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 2016

Project Reference Number

NIA_NGN_169

Project Registration

Project Title

Syphon Design for Polyethylene Networks

Project Reference Number

NIA_NGN_169

Project Licensee(s)

Northern Gas Networks

Project Start

September 2016

Project Duration

1 year and 2 months

Nominated Project Contact(s)

Steve Pigott (Project Manager)

Project Budget

£48,418.00

Summary

- Prototype design, laboratory testing, field trials and approval of a standardized PE Syphon fitting for use on a low pressure PE gas distribution system.

Third Party Collaborators

MACAW Engineering Limited

Nominated Contact Email Address(es)

innovation@northerngas.co.uk

Problem Being Solved

Each year GDNs experience a significant number of events of water ingress into low pressure gas distribution pipes. When water enters a gas network, a risk to consumers arises from water forming seals in undulating pipes; this often results in reports of poor pressure and interruptions to gas supply. Ingress into the network can occur through leaking pipe joints, fractures and due to “third party” damage caused by the failure of the water network. In many cases, the location at which water naturally collects can be some distance from the point of water ingress.

Historically, syphon points were installed at known low points in the metallic low pressure gas network to allow the collection and subsequent removal of water, MEG and other liquids from the gas distribution system.

IGEM/TD/3 states that where necessary, provision should be made for the removal of condensate and other liquids from the system, by the installation of syphons, dip pipes or dip pipe collars located at low points.

There are currently no specific designs available in the UK to construct a PE pipeline syphon and there are no UK PE fitting manufacturers who currently produce such a fitting.

Method(s)

- A global technology search for syphon designs that may be used in fully welded polyethylene gas distribution networks
- Requirements gathering, concept design and prototyping of a polyethylene syphon constructed from GIS/PL2 approved pipe and electrofusion fittings.
- Laboratory testing and field trial (under G23) of prototype/import PE Syphon at multiple locations on the NGN network.
- Discussion with polyethylene pipe and fitting providers regarding the supply of PE Syphons and approval as a permanent attachment to the network.

Scope

- Prototype design, laboratory testing, field trials and approval of a standardized PE Syphon fitting for use on a low pressure PE gas distribution system.

Objective(s)

The objective of this project is to achieve a G23 approved, final design of a standard PE Syphon fitting for use on new PE network which meets the following criteria:

- Compatible with standard electrofusion jointing methods
- Availability in various diameter bands (to be determined)
- To be accessed via syphon stand pipe at road/footpath surface for liquid removal
- Ability to be retro fitted to metallic distribution systems in cases of chronic water ingress investigation and rectification

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The project will be deemed successful if:

- A prototype/import of a PE syphon fitting that meets all criteria set out in the Objectives has been designed/identified, tested, trialed and gained G23 approval

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

All GDNs suffer from the same issue with regard to the availability of a standardized, proprietary design of a syphon fitting for use on PE gas distribution systems. The field trials for this project, however will be restricted to NGN's network.

This solution, if successful will benefit the entire UK Gas Distribution Industry

Technology Readiness at Start

Technology Readiness at End

TRL3 Proof of Concept	TRL8 Active Commissioning

Geographical Area

Design and Trial – North East England

Final solution – National UK Gas Industry

Revenue Allowed for the RIIO Settlement

n/a

Indicative Total NIA Project Expenditure

External Costs: £36,350

Internal Costs: £12,068

Total NIA Expenditure: £48,418

Project Value claimable under NIA (90% of total cost): £43,576.2

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)

The problem the project addresses is that currently GDNs construct ad-hoc, non-standard PE syphon configurations to varying levels of suitability and success which is time-consuming and can have safety implications. By providing the industry with a standardized, G23 approved fitting, GDNs will have a safe, of-the-shelve solution at their disposal. The main savings will be reflected in the time avoided to construct an ad-hoc solutions.

Please provide a calculation of the expected benefits the Solution

A quantification of the benefits will be provided at the end of the project.

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

The problem the projects addresses affects the entire UK gas distribution industry. The solution will be commercially available to all GDNs.

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

Since the fitting is yet to be designed/identified, a unit cost is not known at this stage.

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

☐ 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 suffer from the same issue with regard to the availability of a standardized, proprietary design of a syphon fitting for use on PE gas distribution systems. This solution, if successful will benefit the entire UK Gas Distribution Industry

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

NGN's Innovation strategy identifies 4 focus areas for expenditure. This project addresses the focus area of Asset and Network Management.

☑ 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