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

May 2014

Project Reference Number

NIA_NGGD0033

Project Registration

Project Title

Multi-Occupancy Building CIP (HTC Serline)

Project Reference Number

NIA_NGGD0033

Project Licensee(s)

Cadent

Project Start

May 2014

Project Duration

1 year and 3 months

Nominated Project Contact(s)

NGG- Andrew Newton (Project Manager) – lead GDN, NGN – Alec Breen (Innovation Manager), WW- Lucy Mason (Project Manager), HTC – Len Ellison

Project Budget

£136,556.00

Summary

The project is to test the performance of Hydrostatic Testing Consultants (HTC) small bore pipe lining/ rehabilitation system in a standardized test procedure to enable objective comparisons to be made with alternative technologies that could be applied to the riser application.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

There are a number of high rise buildings across the country with internal 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, disruptive and time consuming. An alternative method to replace these systems is required.

Method(s)

The proposed solution investigates the possibility of utilising a liner system that was developed in the water industry to line lead water pipes. It is believed this technology can be transferred to the UK Gas market to enable the remote lining of the internal pipe wall in HRB risers.

The method would involve a small excavation being carried out at the base of the riser upright. Once the pipeline has been separated, a calculated measure of grit (dependant on length and diameter), is blown through the pipeline in order to clean the internal pipe wall. This would quickly be followed by warm air to ensure the polyurethane (PU) liner securely bonds to the internal pipe wall.

The PU liner would then be blown through the pipeline in a forced air vortex up through the riser into the customer’s property. The

forced air vortex technology allows injection of the mixed PU material into a carefully controlled air flow, allowing the air to carry the product quickly down the pipe, depositing the fast curing PU material to the dry internal wall of the pipe. It effectively uses the air stream as a channel and at the required position, creates turbulence to act as the application medium.

Any overspray from the liner material would be collected in a pre-designed collection devices so not causing unnecessary mess to the customers property.

Scope

The project is to test the performance of Hydrostatic Testing Consultants (HTC) small bore pipe lining/ rehabilitation system in a standardized test procedure to enable objective comparisons to be made with alternative technologies that could be applied to the riser application.

Objective(s)

The objectives are to determine whether candidate lining systems can successfully line metallic small diameter risers and also have the ability to prevent leakage from slackened off joints

The project will have to:

- Establish the degree to which the coating covers the complete inner surfaces of the rig pipework
- Assess the bonding strength of the coating, including after a number of different types of physical stress test
- Assess the integrity of the coating after some basic extreme temperature testing
- Enable basic screening, ranking and provision of 'Go / No Go' recommendations for future testing of candidate systems
- Highlight further product development needs
- Provide learning that will inform the work to define appropriate standards and policy

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

- Establishing the lists of physical test criteria, to allow the performance comparison of the coating in relation to other systems
- The ability for the coating system to be applied to the mock riser rigs in a single working day

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project is to undertake tests on two mock three story riser rigs in 1" and 2" pipes.

Technology Readiness at Start

TRL7 Inactive Commissioning

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

The test will be carried out at GL Noble Denton's Spadeadam Test Site.

Revenue Allowed for the RIIO Settlement

During RIIO-GD1 it is estimated that SGN, NGN ,WWU & NGG will need to replace 5% / annum of their High rise building services stock attend 135,000 gas escapes per annum that are attributed to Gas mains, spending approximately £135m on repairs. As this Project is to undertake tests on a potential lining and is part of a suite of projects looking at this sector the potential for future savings will be determined by the outcomes of these projects.

Indicative Total NIA Project Expenditure

NGG

£104,918 total Project expenditure, 90% of which is Allowable NIA Expenditure (£94,426)

WW

£15,819 total Project expenditure, 90% of which is Allowable NIA Expenditure (£14,237)

NGN

£15,819 total Project expenditure, 90% of which is Allowable NIA Expenditure (£14,237)

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)

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

Assuming that Serline could give savings between 25-50% approximating to savings of between £13m and £26m over a 5 year period for NGGD alone.

Please provide a calculation of the expected benefits the Solution

Typical MOB replacement costs are approximately £10k. It is assumed savings can be made in the region of 25-50%.

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

All Network Licensees have high rise buildings across the country with internal gas risers. The Method could therefore potentially be rolled out across all GB Network Licensees.

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

There would be no up front investment cost in rolling the Method out across GB as the Method would be a bought in service on a site by site basis.

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

The end of Project report will be shared with all Network Licensees. The procedures used within this project could form a template for repeating on different products on the market allowing the Networks the ability to make direct comparisons. The Project will lead to a greater understanding of how this technology can or should be validated and the scope of work to define appropriate standards and policy

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 NNGD have planned £84 m spend on replacement MOBs over 8 years, averaged over 5 years approximates to £52 m.

For WW there are an estimated 14,000 low rise and 346 high riser systems. Of those approximately 442 are repaired or replaced over a five year period at a cost of £2.5m, an intervention rate of 0.6%/annum.

☑ 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