Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

# NIA Project Registration and PEA Document

### Date of Submission

Sep 2024

### Project Reference Number

NIA2_SGN0056

## Project Registration

### Project Title

Interventions for Hydrogen by Asset Group Phase 3

### Project Reference Number

NIA2_SGN0056

### Project Licensee(s)

SGN

### Project Start

September 2024

### Project Duration

0 years and 7 months

### Nominated Project Contact(s)

Innes Maciver

### Project Budget

£254,000.00

### Summary

This project will look to continue and improve upon the work of NIA2_SGN0025 Interventions for Hydrogen by Asset Group (Asset Interventions) by undertaking additional assessments of the new evidence from Hydrogen Heating Programme (HHP) projects completed since the end of phase 2c and by incorporating any relevant international evidence. The format of the database will also be enhanced to enable easier access to the key points and to review the scoring using a new weighted average method, which will improve accuracy. Summaries of the evidence within the database will also be produced against the HSE Demonstration (D) points and the Evidence Management System (EMS) level 2 sub-requirements to provide an overview to DESNZ on the completeness of the NSI D points.

### Preceding Projects

NIA2_SGN0025 - Interventions for Hydrogen by Asset Group

### Third Party Collaborators

Arup

DNV

### Nominated Contact Email Address(es)

sgn.innovation@sgn.co.uk

### Problem Being Solved

Each network has produced a body of evidence to demonstrate the suitability of gas networks for hydrogen conversion. In the previous Asset Interventions project, the evidence from all completed projects was aligned to the relevant asset groups within a centralised

database. This allowed the networks to conduct a thorough gap analysis to initiate targeted projects aimed at closing these identified gaps. Work across the HHP is still ongoing, and evidence is continually being produced. The Asset Interventions database was designed to be a live document and should be continually updated with new evidence assessed to ensure gaps are being addressed ahead of the Hydrogen Heating Policy Decision.

## Method(s)

Phase 3 will continue the good work from the earlier phases and will involve two suppliers in Arup and DNV. Each supplier and the Networks will undertake different roles in the project.

**Arup's approach**:

1. Establishing a collaborative working relationship with SGN, the Networks, ENA and DNV is key. Agreeing mutual outcomes and end goal objectives.
2. Regular weekly progress meetings and reporting in addition to specific working meetings as required.
3. To deliver our scope, Arup will need access to information:
    1. Latest version of the Asset Intervention Database in agreed SharePoint location
    2. Project reports (primarily findings and conclusions) and project proformas - to be provided through the ENA or Networks
    3. HSE Feedback, comments and sign off logs etc. from the HSE, that are related specifically to the project evidence that has been submitted to date.
    4. Any other relevant work/evidence e.g. international evidence to be provided by Networks.

**DNV's approach**:

1. DNV receipt of updated evidence and project kick-off (WP5 & WP6)
    1. DNV receives initial updated evidence recorded against assets (by theme and pressure tier) following completion of earlier work packages.
    2. Discuss any updates to structure and content of Database with subject matter experts (SMEs) responsible for completing work packages.
    3. Outline updated plan (based on actual start date).
    4. Agree sample data set to be assessed as a part of initial assessment milestone Note. The initial assessment is intended to confirm the process and format with the stakeholders prior to progressing with the remaining assessments.
2. Assign evidence to SMEs for assessment
    1. Review updated database and divide into relevant themes based on SME's specific area of expertise
    2. Hold initial meetings with SMEs and agree assessment and review programme for assigned asset/theme/evidence
3. Subject matter experts undertake initial assessment of sample evidence
    1. Undertake assessment of updated evidence for the agreed initial sample, including:
        1. Review new evidence: HyDeploy, MOBs, LTS Futures, HRC, cast iron
        2. Review outputs from International Evidence project and incorporate all relevant evidence
        3. Review knowledge gaps, focus on critical evidence, identify potential replacement of assets
    2. Record assessment outputs in Database, including description of remaining gaps
4. Issue updated Database containing initial sample assessments for optional review by Gas Networks
5. Subject matter experts undertake remaining assessments of evidence (repeat assessment process outlined in step 3)
6. Issue updated 'draft' Database containing all assessments for optional review by Gas Networks
7. SMEs review and update assessment outputs following comments from Gas Networks
8. Issue updated 'final' Database containing amendments and comments response sheet
9. Create a list of assets which is prioritised based on the extent of evidence gaps in a format to be agreed with the Gas Networks
10. Issue the prioritised list to the HSE
11. Develop a short technical note containing the methodology, tasks completed, list of SMEs, high-level assessment outputs, and a record of correspondence with HSE
12. Hold a project close-out meeting to clarify that all deliverables have been provided.

