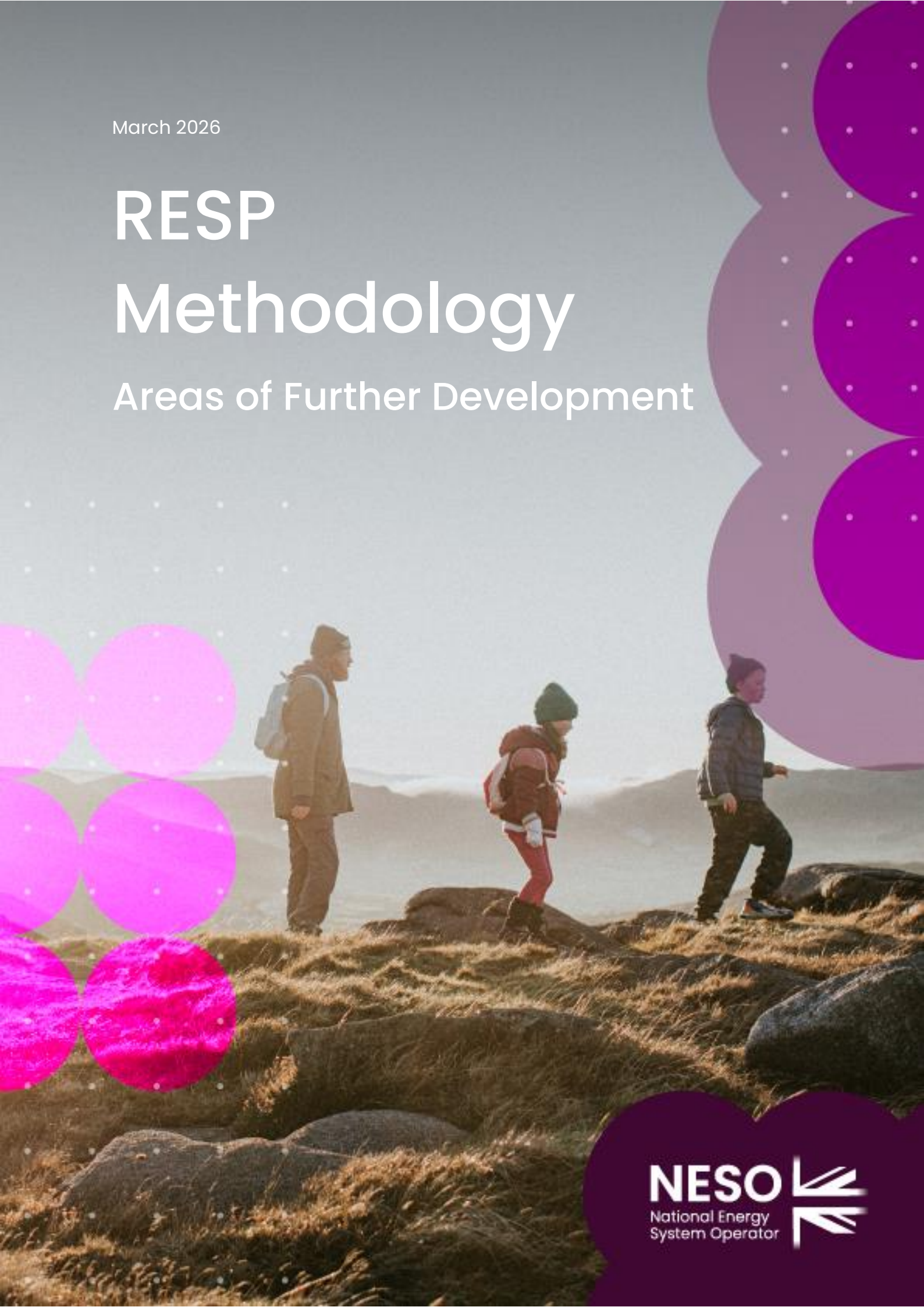
March 2026

RESP Methodology

Areas of Further Development



NESO
National Energy System Operator

Contents

1. Introduction and Purpose

Introduction and Purpose

In the draft Regional Energy Strategic Plan (RESP) methodology consultation published in November 2025[1], we highlighted some areas where further development was planned to ensure the approaches were supported by the right level of detail.

This document provides further detail on the RESP proposed methodology for:

- Whole System Optimisation
- Specification of Strategic Investment Need (SI Need)
- Spatial Context

Thank you to everyone who provided feedback as part of the draft RESP methodology consultation that closed on 16 January 2026. Your responses have played a key role in shaping the further methodology detail presented here. This work has also been informed through collaboration with the gas and electricity distribution networks, Ofgem, and the Department of Energy Security and Net Zero (DESNZ) through our Technical Working Groups.

We are sharing further methodology detail with you so that you can review and provide feedback to help shape the final RESP methodology.

How to provide feedback

We welcome your feedback on the additional methodology detail presented in this document over the two-week feedback window (2 – 16 March 2026). Please provide feedback through our online response form **here**. Please also sign up using the links below to join us for a series of interactive webinars on each of the areas of further development:

- **Launch Webinar (Monday 2 March, 1pm)**
- **Specification of Strategic Energy Need** (Tuesday 3 March, 10am)
- **Whole System Optimisation** (Tuesday 3 March, 1pm)
- **Spatial Context** (Friday 6 March, 10am)

[1] *NESO, RESP draft methodology consultation (Nov 2025)* - https://www.neso.energy/document/372156/download

2. Whole System Optimisation

Introduction to further development

In the draft RESP Methodology consultation, we explained that through our technical coordination function, RESP teams should proactively identify and progress opportunities for whole system optimisation across energy types, at distribution level, and at the transmission–distribution interface. This reflects Ofgem's expectations in the Draft RESP Guidance[2], which requires the National Energy System Operator (NESO) to undertake activity that ensures coherent energy system planning—both by resolving gaps and inconsistencies in regional plans and by identifying opportunities for whole system optimisation (Section 2.15).

In this section, we build on the Draft Methodology by providing a clearer definition of whole system optimisation within the context of the RESP. Based on stakeholder feedback we have provided hypothetical examples to better articulate what whole system optimisation means in practice, where it emerges, and provide clarity on roles and responsibilities.

It is worth noting while whole system optimisation is presented in a dedicated section, as we develop the final RESP methodology we intend to embedded it across the relevant sections of the methodology.

