plan (AMP).
An AMP provides a view of how we will manage, maintain and invest in our assets in line with legislation and our regulatory requirements.

Aggregate System Entry Point (ASEP)
A System Entry point where there is more than one, or adjacent Connected Delivery Facilities; the term is often used to refer to gas supply terminals.

Bacton
Bacton manages a large volume of the nation's gas, and is a critical component of the gas transmission network now and going into the future. Bacton is a key dynamic swing node for a large subset of our customer base at an interdependent part of the network In addition, Bacton bridges GB with EU via two interconnectors (BBL and IUK), and controls flows into the South East to ensure security of supply for London and the west–east transit route for LNG into Europe.

Bcm
Billions of cubic metres. Unit or measurement of volume, used in the gas industry.
1 bcm = 1,000,000 cubic metres.

Best Available Techniques (BAT)
BAT assessments provide a balance between the costs to the operator against the benefits to the environment.

Biomethane
Biomethane is a naturally occurring gas that is produced from organic material and has similar characteristics to natural gas.

Carbon Capture and Storage (CCS)
Carbon (CO_2) Capture and Storage (CCS) is a process by which the CO_2 produced in the combustion of fossil fuels is captured, transported to a storage location and isolated from the atmosphere. Capture of CO_2 can be applied to large emission sources like power plants used for electricity generation and industrial processes. The CO_2 is then compressed and transported for long term storage in geological formations or for use in industrial processes.

Carbon Dioxide
Carbon dioxide (CO_2) is the main greenhouse gas and the vast majority of CO_2 emissions come from the burning of fossil fuels (coal, natural gas and oil).

Calorific Value
The ratio of energy to volume measured in megajoules per cubic metre (MJ/m3), which for a gas is measured and expressed under standard conditions of temperature and pressure.

Centralised Strategic Network Plan (CSNP)
The CSNP will provide an independent, coordinated and long-term approach to the GB transmission energy networks. The CSNP will be a framework of network planning across electricity, gas, and hydrogen vectors with specific outputs being released across the three year cycle. It will plan these networks in the best interests of consumers as the Great Britain transitions to net zero.

Glossary

Cold day
The supply or demand for the coldest day in an average (or seasonal normal) winter. The cold day is taken as day 1 of the Average Load Duration Curve, with calculations using weather history over the period 1960 – 2012.

Combined Cycle Gas Turbines (CCGT)
A combined-cycle power plant uses both a gas and a steam turbine together to produce up to 50% more electricity from the same fuel than a traditional simple-cycle plant. The waste heat from the gas turbine is routed to the nearby steam turbine, which generates extra power.

Commercial actions
Actions taken to balance the NTS, such as buying and selling gas either nationally or locally

Compressor
Compressors are used to move gas around the transmission network through high pressure pipelines. There are currently 71 compressors at 24 sites across the country. These compressors move the gas from entry points to exit points on the gas network. They are predominantly gas driven turbines that are in the process of being replaced with electric units.

COP26
The 26th UN Climate Change Conference of the Parties, held in 2021, where global leaders, including the UK ommitted to reducing methane emissions by 30% by 2030 under the Global Methane Pledge. It marked a key milestone in climate action and influenced UK gas sector strategies.

Constraint
A constraint is where the pressure or flow required to meet customer needs cannot be met by the physical capability of the network.

Critical National Infrastructure (CNI),
The UK's Critical Infrastructure is defined by the UK government as: "Those critical elements of Infrastructure (facilities, systems, sites, property, information, people, networks and processes), the loss or compromise of which would result in major detrimental impact on the availability, delivery or integrity of essential services, leading to severe economic or social consequences or to loss of life.

Cyber Security and Resilience (CSR) Bill
The Cyber Security and Resilience Bill is proposed UK legislation (due for introduction in 2026) aimed at strengthening the security and resilience of critical national infrastructure, including energy networks. It sets out requirements for organisations to manage cyber risks, implement robust security measures, and ensure continuity of essential services against cyber threats.

Department for Energy Security and Net Zero (DESNZ)
The UK government department responsible for energy policy, security of supply, and the transition to net zero. Formerly known as BEIS (Department for Business, Energy & Industrial Strategy), DESNZ oversees regulatory and strategic decisions affecting the gas and electricity sectors.

