

May 2025

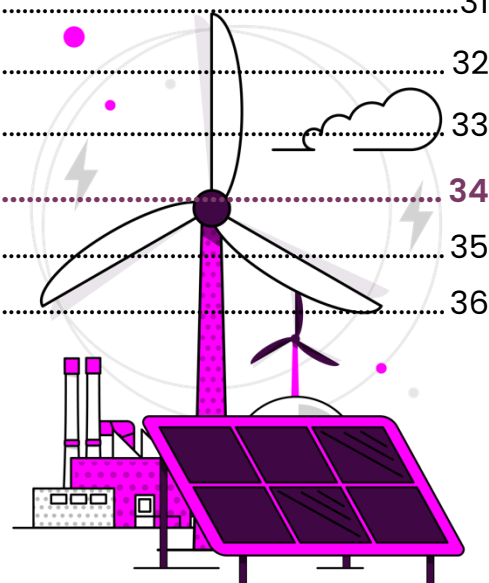
Gas Options Advice Methodology

Consultation



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Executive Summary

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

NESO is built on the strong foundations of the Electricity System Operator (ESO), taking on additional responsibilities to serve as an independent and impartial public body responsible for advising the government on the entire energy system.

Our role involves strategic network planning across electricity, gas, and new vectors such as hydrogen, adopting a holistic approach to decarbonising the whole energy system. NESO now serves as Great Britain's gas strategic network planner, with specific obligations outlined in its gas system planner licence¹.

The Gas Network Capability Needs Report (GNCNR), our first gas publication, set out our independent view of GB's gas transmission system's capability to meet current and future network requirements. The findings within the GNCNR will be used by National Gas Transmission (NGT), the National Transmission System (NTS) owner, to propose network reinforcement options in the Strategic Planning Options Proposal (SPOP). We will then evaluate any proposed reinforcement options and create a Gas Options Advice (GOA) document.

The GOA will complete the two-year gas planning cycle, where gas network capability needs are identified in the first year, and network reinforcement options are developed and assessed in the second year. The outputs from this cycle support Ofgem in making decisions on funding and progression of asset interventions for the NTS.

The intent of the GOA document is for NESO to give an independent assessment of NGT's proposed reinforcement options for the NTS. It can also, where appropriate, present alternative options to Ofgem.

In this consultation document, we present our approach to the analysis of NTS reinforcement options and seek your feedback on the methodology of the GOA document. The consultation closes on **3 June 2025**. All views received will be considered, and where appropriate we will use them to develop our methodology. We will submit our methodology to Ofgem and publish it later in the year, with the GOA document available by 31 December 2025.

When assessing the proposed options, we will review the economic (capital and operational costs), environmental, social, and deliverability aspects of a proposal. This approach will help us to determine the most suitable investment options that is aligned with our vision: creating a world where everyone has access to reliable, clean and affordable energy.

¹ [NESO's Gas System Planner licence conditions](#)



We are seeking your feedback on the proposed assessment approaches that we will use to develop our detailed GOA methodology. Throughout the document, we have highlighted the questions where we would welcome your feedback. You can share your views by completing this [pro-forma](#) and sending your response to gwend@neso.energy by **11:59pm on Tuesday 3 June 2025**.

1. About this consultation

Introduction

How to respond

Our assessment approach

What happens next





Introduction

NESO has published this consultation document to seek feedback on the methodology of the Gas Options Advice document 2025.

The GOA document, to be published by 31 December 2025, will assess investment proposals from NGT, GB's gas transmission owner and operator. NGT will suggest proposals that will meet the network's capability needs, using findings from the GNCNR. Published in December 2024, GNCNR provides NESO's independent view of the GB gas network's capability. The publication of GNCNR and GOA, and our interactions with Ofgem, NGT and stakeholders, complete the two-year gas network planning cycle.

GOA will help guide the shape of the future gas system, as specified in NESO's gas system planner licence². GOA will consider system needs against value for money, helping to safeguard the environment whilst ensuring system resilience, and consumer benefits are realised.

The methodology we are now consulting on formulates the backbone of the GOA document. It will define what we will assess, and how we approach the investment proposals. We wish to invite all members of the public to provide feedback on our methodology. By working closely with stakeholders via this consultation, we can ensure the gas system can be designed and built according to the system's needs.

GB is taking a strategic, long-term approach to network planning in response to an ever-changing energy landscape. Together, we can shape the future of energy for the better: meeting increasing energy demand, the requirements for greater security, and a low-cost, fully decarbonised energy system.

How to respond

The consultation is now open to the public and will close at 11:59pm on Tuesday 3 June 2025.

To share your views, please complete this [pro-forma](#), and send your response to gwend@neso.energy by **11:59pm on Tuesday 3 June 2025**.

Please note that we may use your responses in a future webinar unless they are marked as confidential. You will be given the option to make your response confidential at the beginning of the form.

If you have any questions about the consultation process, other additional comments or queries, please contact us at: gwend@neso.energy.

² [NESO's Gas System Planner licence conditions](#)



Our assessment approach

Chapter 4: Assessment approach in this document defines the scope and criteria of the assessment and explains in detail the four approaches we are considering. We will recommend options by comparing their net present value (NPV). NPV is calculated by assessing the four aspects of a given proposal: its direct economic impacts (capital and operational costs), environmental impacts, social impacts, and project deliverability.

A glossary is included from page 34 to explain technical terms.

What happens next

After the consultation closes on 3 June 2025, your views will be taken forward to refine our methodology. In summer, we will publish the final methodology followed by a webinar, where we will provide a high-level overview of the methodology, and explain how feedback is being used in the methodology development.

We will publish the GOA document by 31 December 2025.

In parallel, NESO will also seek input on the high-level principles of integrating gas, through our existing gas reports (GNCNR and GOA), into a coordinated whole-system strategic plan – the Centralised Strategic Network Plan (CSNP). The CSNP aims to accelerate the development of the Government’s net zero ambitions. It will consist of a collection of plans focusing on electricity transmission network planning, developments in natural gas transmission, and in the future, hydrogen network planning. The first CSNP is due to be published by the end of 2027.

Figure 1 is showing the different delivery timelines for GOA and CSNP, with the publications being developed in parallel. For this reason, we are seeking feedback for each separately.