Definition of whole system optimisation

Responding to Feedback
Stakeholders supported RESPs role in identifying whole system opportunities, particularly across energy vectors and energy system boundaries.
However, they also highlighted that the term **"whole system optimisation"** is unclear, asking:

- what objective function RESP is optimising for?
- how should optimisation be interpreted?
- how should it influence energy system planning and decision-making?
- Does RESP intend to present a single "optimal" future system?

Changes from Draft Methodology
We've clarified the definition and boundaries of whole system optimisation in the context of the RESP.

Whole system optimisation, as applied within RESP, refers to NESO's role as the independent strategic energy planner to identify and assess opportunities that deliver improved overall energy system outcomes. NESO will work with relevant parties to assess how interactions across energy types, geographies, actors and constraints may create opportunities where coordinated action adds value.

In RESP, the term "optimisation" is used as an umbrella term that includes the identification of these whole system opportunities, the coordination required to explore

[2] *Ofgem RESP licence modification and guidance note consultation (Oct 2025) - https://www.ofgem.gov.uk/consultation/regional-energy-strategic-plan-licence-modifications-and-guidance-document*

them, and in strategic cases, the comparative assessment of options and progression of the optimal solution. It is broader than mathematical optimisation for a certain objective function and reflects structured, principles-based evaluation.

RESP does not intend to:

- produce a fully mathematically optimised whole energy system plan
- prescribe detailed project-level decisions
- limit the ability of networks and others to provide innovative solutions to energy system challenges

Instead, RESPs will provide evidence and insight that enable system actors to make more informed and efficient decisions within their remits. For example, distribution network operators (DNOs) undertaking network planning or local authorities updating local planning policy.

RESP recognises that decisions must balance multiple criteria, many of which are not easily quantified. RESP will therefore use its decision-making principles (set out on page 25 of the Draft Methodology consultation) to structure how opportunities are assessed and progressed.

How whole system optimisation is embedded in RESP

Whole system optimisation is not a single activity or standalone stage within RESP. It is embedded across all RESP products and emerges through the interactions and analytical insights each product generates.

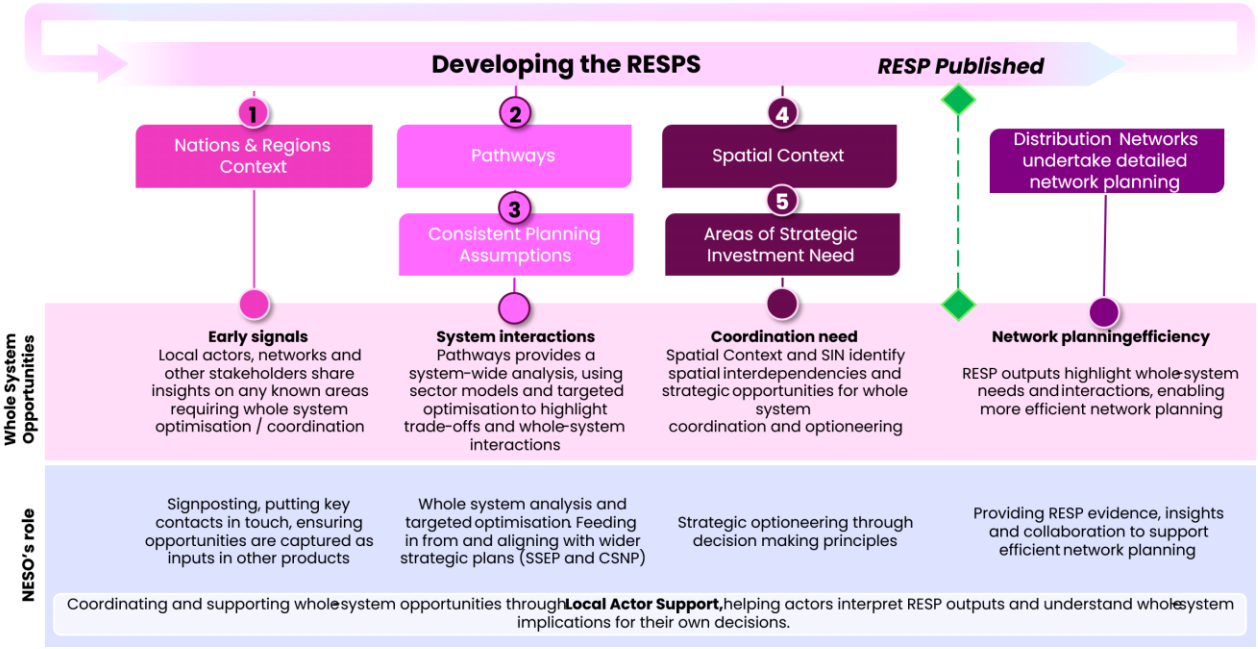


Figure 1: How whole system opportunities arise and are developed throughout the RESP development cycle

1. Nations and Regions Context brings together stakeholder insight on local priorities, energy needs and whole energy system opportunities and challenges. This provides early signals of any known areas requiring whole system optimisation or coordination.

2. Pathways draw on sector-specific models and integrated whole system modelling to build a picture of supply and demand across the distribution energy system and help identify system interactions where coordinated or strategic interventions may add value. Some models use optimisation for specific objectives, while others rely on structured assessment tailored to each sector. The Strategic Spatial Energy Plan (SSEP) is a key input to ensure coherence across NESO's strategic energy planning. It provides a pathway for generation and storage across Great Britain, optimised for cost across demand and high-level network needs, as well as environmental, societal, and other spatial interests ensuring.

3. Consistent planning assumptions provide a shared basis for deriving network impacts, ensuring a common foundation from which interactions and optimisation opportunities become visible.

4. Spatial context flags areas of emerging system need and highlights where location specific factors may indicate a coordination need.

5. Strategic Investment Need (SIN) Specification progresses opportunities that are both strategic and complex. In these cases, NESO coordinates across energy types and networks, aligns evidence, and applies independent judgement to identify areas of strategic investment need through strategic optioneering. Where appropriate, NESO will also undertake high-level cost benefit analysis to support this.

6. Local Actor Support equips local authorities and other actors to interpret RESP outputs and understand whole system implications to make informed decisions.

Across the products, RESP's decision-making principles will guide how opportunities are weighed and taken forward.