Distribution Network (DN)
A gas transportation system that delivers gas to industrial, commercial and domestic consumers within a defined geographical boundary. There are currently eight DNs, each consisting of one or more Local Distribution Zones (LDZs). DNs typically operate at lower pressures than the NTS.

Dry Low Emissions (DLE)
An Avon DLE retrofit modifies the combustion system within the Avon engine so that air and fuel are premixed before combustion. This reduces the peak combustion temperature, which in turn reduces the amount of NOx produced.

Electricity (power) generation
Electricity generated by the burning of gas.

Emission legislation
Emissions legislation relates to The Industrial Emissions Directive (IED), which is the mandatory minimum emission standard that all European countries must comply with by 2023. The IED aims to prevent and reduce harmful industrial emissions, while promoting the use of techniques that reduce pollutant emissions and that are energy and resource efficient. The EU Withdrawal Act 2018 maintains established environmental principles and ensures that existing EU environmental law will continue to have effect in UK law, including the IED.

Entry terminals
These terminals allow gas supply to enter the NTS.

Glossary

Exit points
Exit points are where gas exits the NTS e.g. to industrial users or to local infrastructure to provide gas to domestic homes.

Export
Gas demand on the NTS from interconnectors to continental Europe or the island of Ireland.

Front End Engineering Design (FEED)
The FEED is basic engineering which comes after the Conceptual design or Feasibility study. The FEED design focuses on the technical requirements as well as an approximate budget investment cost for the project.

Future Energy Scenarios (FES)
The FES is a range of credible futures which has been developed in conjunction with the energy industry. They are a set of scenarios covering the period from now to 2050 and are used to frame discussions and perform stress tests. They form the starting point for all transmission network and investment planning, and are used to identify future operability challenges and potential solutions.

Final Option Selection Report (FOSR)
Engineering justification paper aiming to secure funding from Ofgem that confirms the preferred option to solve an issue and the reasoning why that option was selected.

FutureGrid
A National Gas innovation programme and a global world class test facility with the sole purpose of demonstrating the ability to transition our National Transmission System (NTS) to decarbonised energy.

Gas Demand Forecasting Methodology (GDFM)
Our Gas Demand Forecasting Methodology (GDFM) document is produced to provide a general overview of the methods used by National Gas to calculate peak day demand forecasts and load duration curves. Day-ahead and within-day gas demand forecasting use a separate methodology.

Gas fired generation
Electricity generated by the burning of gas.

Gas Network Capability Needs Report (GNCNR)
This is a biannual statutory report produced by the National Energy System Operator (NESO) under the Gas System Planner Licence (sections 8.4–8.10). It outlines NESO's assessment of the National Transmission System's (NTS) capability and identifies any shortfalls or emerging requirements that may necessitate changes to the NTS over both five and ten year horizons and out to 2050.

Gas Options Advice (GOA)
This is a biannual document which NESO produce under the Gas System Planner Licence. It uses the outputs of SPOP and NESO's own options to carry out an assessment to arrive at a recommendation to Ofgem for the best value option to meet the capability needs identified in GNCNR.

Gas Safety (Management) Regulations 1996 (GS(M)R)
Regulations which apply to the conveyance of natural gas (methane) through pipes to domestic and other consumers and cover four main areas:

(a) the safe management of gas flow through a network, particularly those parts supplying domestic consumers, and a duty to minimise the risk of a gas supply emergency;

(b) arrangements for dealing with supply emergencies;

(c) arrangements for dealing with reported gas escapes and gas incidents;

(d) gas composition.

Gas Transporters are required to submit a safety case to the HSE detailing the arrangements in place to ensure compliance with GS(M)R requirements.

Glossary

Gas Safety (Management and Amendment) Regulations 2023 (GS(M)(A)R)
A set of legal regulations that govern the safe management of gas transported through UK gas networks. The 2023 GS(M)(A)R regulations amend the original 1996 GS(M)R and place duties on UK gas transporters including limits on the quality of gas for conveyance to ensure safe combustion and protect infrastructure. National Gas constantly monitors the quality of gas entering the NTS to comply with these requirements.

GW
Gigawatts. Unit or measurement of power, used in the gas industry. 1 GW = 1,000,000,000 watts

Health and Safety Executive (HSE)
The HSE regulates the onshore pipeline operators to maintain and improve the health and safety performance within the industry.

Hybrid heating systems
The term refers to a system that uses a heat pump alongside another heat source. Typically, it describes fitting a heat pump alongside a fossil fuel (gas, oil or LPG) boiler.