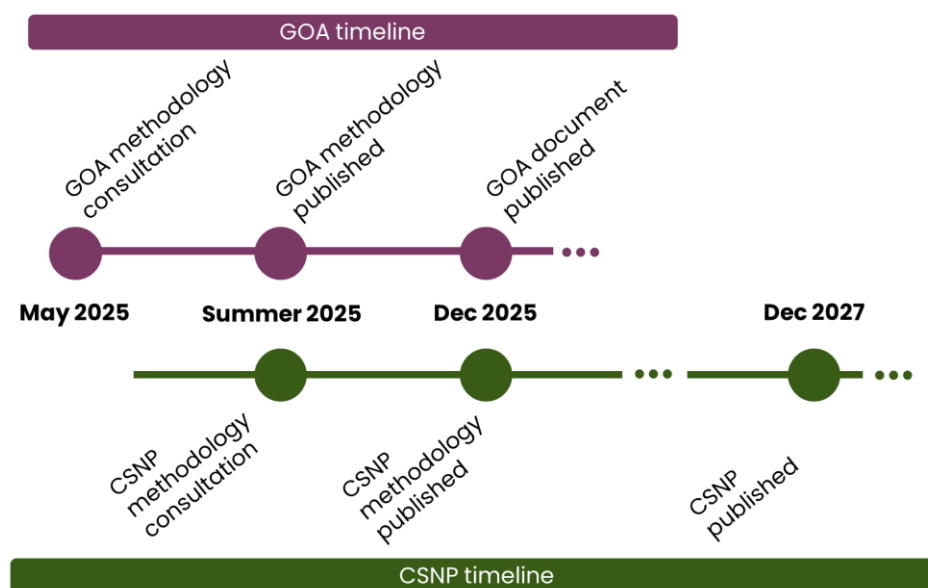


Figure 1 GOA and CSNP delivery timelines

2. NESO and the gas planner role

Introduction to NESO and the gas planner role





Introduction to NESO and the gas planner role

The UK's 2023 Energy Act set the legislative framework for an independent system operator and planner to help accelerate GB's energy transition, leading to the establishment of NESO.

An independent, public corporation at the centre of the energy system, NESO takes a whole system view to create a world where everyone has access to reliable, clean and affordable energy. Our work will be the catalyst for change across the global community, forging the path to a sustainable future for everyone.

Working in partnership with Government, Ofgem, industry and consumers, we take a long-term approach to planning GB's energy networks that identifies whole energy system needs and ensures that the system can be designed and built accordingly.

Our role involves strategic network planning across electricity, gas, and new vectors such as hydrogen, adopting a holistic approach to decarbonising the whole energy system. NESO's Strategic Energy Planning (SEP) programmes are being consulted on and developed to cover electricity, hydrogen and gas energy systems.

Now serving as GB's gas strategic network planner, NESO works collaboratively with NGT, who own and operate the NTS, to support strategic planning decisions on the gas transmission network. As per our gas system planner licence, we produce two publications consecutively: the GNCNR and the GOA³.

Tackling climate change is truly the challenge of our generation; addressing energy security, sustainability and affordability for everyone are at the forefront of our thinking as we drive to meet net zero. It is NESO's job to transform the whole energy system to meet these challenges and transition to a low-carbon future, embracing new technologies and cleaner generation sources, always with the cost to the consumer in mind.

Our three statutory duties are:

		
Net zero	Efficiency & Economy	Security of Supply
enabling the government to deliver on its legally binding emissions targets	promoting efficient, coordinated, and economic electricity and gas networks	ensuring security of supply for current and future consumers of electricity and gas

³ More information on what we do, GNCNR and GOA: neso.energy/what-we-do/strategic-planning/gas-network-capability-needs-report-gncnr

3. Gas network planning

The gas network planning cycle

Gas Options Advice overview





The gas network planning cycle

Our gas strategic network planning obligations are set out in condition C8 of our gas system planner licence⁴. These new obligations form part of the two-year gas network planning cycle, carried out in collaboration with NGT, the NTS System Operator.

The cycle begins with us identifying the NTS system physical capability needs through the GNCNR. Based on these findings, NGT will develop the Strategic Planning Options Proposal (SPOP) to propose reinforcement options, which we then assess in the GOA document.

The purpose of this two-year network cycle is to identify gas transmission network needs and drive the development and assessment of network reinforcement options.

This cycle is illustrated in Figure 2 and described in more detail below.

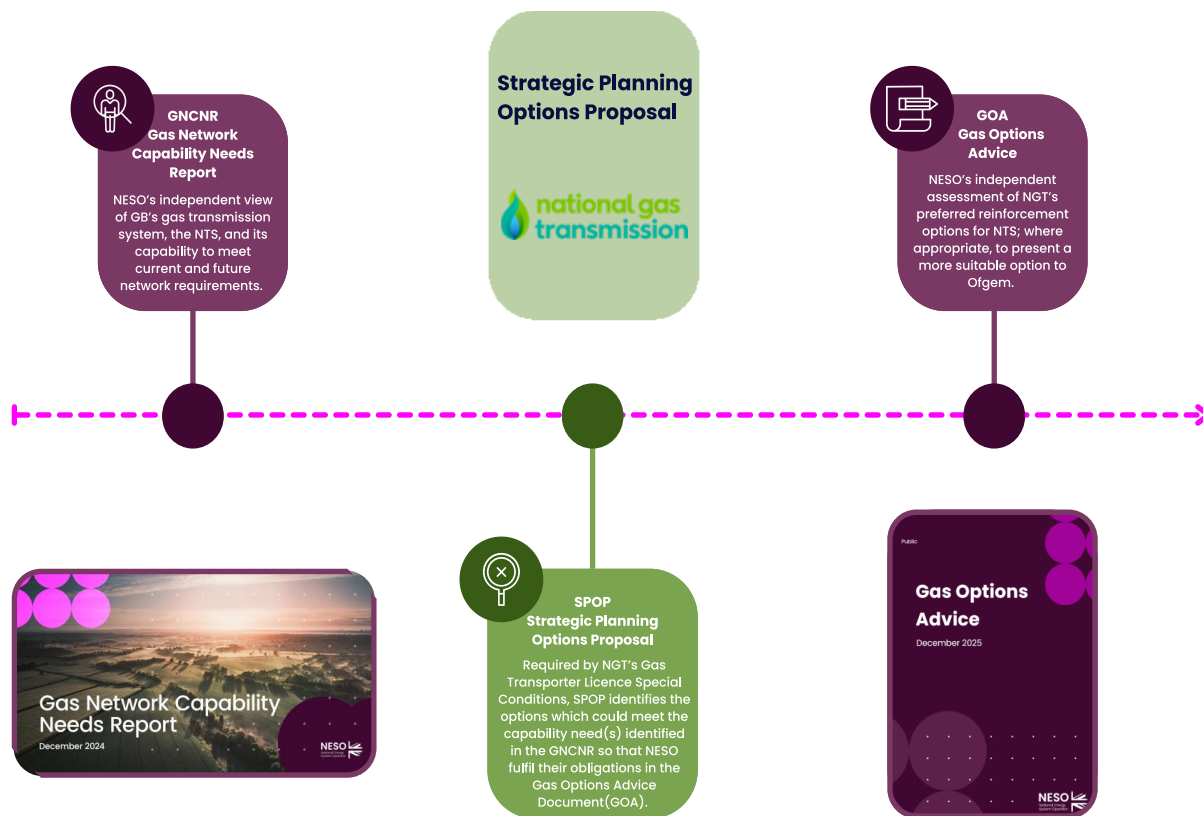


Figure 2 Gas network planning cycle

In December 2024, we published the GNCNR which was our first gas publication based on these new licence conditions. The GNCNR gives an independent view of GB's gas transmission system, the NTS, and its capability to meet current and future network requirements.