Types of whole system opportunities

We expect whole system opportunities to vary in the level of coordination required. Opportunities are likely to fall into two broad categories:

1. Strategic and complex opportunities are areas of energy need where NESO adds value by applying an independent, whole system assessment to support proactive, ahead of need investment that can unlock development and growth. The definition and criteria for identifying 'strategic and complex' needs are set out in the Strategic Investment Need (SIN) section of the Draft RESP Methodology. To identify these opportunities, NESO will apply independent judgement to identify areas of strategic investment need. This will be informed by the decision-making principles and proportionate high-level assessment, including systems-level or cost-benefit assessment, to support a Strategic Investment Need (SIN) specification. For further

detail on how NESO expects to develop the SIN output, stakeholders can refer to the Strategic Investment Need areas of further work document

2. Wider whole system coordination opportunities are cases where a whole system perspective would deliver improved overall energy system outcomes. NESO's role will be to convene stakeholders, provide independent, consistent whole system evidence and advice to support decision makers, and to ensure alignment with wider system considerations. These opportunities may relate to choices around local policy direction, planning approaches, sequencing of activities, or how actors coordinate across boundaries. Where possible and appropriate, this coordination should capture decisions made and feed back into the RESP development process.

How opportunities for whole system optimisation emerge

Responding to Feedback

Stakeholders asked for greater visibility of how issues raised through engagement translate into concrete opportunities within RESP, and more structure around the progression stages and NESO's technical coordination role.

Changes from Draft Methodology

We have strengthened the explanation of the end-to-end process for identifying, shaping and assessing optimisation opportunities. The update introduces a clearer sequence from early signals through to collaborative development and comparison of options

This section expands on the steps set out on page 98 of the Draft RESP Methodology, outlining how whole system optimisation opportunities emerge and are developed. The four steps below describe the broad process for how whole system opportunities emerge and are developed within RESP. Note that for opportunities that are classified as strategic and complex, these steps should operate in alignment with the Strategic Investment Needs process, set out in the Draft Methodology and SIN Additional Areas of Development section.

Identification

Whole system optimisation opportunities emerge when system interactions indicate that coordinated interventions may deliver improved overall system outcomes.

This includes:

- growth or constraints near network or region boundaries
- interactions between electricity, gas, heat or hydrogen systems and corresponding implications, including trade-offs,
- clusters of development with shared needs

- situations where sequencing or coordination could reduce costs or disruption to customers.

Opportunities may emerge at any stage of the RESP development process, either when stakeholders share insights or when emerging analysis from developing the RESP products highlights cross-system interactions. Where stakeholders observe opportunities like the examples outlined above, they will be encouraged to raise these with NESO. Many of these conversations should naturally arise as we develop the Nations and Regions Context and through wider engagement.

NESO will log opportunities as they are flagged through analysis or engagement, ensuring they are reviewed with stakeholders.

Stakeholder review

NESO will explore opportunities through structured engagement with networks, local authorities, developers and other actors who hold key information. Engagement is structured to:

- build a shared understanding of the opportunity and benefits,
- identify any practical constraints, and
- assess how a whole system perspective could add value

Opportunities will be presented and reviewed in the relevant working groups and, where appropriate, Strategic Boards or GB Steering Committee.

At this stage, opportunities could be categorised as either as strategic and complex, which follows the process set out in the SIN specification process, or as a wider whole system coordination opportunities.

Collaborative development

NESO will work collaboratively with the relevant actors to shape the opportunity, gather evidence, and where appropriate, develop credible high-level options. This is likely to include:

- convening the relevant actors
- sharing evidence
- collating additional information/data
- producing high-level options for assessment

For opportunities identified as strategic and complex, this stage is referred to as 'Strategic Optioneering', as set out in the SIN Additional Areas of Development document. The output of this stage is a set of credible high-level options that can be compared.

Optimisation approach

In cases where NESO plays an active role in appraising options (i.e. SIN), we will use a structured approach to compare options. NESO will apply the RESP decision-making

principles to weigh evidence and trade-offs in a clear and consistent way and identify the preferred high-level network need for SIN specification.

For wider whole-system coordination opportunities, NESO will set out the relevant whole-system evidence and interpretation to support stakeholders' understanding of system impacts and trade-offs. The RESP decision-making principles will be used to structure and interpret whole-system evidence, while actions remain with the relevant network or local actors.

Table 1: How the RESP decision-making principles guide optimisation

Decision making Principle	How it may be applied
Be economic by minimising costs	Compare options to understand impact on consumer costs, reinforcement needs, disruption and efficiency.
Maintain coherence with SSEP and CSNP	Check whether the options are consistent with the Strategic Spatial Energy Plan (SSEP), Centralised Strategic Network Plan (CSNP) and the RESP Pathways. Check whether it is coherent with the strategic direction they provide.
Enable priorities identified in the Nations & Regions Contexts	Test each option against national/regional priorities. Assess whether it supports local development plans, spatial considerations and place based needs.
Support future policy ambitions and national decarbonisation goals	Assess how well each option aligns with long term policy direction and net zero trajectories.

Roles and responsibilities

Table 2: Roles and responsibilities in identifying and progressing whole system opportunities

Stakeholder Group	Summary of responsibilities
NESO RESP Team	Provides whole system insight; convenes actors; ensures consistent evidence; determines if an opportunity should be progressed through SIN, or wider whole system coordination activities; collaborates with networks and actors to develop and comparatively assess options
Local actors	Provide place based insight into opportunities and options (e.g., plans, priorities, constraints).
Networks (distribution and transmission)	Provide technical expertise, data, and insights (e.g. constraints, timing considerations, and high-level costs) to support SIN process
Working groups	Support issue specific discussion; test evidence and

	assumptions; enable coordination across actors.
Strategic boards	Provide strategic oversight; validate direction where needed.
GB Steering Committee	The GB Steering Committee will support alignment with national plans, including the SSEP and CSNP, and will help ensure coherence and efficiency across nations and regions as we develop whole system opportunities.

