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

Aug 2019

Project Reference Number

NIA_SGN0153

Project Registration

Project Title

ERS Module Regulator Conversion Phase 2

Project Reference Number

NIA_SGN0153

Project Licensee(s)

SGN

Project Start

September 2019

Project Duration

1 year and 7 months

Nominated Project Contact(s)

Keith Ellison - Innovation Project Manager

Project Budget

£366,921.00

Summary

Currently there are 559 sites with ERS modules that were originally designed by British Gas Research centre in the early 1980's installed across SGN which are no longer supported by the original manufacture, and these are having to be replaced due to many assorted reasons. This can include obsolescence, the obtainability of spares, the soft spare parts are still produced but there is no support for the internal hard parts and the issues relating to the existing ERS module regulator configuration outdated and the general condition of the ERS Modules where a number are suffering from water ingress issues.
Following on from the ERS Module Regulator Conversion Phase 2 Project SGN_0133 it is now necessary to progress the Project to a Phase 2 which will involve the installation of new axial flow valves and assess its suitability on the gas networks at 3 sites, 2 in the South and 1 in Scotland, which will meet existing industry specifications. This will enable the ERS modules to be upgraded, overcoming issues such as obsolescence which will be impacted on during GD/2, obtainability of spares, prolonging the existing vessels asset life, reduce the need to replace the vessels and reduce environmental impact. Current inspection methods require extensive excavation works to dig out the pipe, remove the sleeve and visually inspect it, which are often costly, time-consuming and a resource burden on the GDNs. In June 2003 Advantica Report R6196 was produced which provided a risk assessment methodology for OLI4 pipelines contained within Air-Filled Sleeves. This report made a number of recommendations as to how potentially make a desktop assessment to select which pipelines should be exposed and inspected. Since this time sleeves have undergone a limited number of condition assessment since this was published and recommended as the overall cost is extremely prohibitive.

Nominated Contact Email Address(es)

sgn.innovation@sgn.co.uk

Problem Being Solved

Currently there are 559 sites with ERS modules that were originally designed by British Gas Research centre in the early 1980's installed across SGN which are no longer supported by the original manufacture, and these are having to be replaced due to many assorted reasons. This can include obsolescence, the obtainability of spares, the soft spare parts are still produced but there is no support for the internal hard parts and the issues relating to the existing ERS module regulator configuration outdated and the general condition of the ERS Modules where a number are suffering from water ingress issues.
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overcoming issues such as obsolescence which will be impacted on during GD/2, obtainability of spares, prolonging the existing vessels asset life, reduce the need to replace the vessels and reduce environmental impact. Current inspection methods require extensive excavation works to dig out the pipe, remove the sleeve and visually inspect it, which are often costly, time-consuming and a resource burden on the GDNs. In June 2003 Advantica Report R6196 was produced which provided a risk assessment methodology for OLI4 pipelines contained within Air-Filled Sleeves. This report made a number of recommendations as to how potentially make a desktop assessment to select which pipelines should be exposed and inspected. Since this time sleeves have undergone a limited number of condition assessment since this was published and recommended as the overall cost is extremely prohibitive.
A means of inspecting the sleeves without the need to excavate would greatly simplify the process of assessing these sleeves, limit interference and inform any future action taken by the networks.

Method(s)

This will consist of the manufacture & the installation of new axial flow valves and assess its suitability on the gas networks at 3 sites, 2 in the South and 1 in Scotland, which will meet existing industry specifications. This will enable the ERS modules to be upgraded, overcoming issues such as obsolescence which will be impacted on during GD/2, obtainability of spares, prolonging the existing vessels asset life, reduce the need to replace the vessels and reduce environmental impact.

Scope

The project will focus on the production of 3 new cartridges / upgrades and to install these on the network to enable to assess the functionality & their suitability on the live gas network.