⁴ [NESO's Gas System Planner licence conditions](#)



The analysis carried out in GNCNR 2024 shows that the NTS has sufficient capability to continue to operate safely, with the probability of gas network constraints reducing in the future except for South Wales. The probability of network constraints remains very low over the next 10 years.

If you want to see more detail on the GNCNR 2024 report and its associated documents, you can access them on our website at neso.energy/what-we-do/strategic-planning/gas-network-capability-needs-report-gncnr

The SPOP is NGT's response to the capability needs identified by NESO in the GNCNR. This is required as per special condition 9.10 of NGT's Gas Transporter Licence.

The purpose of the document is to identify the options that could meet the capability needs identified in the GNCNR. Such options may involve construction, expansion, reinforcement, repurposing, replacement or decommissioning. NGT will present a range of options with a cost estimate, physical specifications, technical criteria, and estimated deliverability for each option. NGT will also calculate the impact on the physical network capability that each option creates once implemented.

Should NGT's views differ from those in the GNCNR, these differences and their implications will be documented.

NGT is obligated to share the SPOP with NESO and Ofgem by 30 June 2025 and every subsequent two years.

Once these options are proposed, NESO will analyse them to recommend a preferred option that is either an option presented in SPOP or a new option that NESO believes is a preferred option. The outcomes of this will be published in the GOA document by the end of 2025.

We have engaged with NGT and Ofgem to form a view of how the SPOP and the GOA will interact with each other, ensuring that the outputs of our analysis can inform Ofgem's decisions on funding and progression in response to network needs.

As we continue with our work throughout this two-year cycle, our assessment will be underpinned by regular engagement with the relevant stakeholders. Whilst we value and consider external views for the development of our methodology and assessment, our advice and analysis will ultimately remain independent.

The intent of the GOA document is for NESO to give an independent assessment of NGT's proposed reinforcement options for the NTS. It can also, where appropriate, present alternative options to Ofgem. Our licence condition requires us to state a recommendation for which options should be progressed further. This information then supports Ofgem in decisions on funding and progression of asset interventions for the NTS.

Although we provide recommendations for the options to meet the NTS's needs, Ofgem or other relevant parties will ultimately decide on the investments made.



GOA overview

The GOA is the third deliverable within the overall gas network planning cycle and represents the last stage of the process detailed under condition C8 of our gas system planner licence. The GOA is required to be published by 31 December 2025 and every two subsequent years thereafter.

GOA's purpose

The purpose of GOA is to set out, as far as is reasonably practicable:

- Our view of the drivers for change to the NTS, considering security standards, gas supply and demand requirements, deliverability, and entry and exit capacity obligations.
- Our view of the suitability of proposed investment options that could meet any needs identified in the GNCNR.

The options assessed in the GOA could be proposed either by NGT in the SPOP or be put forward by NESO. Such options can involve no or minimal construction, expansion, reinforcement or replacement of the NTS. In addition, options that relate to rules, codes, and legislation that underpin the regulatory framework or operation of pipeline systems may be considered, as well as options related to the practices, services and commercial arrangements within the energy market.

The assessment can be carried out on either a single option or a combination of options and will support the NTS capability requirements for entry capability, exit capability, or a combination of both.

The GOA publication will offer recommendations along with an explanation of how the conclusions were reached.

Should our view of the physical capability needs of the NTS have changed or updated since the publication of the GNCNR, these changes will be clearly stated in the GOA. Focus will be placed on any significant system needs changes that could impact NESO's view of the options and the recommendations put forward.

Our analysis will also consider other arrangements or agreements with other parties regarding the development of the NTS, where there is a long-term impact on the NTS.

The GOA will provide a detailed analysis of each investment proposal based on the economic, environmental, social and deliverability aspects, with more details found in the following chapter. NESO and NGT might hold different views on the proposals put forward. Those material differences will be identified along with their implications in the GOA document.



Due to the sensitive nature of the commercial proposals, as specified in C8.16, we will take due care to exclude any information that may affect the commercial interests of the owner of the information. All relevant information will be shared with the regulator to enable them to make the necessary decisions.

4. Assessment approach

Introduction

Capital and operational costs

Environmental impacts

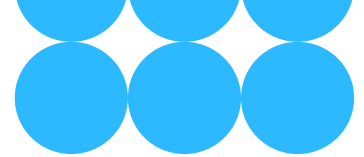
Social impacts

Deliverability

Method

Options





Introduction

Through GOA, we will carry out an unbiased assessment of all investment options put forward by NGT. Those proposals are created to meet each identified shortfall in capability. This evaluation will result in the recommendation of the preferred solution.

We will discuss below our initial proposal of the GOA assessment scope, criteria, methods and options. We welcome your views on the relative merits of the approaches outlined in this chapter. Your input will be used in the development of the GOA methodology.

We consider each option by assessing these four aspects:

- direct economic impacts (capital and operational costs),
- environmental impacts,
- social impacts, and
- deliverability.