**Measurement Quality Statement**

The project will use the above approaches to ensure assessments follow quality assurance processes. All methods used will be clearly documented within the relevant deliverables and final project reports, which will be made available for review. This will include the procedures and techniques used, and mechanisms to ensure traceability, reliability and comparability of results.

**Data Quality Statement**

Regular meetings will be held with key stakeholders from each network and the two suppliers to agree the format for the sharing and storage of project data. This is important as it will allow the gas networks to demonstrate to DESNZ and Ofgem that there is no unnecessary duplication within the various hydrogen projects and trials, and justify any additional research required. DNV's involvement in the project will ensure a consistent approach in the presentation of the assessments and data due to their involvement in the previous phase of Asset Interventions.

## Scope

**WP1: Ongoing management of the Asset Interventions database (Arup)**

1. Update of the format of the database to improve presentation and allow easier access to results and review of scoring:
    1. Arup will update the excel based database to allow easier navigation and access to data and ratings.
    2. Discussion will be held with SGN, the other Networks, DNV and the HSE to agree format change and requirements.
2. Taking ownership of managing the database, controlling access to the SharePoint and version control:
    1. The live version of the database will be saved in an agreed SharePoint location with Arup having full access.
    2. During the project Arup will host the database and provide access as directed by the Networks. At the project end, the database will be handed back to the Networks. The Networks will then be responsible for providing access to those that require access.
3. Adding new project and evidence to the database as provided by the Networks:
    1. Under WP3, the Networks will be reviewing ongoing and new projects and will provide information to Arup to include in the database.
    2. Arup will also consider how the project tables are formatted and accessed within the database. The format for adding international evidence will also be agreed with the Networks.
4. In the database, update HSE Demonstration Points and NSI L2 sub-requirements:
    1. Demonstration Points and L2 references are to be provided by the Networks for the asset categories in the database.
    2. Project Matrix (developed as part of the current SGN-Arup Hydrogen Network Safety project) will also support in updating existing Demonstration Points in the database.

**WP2: Review of HSE feedback (Networks)**

Review of HSE comments logs and highlighting any knowledge gaps in the database:

- The Networks will carry out technical review of comments in the HSE comments log for their individual projects, identifying areas with gaps which are yet to be covered by other Network projects and evidence in the database.
- Any gaps will be discussed with other NSI project leads where required and reviewed against information in the database.
- Evidence gaps will be added into the database by the Networks for consideration and update of the scoring by DNV.

**WP3: Review of existing/ongoing evidence (Networks)**

Create specific evidence tables per project: HyDeploy, MOBs, LTS Futures, Hydrogen Ready Components (HRC) Phase 2, Cast Iron, and others:

- Arup will incorporate this into the database and ask for feedback on missing information, accuracy of evidence and correct alignment to themes/asset categories.

**WP4: Summary of evidence (Arup)**

Analyse the database to determine state of evidence and HSE Demonstration Point completeness:

- Arup to review the database to extract evidence ratings against asset categories, pressure tiers and NSI themes/sub-themes/asset categories.
- Calculate average scores based on HSE Demonstration Points and L2 sub-requirements. Consideration to be given to weighted average approach to prevent unbalanced scoring. Approach to be agreed with al Network Partners.
- Provide overview to DESNZ on how well the NSI Demonstration Points have been addressed. The outputs from the database will feed into the Hydrogen Network Safety project.

**WP5: Review of evidence (DNV)**

Review new evidence and updated evidence summary tables:

- DNV to review new evidence on key projects including HyDeploy, MOBs, LTS Futures, HRC Phase 2 and Cast Iron.
- Review outputs from the International Evidence project and incorporate all relevant evidence.
- Review knowledge gaps, focus on critical evidence, identify potential replacement of assets.

**WP6: DESNZ review (DNV)**

Liaison with DESNZ on evidence reviews:

- DNV to issue evidence for updated asset categories that require review.
- Send evidence to DESNZ in order of prioritisation.

