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

Mar 2016

Project Reference Number

NIA_SGN0097

Project Registration

Project Title

PE Flowstop (up to 10bar(g))

Project Reference Number

NIA_SGN0097

Project Licensee(s)

SGN

Project Start

May 2016

Project Duration

0 years and 8 months

Nominated Project Contact(s)

Alex Stewart, Innovation Project Manager

Project Budget

£36,948.00

Summary

Research into existing manufacturers and suppliers of PE flow stop systems and products.

The project will involve an initial desk top investigation of manufacturers of PE flowstop systems including the current usage of PE flowstop globally. This will include diameters from 90mm up to and including 630mm. The project partner have offices throughout the world with experience of gas engineering and will draw on this experience to add value to the review.

Review of existing manufacturers and suppliers of PE flowstop systems and products.

Following this, a review will be carried out of all information gathered and identification of suitable flowstop systems for consideration for use by the GDNs. This review will include both Gap Analysis and Risk Assessment of the proposed solutions against relevant legislation.

Gap analysis of suitable products with SGN engineering procedures.

Undertake a gap analysis and risk assessment comparing the products identified in the initial research with the following complimentary SGN procedures:

SGN/PM/DIS/6.1.1 – Management Procedure for Metallic Flowstopping of Ductile Iron & Steel Mains by Use of Short Stop II Equipment.

SGN/PM/DIS/6.1.2 – Management Procedure for Metallic FlowStopping of Ductile Iron and Steel Mains by Use of TD Williamson Folding Plugger Equipment.

Selection of suitable PE flow stop systems for testing.

With the information gathered from the review of current products, an assessment will be carried out to ascertain the suitability of the available products taking account of procedures and specifications. Current UK industry standards and industry best practice and

guidance from professional institutions will also be considered.

Assessment of available products will identify current gaps in the supply chain for suitable PE flowstop techniques and the technical and engineering restrictions inhibiting the wider use of PE Flowstop across the UK gas industry. Furthermore, the project will also risk assess the use of PE flowstops >90mm on the SGN network and identify any conflicts or omissions with relevant SGN engineering policies and procedures and industry best practice.

Draft specification for off-site testing.

Following the identification of a preferred PE flowstop system for off-site testing a draft off-site testing specification will be created, taking account of the results of the gap analysis undertaken comparing existing available PE flowstop products with current UK standards and specifications. The Draft specification will be included in the final summary report for the project.

Nominated Contact Email Address(es)

sgn.innovation@sgn.co.uk

Problem Being Solved

SGN currently have 8,777,363.32m of medium (MP) and and 323,508.5m of intermediate pressure (IP) (up to 7bar(g)) mains in MDPE and HDPE laid in their networks in Scotland and Southern. It has been identified that a more efficient means of PE flowstopping technique (up to 10bar(g)) is required to maintain and extend the assets to their full potential and cause minimal disruption when works are being carried out. In 2015, there were 233 routine and non routine operations carried out on MP and IP PE mains in SGNs Scotland network, a significant proportion of which require a flowstop operation.

Following the work carried out in the PE Asset Life Research projects (NIA_NGGD0010), it has been identified that PE Squeeze Off has long term detrimental effects on PE, therefore an improved solution is required. Line valves can be used as an alternative means of stopping the flow, however as these are located at fixed points on the network, this can be impractical and result in the loss of customers' gas supplies.

Following an industry watch, SGN have identified systems in use, outwith the UK gas distribution industry, which allow for PE flow stop up to 10 bar(g). This project will involve an exhaustive global technology review for new, alternative technologies which meet the needs of the GB Gas Distribution Networks (GDN). It will also identify gaps in current European and UK legislation and regulation that is pertinent to the project.

Method(s)

SGN require a detailed assessment of the use of PE Flowstops on pipelines up to 630mm diameter and up to 10barg pressure in the global gas industry leading to the introduction of approved equipment and techniques for use on the GB Gas Networks.

The project will include:

- Research of global products and systems currently available
- Review of global products and systems currently available
- Gap Analysis and risk assessment of current products with SGN standards
- Recommendation of PE flowstop products suitable for testing

Off site testing specification to meet gap analysis identified

Scope

Research into existing manufacturers and suppliers of PE flow stop systems and products.

The project will involve an initial desk top investigation of manufacturers of PE flowstop systems including the current usage of PE flowstop globally. This will include diameters from 90mm up to and including 630mm. The project partner have offices throughout the world with experience of gas engineering and will draw on this experience to add value to the review.

