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_NGGD0076

Project Registration

Project Title

Concrete Removal System for Multi-Occupancy Buildings (MOBs)

Project Reference Number

NIA_NGGD0076

Project Licensee(s)

Cadent

Project Start

March 2016

Project Duration

1 year and 1 month

Nominated Project Contact(s)

Joe McShane (Innovation Project Manager)

Project Budget

£43,911.00

Summary

The Scope of this proposal is to design, manufacture and trial (laboratory and field) the new product to initially prove an improved method of securing riser pipework to walls whilst also improving repair activities on gas risers in MOBs.

The output would consist of a product for concrete removal tested in both a laboratory and field environment.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

There are a large number of MOBs across the country with gas risers. These risers, usually constructed of steel or copper, are coming to the end of their expected operational life, and to replace these using existing construction methods will be expensive and time consuming. NGGD alone as an example has an estimated 165,000 medium rise (3-5 stories) and 2500 high rise systems (above 5 stories).

Gas risers can be located internally within the building or can run up an external face where they are anchored to the wall using metal brackets. The metal-on-metal contact between the pipework and the wall anchor encourages localised corrosion which can lead to leakage and structural issues for the riser. The issue also extends to situations where a riser system can pass through a wall or balcony. Often in these situations the pipework has been sleeved for protection, however, the metal on metal contact again can encourage localised corrosion.

The GDNs would like to be in a position where a localised repair to this area of pipe can be undertaken which would stop leakage, halt further corrosion and provide support to the riser pipework.

Method(s)

The method would be a concrete removal jig to work in conjunction with a standard masonry drill to allow for the simple, reliable and low disruption removal of the top 25mm of concrete from around the riser and enable inspection to take place.

Scope

The Scope of this proposal is to design, manufacture and trial (laboratory and field) the new product to initially prove an improved method of securing riser pipework to walls whilst also improving repair activities on gas risers in MOBs.

The output would consist of a product for concrete removal tested in both a laboratory and field environment.

Objective(s)

The Project seeks to prove that the a currently conceptual approach to the problem is able, through trialling, to demonstrate that it offers a viable, cost effective and less customer disruptive alternative to inspecting and repairing/replacing gas risers.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The Project can be considered a success if, upon completion of work:

- The product has demonstrated capability of performing the desired tasks
- Feedback from the GDN engineers involved in the final stages of the project do not prohibit the further roll-out of the solution into normal working practice.

Project Partners and External Funding

The Project Partners are listed below. The Project is wholly NIA funded.

National Grid Gas Distribution (NGGD) – total project expenditure: £43,911.42

Potential for New Learning

The Project has the potential to demonstrate that some of the concepts within the solution to concrete removal from around gas risers could be applicable on a different scale to other networks activities such as small scale excavations.

Scale of Project

Different representative test sites, approved by NGGD, will be replicated for the purposes of demonstration and ease of application within the prototype lab simulation trails. These test rigs can also be used for further product training.

Three representative tests for concrete removal will be identified by NGGD for the purposes of field trials.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL6 Large Scale

Geographical Area

The early phases of work will predominantly be undertaken and the supplier's premises with stage gate meetings either also at these premises or at NGGD in Hinckley. Field trials will be undertaken at six NGGD approved locations to provide a representative sample of field variations.

Revenue Allowed for the RIIO Settlement

During RIIO-GD1 it is estimated that NGGD will need to replace 5% / annum of their High rise building services stock and attend 67,500 gas escapes per annum that are attributed to Gas mains, spending approximately £67.5m on repairs.

Indicative Total NIA Project Expenditure

The total recoverable allowance will be 90% of the project costs shown below for each Licensee under the Network Innovation

Allowance (NIA):

NGGD:

External expenditure - £30,643

External contingency @ 10% - £3064.30

Internal expenditure - £10,204.12

Total NGGD expenditure - £43,911.42

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 solution is part of three repairs which will potentially mitigate the need to replace a full riser system. As part of the wider cost-benefit analysis (CBA) for MOBs, the outputs from the trial will be fed into the CBA to better determine the limits of its use and the projected net financial benefits.

The ethos of the technology is to provide a remediation (deemed as permanent) as opposed to replacement with the obvious benefits being reduced cost for replacement, reduced interruption time, quicker response/reaction to repairs leading to improved customer experience.

Please provide a calculation of the expected benefits the Solution

Please see above.

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

All Network Licensees have multiple occupancy buildings across the country with gas risers. The Method and outputs will ultimately benefit all GB Network Licensees.

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

The costs of roll-out will be determined from the outputs from the trial (assumed that NGGD would enter a Commercial Arrangement with the Supplier and procure and specified volume per annum).

The intentions of the rollout plan would be to initially limit this technology to a small number of teams who carry out repairs of the network.

As part of the NIA, NGG would also share the outputs from the trial with other GDNs which would further expand the benefits case.

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

n/a

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

National Grid is responsible for approximately 2,500 gas riser systems in high rise buildings. NGGD assume that it would replace 170 of these riser systems over the following 5 years.

- 170 buildings over 5 years is approximately 34/year
- 34/year is approximately 1.3% of total population per annum.

National Grid is responsible for approximately 550,000 Medium Rise Buildings, of which it is believed 165,000 may contain a gas riser system. NGGD estimates that it would replace 7,218 of these riser systems over a typical 5 year period.

- 7,218 buildings over 5 years is approximately 1,443/year
- 1,443 a year is approximately 1% total population per annum (of medium rise buildings with a riser)

In the RIIO submission NGGD have planned £84 m spend on replacement MOBs over 8 years, averaged over 5. years approximates to £52M.

☑ 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.

Participation of within the project was offered to other GDNs at the initiation stage with no request received to collaborate within the

project.

All outputs will be shared as required.

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