## Objective(s)

The aims and objectives of this project are to:

- Add new evidence and projects into the database.
- Improve the usability of the database including access to results and review of scoring.
- Complete assessments of the new evidence.
- Revise knowledge gaps and include identification of potential replacements of assets where appropriate.
- Determine the overall state of evidence.

## Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

An assessment of distributional impacts (technical, financial and wellbeing related) for this project has been carried out using a bespoke assessment tool, which assesses the project as having a positive, negative or neutral effect on consumers in vulnerable situations. To help inform the assessment, this tool considers the categories of consumers identified in the Priority Services Register.

This project has been assessed as having a neutral impact on customers in vulnerable situations.

## Success Criteria

The outcomes of the project will be considered successful if:

- Completed evidence is successfully added to the existing framework and assessed within the context of the relevant assets.
- All asset categories with new evidence receive new scores, assessments, identified gaps, or recommended interventions.
- The database can be easily used to its full potential.
- The database includes a weighted average scoring system.

## Project Partners and External Funding

Arup and DNV will be the suppliers for this project with collaboration from the networks.

## Potential for New Learning

The new weighted average scoring will help paint a more accurate picture at asset level to better understand the overall state of hydrogen evidence and existing knowledge gaps, which will support scoping new potential projects to address these gaps and support the Hydrogen Heating Policy Decision.

## Scale of Project

This project, based on the database from the earlier project, has been scaled to include all projects completed since December 2023 along with new ongoing projects and interim evidence. This will ensure the assessment of the evidence is the most comprehensive possible, making for an accurate state of evidence. The planned formatting and functional improvements for the database are necessary to ensure the database can be used to its full potential.

## Technology Readiness at Start

TRL4 Bench Scale Research

## Technology Readiness at End

TRL5 Pilot Scale

## Geographical Area

The outputs of this project will be representative of the GB gas network.

## Revenue Allowed for the RIIO Settlement

Not applicable.

## Indicative Total NIA Project Expenditure

SGN – External £41,930 Internal £13,837

Cadent – External £83,860 Internal £27,953

NGN – External £20,965 Internal £9,699.45

WWU – External £20,965 Internal £6,988

NGT – External £20,965 Internal £6,988

**Total – £254,150.45**

# Project Eligibility Assessment Part 1

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

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

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

This project will allow networks to be fully informed on the current state of evidence for converting the gas network to 100% hydrogen and the remaining knowledge gaps that need to be addressed.

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

n/a

## 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 (RIIO-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 outcome of this project is relevant to the whole GB gas network.

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

Not applicable.

## Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-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

RIIO-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

This project will assist with identifying gaps in the knowledge required to convert the gas networks to 100% hydrogen. This will assist all network operators in preparing for future conversion by scoping new projects to address any identified gaps and by making informed decisions on replacement programmes. Findings from the project will be available to all relevant stakeholders through the report and associated database.

### Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-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.

This project is collaborative amongst the networks and the results will be in the public domain as well as being disseminated to networks via the Network Safety and Impacts group. Furthermore, the database itself will ensure there is no duplication across the programme as it offers a simple and effective way of checking existing and ongoing 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

As hydrogen becomes a key energy system for the UK, there is a requirement to identify and close out any remaining gaps in our knowledge base.

The UK gas networks are working on a wide range of projects to understand the feasibility of hydrogen as an energy solution for the UK as part of the net zero targets for 2050 and this project will collate all this information as well as information from relevant international trials in one central database accessible by all relevant stakeholders.

A new weighted average scoring system will help make the outputs of the database more accurate and the planned enhancements to

the database will ensure this tool remains relevant until the Hydrogen Heating Policy Decision.

## Relevant Foreground IPR

The outputs from this project will include some reports and technical notes on the work undertaken, along with an improved database which will rely on the database from the earlier project.

## Data Access Details

Information relating to the project will be published on the ENA Smarter Networks Portal at https://smarter.energynetworks.org/

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

The methodology undertaken in this project is deemed a beneficial part of the network conversion to 100% hydrogen. This is not yet a business-as-usual activity for the GDNs.

## 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 conversion of the GB gas network to 100% hydrogen is a key element on the road towards net zero. A reliable supply and the assurance of safe operations for workers and the public are crucial to support the viability of the hydrogen transition. The NIA framework can support works that ensure results that play an essential part in the roll-out of hydrogen.

## This project has been approved by a senior member of staff

☑ Yes