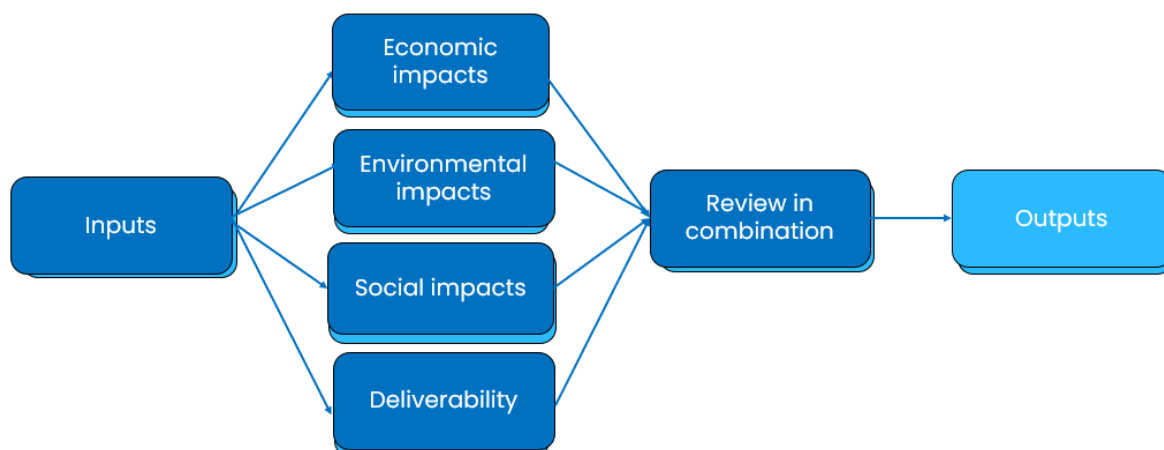
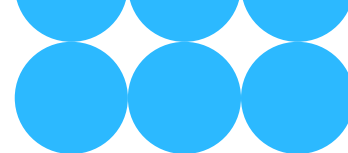


Figure 3 High level view of the options assessment process

We describe in detail the criteria are covered under these assessments in the subsequent sections.



In-scope assessment criteria

The listed items are currently the criteria in-scope to be included in our assessment. The following sections provide a detailed explanation of each criteria.

ASSESSMENT CATEGORIES	DESCRIPTION
Capital costs	Costs associated with the design, planning, building and decommissioning (at the end of the assumed operational life) of the investment options
Operating costs	Costs associated with the operation and maintenance of the investment options
Network constraint costs	Costs that NGT incur when gas flows on the NTS are constrained
Environmental impacts	Environmental cost of emissions that are incurred as part of an investment option
Social impacts	Consider to what extent can these options ensure network security of supply, promote and maintain safety for the consumer
Deliverability	Consider the likely complexity in implementing the option, together with any known challenges concerning the proposal's geographical location and whether it is reliant on any unproven technology.

Table 1 In-scope criteria to be included in the GOA assessment



Capital and operational costs

Capital and operational costs associated with an option are assessed to further understand the financial costs of an option over its expected life (the direct economic impacts of a given proposal).

When assessing the direct costs of an investment option, we will consider:

- Capital investment costs for installing any new assets on the NTS
- Capital investment costs for removing (decommissioning) redundant assets on the NTS
- Expenditure associated with operating and maintaining both new and existing assets. This could include changes to both fixed operational costs as well as variable costs, such as fuel.

Where an option requires installing new assets, we seek to include the cost of decommissioning the assets from the NTS at the end of their assumed operational life. Our assessment will reflect the decommissioning costs either in this year's publication or the future iteration, when we deem it appropriate. The time when such a decommissioning could occur (the end of asset life) is currently uncertain.

The lifespan of gas network assets is dependent on the pace of progress towards net zero and its corresponding implications for the NTS. For example, the future of any proposed new assets may partly depend on whether they would be needed for future hydrogen applications, post-2050.

We will revise our assumption on when to include asset decommissioning costs periodically as the energy transition progresses.

Q: Do you agree with our cost input to assess the economic impacts (please include any details to support your opinion)?

Q: Should we consider decommissioning costs in this year's assessments?

Q: What other cost factors do you think we should consider?



Environmental impacts

Any investment option that involves a change to the physical makeup of the NTS could have some local and wider environmental impacts, as a result of the construction itself and of longer-term effects from installed assets and changes to the operation of the network.

NESO is committed in its advisory role to providing its best view of the relative merits of each proposed option, whilst minimising any detrimental effects on the environment. We are aligned with the Government's commitment to the protection and enhancement of the environment.

Environmental assessments enable us to evaluate the potential impact that investment proposals could have on the environment, and to compare options based on their relative impact.

It should be acknowledged that at the early appraisal stage, options under consideration are defined at a broad level. We expect decisions on the required location and detailed design will come at a later stage of the investment cycle.

We do not consider that the GNCNR or the GOA will impose an obligation on any other party, and they are not intended to have any status in planning⁵. We therefore do not consider it necessary to undertake a Strategic Environmental Assessment (SEA) or a Habitats Regulation Assessment (HRA), although we note that these are expected to be integral components of our electricity network planning covered CSNP.

Our assessment of environmental impacts therefore encompasses:

- Key environmental factors that have a defined cost, namely the categories of emissions (including CO₂) that we will detail later in this section, and
- A general view of the likely scale of environmental issues that may arise and their potential consequences for the viability of an option

The second assessment relates to the potential location of new assets, which includes considering both environmental and social impacts. We will develop a scoring matrix to weigh up those factors and review them in combination with other aspects. This review method is presented in the Deliverability section.

In-scope

We propose the following elements to be included in our environmental assessment:

- **CO₂ equivalent emissions (CO_{2e})** – this is a metric used to compare the emissions of greenhouse gases based on their global warming potential (GWP). It has been designed to standardise the effects of different greenhouse gases on climate change. CO_{2e} represents the amount of CO₂ that would have the same warming effect as a given amount of another greenhouse gas. On the NTS, gas turbine compressors release CO₂ during operation.

⁵ 'Planning' in the sense of the Planning Act 2008 or the Town and Country Planning Act 1990



- **Fugitive methane emissions** – should these not be included as CO₂e or in the social cost of carbon, they will be captured separately in our assessment. Fugitive methane emissions are the unintentional release of methane in the atmosphere from equipment over time; this can happen during the production, processing, storage, and transportation of natural gas and other hydrocarbons.
- **NO_x emissions** – these represent a group of chemical compounds known as nitrogen oxides which are significant air pollutants and are considered greenhouse gases.

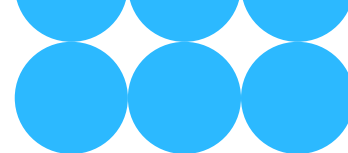
We will use the Treasury Green Book guidance⁶ to quantify the cost of environmental impacts, particularly with regard to the cost of carbon emissions or NO_x emissions.

In the following Deliverability section, we will also consider how known features in the geographical area of proposed assets may create challenges for the implementation of the option, and this consideration will take account of environmental factors such as Areas of Outstanding Natural Beauty (AONBs), Site of Special Scientific Interest (SSSI), and larger protected habitats that could pose a significant restriction on siting or routing of assets.

Q: Do you agree with the inclusion of the above emissions in our assessment?

Q: What other environmental impacts should we consider?

⁶ gov.uk/government/collections/the-green-book-and-accompanying-guidance-and-documents



Social impacts

Social impact assessments include the process of analysing and appraising the consequences of investment proposals on communities or society. This considers both the positive and negative impacts that result from these options.

