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

Dec 2015

Project Reference Number

NIA_NGGD0069

Project Registration

Project Title

Top Tee Siphon Adaptor (TTSA)

Project Reference Number

NIA_NGGD0069

Project Licensee(s)

Cadent

Project Start

December 2015

Project Duration

3 years and 9 months

Nominated Project Contact(s)

Adam Hassall - National Grid Gas Distribution

Project Budget

£25,974.00

Summary

The Scope of this project is to carry out tests and trials on a product that can remove water quickly and safely, without the need for specialist teams at a low cost. This Project will:

- Test a prototype on a non-live environment
- Carry out live environment field trials in the North West network
- Generate a product specification
- Produce stats on efficiencies of using this product against traditional methods.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

Heavy flooding and events such as burst water mains cause pipelines to take on water. Water ingress is a problem that NG faces on its distribution network. Water ingress can lead to loss of system pressure and loss of supply to customers.

When emergency incidents occur, the current method of removing water from multiple streets requires an excavation to be made to uncover the section of pipe, installation of a pit to allow water to gather, siphon out the water, and once removed the saddle is then plugged and the excavation back filled. This has to be done in multiple streets to remove the water from an entire area.

This can be very time consuming and keeps customers off gas until the water is removed.

Method(s)

National Grid working with Gas Leakage Solutions are going to trial and test a Top Tee Siphon adaptor that can withdraw water from the top of PE mains without the requirement for Breathing Apparatus, as a low cost solution compared to traditional methods and other techniques on the market.

Network Maps will be utilised to identify low points in the areas, with altitude readings from our ESRI system to pin point locations for excavation and use of this product.

Scope

Scope of field trial changed to include East Midlands Network - numerous opportunities are available as trial sites

Objective(s)

The objective of this project is to trial equipment for water removal from the top of the main without the need for BA equipment, ensuring the water from within a specific section of the main is fully removed and allows engineers to install a PE siphon directly on the network without installing a water collection pit at a relatively low cost.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The success criteria for the project is to trial and test a Top Tee siphon adaptor and show that:

- Removes water from a PE main in a controlled environment
- Can be applied directly on to a PE network resulting in a reduction of required fittings
- Reduces the requirement for larger excavations & removes the need for a water collection pit
- Restores gas supply to customers in a shorter time frame.
- Product is a cheap cost solution for removing water over traditional methods.

Project Partners and External Funding

National Grid Gas (NGG) – NIA internal funding

Gas Leakage Solutions – Project Partner

Potential for New Learning

This project is expected to offer GDN's a tested and trialled product that allows Engineers to remove water from the top of the main without requiring BA equipment. It also ensures the water from within a specific section of the main is removed and allows engineers to install a PE siphon directly on the network without installing a water collection pit when an emergency occurs.

Scale of Project

National Grid plan to carry out a small scale project to trial the equipment and tooling necessary to remove water within PE mains via a Top Tee Siphon adaptor. These trials will be used to provide a body of evidence that the tooling and equipment can be used on NGs network and comply with NG policies and procedures.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The tests and trials will take place on National Grids North West network

Revenue Allowed for the RIIO Settlement

No Revenue Allowed for in the RIIO Settlement

Indicative Total NIA Project Expenditure

£25,974

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 aims to trial a way of removing water from the top of a PE main through a new top tee siphon adaptor when major water incidents occur.

1. Quicker resolution to removing water will ensure customers are returned to gas quickly, reducing interruption periods. (Reduction in customer interruption times)
2. Excavation size will be reduced by approximately 40% over current methods where the entire main has to be exposed to install a pit meaning less disruption to customers. (Excavation reduction target and time/cost saving)

Please provide a calculation of the expected benefits the Solution

As part of the project there will be a cost comparison exercise using this product over traditional methods and the savings figure will be uploaded as part of the closure process.

The reduction in excavation size will be a cost saving and due to a reduction in fittings this will also add to the cost savings. Compared to traditional methods, it has the potential to save up to £500 per job carried out.

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

Roll out has the potential to be applied across all GDNs across in the emergency area. This technology is for PE mains only. The specification generated as a deliverable of this project will be made available to other GDNs which will allow other GDNs to replicate the method.

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

It is estimated the kits will be below £2k per unit depending on how many are purchased at any one time. We envisage each repair team could purchase a kit to have available for emergency situations.

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

All GDNs encounter the problem of water ingress. The results from the trials of this equipment will be made available to the other networks.

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.

This technology has been confirmed by the supplier that it has not been utilised within the GB Gas Industry, nor are National Grid aware that this tech has been utilised in across the industry.

This project is intended as a low cost solution for extracting water from as many mains as possible when major incidents occur. This will not locate historical water ingress issues and as such does not duplicate any other project previously registered.

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