

NIA Project Registration and PEA Document

Date of Submission

Oct 2024

Project Reference Number

NIA2_SGN0071

Project Registration

Project Title

Heat Network Transition Study

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NIA2_SGN0071

Project Licensee(s)

SGN

Project Start

October 2024

Project Duration

0 years and 5 months

Nominated Project Contact(s)

Ryan Smith

Project Budget

£260,000.00

Summary

The objective of this Project is to help inform (i) GDN's views on the investability of the heat networks business model proposed by DESNZ and Ofgem, in particular on the appropriateness of the proposed use of zoning and adaptations or alternatives to zoning which might be more appropriate; and (ii) GDN's understanding of the prospects for repurposing selected assets on its gas networks to form part of heat networks.

Nominated Contact Email Address(es)

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Problem Being Solved

In the 2021 Heat and Building strategy, the UK Government cites a Climate Change Committee recommendation for around 18% of UK heat to come from heat networks by 2050 and currently circa 2-3% of UK heat is supplied via heat networks. As part of a least cost pathway to meeting net-zero, the Government estimate approximately £60-80bn investment will be required to meet this objective.

The high upfront investment and long payback periods compared with other heat sources can, however, deter deployment of heat networks and the current model has several challenges that may impact the role heat networks can play in decarbonising heat.

Current business models do not adequately enable heat networks as a transitional heating option, with the balance of network risks being transferred to and undertaken by the developer, eliminating viability of the opportunity. This risk is further compounded as customers will not be contractually committed to the heat network prior to the outlay of any capital investment from the developer to build the required infrastructure. There is currently no established process the networks can follow other than disconnection on the

grounds of safety, with this project being an opportunity to map out what can be done to enable heat networks as a transferable domestic heating option.

SGN have been actively assessing opportunities across heat networks with limited success and insufficient confidence that the current business processes would be viable to take forward a transitional gas to heat network multi-occupancy buildings (MOBs) project. We believe that now is the right time to engage with key stakeholders to identify how this can be achieved to ensure that government targets can be met. Without completing this work, it is unlikely we will realise the opportunity heat networks can play in the transition of heat.

Method(s)

This Heat Network Transitional Study looks to offer a blueprint of why gas networks might be best placed to deliver heat networks using a technical assessment of how assets could be utilised or repurposed to facilitate future role out. A detailed report will be shared across the industry to stimulate debate and discussion as well as a launch event that will bring together key stakeholders, including DESNZ, to ensure this work gets the required exposure across the industry.

Scope

This study is divided into two phases that will be completed in parallel:

Phase 1A: Commercial Workstream

- Establish the UK Government's expectations to define heat network objectives
- Summarise the current UK heat network market landscape including DESNZ Zoning and Energy Act 2023
- Develop business model options
- Engage with agreed stakeholders (to be agreed between the Parties during the Project, with SGN ensuring appropriate approaches and confidentiality agreements are in place where required and preferred by such Stakeholders)
- Risk evaluation of zoning
- Evaluation of heat network business models

Phase 1B: Technical Workstream

- Establish the factual and counterfactual scenarios of interest
- Identify customer archetypes and assets
- Create design concepts
- Undergo a technical feasibility assessment
- Deliver an initial cost-benefit analysis
- Produce a final report with summary insights across both workstreams

The outputs of the Heat Networks Transition Study will apply to all Heat Networks across Great Britain.

Objective(s)

The project objectives are to:

Analyse market outlook and challenges to investment

Produce strategic insights on the current regulatory framework and market outlook for heat networks based on the latest policy and industry developments. Workshops will be held to identify the key challenges and barriers to investment in heat networks, which will inform the list of criteria we develop to evaluate the suitability of different business models.

Assess potential business models.

Design a tailored assessment framework and use this to investigate the suitability of potential business models to scaling up opportunity for the deployment of UK heat networks. Profiles and case studies for each business model will be developed, drawing on lessons learned from the use of these models in other parts of the UK energy system and international heat network markets.

Support stakeholder engagement.

To capture the breadth of challenges in attracting investment in this emerging market and the needs of different groups, this project will

conduct a soft market engagement with industry stakeholders including government, investors, and developers, building duty holders and customers. The views and perspectives on current barriers and potential business models will be tested, enhancing the insights captured in the report.

Deliver report on insights.

The analysis on the market outlook, potential business models and stakeholder insights will be brought together in a detailed report. The advisor will work closely with the SGN team at each stage to reflect feedback and deliver a completing piece of thought leadership on how best to attract solutions into heat networks in the UK.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

MOBs as an asset group have a specific set of challenges which make them a sensitive asset group to manage. A large population of vulnerable customers reside in MOBs giving importance to finding an energy solution that does not leave these customers behind in the transition to net zero. As stated as part of SGN's Hydrogen in MOBs project, in most instances MOBs can be converted to hydrogen or an alternative heating solution. This project looks to assess this gap and provide an alternative heat option through heat networks providing the customer options, based on deployable heat network technology as an alternative to electrification being the only option if green gas is no longer the recommended heating option.