The NTS provides an ongoing benefit to the consumer by enabling a safe and secure supply to homes and businesses. For our social impact assessment, we will consider whether proposals ensure that NGT maintains a resilient and secure gas supply.

We recognise there could be a social cost of carbon emissions. They will be considered in our environmental impact assessment.

As we discussed in the Environmental Impacts section, the geographical area of a proposed option could also lead to certain social impacts that make the option challenging to implement. Our deliverability matrix seeks to cover the social impact assessment as such.

NESO is subject to the Public Sector Equality Duty⁷. It is incumbent on us to consider the impact of any options on protected characteristics – age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, including ethnic or national origins, colour or nationality, religion or belief, and sexual orientation. Whilst we do not expect any significant impacts on any of the protected characteristics, we will carefully consider them.

In-scope

We are currently considering the following elements to be included in our environmental assessment, and we welcome your views on their applicability to our evaluation of options:

- **Security of supply** – the assessment of the options will need to consider whether and how the options deliver a safe and secure network.

Q: Do you agree with our approach to assessing security of supply (please include details that support your opinion)?

Q: Are there any other factors we should consider delivering a safe and secure network?

Q: What other social impacts do you think we should consider?

⁷ <https://www.gov.uk/government/publications/public-sector-equality-duty>



Deliverability

To carry out the deliverability assessment, we apply a framework against each option, considering a range of factors including the supply chain of technologies, construction complexity and consenting challenges (geographical considerations). Assessing the proposal's deliverability at a strategic level allows us to recommend options that could be delivered in a timely and practical way.

The ranking below provides an overview of the approach used. Deliverability rank is determined by comparing the feasibility of each proposal.

	Complexity	Geographical Considerations	Technology
	Highly complex design unlikely to be deliverable. The design is subject to a high likelihood of constraints and risks affecting the construction to such a degree that the option should not be considered further.	The option would be unlikely to be implemented without incurring significant extra costs and delays due to very large areas of population or multiple sensitive areas (AONB/SSSI) located in proximity.	New technology that has not been used before beyond testing. Would need further justification to ensure compliance with safety legislation.
	Design that features some complex elements that may be challenging to deliver. The design is subject to constraints that are likely to affect construction to such a degree that the option should not be included without potential solutions identified.	The option would be very difficult to implement or incur significant extra costs or delays, due to large areas of population or sensitive areas (AONB/SSSI) located in proximity.	Emerging complex technology, with uncertainty on longevity.
	Design of moderate to significant complexity, with constraints or risks which may impact some construction. Design is likely to be achievable and issues are capable of resolution.	The option may be implemented with some challenges to avoid significant areas of population or sensitive areas (AONB/SSSI etc.) located in proximity.	Proven mature technology that is used by equivalent Gas Transmission System Operators, but not on the NTS.
	Design of low to moderate complexity. The design is subject to a low likelihood of constraints affecting construction. Option very likely to be achievable in the time stated.	The option should be achievable, with minimal or no areas of population or sensitive areas (AONB/SSSI etc.) located in proximity.	Proven mature technology already used on the NTS.

Q: Do you agree with our approach to assessing deliverability (please include details that support your opinion)?

Q: What other factors do you think we should consider in assessing deliverability?



Method

We will assess the proposed options against their economic, environmental, social and deliverability aspects and integrate them for comprehensive evaluation.

These investment proposals and other intervention options are developed to reduce current and probable future network constraints⁸. Constraint costs will occur if NGT cannot meet its contractual obligations at supply and demand points on the NTS. If they occur, those costs could impact consumer bills.

Some intervention options could favourably counterbalance the constraint costs. Those options may include commercial contracts to manage the location of supplies and demands, code changes, or physical changes to the makeup of the network.

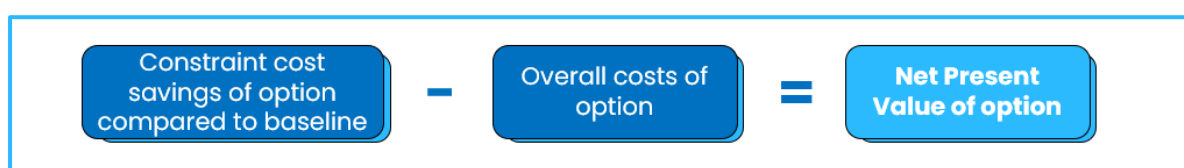
By recommending suitable solutions to ease network constraints, GOA will reduce the incidence and cost of constraints on the NTS, delivering consumer benefits.

We will compare two sets of costs against the baseline: option costs and constraint cost savings. The baseline is the “do nothing” option, where there is no asset change or other intervention to mitigate constraints. The desirable option(s) will have low overall costs and high constraint cost savings against the baseline.

Using net present values

For each investment option considered, the main analysis output will be what is known as a ‘net present value’. The method will compare different options by their value over the assumed lifetime of the proposed newly built assets. The NPV method considers factors such as inflation, annualisation of capital expenditure, time taken to implement options, impacts on network capability. If the benefits of an option outweigh the cost of an option over its lifetime, it will have a positive NPV and therefore more desirable. All options will be compared to the baseline.

The net present values for each option in the economic assessment will be calculated by:



Note on asset life assumption

The ‘operational life’ is a crucial factor within the calculations of the economic assessment to understand the whole life cost of an investment in new assets. Key assets installed on the NTS (e.g. compressors, pipes and valves) are usually assumed to have a design life of 40 to 50 years. However, given the commitment of net zero by 2050, there is a large degree of uncertainty in assessing any new asset value to the consumer beyond this

⁸ More details on constraints can be found in the [GNCNR 2024](#), where we identify constraint scenarios using our network modelling and probabilistic tools, based on the FES data



point. As the FES data does not extend beyond 2050, it is not possible to assess the constraint risk beyond this point using FES data.

For this reason, we will ordinarily assume that the useful life of any proposed new assets ceases in 2050, except where there is a clear indication that the assets will continue to provide additional value beyond this point in terms of constraint reduction. For example, if a sensible extrapolation of the FES net zero pathways or Counterfactual beyond 2050 indicates flows that would continue to produce instances of constraint on the base network, we would consider extending the assumed asset life beyond 2050 as appropriate to calculate the full value of any proposed investment options.

Q: What is your view on the approach to assuming new asset life?

Economic assessment: General NPV method

We will choose one approach among the four proposed in this consultation for the GOA assessment. The NPV of each option is assessed over a set period, and its value is influenced by factors ranging from economic, environmental, social to deliverability.