- Kick off meeting for Phase 2 & review of Phase 1 work
- Manufacture protypes
- Offsite Testing
- Production of G/23 to allow for field trials
- Provide training package & training
- Supporting installation & track performance of the 3 live field trials
- If field trials unsuccessful arrange for the removal of the units
- Following successful live field trials produce maintenance work instructions in SGN format
- Detailed final report on the project completion

Objective(s)

The objectives of a Phase 2 for the project is that it will enable DNVGL & SGN to evaluate the manufactured bespoke axial flow regulator cartridge system or suitable alternative new bespoke cartridge system and to carry out live field trials on 3 sites. It is envisaged that if this project is successful this would lead to; significant savings in not having to replace the ERS regulator modules

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The project will be deemed successful if the following has been achieved:

- Kick off meeting for Phase 2 & review of Phase 1 work
- Manufacture protypes
- Offsite Testing
- Production of G/23 to allow for field trials
- Provide training package & training
- Supporting installation & track performance of the 3 live field trials
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- Detailed final report on the project completion

Project Partners and External Funding

The project is to be wholly NIA funded & DNVGL have been chosen to continue to partner with SGN

Potential for New Learning

The project is expected to provide all Network Licences with fundamental understanding of whether to ERS Module Regulator Conversion Phase 1 Project SGN_0133 is suitable solution to enable the upgrade of these assets. Learning will be disseminated by providing training to operatives and through reports produced throughout the project.

Scale of Project

This project will consist of the manufacture & the installation of the new bespoke axial flow regulator cartridge system or suitable alternative and assess its suitability on the gas networks at 3 sites, 2 in the South and 1 in Scotland.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The conceptual design will be undertaken at the partner offices & at 3 SGN sites, 2 in the South and 1 in Scotland.

Revenue Allowed for the RIIO Settlement

SGN's RIIO Allowance for Repair activities is £209.6m. Given that the Project is successful and identifies that a phase 2 project where ERS module conversions can be manufactured & trialed as an alternative solution it is likely that there could, potentially, be a reduction in the repair expenditure. It is envisaged this would be down to material costs, excavations, although this will become clearer as the Project progresses.

Indicative Total NIA Project Expenditure

The total eligible NIA project expenditure expected to be £366,921 of which 90% £330,229 will be recovered 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)

SGN currently has over 559 ERS module regulators where these are no longer supported by the original manufacture and are being replaced due to many assorted reasons such as obsolescence, the obtainability of spares and the general condition of the ERS module regulators.
The replacement of these units requires the ERS module regulators to be replaced or relocated above ground, leading to a complete new site requiring large excavations, backfilling and infrastructure changes.

Current Costs
The 559 ERS Regulator Modules figure has been taken from 2015 data, where 29 modules were replaced during 2015, each costing on average of £61,116. However due to governor parts increased costs and contract rates the average cost of replacement of an ERS Regulator Module is estimated to be £72,326. This involves labour costs, obtaining a new location for an above ground unit and excavation and removal of the old ERS module regulators and backfilling.

New ERS Regulator Costs
The cost to produce the new axial flow regulator based on modifications are estimated as £12,568, however this does not include labour costs for the installation etc. As this is unknown an approximate labour cost of 10% per modification has been taken, equalling a total cost of £13,825.

Savings per replacement

The estimated cost replacement of £72,326 compared to the estimated modification cost of £13,825 equates to a saving of £58,501 per ERS Regulator Module.
Taking the 29 replacement figures from 2015, this new modification could on average annual save £1,696,529.

Please provide a calculation of the expected benefits the Solution

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

The potential outcome of this project is applicable across all GDNs

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

There are no costs associated with sharing the outputs and recommendations of this study with the other Network Licensees, which will be the first step to roll across GB.

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 generated from the manufacture & field trial of the ERS module conversion solution and the outcomes can be shared in a final report. This new methodology is anticipated to deliver savings in lifecycle costs to benefit the Networks. The learning gained from this project aims to inform Network Licensees of the potential of a solution to initially assess the condition assessment of pipeline sleeves.

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

The project aligns to the target area of reliability and maintenance and aims to improve the Assets life cycle and additionally the environment from having to replace the below ground modules.
☑ 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 the Smarter Networks Portal and other Network License's Annual Reports was performed prior to the start of this project and no similar projects were identified.

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

Currently obsolescence of the ERS Modules and the outdated functionality has been managed across the Networks by replacing these modules this project aims to prolong the assets life and bring these in line with current practices.

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

This is the manufacture & field trial to investigate the potential benefits of developing a usable ERS module conversion that has the potential to prolong the assets life and to reduce excavations and backfilling and conforms to the NIA governance criteria.

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 networks do not have the technical capability to or ease of access to the required information to undertake the project

This project has been approved by a senior member of staff

☑ Yes