Worked examples

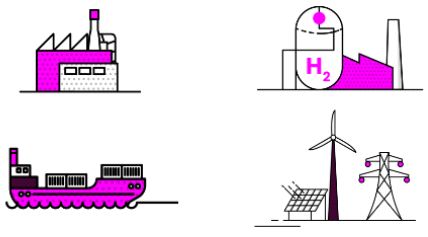
Responding to Feedback

Respondents asked for practical examples to help understand how optimisation considerations may be applied in real contexts

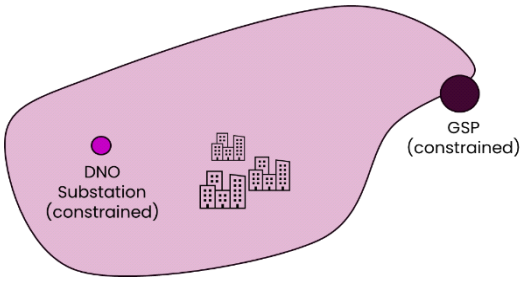
Changes from Draft Methodology

Examples have been produced to illustrate a broader range of whole system scenarios. They show how NESO expects to apply evidence, coordination and decision-making principles in practice. This helps bring the methodology to life and supports consistent interpretation across regions and vectors.

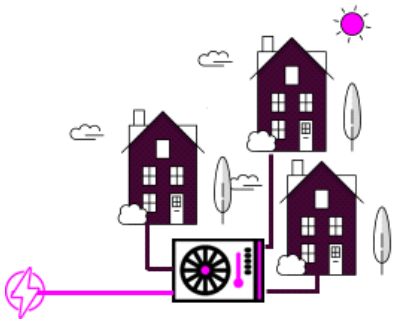
The examples below show how whole system optimisation opportunities may be identified and progressed in different contexts. They demonstrate how options are developed, how NESO supports comparison using the decision-making principles, and how opportunities progress either as a SIN or through wider whole system coordination. Note that these examples are illustrative and non-exhaustive.

Example 1: Multi-energy-type freeport	
	Early Spatial Context analysis and stakeholder engagement identifies a Freeport which anticipates large multi-energy-type needs (electricity, hydrogen, transport) with uncertain phasing. This area has been identified as a complex and strategic energy need and in scope for SIN.
Why this is a whole system optimisation opportunity	• Interactions across electricity, hydrogen and transport. • Timing and phasing strongly influence system costs. • Upstream network investment may unlock wider value.

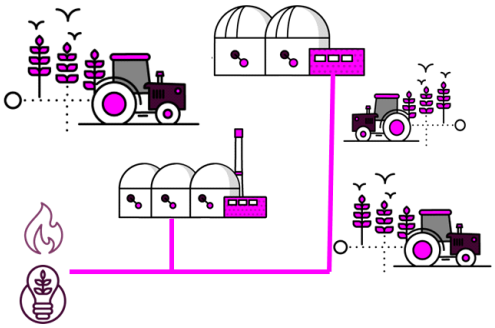
NESO's role	• Convenes networks and local actors to shape systemwide options. • Coordinates RESP outputs to inform high-level optioneering. • Applies decision making principles to compare options. • Tests whether early "low regret" solutions are justified. • Identifies a preferred high level option.
Outcome	A SIN Specification that supports justification of ahead of need planning or investment and could also be revisited as certainty improves over time.

Example 2: Data Centre Cluster at the Transmission/Distribution Interface	
	Emerging demand growth flagged through the Nation and Region Contexts and early engagement with the Distribution Network Operator (DNO) has highlighted that several proposed data centres are clustered in a constrained area. Supply could come from DNO reinforcement, a coordinated DNO–Transmission Owner (TO) upgrade, or a shared solution that also unlocks future onsite generation. In addition to significant electricity demand, developers are also exploring gas for back-up power, and heat recovery opportunities. This cluster has been identified as a complex and strategic energy need and in scope for SIN.
Why this is a whole system optimisation opportunity	• New demand affects both electricity distribution and transmission networks. • Proposal introduces cross-vector elements which will impact demand patterns and multiple networks. • Several credible options exist with different system impacts. • Coordination could reduce cost and avoid duplication.
NESO's role	• Convenes the Distribution Network Operator (DNO), Transmission Owner (TO), Gas Distribution Network (GDN) and developers to build a shared understanding of system wide options.

	• Shares aligned evidence and spatial insight across RESP and CSNP. • Works with networks to develop high-level options; networks provide high-level optioneering, costings and timings. • Applies the decision-making principles to compare options through a cost-benefit analysis • Uses independent judgement to identify a preferred high-level network solution and sets out the thresholds or conditions under which the solution would not remain the preferred approach.
Outcome	A one-off SIN Specification recommending the preferred high-level network solution that addresses the T/D boundary constraint while taking into account wider multi-energy-type opportunities.

Example 3: Local heat decarbonisation planning	
	Through engagement, NESO learns that a local authority is considering options to decarbonise its housing portfolio in a neighbourhood. Options include retrofit, combined with heat pumps or a district heat network. The local electricity network faces peak constraints. This is classified as a whole system coordination opportunity.
Why this is a whole system optimisation opportunity	• Heating decarbonisation choices affect electricity demand profiles and wider network impacts • Decisions may interact with gas network demand • A coordinated solution may avoid or defer network reinforcement
NESO's role	• Provide Pathways insight and Spatial Context outputs to support assessment of high-level options • Advises on whole system impacts to help stakeholders understand system implications

	• Convene relevant networks and actors where needed to clarify constraints (e.g., peak load, spatial constraints), share evidence and support interpretation of RESP outputs.
Outcome	A local decision is made, led by the local authority, informed by NESO's whole-system evidence and coordination support.

Example 4: Biomethane injection cluster and network reinforcement options	
	Early insight from Nation and Region Contexts and engagement with the GDNs identifies early plans for several biomethane production facilities in a rural area. The combined injection volumes raise uncertainties around future pressures, blending opportunities and local planning decisions. The uncertainty and localised nature does not warrant a SIN. This is classified as a wider whole system coordination opportunity.
Why this is a whole system optimisation opportunity	• System interactions between biomethane injection, gas network constraints, and potential future hydrogen blending. • Possible interactions with the electricity network where developers consider onsite generation or hybrid solutions. • Opportunity to coordinate phasing, avoid duplication, and align with local decarbonisation strategies.
NESO's role	• Convene GDN, developers, local authorities and (where relevant) DNOs to ensure plans are joined up. • Provide Pathways insight on future gas and hydrogen demand, heat transitions and biomethane trajectories to support stakeholder conversations. • Share Spatial Context evidence to inform systemwide considerations.
Outcome	Local and network actors consider coordinated approaches to planning and delivery. Project insights feed back into the RESP development cycle.