Subject to the FES pathway or Counterfactual used in the assessment, the NPV of the same option could be different. We believe both FES net zero pathway(s) and Counterfactual need to be considered in our assessment to minimise the impact to security of supply.

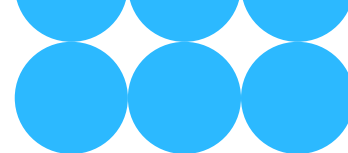
For example, if we only consider the net zero pathways by excluding the Counterfactual, it introduces an uncertainty associated with the decarbonisation of heat demand should electrification of heating not happen where and when it is expected. This risk could mean that the gas network is inadequately sized or insufficiently reliable to provide appropriate levels of safety and security.

Comparing options against the baseline

Changes in the gas transmission network are driven by either a shortfall or excess in network capability in a particular zone (in the present and into the future). In general, a shortfall may be offset via construction of new assets, whereas an excess may present opportunities to decommission assets and thereby reduce operational expenditure.

To assess options that are designed to meet the network capability needs, we begin by establishing our reference (baseline case) where we assume there is no intervention planned to change network capability (the do-nothing option). Constraints in the relevant zone can be found in the GNCNR 2024.

For the baseline and for each option we calculate the cost of any constraints. The constraint cost for each option is compared with the baseline value, and any reduction is defined as a **benefit**. The increase in total expenditure versus the baseline case is also calculated for each option and this is defined as the **cost** of the option. For the baseline and each option, the costs and benefits will be discounted at a social discount rate/social time preference rate, over the period to 2050. The resultant net value for each option and the baseline is defined as the NPV in each case.



The following summarises the elements used in the NPV calculation:

- **Option costs** – this includes any build costs, operating costs, decommissioning costs, environmental, social costs, or the cost of commercial contracts with third parties that will reduce constraints.
- **Constraint costs from each option** – they are calculated by determining the network capability impact of each option under the FES pathways and the Counterfactual.
- **Baseline constraint costs** – It is the situation where there is no intervention on the NTS (the 'do nothing' option).
- **Constraint cost savings** – they are calculated by comparing the constraint costs from one option to the baseline constraint costs
- **Option costs compared to the baseline** – they are calculated by comparing options costs to the baseline costs (which equals zero due to no interventions)

The recommended option(s) will have the highest NPV across the FES pathways or the Counterfactual considered. Table 2 provides an example calculation. The different approaches for how NESO could then use these calculated NPVs to determine a preferred option, are detailed in the next section.



Illustrative example

The following illustrative tables show how a recommended option emerges from the relative NPV calculations as described in the steps above⁹. In this example, option 2 (highlighted in green) is the preferred option, as it has the highest NPV relative to the baseline.

	Option costs (£)	Constraint costs under Counterfactual (£)
Baseline	0	200
Option 1	50	150
Option 2	90	30
Option 3	60	180

	Option costs compared to baseline (£)	Constraint cost savings to baseline (£)	NPV relative to baseline option (£)
Option 1	-50	50	0
Option 2	-90	170	80
Option 3	-60	20	-40

Table 2 Illustrative example of general NPV method

Q: Do you agree with our overarching approach (please include any details that support your opinion)?

Q: What else would you want us to consider in the NPV method?

⁹ Baseline constraint costs (top right) will be based on the FES pathway or Counterfactual included in the assessment approach chosen



Options

We are proposing four approaches to calculating the NPV of investment proposals. Table shows the potential approaches to carrying out our assessment.

APPROACH	DESCRIPTION
APPROACH 1	NPV under the Counterfactual only
APPROACH 2	NPV under FES net zero pathways and the Counterfactual
APPROACH 3	NPV under the FES Holistic Transition pathway and the Counterfactual
APPROACH 4	Least Worst Regret (LWR) under FES net zero pathways and the Counterfactual

Table 3 Proposed economic assessment approaches

Key message:

Our preferred approach is approach 3: NPV under the FES Holistic Transition pathway and the Counterfactual

Q: Do you support our preferred approach (please include any details to support your opinion)?

Q: If you prefer other approaches: what is your choice and why?

Approach 1: NPV under the Counterfactual only

In this approach, the preferred investment option has the highest NPV relative to the baseline. All values are calculated under the Counterfactual only.

NPVs are also calculated for each investment option against the three FES net zero pathways to understand the possible impact of each pathway (the potential 'regret'). The 'worst regret' for each option is defined by the highest regret value across all FES net zero pathways and the Counterfactual.

Our recommended investment option will have the highest NPV under the Counterfactual. The possible regrets under the rest of the FES net zero pathways are provided for reference only.



Approach 2: NPV under FES net zero pathways and the Counterfactual

In this approach, the preferred investment option has the highest NPV relative to the baseline. All values are calculated under FES net zero pathways and the Counterfactual.

The worst regret will be calculated for each option, for reference. The 'worst regret' is defined by the highest regret value across all FES net zero pathways and the Counterfactual.

Our recommended investment option will have the highest NPV all FES net zero pathways and the Counterfactual. The possible regrets of other options are detailed for reference only.

Approach 3: NPV under the FES Holistic Transition pathway and the Counterfactual

In this approach, the preferred option has the highest NPV relative to the baseline. All values are calculated under the FES Holistic Transition pathway and the Counterfactual.

The worst regret will be calculated for each option for reference. The 'worst regret' is defined by the highest regret value across all FES pathways and the Counterfactual.

Our recommended investment option will have the highest NPV value across the FES Holistic Transition pathway or the Counterfactual. The possible regrets of other options are detailed for reference only.

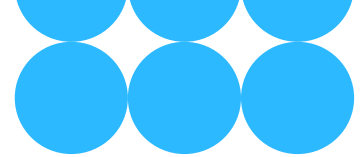
Approach 4: Least Worst Regret (LWR) under FES net zero pathways and the Counterfactual

In this approach, the preferred option has the 'Least Worst Regret' (LWR) across all FES net zero pathways and the Counterfactual, with equal weightings on probability assigned to the net zero pathways and the Counterfactual.

We will calculate the NPV relative to the baseline for each investment option under each FES pathway.

For each option, the 'regret' is defined by the difference between the NPV for that option and the option with the highest NPV under the FES net zero pathways and the Counterfactual. The 'worst regret' is calculated by taking the highest 'regret' value for each option.

Our recommended investment option will have the lowest 'worst regret'.



Illustrative example

The table below illustrates how different approaches could change our recommendation of investment options.