Review of existing manufacturers and suppliers of PE flowstop systems and products.

Following this, a review will be carried out of all information gathered and identification of suitable flowstop systems for consideration for use by the GDNs. This review will include both Gap Analysis and Risk Assessment of the proposed solutions against relevant legislation.

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Draft specification for off-site testing.

Following the identification of a preferred PE flowstop system for off-site testing a draft off-site testing specification will be created, taking account of the results of the gap analysis undertaken comparing existing available PE flowstop products with current UK standards and specifications. The Draft specification will be included in the final summary report for the project.

Some minor issues and lack of suitable field trial location have led to a delay in the project completion. Some field trial were completed in early 2019 with final trials scheduled for early 2020. These trials have now had to be postponed due to the COVID 19 situation. It is hoped these can be completed once normal Operations resume. This change is beneficial as it allows completion of the project with no change to project costs or scope.

Objective(s)

The objective of this project is to prove the suitability of using PE flowstopping equipment (up to 10bar(g)) on the GB gas network.

Following this, the identification of the most suitable equipment and a detailed off site testing specification.

If a suitable technology is found which could be implemented to provide value to the GB Gas Consumer, then it is anticipated that this project could lead into a future stage where the equipment will be purchased and tested in both an off site and on site environment to confirm suitability.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The following success criteria apply to this project:

- Completed research into global products and systems currently available.
- Completed review of global products and systems currently available to assess appropriateness for use on GB Gas Distribution Networks.
- Delivery of an interim report which details the research and review into global products and systems.
- Completed Gap analysis and risk assessment of products with all relevant gas industry standards.
- Creation of an off site testing specification.

Delivery of final project report which details all project findings, including gap analysis and risk assessment and detailed testing specification.

Project Partners and External Funding

None

Potential for New Learning

The successful completion of this project will provide all GB Network Licensees with an understanding of the available PE flowstop (up to 10bar(g)) product outwith GB. It will highlight the most suitable technology for use on the GB GDNs when considered against all relevant legislation and current industry best practice.

The outputs of the project will be detailed in a final project report which will be available to other network licensees on request. Should a technology be identified which is considered to be suitable for use on the GB GDNs, it is anticipated that a future stage of this project could involve off site and on site testing of the equipment to confirm the technology is suitable for safe use on the GB GDN and its use can provide value to the GB Gas Consumer.

Scale of Project

This project could not be carried out on a smaller scale. This is the research, review and gap analysis and risk assessment phase of identifying a potential solution to provide value to the GB Gas Consumer. By structuring the project in this way, should no technology be identified which could be safely used and provide value then this learning will be valuable. Should a technology be identified then it is anticipated that the project could lead to a future stage.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL3 Proof of Concept

Geographical Area

The project is a desk top exercise involving research, review, gap analysis and risk assessment. This will be carried out by the selected project partner at one of their office locations in the UK.

Revenue Allowed for the RIIO Settlement

As PE valves can be utilised on a number of different operational activities it is not possible to identify this. However, during RIIO-GD1 it is estimated that SGN will spend approximately £255.7m and £209.6m on emergency and planned repairs respectively on all mains. As this project potentially will eventually allow the use of PE flowstop upto 10bar(g) it can be expected the reduction in asset life from existing flowstop techniques could be eliminated, thereby extending asset life and integrity. In 2015, there were 233 routine and non routine operations carried out on MP and IP PE mains in SGNs Scotland network, a significant proportion of which require a flowstop operation.

Indicative Total NIA Project Expenditure

The total project expenditure is £36,948. 90% (£33,253) of which will be claimed back via the NIA funding mechanism in line with the funding conditions.

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)

If it is assumed that, after successful completion of this project, a future project will be registered to carry out in depth off site and on site testing of the proposed solution to determine that it can be safely implemented on the GB GDNs and provide value to the GB Gas Consumer.

Please provide a calculation of the expected benefits the Solution

Research project and therefore N/A.

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

The potential outcomes of this project are replicable across GB. All the network licensees will be able to utilise the learning obtained from the research and review.

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

n/a

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 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 request, this will allow the network licensees to make informed choices as to whether to invest in this technology.

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.

A review of all other Network Licensees Innovation Funding Incentive Annual Reports and NIA portfolios has been performed and no similar projects have been identified. The project has followed on from the PE Asset Life projects which were funded through IFI and NIA.

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