

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 2015

### Project Reference Number

NIA\_SGN0081

## Project Registration

### Project Title

Interruption Solutions – Live ECV, Meter, and Service Replacement (Stage 1)

### Project Reference Number

NIA\_SGN0081

### Project Licensee(s)

SGN

### Project Start

October 2015

### Project Duration

0 years and 8 months

### Nominated Project Contact(s)

Stephen Tomlinson, Innovation Project Manager

### Project Budget

£166,800.00

## Summary

Traditionally there have been a range of products and processes that have been used operationally to deal with the customer interruptions. Some of the products, such as service renewal after escape are even carried out under 'live' gas conditions.

However in all cases, irrelevant of whether the service pipe is maintained as a 'live' pipe, the customer is taken off gas. The innovation is to develop processes, methodology and concepts that would allow the work to be done, whether under dead or live conditions, but maintaining a gas flow to the customer, thus preventing their interruption.

The scope of the project is to identify how unplanned customer interruptions can be minimised by determining possible solutions that will potentially reduce interruption due to (but not limited to):

- Disconnections
- ECV exchange
- Water ingress
- Poor pressure
- Service renewal after gas escape

The scope detail is:

- Feasibility Study – Concept to Reality .
- The type of service pipe that the project will consider is
  - ¾" to 1 ¼" metallic service pipes
  - Service pipes that are 12 to 15metres in length
  - Service pipes that have a maximum of two 90 degree short radius bends in line

- Service pipes that have a maximum operating pressure of 75mbar.
- Flow, Pressure and usage data capture system
  - 0-75mBar pressure
- 0-3scmh-1 flow

## Nominated Contact Email Address(es)

sgn.innovation@sgn.co.uk

## Problem Being Solved

Network Licensees endeavour to minimise interruption to customer supplies during engineering works wherever possible.

This project aims to investigate the potential of reducing interruptions by reviewing the feasibility of Live Service and Live ECV renewal and replacement, allowing the potential to work on service pipes and emergency control valves (ECV) without turning off the gas flow to customers gas operated devices.

Simply put the problem is to keep the customer 'on gas' while working on their service pipe or ECV which carries the potential to improve customer satisfaction and reduce costs.

## Method(s)

This project will investigate the possibility of working on service pipes and ECV's without interrupting gas flow by:

- Undertaking a detailed feasibility study to generate a 'Concept to Reality' study including:
  - Global Technology Watch
  - Patents Searches
  - Engagement with Partners
  - Concept to Reality Technical Report
- Undertake a detailed review of operational procedures and gas standards to identify possibilities and blockers in moving to a Live Service Renewal System.
- Review of management information to identify high impact unplanned interruption solutions
- Review existing technology from the global gas industry as well as existing technology from other industries.
- Develop possible concepts
- Provide product and methodology recommendations based on cost benefit analysis, operational requirements and development restrictions.
- To provide a high level commercial and technical review of the process.

## Scope

Traditionally there have been a range of products and processes that have been used operationally to deal with the customer interruptions. Some of the products, such as service renewal after escape are even carried out under 'live' gas conditions.

However in all cases, irrelevant of whether the service pipe is maintained as a 'live' pipe, the customer is taken off gas. The innovation is to develop processes, methodology and concepts that would allow the work to be done, whether under dead or live conditions, but maintaining a gas flow to the customer, thus preventing their interruption.

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## Objective(s)

The objectives for this project are to:

- Identify any existing gas industry technologies that could possibly reduce the number of unplanned customer interruptions.
- Identify any existing non-gas industry technologies that could possibly be transferred to reduce the number of unplanned customer interruptions.
- Identify any possible conceptual ideas that could possibly reduce the number of unplanned customer interruptions.
- Review and identify current UK Gas Industry Standards in relation to reducing the number of unplanned customer interruptions.
- To prepare a report confirming the findings from the
  - Global Technology Watch
  - Patents Searches
  - Engagement with Partners
  - Concept to Reality technical Report
- Provide recommendations on products, processes and procedures for reducing the number of unplanned customer interruptions.
- Identify concepts for further development.

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

n/a

## Success Criteria

- A review of existing full or partial solutions, that are available both within the UK and elsewhere, to enable live service insertion without interruption or affecting the flow of gas through the meter.
- A gap analysis of solutions against existing SGN and UK industry specifications and standards.
- Selection of the most suitable existing solution to develop with conceptual design or conceptual design of new solution. Including an indication of expected full solution unit purchase cost and risk assessment and gap analysis against relevant SGN and UK specifications and standards.
- Conceptual design of solution and assessment. Including gap analysis of the design against relevant SGN and UK specifications and standards, in order to determine performance requirements for product testing. Rev
- Review of regulatory and statutory requirements

## Project Partners and External Funding

n/a

## Potential for New Learning

n/a

## Scale of Project

This is a small scale feasibility assessment project that will be carried out off the gas distribution network. Due to the low Technology Readiness Level (TRL) it is not possible to accurately comment on the potential future scale until the completion of the project.

However, any future methods/products arising from the successful completion of this phase and all required future phases will be applicable throughout GB

**Technology Readiness at Start**

**Technology Readiness at End**

TRL2 Invention and Research

TRL3 Proof of Concept

## **Geographical Area**

This project will be undertaken by Synthotech and their associates at their respective sites.

## **Revenue Allowed for the RIIO Settlement**

As this project is a feasibility study for a technology at a low TRL, it is not yet possible to determine whether revenue savings are likely during RIIO-GD1.

## **Indicative Total NIA Project Expenditure**

The total project expenditure is £166,800 , 90% of which is allowable NIA expenditure (£150,120

## 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:

n/a

#### 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)

This project is at a low TRL and it is therefore not possible to provide an accurate estimate of the potential saving to customers at this stage. However, any mechanism that enables Network Licensees to reduce customer interruptions will potentially enable both tangible and intangible financial benefits to be achieved.

#### Please provide a calculation of the expected benefits the Solution

N/A – low TRL.

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

The potential outcomes of this project and any follow on projects are replicable across GB. All network licensees will be able to utilise identified interruption solutions throughout their operational activities

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

Excluding the cost of purchasing any equipment, it is anticipated that the cost of disseminating the development outcomes and findings from the project and training costs incurred before the any identified products can be used would be approximately £10,000 for SGN. Using the 4:2:1:1 split with reference to the size of the networks, It can be assumed that National Grid's training costs would be approximately £20,000, and Wales & West Utilities', and Northern Gas Networks' would be £5,000 each. Therefore, the estimated total cost of training would be £40,000.

This estimated figure includes three training courses for 12 people for each Network Licensee in three separate locations across their network with an allowance for travel included, and approximate costs for one practical demonstration by SGN for representatives from each Network. It is anticipated that each Licensee would have their internal training carried after an initial training program to a selective proportion of their workforce.

### 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 trialed 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

All Network Licensees will be able to use the learning from this project as the outputs will be presented in a clearly defined report that will be available to them on the smarter networks portal. This will demonstrate to the network licensees the potential benefits of utilising identified methods following the success of this project and any required future follow on projects.

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

n/a

- Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

### 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.

n/a

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

n/a

## Additional Governance And Document Upload

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

n/a

**Relevant Foreground IPR**

n/a

**Data Access Details**

n/a

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

n/a

**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**

n/a

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

Yes