Request for feedback

NESO is seeking feedback specifically on the additional methodology detail set out in this document.

Feedback Questions

- Does the updated definition of whole system optimisation provide sufficient clarity on scope and boundaries?
- Do the worked examples help illustrate how the methodology could operate in practice, or are further clarifications needed?

3. Strategic Investment Need

Introduction to further development

SI Need is a crucial part of the RESP approach, enabling proactive investment in the whole energy system to support economic growth and decarbonisation goals.

In this section we provide additional detail on specific areas:

- We provide further clarity on the 'Overview of Specification of Strategic Investment Need' section as requested by stakeholders, expanding this section of the draft RESP methodology
- We provide more detail on 'Step 4 – Specifying the SI Needs'. The text provided in this section replaces the sub-sections titled 'Specification' and 'Needs case structure' (Page 93) of the Draft RESP Methodology. We have also included an additional 'Roles and Responsibilities' table specific for this step. It does not replace table 16 in the Draft RESP Methodology. Both tables will be combined for the final methodology.
- In response to stakeholder feedback, we have also provided some hypothetical examples to help illustrate the categories of Strategic Investment Need

Overview of specification of strategic investment need

Responding to Feedback

Stakeholders expressed a need for further clarity on the intention of SI Need and the value-add from NESO in the process.

Changes from Draft Methodology

We have strengthened the 'Overview of Specification of Strategic Investment Need' to make it more explicit that the Strategic Investment Need component is not intended to identify all areas of strategic network investments in a nation or region.

We have emphasised that the Strategic Investment Need component only focuses on needs which are both strategic and complex and the added value NESO brings as the independent strategic energy planner for GB.

The SI Need component of the RESP focuses on identifying areas of energy need that are both strategic and complex. In these areas, NESO can add value by identifying proactive, ahead-of-need investment that may be required to unlock development and growth.

As Great Britain's strategic energy planner, NESO expects to deliver this added value by coordinating relevant stakeholders, enabling the flow of information and applying independent judgement to specify areas of strategic investment need.

The SI Need component is not intended to identify all areas of strategic network investments in a nation or region. The vast majority of load related investment needs (strategic or otherwise) should be identified through the spatial context and further

developed by distribution network operators following receipt of the RESP pathways and Consistent Planning Assumptions.

The specification of areas of SI Need is intended to support coordinated network development across electricity and gas, and across distribution and transmission. It also provides justification of energy need for use in periodic regulatory business plan submissions by distribution networks. These are likely to be areas where "business as usual" approaches will not deliver the right or most efficient investment in the optimum timescales. The role of RESP is to highlight areas where investment may be needed. Ofgem has accountability for approving future network investment through the price control process. Network operators remain responsible for undertaking network analysis and thus determining the specific network investments required in response to the areas of strategic investment need.

Approach to producing the output ("the SI Need Specification")

Responding to Feedback

We received early feedback that the 'Specification' and 'Needs case structure' sub-sections (page 93 of the Draft Methodology) of the 'Step 4 – Specifying the SI Needs' section lacked detail in relation to the output delivered to the networks and our approach for producing the output.

Working closely with Ofgem and the networks to co-develop our approach, some key themes were raised:

- A collaborative and iterative approach with the networks is needed to produce a specification.
- Roles and responsibilities for producing the specification needs to be clear.
- The specification needs to consider additional detail in relation to the vector and capacity factors (timing, ramping, peak demand, load profiles, flexibility potential).
- Some complex needs may be difficult to specify in a single RESP cycle due to various dependencies and uncertainties and the process needs to have some flexibility to account for that.

Changes from Draft Methodology

Since the Draft Methodology we propose to expand 'Step 4 – Specifying the SI Needs' section by:

- Developing an approach and the principles for the interaction required with the networks and other stakeholders to produce the specifications.
- Further defining the output. The form and the content of the specifications of SI Needs that will be given to the networks is explained (with hypothetical examples).
- Refining our proposal for the needs case element within the specification to justify the investment.
- Setting out the roles and responsibilities of stakeholders involved in the proposed approach.

The proposed process to collaboratively develop a Specification of SI Needs is summarised in the following process flow diagram:

NESO - Produce outline specification

1.Produce outline specification of "in-scope" complex SI Need with uncertainty ranges and outline needs case

Output: *Outline specification*

NESO & Networks - Strategic optioneering

1.Collaborate to identify, map and engage stakeholders to further explore gaps and uncertainties essential to informing high-level scope options (led by NESO and supported by the Networks)

2.Collaborate to produce high-level scope options for level 2 & 3 uncertainties, including high-level costings (led by the Networks and supported by NESO)

Output: *High-level scope*

NESO - Recommend preferred option*

1.Assess high-level scope options (high-level cost benefit analysis)

2.Finalise the needs case

3.Recommend a preferred option – in collaboration with relevant working group(s)

Output: *Preferred option*

RESP Strategic Board – Review and feedback

1.Review preferred option and needs case

2.Provide feedback to NESO if needed

Output: *Feedback on preferred option*

NESO - Issue SI Need specification

1.Finalise and issue the SI Need specification output, based on the preferred option, as part of the final RESP for approval by the Strategic Board

Output: *SI Need Specification*

*In some cases, the preferred option could be an informative outline specification due to the nature of the complexities and uncertainties (see '3. Informative outline specifications' in next section).

EXPLAINER OF KEY TERMS

Outline specification

Each factor within the specification table shall be presented as a value or information in accordance with the uncertainty associated with it, i.e. specific (level 1 uncertainty), distinct options (level 2 uncertainty) or a range (level 3 uncertainty).

Strategic Optioneering

The purpose of Strategic Optioneering (collaboration between NESO and the Networks) is to better understand the high-level options that respond to scope-related factors with levels 2 and 3 of uncertainty. For example, capacity requirements for a complex strategic energy need (such as a Freeport) could fall anywhere within a wider range (level 3 uncertainty). In this case, NESO would need to collaborate with the networks and relevant Freeport stakeholders to consider potential implications of various capacity options within that range before a direction setting specification can be produced. This is considered essential as there may be a significant step-up in potential costs or timescales when you reach a certain capacity along that range – therefore NESO would need to be mindful of this to avoid producing a specification that is unlikely to be deliverable or cost optimal.