Success Criteria

The project will be deemed successful if the following is met during and post project delivery:

Report Finalisation and Internal Approval:

The consultancy report is delivered by the agreed timeline, followed by internal review.

Strategic Implementation:

Following approval, the recommended strategies and models will be implemented over a defined period, with specific milestones for each phase of the plan.

Continuous Monitoring:

The success of the implementation will be monitored through regular updates and assessments against the baseline measurements, ensuring that the expected benefits are being realised.

Project Partners and External Funding

PA Consulting Services are the Project Supplier

Potential for New Learning

The Heat Network Transitional Study will produce a blueprint of how gas networks might be best placed to deliver heat networks using a technical assessment of how our assets could be utilised or repurposed to facilitate future role out. New learning will be posted on the ENA Smarter Networks portal and a detailed report will be shared across the industry to stimulate debate and discussion, as well as a launch event that will bring together key stakeholders, including DESNZ, to ensure this work gets the required exposure across the industry.

Scale of Project

This will be a desktop study covering heat networks across Great Britain with regular engagement between SGN and the project partner.

A smaller scale business modelling only scope did not meet the NIA funding criteria which would require an SGN Opex spend. Furthermore, this would not include GDN's strategic advantage as an incumbent gas network owner/operator, potentially positioned to support the development of heat networks, deploying capital, core regulated business, and utilising its skills and repurposing existing infrastructure.

Technology Readiness at Start

TRL7 Inactive Commissioning

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

This is a desktop study that will evaluate the heat networks business models across all GDN areas in Great Britain.

Revenue Allowed for the RII/O Settlement

Not applicable

Indicative Total NIA Project Expenditure

SGN External - £260,000.00

SGN Internal - £86,666.67

Total - £346,666.67

Project Eligibility Assessment Part 1

There are slightly differing requirements for RII0-1 and RII0-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RII0-2 / RII0-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RII0-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

This Heat Network Transitional Study looks to offer a blueprint of why gas networks might be best placed to deliver heat networks using a technical assessment of how assets could be utilised or repurposed to facilitate future role out. A detailed report will be shared across the industry to stimulate debate and discussion as well as a launch event that would bring together key stakeholders, including DESNZ, to ensure this work gets the required exposure across the industry.

How the Project has potential to benefit consumer in vulnerable situations:

Many vulnerable people reside in multi-occupancy buildings which are a key customer for heat networks. By identifying business models to support the deployment of heat networks, vulnerable customers will be provided with an additional option for decarbonisation and help ensure they are not left behind in the pathway to net zero.

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RII0-1 projects only)

Not applicable.

Please provide a calculation of the expected benefits the Solution

Not applicable.

Please provide an estimate of how replicable the Method is across GB

The business models being evaluated will be effective in all GDN areas across Great Britain.

Please provide an outline of the costs of rolling out the Method across GB.

Not applicable at this stage.

Requirement 3 / 1

Involve Research, Development or Demonstration

A RII0-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

- ☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).
- ☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)
- ☐ A specific novel operational practice directly related to the operation of the Network Licensees system

- ☐ A specific novel commercial arrangement

RIO-2 Projects

- ☐ A specific piece of new equipment (including monitoring, control and communications systems and software)
- ☐ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven
- ☐ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)
- ☐ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology
- ☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution
- ☒ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

The analysis on the market outlook, potential business models and stakeholder insights will be brought together in a detailed report that is applicable to all GDNs across Great Britain.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIO-1 only)

Not applicable.

Is the default IPR position being applied?

- ☒ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

A GIGG one-pager has been shared with the other GB Gas Networks and reviewed against other projects.

Study of heat networks is also being covered by Wales & West Utilities' project 'The Impact of District Heating on Our Network'. However, there is limited duplication as the 'Heat Network Transition Study' is focused on urban areas identifying primary FEED and financeability challenges to transition high-rise MOBs to heat networks with a goal of identification and viability of this from an engineering and cost perspective. On the other hand, 'The Impact of District Heating on Our Network' project is looking at LAEP management planning and regional optioneering drivers.

SGN will engage with Wales & West Utilities throughout project deployment to ensure that there is no duplication of evidence.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

Not applicable.

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

This project will identify and evaluate viable investment models that can attract significant capital to support the development of Heat Networks. This will help to stimulate debate and support strategic decision-making within SGN and possibly influence DESNZ and Ofgem on alternative funding structures to the DESNZ Zoning and Energy Act 2023.

Relevant Foreground IPR

The foreground IPR from this project will be the report prepared by PA Consulting at the end of the project of which SGN will own and share as agreed on an informative basis with SGN's stakeholders and regulators.

Data Access Details

Any consumer data gathered throughout this project will be anonymised and will be compliant with General Data Protection Regulations (GDPR) and the UK Data Protection Act. Any compliant data can be made available for review upon request.

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

The project is carrying out an evaluation of viable investment models and as such it is not part of the usual activities of the business.

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

The NIA framework offers a robust, open framework to support this work and ensures the results are disseminated to all licenses. The project will identify and evaluate viable investment models that can attract significant capital to support the development of Heat Networks.

This project has been approved by a senior member of staff

☒ Yes