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

Apr 2019

Project Reference Number

NIA_CAD0036

Project Registration

Project Title

Internal Joint Repairs

Project Reference Number

NIA_CAD0036

Project Licensee(s)

Cadent

Project Start

April 2019

Project Duration

0 years and 8 months

Nominated Project Contact(s)

Cadent Innovation Team

Project Budget

£78,451.21

Summary

The supplier will propose methods used by other utilities and industries that could be developed and adopted as a recognised internal mains repair.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

Analysis of gas leakage repair data shows that there are a significant number of mains repairs that are undertaken on joints of pipes that have previously been subject to mains spraying. This is further supported by statements from Operational managers working in the repair process that mains spraying has limited success. Falure of mains spraying will result in an excavation and an external repair being performed. Although some recent developments are now becoming available for targeted mains joint spraying they still have limitations in terms of the abillty to effect a permant repair for all joint types.

Method(s)

The supplier will propose methods used by other utilities and industries that could be developed and adopted as a recognised internal mains repair.

Scope

The scope of the project is to research internal joint repair methods for the full range of metallic pipes and associated joints, targeted but not limited to diameters of 6” up to 24”, and for mains operating at Medium (>75mbar to <=2bar) and Low Pressure (<=75mbar). The identification of internal joint repair techniques identified during these work packages should minimise the number of excavations required to effect the repair. Limiting launch and recovery points of tools to keyhole cores or the ability to complete multiple internal joint repairs from one excavation is to be considered. The project will offer a down selection model of interim to permanent joint repair solutions.

Objective(s)

• Research available technologies applicable to internal pipe repair.
• Down selection of most suitable solution(s) for each pipe repair scenario for further development and identify gaps in solution matrix.
• Plan for progressing further development of each preferred solution.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

• Final report which summarises the work conducted by the MTC, including but not limited to:
• Down selection of suitable technologies or solutions
• Next steps to further develop each of the down selected technologies or solutions

Project Partners and External Funding

Cadent and the Manufacturing Technology Centre (MTC).

The project will be wholly funded by the NIA.

• External (MTC) – £54,764
• Internal Allowance - £ 18,210.81
• Contingency - £5,476.40
Total: £78,451.21

Potential for New Learning

The utilisation of alternative internal mains repair techniques could reduce the amount of excavation and disruption to customers and road users.

Scale of Project

The scale of the project is across all Cadent Networks where pipe joint repairs are required. This work will inform all Gas Distribution Networks that have similar issues with pipe joint repairs in their networks. The scale of investment in this project is necessary due to the current lack of understanding and application of alternative internal pipe joint repairs, as per scope.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL2 Invention and Research

Geographical Area

The project will be delivered from the supplier facilities in Coventry and the Cadent offices in Hinckley, across the Cadent geography.

Revenue Allowed for the RIIO Settlement

Yes for repair and maintenance of existing metallic pipe assets. Innovation funding is to support new and novel internal pipe joint repair techniques that have not been considered by the gas industry previously.

Indicative Total NIA Project Expenditure

£78,451.21

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)

n/a

Please provide a calculation of the expected benefits the Solution

Although a research project it is anticipated that the success criteria for new and novel technologies will lead to a reduction in repair costs and disruption to customer and road users.
Successful novel technologies will be selected against these criteria.

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

Internal mains repair techniques will be replicable across all networks. The replicability of methods is not part of this study as it is a research based project.

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

This is not applicable at this stage of the project. This project is a research study.

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

This project will determine if alternative internal joint repair techniques can be used safely and effectively in the gas industry, which will provide more cost effective techniques for mains repairs in other GDNs .

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

This project supports Cadent Gas' drive to develop more efficient methods of repairs and maintenance of Gas Distribution assets.
☑ 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.

This project does not lead to unnecessary duplication as it is directly researching alternative internal mains repair techniques that can be applied other than the use of sealants or mains spray, such techniques are not fully understood within the gas industry at this time.

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

This Project is innovative as it involves researching alternative internal mains joint repair solutions from other industries and assessing the potential of these technologies crossing over to the gas industry.

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

The Network Licensee would not fund the project as BAU as identifying alternate internal mains repair techniques outside the gas industry carries significant risk both technically and operationally. The Manufacturing Technology Centre has multi-sector experience

and knowledge to help meet this shortfall.

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 Network Licensee is funding the project via NIA due to risks associated with new or novel untested technologies. It is also likely that foreground IPR opportunities will be very limited and therefore innovation investment risk is too high for a self-funded approach.

This project has been approved by a senior member of staff

☑ Yes