	<i>Approach 1</i>	<i>Approach 2</i>	<i>Approach 3</i>	<i>Approach 4</i>
<i>Proposal X</i>	Most recommend	3 rd recommend	Least recommend	2 nd recommend
<i>Proposal Y</i>	Least recommend	2 nd recommend	Most recommend	3 rd recommend
<i>Proposal Z</i>	3 rd recommend	Most recommend	2 nd recommend	Least recommend

Table 4 Illustrative example of different assessment results under the four approaches proposed

5. Stakeholder engagement

Our stakeholder engagement approach

GOA Engagement timeline

Stay in touch





Our stakeholder engagement approach

We will deliver meaningful and transparent engagement that instils confidence in GOA. We will consider all stakeholder input from this consultation, acting as an impartial voice for gas network planning.

We have identified a range of stakeholders that have varying levels of interest in GOA. As we are developing the methodology, we will engage with stakeholders via consultation, webinars and bilateral conversations.

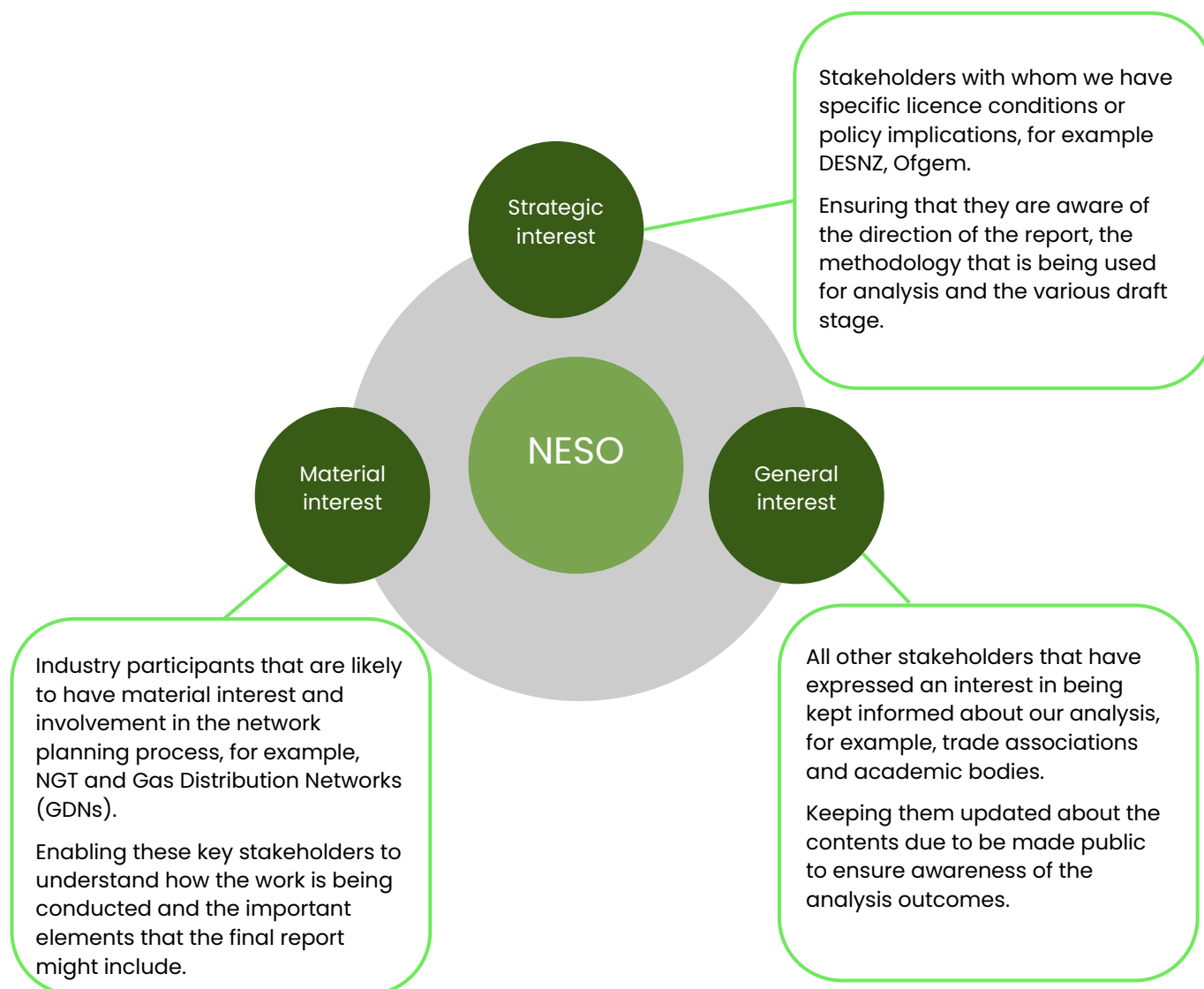


Figure 4 Stakeholder engagement approach

Q: How can we make engagement more accessible?



Engagement principles

The following will define our stakeholder engagement:

- **Timely and transparent:** we will engage early, and our process, methodology, and stakeholder approach will be transparent. We will make it clear to stakeholders how we will consider their feedback and how they can shape the plan, while adhering to the confidential nature of the work where appropriate.
- **Proactive engagement:** we will identify stakeholders with interest or expertise in energy planning whose inputs could materially improve the plan. We will update our stakeholders proactively on new and changing information via our regular stakeholder groups and public communications.
- **Action feedback:** we will consider all feedback from our stakeholders during the engagement process. In the main, we will group feedback under themes and share how we have considered and addressed these themes. We will be candid with stakeholders that we will not be able to action all feedback we receive. This could be for a variety of reasons, like some views conflicting with the aims of the plan. Finely balanced trade-offs will need to be made. A clear explanation will be provided for any feedback that is not used.
- **Coordinated engagement:** where we can, we will align stakeholder engagement activity across NESO's SEP activity, aiming to be as efficient as possible with stakeholders' time. We will build on relationships formed during other strategic planning activities and explain to stakeholders how the SEP projects all fit together.
- **Tailored engagement:** we will ensure our engagement is accessible and at the right level for our diverse range of stakeholders, who all have different experiences in the energy sector and network planning. We will regularly seek feedback to understand if the engagement is working for stakeholders so we can improve.

GOA Engagement Timeline

As illustrated below, we will be engaging with stakeholders via regular touchpoints throughout the GOA development.

If you want to shape the future of gas network with us, please respond to this consultation **by 11:59pm on Tuesday 3 June 2025**. Send your [response form](#) to gwend@neso.energy.