HyNTS (Hydrogen in the NTS)
HyNTS is a programme of work that seeks to identify the opportunities and address the challenges that transporting hydrogen within the National Transmission System (NTS) presents. This will unlock the potential of Hydrogen to deliver the UK's 2050 Net Zero targets.

Hydrogen
Hydrogen is a clean alternative to methane, also known as natural gas. It's the most abundant chemical element, estimated to contribute 75% of the mass of the universe. Here on earth, while it's present in nearly all molecules in living things, it's very scarce as a gas – less than one part per million by volume. Hydrogen can be produced from a variety of resources, such as natural gas, nuclear power, biogas and renewable power like solar and wind.

HyNTS Deblending for Transport
HyNTS Deblending for Transport focuses on the delivery of high purity hydrogen from blended gas networks to enable delivery to transport applications, enabling hydrogen infrastructure to be provided more quickly and with greater resilience.

Industrial Emissions Directive (IED)
The main EU instrument regulating pollutant emissions from industrial installations. The IED was adopted on 24 November 2010. The IED aims to achieve a high level of protection of human health and the environment taken as a whole by reducing harmful industrial emissions across the EU, in particular through better application of Best Available Techniques (BAT).

Interconnector
A pipeline transporting gas to another country. The Irish Interconnector transports gas across the Irish Sea to both the Republic of Ireland and Northern Ireland. The Belgian Interconnector (IUK) transports gas between Bacton and Zeebrugge. The Belgian Interconnector is capable of flowing gas in either direction. The Dutch Interconnector (BBL) transports gas between Balgzand in the Netherlands and Bacton. It is currently capable of flowing only from the Netherlands to the UK.

ISO 55001 framework
ISO 55001 is an asset management system standard, the main objective of which is to help organizations manage the lifecycle of assets more effectively. By implementing ISO 55001 organizations will have better control over daily activities, achieve higher return with their assets, and reduce the total cost of risk.

Linepack
The volume of gas stored within the National Transmission System at any time.

LNG
Natural Gas that has been converted to liquid form for ease of storage or transport. It is formed by chilling gas to -161°C so that it occupies 600 times less space than in its gaseous form

Managed Service Providers
Managed Service Providers are third-party organisations that design, deliver and/or manage services, infrastructure or security for IT and OT assets on behalf of a business under a contractual agreement. They help ensure operational effectiveness, efficiency and resilience by providing specialised expertise and support.

Glossary

Maximum Operating Pressure (MOP)
This is the maximum pressure that each section of the NTS can operate at and is relevant to connected NTS Exit and NTS Entry Point Terminals.

Medium Combustion Plant Directive (MCPD)
The requirements for the MCPD are detailed in Pollution Prevention and Control (Scotland) (Amendment) Regulations 2017 that came into force 19 December 2017 and for England and Wales in the Environmental Permitting (England and Wales) (Amendment) Regulations 2018 that came into force 29 January 2018.

Methane
Methane (CH4) is a hydrocarbon that is a primary component of natural gas. Methane is also a greenhouse gas (GHG), so its presence in the atmosphere affects the earth's temperature and climate system. Methane is a short-lived climate pollutant with an atmospheric lifetime of around 12 years. While its lifetime in the atmosphere is much shorter than carbon dioxide (CO_2), it is much more efficient at trapping radiation. Per unit of mass, the impact of methane on climate change over 20 years is 86 times greater than CO_2; over a 100-year period it is 28 times greater.

Mtpa
Million Tonnes Per Annum. A unit of measurement used to express the annual production or transport capacity of materials, such as Liquefied Natural Gas (LNG).

Multi-Junctions
Strategically located sites on the National Transmission System (NTS) where multiple pipelines converge and gas flows are managed. Multi-junctions enable flexible routing of gas across the network, support system resilience, and facilitate operational balancing and pressure control.

Network Innovation Allowance (NIA)
A funding mechanism introduced by Ofgem under the RIIO price control framework to support smaller-scale innovation projects by network licensees. It enables research, development, and early-stage trials that deliver environmental, operational, and consumer benefits, helping networks transition to net zero.

Network and Information Systems (NIS) Regulations
The Network and Information Systems (NIS) Regulations is a regulation aimed at raising levels of cyber security and resilience of key systems, came into force in the UK in May 2018. The Department for Science, Innovation & Technology (DSIT) is the lead government department for NIS.