There is no intention to review detailed asset-level technical options at this stage, however we do recognise that the networks will need to undertake conceptual design work to inform this process. We will work with the relevant networks for each SI Need to ensure the scope of this work is resource efficient, appropriate to inform the specification and proportionate to the value-add RESP can deliver.

Gaps and uncertainties

These are factors within the specification table where more information could be required from relevant stakeholders to inform the strategic optioneering activity.

To ensure consistency and coherence in our approach, the process of assessing high-level scope options resulting from Strategic Optioneering and recommending a preferred option will align with the RESP decision-making principles set out in the Developing the RESPs section (page 25 of the Draft Methodology). These are informed by strategic value, uncertainty and high-level costs.

NESO's proposed external governance mechanisms will support the process through the working groups where needed, and the SI Need specification will be approved as part of the final RESP.

The RESP SI need output ("the SI Need Specification")

The final output will be a specification for each area of strategic investment need that has been identified. The output will be handed over to the networks to help support the

development of solutions and inform network planning when developing business plans. The networks remain responsible for determining the best approach to meet investment needs and a specification of area of SI Need may not always lead to network investment.

The specification also contains the justification of ahead of need investment to support the distribution networks justification of the final engineering solutions included in their regulatory business plan.

It is important to note that these areas of strategic investment needs are in relation to complex and diverse needs, and therefore the specifications are likely to vary in level of detail/specificity.

The contents of the specifications are summarised below:

SPECIFICATION OF STRATEGIC INVESTMENT NEED	
Area (the 'where' and the 'who')	
Location Network licence area	spatially mapped area of strategic investment need the network licence area(s) relevant to the areas of strategic investment need
Basis of investment (the 'what')	
Energy type	relevant energy type(s) involved (electricity, gas, hydrogen, heat)
Characteristics and capacity of energy need	Scale and size of demand or supply, including expected growth. Where known: energy profile, flexibility characteristics
Connection date	expected date for when a connection is likely to be needed, including uncertainty bounds
Phasing	if any phasing can be accommodated, or is considered appropriate given the uncertainty; what is needed by when (energy type, capacity, date)
Network level	for areas of SI Needs we expect this to be primary network level and above for electricity distribution and medium pressure and above for gas distribution
Justification of investment (the 'why')	
Needs case	**Strategic Case for Energy Need(s) leading to the identification of areas of strategic investment need [why is it important?]** • Significance to Nation/Region • Strategic Value **Complexity [why does it need Strategic Planner involvement?]** • Complexity statement • Uncertainties • Role undertaken by NESO

	Scope Options appraisal for Network Investment [why is this the most appropriate option?] • Assumptions and constraints • The Spatial Context • Overview of options considered • High-level cost benefit analysis • Rationale behind preferred option
Categorisation	Specifications will be categorised as follows: • Direction setting one-off specification • Direction setting one-in-a-series specification • Informative outline specification

We expect to see three different types of specifications (as set out below), each reflecting a different level of certainty or evidence maturity. These specification types are proportionate responses and do *not* indicate differences in importance.

Direction setting one-off specifications: Some specifications only need to be produced once for a specific area. These are used when the situation is complex and requires NESO's independent judgement but is not expected to require reviews during future RESP cycles. This might happen when the complexity is more on the energy network side rather than the underlying energy need side, i.e. where a network solution for a strategic energy need could be delivered by more than one network operator or delivered at distribution and/or transmission level. Independent judgement is needed to specify the network licence area or network level for the SI Need that is likely to be the most optimal outcome in the context of ahead of need investment.

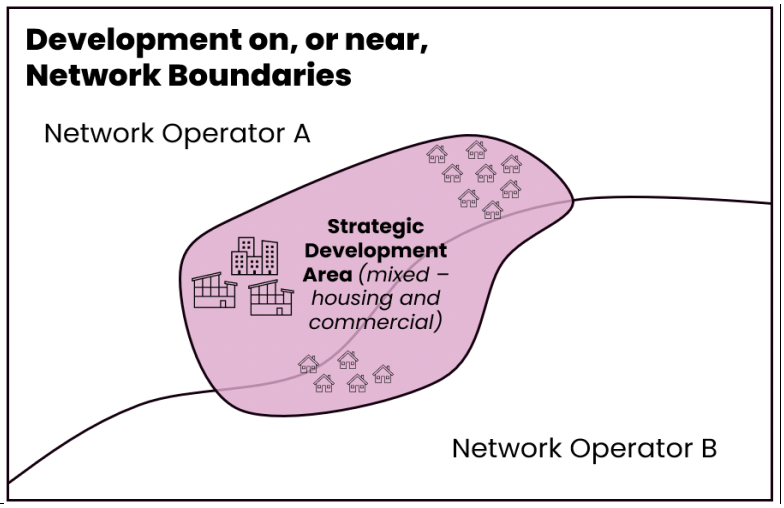
NESO assesses high-level options and applies independent judgement on which network (Network A or Network B, or a combination of both) can deliver the optimal network solution for the Strategic Development Area	

Figure 2 Hypothetical example for Direction setting one-off specifications

Direction setting one-in-a-series of specifications: Some specifications may be the first of many for areas where the energy need is likely to stay complex and certainty increases over several RESP cycles. These areas need ongoing coordination between NESO, Network Operators and other stakeholders to support ahead of need network planning. The level of detail should improve over time as certainty increases. However, issuing an early specification can still add real value as it ensures network plans are cognisant of the need and could justify the frontloading of upstream 'low-regret' reinforcement. Subsequent specifications, based on more certain needs, are likely to inform more specific and downstream network investments.