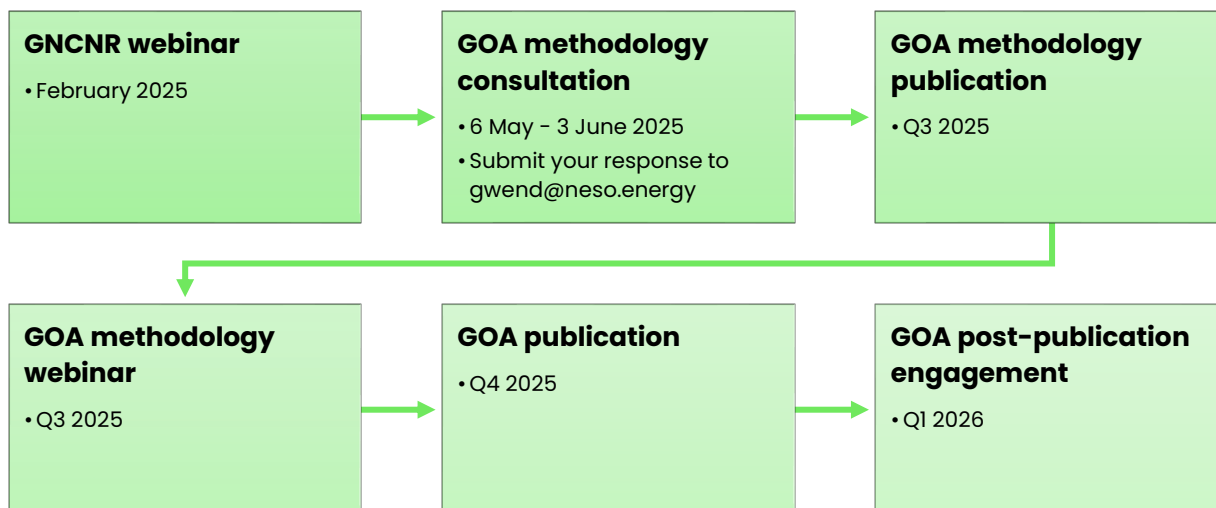


Figure 5 Stakeholder engagement timeline for GOA 2025

Stay in touch

NESO communicates with its stakeholders in a timely, transparent, and proactive manner. To hear the latest updates from SEP, and/or gas network planning, you can tailor your communication preferences by:

Strategic energy planning (gas network planning included)

- Subscribe to NESO Newsletter: neso.createsend.com/h/d/918820CF9659BD06
- Follow us on LinkedIn: linkedin.com/company/neso-energy/posts/?feedView=all

Gas network planning

- Send email to: gwend@neso.energy

6. Glossary

Glossary

Legal notice





Glossary

Acronym	Description
AONB	Areas of Outstanding Natural Beauty
CO ₂	Carbon dioxide
CO _{2e}	CO ₂ equivalent emissions
CSNP	Centralised Strategic Network Plan
FES	Future Energy Scenarios
GNCNR	Gas Network Capability Needs Report
GOA	Gas Options Advice
GWP	Global warming potential
LWR	Least Worst Regret
NGT	National Gas Transmission
NPV	Net Present Value
NTS	National Transmission System
SEP	Strategic Energy Planning
SPOP	Strategic Planning Options Proposal
SSSI	Site of Special Scientific Interest

Legal notice

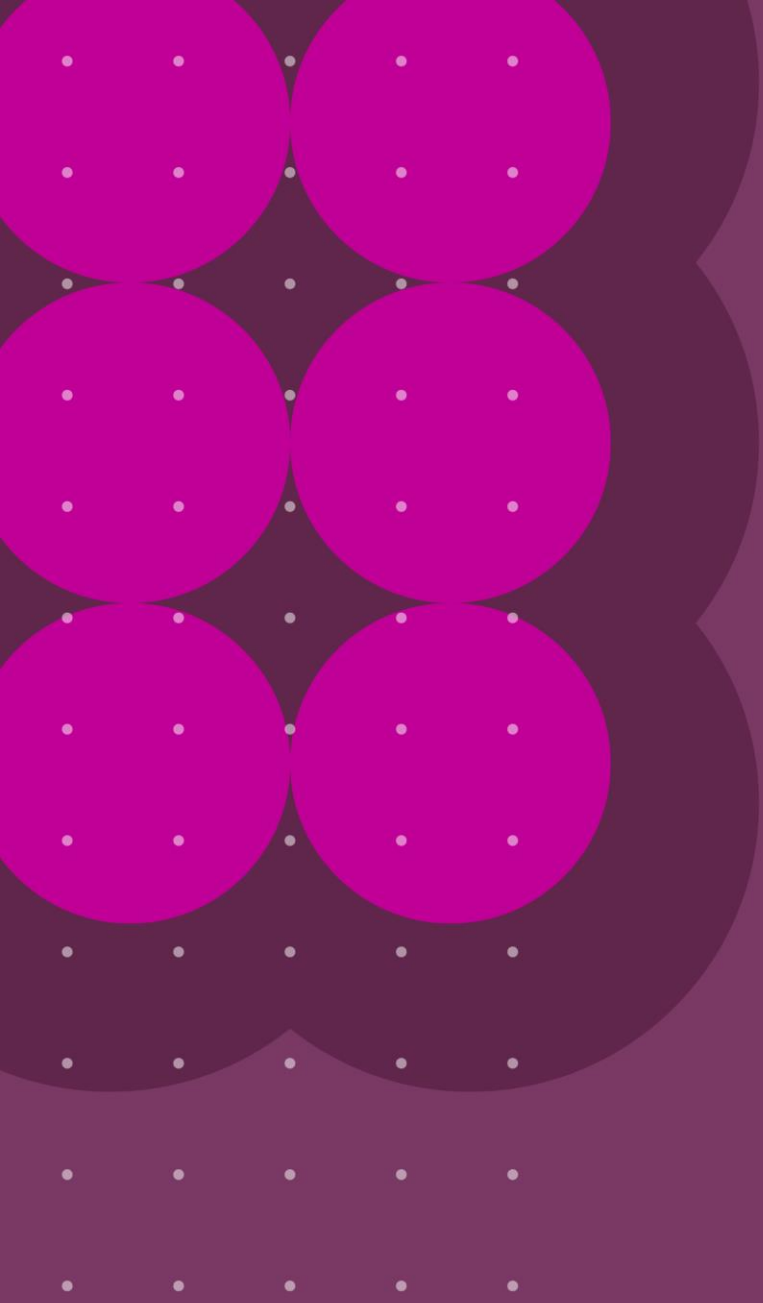
For the purposes of this report, the terms “NESO”, “we”, “our”, “us” etc. are used to refer to National Energy System Operator Limited (company number 11014226).

NESO has prepared this report pursuant to its statutory duties in good faith and has endeavoured to prepare the report in a manner which is, as far as reasonably possible, objective, using information collected and compiled from users of the gas and electricity systems in Great Britain, together with its own forecasts of the future development of those systems.

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