National Transmission System (NTS)
A high pressure gas transportation system consisting of compressor stations, pipelines, multijunction sites and offtakes. Pipelines transport gas from terminals to offtakes. The system is designed to operate at pressures up to 94 barg.

Network Asset Risk Metrics (NARMs)
Network Asset Risk Metrics (NARMs) is an Ofgem regulatory framework that monetises the risk associated with gas transmission assets. It quantifies the benefit to consumers of a company's asset management activities by measuring risk reduction in financial terms. and serves as a key output metric under the RIIO-GT3 price control regime, ensuring investments reduce network risk and maintain safety and reliability.

Network capability
This refers to the physical capability of the NTS i.e. how much gas can be transported throughout the system on a given day.

Norway / Norwegian Continental Shelf (NCS)
Gas supplied to the NTS via pipelines from Norway.

National Energy System Operator (NESO)
The National Energy System Operator (NESO) is an independent, public body responsible for the long-term planning and day-to-day operation of the electricity system in real-time, as well as long-term strategic planning for gas. It provides insights and recommendations for the future of the whole energy system to government and regulators.

Original Equipment Manufacturer (OEM)
A company that designs and manufactures equipment or components that are used in National Gas infrastructure. OEMs provide the original parts, systems, or machinery, such as compressors, valves, or control systems used in the construction and maintenance of the National Transmission System (NTS).

Glossary

Office of Gas and Electricity Markets (Ofgem)
The UK's independent National Regulatory Authority, a non-ministerial government department. Their principal objective is to protect the interests of existing and future electricity and gas consumers.

Peak day capability
This refers to the maximum level of supply capability of the NTS

Peak demand
This is a 1-in-20 demand which means that statistically, in a long series of winters, it would be exceeded in one out of 20 winters. The 1-in-20 peak day is calculated from a statistical distribution of simulated historical peaks days. It is not the highest demand in the last 20 years, nor is it the demand that would be expected in the cold weather experienced in the last 20 years.

Physical capability
The maximum amount of gas that the network can physically flow at specific locations without going outside any of its pressure obligations, or equipment's safe operational tolerances

Planning and Advanced Reservation of Capacity Agreement (PARCA)
Developer and / or NTS Users (Shippers or Distribution Network Operators 'DNOs') can reserve firm NTS capacity through the Planning and Advanced Reservation of Capacity Agreement (PARCA) process. A PARCA is a bilateral contract that allows entry and/or exit capacity to be reserved for the customer while they develop their own projects.

Process Duty Specifications (PDS)
Technical document that defines the specific operational and performance requirements for a compressor within a particular industrial process. These were produced internally to incorporate compressor re-wheel requirements before they are sent to the OEM to check viability.

Physical Security Scope of Works (PSSW)
The Physical Security Scope of Works (PSSW) upgrade programme is a DESNZ led national programme that commenced in RIIO-T1 (previously known as the Physical Security Upgrade Programme - PSUP) to enhance physical security at critical sites.

Regulatory Reporting Pack (RRP)
The RRP is a set of data templates and guidance used to collect performance information from energy network licensees. It is a tool for Ofgem to monitor companies' costs, volumes, and output delivery against their price control objectives and hold them accountable.

Renewable
Forms of energy generation from renewable resources, which are naturally replenished, such as sunlight and wind.

Resilience
Resilience is the ability of the network to recover from unforeseen conditions such as asset failure. If, at a compressor site, there is a back-up unit, the site resilience is much higher.

RIIO-T1
RIIO-1 relates to our Business Plan covering 2013-2021. Ofgem's performance-based RIIO model seeks to ensure consumers get the necessary investment in Britain's energy networks at a fair price. RIIO stands for Revenue = Incentives + Innovation+ Outputs. Companies have to meet performance targets, set in consultation with consumers and network users: failure to do so brings automatic penalties.

RIIO-T2
The RIIO-T2 period is 2021 to 2026. Ofgem's performance-based RIIO model seeks to ensure consumers get the necessary investment in Britain's energy networks at a fair price. RIIO stands for Revenue = Incentives + Innovation + Outputs. Companies have to meet performance targets, set in consultation with consumers and network users: failure to do so brings automatic penalties.