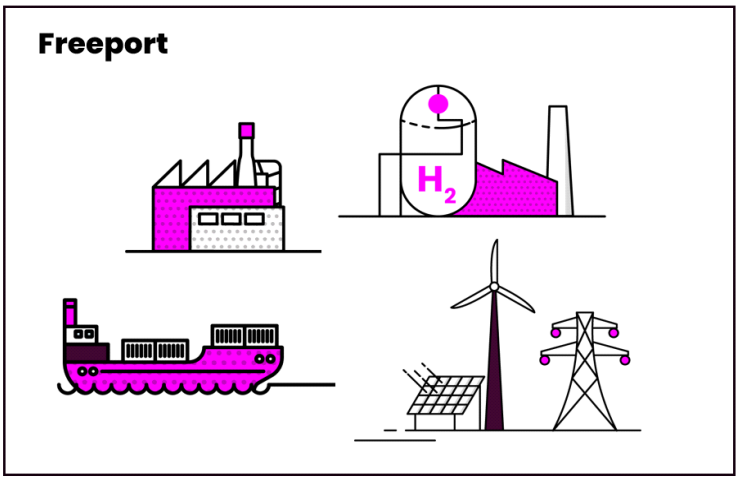
In the case of a Freeport, NESO could apply its independent judgement on the appropriate level of upstream investment for the current RESP cycle given the uncertainties associated with the future energy need. Specification should be revisited each RESP cycle as certainty of need is likely to improve over time	

Figure 3 Hypothetical example for Direction setting one-in-a-series specifications

Informative outline specifications: For some specifications, we may be unable to set out more than an outline for certain factors due to the nature of the complexities and uncertainties. Similar to the 'one-in-a-series' specifications, the needs are likely to remain complex and evolve over many RESP cycles, but may transition into a direction-setting specification as certainty increases. Their value lies in maintaining coordination and collaboration in relation to the complex need and that networks are cognisant of the need which may influence future proofing ("touch the network once") and 'no-regret' investments. This should also reduce the risk of network planning decisions occurring that inadvertently become a barrier to development and growth.

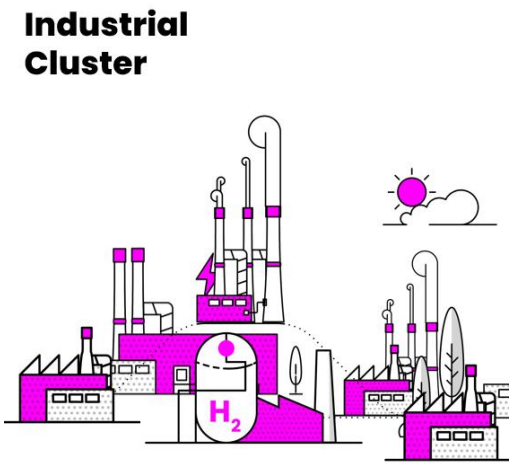
NESO identifies an area that needs network investment to achieve a key priority of the nation or region, such as the decarbonisation of an industrial cluster. In some cases the basis of investment could be dependent on policy decisions yet to be taken (for example hydrogen, carbon capture, etc) and therefore too uncertain to prescribe an investment need at that point in time. The informative specification should be considered in network planning activities and specification revisited each RESP cycle as certainty improves	

Figure 4 Hypothetical example for Informative outline specifications

Key roles and responsibilities for producing the output ("the specification")

Group	Key roles and responsibilities
NESO RESP Team	• Maintain a robust, transparent and collaborative process to produce the output • Assess options and apply independent judgement to trade off decisions • Enable the flow of information across relevant networks and energy types to encourage whole system optimisation • Convene relevant stakeholders
Energy distribution networks	• Collaborate with NESO to map stakeholders relevant to the identified complex need and identifying key knowledge gaps and uncertainties. • Contribute data and relevant insights to support the process. • Support stakeholder engagement. • Undertake high-level scope optioneering including high-level cost analysis and delivery timescales.
Local actors Working Groups	• Engage with the request for additional information to provide deeper insights into energy needs and priorities. • Collaborate where required to support stakeholder engagement and reviewing options.

Strategic Boards	• Review and approve the in-scope SI Needs as part of the final RESP plan.

Request for feedback

NESO is seeking feedback specifically on the additional methodology detail set out in this document.

Feedback Questions

- Does the updated Overview further clarify the intention of SI Need and the value-add from NESO in the process? Please provide your reasoning
- Do you agree with the updated methodology that defines the SI Needs Specification output and the approach for 'Step 4: Specifying the SI Needs'? Please provide your reasoning

4. Spatial Context

Introduction to further development

NESO's draft methodology for Spatial Context set out our proposed approach to developing an accessible digital geospatial mapping tool. This tool uses both geographical and network asset views to enable users to interrogate system needs spatially and temporally, including where potential constraints may emerge.

The Draft Methodology also outlined NESO's approach to developing a formalised coordination process with DNOs and GDNs to enable the exchange of relevant Pathways outputs and network data to inform the development of the spatial context.

The following sections contain further methodology detail specifically on the approach to spatial context for gas and biomethane. We have developed this in response to consultation feedback and through continued engagement with key stakeholders. Where updates have been proposed, we have presented feedback received, and changes proposed from the draft methodology with reasoning. For each update, we are requesting feedback to inform the final updated methodology.

Spatial context for gas demand

Responding to Feedback

Stakeholders requested further detail on gas demand within spatial context. NESO's initial approach focused on mapping future gas demand across all gas distribution networks to provide a spatial view of how gas demand could change over time. Many stakeholders commented that whilst this view was welcomed, the detail provided within the draft Methodology was limited, making it hard to conclude how this would work in practice and how its value would be assessed.

Changes from Draft Methodology

We have updated our methodology to explain how we intend to visualise gas demand across networks. NESO proposes that projected gas consumption for each RESP Pathway is presented spatially and temporally in the geographic view of spatial Context. Additionally, NESO proposes that Gas Distribution Networks (GDNs) utilise RESP Pathways and Consistent Planning Assumptions (CPAs) to model peak gas demand (1 in 20) across their networks to support the identification of future system needs, including where constraints may emerge. NESO would then present this data in the network asset view of spatial context.

In order to develop the spatial context for gas, NESO expects to provide RESP Pathways and CPAs to the GDNs, who model 1-in-20 peak gas demand and return outputs to NESO. These outputs are visualised within Spatial Context to support the early identification of areas of strategic investment needs where proactive investment may be required. This includes accommodating strategic or large loads and future demand changes under different RESP Pathways.

NESO expects to continue to collaborate with GDNs to refine the peak gas demand network modelling methodology for Spatial Context, ensuring alignment with existing

1-in-20 peak modelling parameters, including appropriate weather correction. Under existing Gas Transporter Licence Standard Conditions [3], GDNs are required to forecast 1-in-20 peak gas demand to ensure Security of Supply. GDNs apply established, network-specific methodologies for this purpose; NESO's proposal for GDNs to utilise RESP Pathways and CPAs within Spatial Context does not supersede or replace these existing methodologies and responsibilities.

