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 2016

Project Reference Number

NIA_NGN_192

Project Registration

Project Title

Tier 2 Foam bags

Project Reference Number

NIA_NGN_192

Project Licensee(s)

Northern Gas Networks

Project Start

December 2016

Project Duration

1 year and 11 months

Nominated Project Contact(s)

Richie Read (Innovation Implementation Manager)

Project Budget

£93,732.00

Summary

Redevelop the existing design of the Tier 1 Stub End delivery product.

Undertake off-network testing of new design bags.

Trial on small sample of Tier2 stubs

Amend recording techniques within systems to ensure accuracy of data is complete.

Produce operational & management procedures along review of existing process to ensure full compliance

Third Party Collaborators

Steve Vick International Ltd

Nominated Contact Email Address(es)

innovation@northerngas.co.uk

Problem Being Solved

Where a tier 2 pipe's risk score exceeds the risk action threshold there is a requirement to remove the pipe from risk by abandoning the entire pipe. Leaving a stub of any length is un acceptable so cutting out a section of the parent main including the tee is the only compliant option available. Removal of the parent main, in many cases, can be extremely expensive, very disruptive to customers. It is often impractical to abandon these short sections due to traffic sensitivity or where normal working practices are unacceptable to stakeholders.

Method(s)

To undertake a development and demonstration project with an SME (Steve Vick International) to produce a permanent abandonment process that removes fully the risk of Tier 2a pipes i.e. those above the Risk Action Threshold connected to tier 2 or 3 pipelines without requiring a full cut out of the parent pipe.

Undertake an adaptation of the existing process “Remote foam bag for Tier 1 pipes” to ensure that the whole length of the tier 2a main is removed from risk.

Scope

Redevelop the existing design of the Tier 1 Stub End delivery product.

Undertake off-network testing of new design bags.

Trial on small sample of Tier2 stubs

Amend recording techniques within systems to ensure accuracy of data is complete.

Produce operational & management procedures along review of existing process to ensure full compliance.

Project Update

The project has had a few issues on the first trial whereby the foam didn’t “go off” as quickly as expected so the ratio of mix to hardener needed to be amended. Also the design of the bag had to change.

The initial design was a “dog bone” shaped bag with an open centre section. This part could be filled through a second umbilical fed through the bag. The foam didn’t travel as expected i.e. as it had done in the workshop, so the bag is being redesigned to have an outer layer to contain the foam.

The above has led to a delay in the project and needs to be extended by three months.

Project Update

After undertaking several field trials and developments over the past year with Steve Vicks we believe we have potentially developed the process for sealing off large diameter mains. But we must undertake 5 further trials on T2 diameter mains to prove the concept and gain approval to take Tier 2 Eseal to Business as Usual.

Reason for extending the process:-

The bags that are inserted into the main are unique to the process and the design had to be changed several times to fulfil the scope of the project and as the bags have to be manually constructed it takes several days and more cost has to be attributed to the project.

We had to develop a way to move debris inside the main to help with the seal of the bag.

Re-development of the insertion tubes, so there is a continual flow of the solution.

Time has been critical as there is limited number of occasions we can utilise this method.

Changes to the work method statement.

Objective(s)

To produce a fit for technique and methodology to fully remove from risk Tier 2a (mandatory) stub ends connected to T2 and 3 Non2 mandatory pipes.

Introduce a new product or service to the sector for decommissioning pipes in this category without the need for major customer disruption.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Gain approval for product to be used on the gas network

Introduce, from a remote location, an isolation technique that 100% removes stub end tier 2 pipes connected to tier 2 and 3 parent mains

Ensure that the new technique complies fully with Stub End Policy and data is captured in recording systems.

Project Partners and External Funding

This project is completley funded by NIA allowance

Steve Vick International

Potential for New Learning

The networks do not a have a fully approved process that guarantees the full removal of risk of tier 2a 10”-14” dia pipes connected to tier 2 or 3 parent mains.

The aim of this development is to learn if a redesigned delivery system can completely remove the risk of a stub end pipe

Scale of Project

Several field trial sites have already been identified and it is thought that performing the new technique in these locations will greatly reduce the cost of the abandonment. If it is deemed a success it is likely that this proposal could be deployed across the entire Northern Gas Networks geography, replicated across the other GDN’s.

Currently the only method for abandoning/decommissioning T2 gas mains is by using traditional ‘cut out’ methods. These methods involve large amounts of traffic management before an excavation in the highway can be made. Once access has been gained to the T2 main, there must then be enough space and straight T2 pipe to allow for the introduction of traditional flow stopping techniques. Traditional flow stopping techniques require a large amount of ground to be removed around and along the T2 gas main which is extremely costly when digging in a sensitive highway or road junction.
The nature of T2 gas mains means they are usually quite deep in the highway to protect them from damage. This means that they are difficult, time consuming and costly to expose with most excavations involving deep excavations permits. The ground surrounding the T2 mains is usually reinforced to allow for the traffic usage above which means costly and time consuming excavations. The reinstatement costs on such highways are also usually more costly and disruptive than on highways involving T1 gas mains.

Where Local Authority inspectors identify problems with reinstatement they may defect the work, requiring the statutory undertake, Northern Gas Networks, to return to site to undertake remedial repairs. Unsatisfactory performance such as described can impact on our stakeholder relationship and potentially can lead to a performance improvement notice and additional financial penalties.

Road opening permits must be obtained before any type of excavation work begins on a highway. These can be difficult to acquire from local authorities especially if the excavation comes with potential traffic disruption.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The development of the foam bag will take place at Steve Vicks HQ, with the field trials being carried out in NGN's network.

Revenue Allowed for the RIIO Settlement

This project will impact the safety output in the RIIO settlement reducing the lenghths of main taken off risk. NGN recieved £227m of TOTEX allownace in 2015/16, we estimate that this project could save £25k-£60k per operation, the amount saved will depend on how many are carried out each year.

Indicative Total NIA Project Expenditure

NGN External expenditure - £48,204

NGN Internal expenditure - £16,068

Total NGN expenditure - £64,272

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)

Existing tier 2 or 3 cut outs cost the network between £5,000 and £30k per occasion, on occasions in excess of £50k. If the method process successful the likely cost will be around £5,000 -£10k per occasion.

Please provide a calculation of the expected benefits the Solution

Base method £25,000, Baseline cost £5,000

NGN estimate they would complete around 16 over the period of RIIO saving £320k

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

NGN believe this would be replaceable across all 8 networks saving around £2.5m over the 8 years of RIIO

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

Theres is not anticipated to be any cost for roll out.

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

The learning from this project determine if a remote system can be safely used to complete isolate tier 2a pipes 10” to 14” dia connected to tier 2 or 3 pipes. Given the current view by the HSE of our current method the project aims to provide a robust alternative to mains cut outs on large diameter mains.

If successful other networks will learn from the project and be able to implement via the development of procedures.

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

Within our strategy NGN stated that within its Total Network Management approach it will focus on exploring new ways of working, new technologies and new processes to enable continuous improvement in:

- customer service; - This project will reduce impact on traffic and shorter duration jobs

- environmental impact; - Less excavation and material going to landfill

- safety; Shorter duration work results in fewer accidents to both employees or Members of the public

- asset performance; - By not undertaking cut out from tier 2 or 3 pipes and disturbing its environment there is less risk of future weaknesses occurring in the pipeline

- efficiency; Overall the above benefits will reduce costs.

☑ 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 thorough check of the smarter network portal has been carried out with no duplication found.

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