RIIO-GT3
The RIIO-T2 period is 2026 to 2031. Ofgem's performance-based RIIO model seeks to ensure consumers get the necessary investment in Britain's energy networks at a fair price. RIIO stands for Revenue = Incentives + Innovation + Outputs. Companies have to meet performance targets, set in consultation with consumers and network users: failure to do so brings automatic penalties.

Glossary

SCO_2T Connect
A National Gas project to design, construct, own and operate onshore pipelines that link CO_2 emitters in Scotland's central belt to offshore geological storage at St Fergus, enabling large-scale Carbon Capture and Storage (CCS) and supporting the UK's net zero targets. Offshore pipeline and storage assets will be owned/operated by the Acorn Project.

SGT-A20 unit
Rolls Royce (Siemens) gas turbine engine which forms part of the compressor machinery train and is subject to MCPD.

Shale
Shale is a fine-grained, sedimentary rock formed as a result of the compaction of clay, silt, mud and organic matter over time and is usually considered equivalent to mudstone. Shale gas is natural gas found in shale deposits. This natural gas is a mixture of naturally occurring hydrocarbon gases produced from the decomposition of organic matter (plant and animal remains). Typically, shale gas consists of 70 to 90 per cent methane (CH4). This gas can be used for generating electricity and for domestic heating and cooking.

Single Value Framework (Copperleaf)
A tool to allow objective comparisons to be made around different types of investments, helping to highlight and quantify all the benefits of each investment in order to understand which offers best value, even if the investments are very different.

Strategic Planning Options Proposal (SPOP)
This is a biannual report produced by us according to the Special Conditions of the NGT Gas Transporter Licence (sections 9.10.9–9.10.14). It is our best view of the physical and commercial options which could be utilised to meet the capability need/s identified in GNCNR. Due to the nature of the information it contains it is not currently a public document.

The Network and Information Systems (NIS)
The Network & Information Systems (NIS) Regulations, aimed at raising levels of cyber security and resilience of key systems across the EU, came into force in the UK in May 2018. The Department for Digital, Culture, Media & Sport (DCMS) is the UK government department responsible for NIS.

TR/7
There are two existing standards that are used in the uprating of natural gas assets. This refers to increasing the maximum operating pressure of the assets to improve their capacity to handle increased gas flow. TR/7 addresses the technical assessments required to demonstrate it is safe to uprate.

TR/8
There are two existing standards that are used in the uprating of natural gas assets. This refers to increasing the maximum operating pressure of the assets to improve their capacity to handle increased gas flow. TR/8 is the management procedure that accompanies TR/7.

Transmission System Operators (TSO)
Transmission System Operators (TSOs) are organisations responsible for operating, maintaining, and developing high-pressure gas transmission networks. They ensure the safe, reliable, and efficient transport of gas across regions, balancing supply and demand while complying with regulatory and market requirements.

UK Continental Shelf (UKCS)
UKCS is made up of the areas of the sea bed and subsoil beyond the territorial sea over which the UK exercises sovereign rights of exploration and exploitation of natural resources.

Uncertainty Mechanism (UM)
Uncertainty mechanisms (UMs) exist to allow price control arrangements to respond to change. They protect both end consumers and licencees from unforecastable risk or changes in circumstances.

Uniform Network Code (UNC)
The legal and contractual framework that governs the arrangements for the transportation and balancing of gas across the gas transmission and distribution networks in Great Britain. It sets out the rights and responsibilities of gas transporters and shippers, and is maintained by the Joint Office of Gas Transporters.

UNC Gas Quality Workgroup
An industry working group, created in January 2025 and chaired by the Joint Office of Gas Transporters that progresses gas quality related UNC Modifications and issues.

Glossary

UNC Modification 0870
A UNC Modification that enabled amendment of the lower limits for Wobbe Index and Calorific Value at certain NTS system entry points. Approved by Ofgem in March 2025, this modification enabled implementation of the change to Wobbe Index that was implemented in the GS(M)(A)R at entry terminals that wished to do so.

UNC Modification 0882
A change to the Uniform Network Code (UNC) that introduces enhanced transparency when National Gas receives requests for non-standard gas quality parameters from developers of new NTS entry points. It aims to be more consistent with the rules for consultation at existing sites, whilst not impacting the connection process timelines adversely.

Wobbe Index
The Wobbe Index is a key gas quality parameter that measures the interchangeability of fuel gases. It is calculated by dividing the calorific value of the gas by the square root of its relative density.

Legal notice

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