The figure below summarises the process to create spatial context:

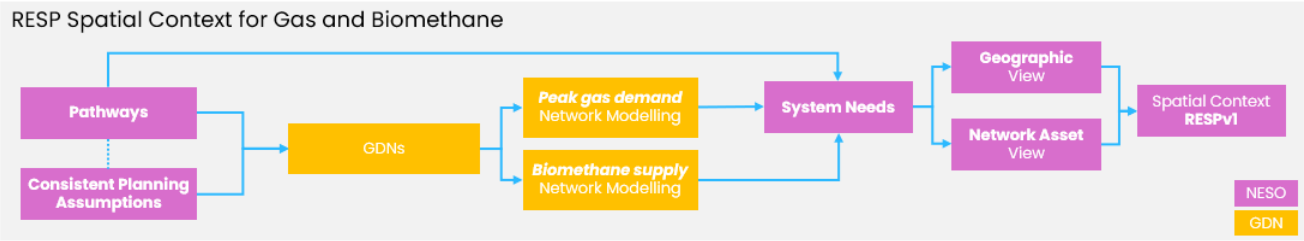


Figure 5: RESP Spatial Context for Gas and Biomethane

Spatial context for biomethane supply

Responding to Feedback

Stakeholders requested further detail on biomethane supply within Spatial Context. NESO's initial approach for biomethane focused on mapping future biomethane injections into the gas distribution network. Similarly to Gas demand, many stakeholders commented that whilst this view was welcomed, the detail provided within the draft methodology was limited, making it difficult to conclude how this would work in practice and how the value of this approach would be assessed.

Changes from Draft Methodology

We have updated our methodology to explain how we intend to visualise biomethane. NESO proposes that projected installed biomethane production capacity for each RESP Pathway is presented spatially and temporally in the geographic view of Spatial Context. Additionally, NESO proposes that GDNs model the interaction between projected biomethane supply and periods of minimum demand across their networks. This supports the identification of system needs where potential injection constraints may emerge based on RESP Pathways and CPAs. NESO would then present this data in the network asset view of Spatial Context.

Biomethane is typically supplied onto GDNs under firm injection profiles, resulting in limited flexibility to adjust supply to meet changes in demand. This can result in network constraints during the summer minimum gas demand period which could prevent

[3] Gas transporter Licence conditions (Oct 2025)- *Gas licensing (from October 2025) - Publications - Ofgem Public Register*

biomethane producers from being able to inject their supplies into the local gas distribution network.

The geographic view of biomethane within Spatial Context should facilitate an increasingly proactive approach to identification of system needs where biomethane connection enquiries may emerge. This should ensure timely and efficient connection of biomethane supplies to the GDNs where required. Each strategic investment need is expected to be considered alongside the broader whole system challenges, with the final decision of how areas of strategic investment need are implemented within network planning processes and price control mechanisms remaining with Ofgem through its regulatory and policy frameworks.

NESO considers that GDNs are best placed to model the interaction between projected biomethane supply against projected minimum demand across their networks following provision of RESP Pathway outputs and Consistent Planning Assumptions. By modelling where projected biomethane supply may exceed local demand, Spatial Context should support the identification of system needs to facilitate additional biomethane entry (e.g. need for increased system capacity through reverse compression/enhanced network monitoring). These outputs would then be returned to NESO for incorporation within the geospatial tool.

Network asset granularity for gas and biomethane

Responding to Feedback

Stakeholders requested further clarity on Network Asset Granularity. NESO's initial approach for visualising gas network data did not present a decision on the granularity of network asset to be modelled against.

Changes from Draft Methodology

NESO proposes we present and that GDNs model the required supply and demand related outputs for Spatial Context at the Medium Pressure Entry Assets.

Medium Pressure entry assets operate at the interface between the medium (below 2 bar) and the intermediate/high pressure (above 2 bar) gas distribution systems. Modelling the RESP Pathways data at this asset granularity enables the visualisation of gas network capacities over time. This includes identification of system needs across RESP nations and regions where further strategic investment may be required.

Throughout the development of the proposed approach, NESO evaluated the value of providing a network-based view at higher asset granularities across the gas distribution network. GDNs indicated that it may be valuable to present a view at the Local Transmission System (LTS) level, comprising of the above 7 bar network.

NESO acknowledges some of the benefits associated with this view, including a reduction in the volume of data modelling; however, our proposed approach provides added value by enabling visualisation of biomethane connections at the pressure tier connections are typically made, as well as enabling us to better understand how gas networks may

change at a fine granularity within each RESP region and nation. The approach closely aligns with the level of asset granularity being developed in parallel by Electricity Distribution Networks Operators (DNOs) when modelling Peak Electricity Demand at Primary Substations.

Additional considerations

NESO's proposed approach for integrating gas and biomethane into Spatial Context provides a strategic, pathway-aligned view to support proactive investment planning and whole system coordination. This approach does not guarantee network capacity for stakeholders and will not replace the requirement for detailed network analysis conducted by GDNs.

GDNs will still need to individually assess customer connection enquiries, identifying actual available capacity and reinforcement needs based on bespoke connection details such as: the exact entry connection point, distance from existing network assets and local technical parameters of the gas distribution network.

NESO will continue to work closely with GDNs to evaluate the impact of the above proposed modelling approach for Spatial Context on existing GDN activities and resources. Furthermore, NESO shall collaborate closely with GDNs to develop a formalised data coordination framework outlining how relevant network data should be exchanged to inform the geospatial tool, including standardised processes for input data and agreed submission timelines.

Request for feedback

NESO is seeking feedback specifically on the additional methodology detail set out in this document.

Feedback Questions

- Do you agree with the proposed approach and justifications for integrating gas & biomethane energy vectors into RESP Spatial Context?
- Do you agree with NESO's proposal for visualising peak demand to identify areas of system need within Spatial Context? Please provide reasoning.
- Do you agree with NESO's proposal for visualising biomethane supply to identify areas of system need within Spatial Context? Please provide reasoning.
- Do you agree with NESO's proposal to visualise the gas distribution network asset view at Medium Pressure Entry Assets for biomethane supply and gas demand? Please provide reasoning.

5. Next Steps

How to provide feedback

We welcome your feedback over the two-week feedback window (2 – 16 March 2026). Please provide feedback through our online response form **here**. All your feedback will help us shape the final RESP methodology which will be published in summer 2026, subject to approval from Ofgem and DESNZ.

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