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NIA Project Registration and PEA Document

Date of Submission

Jun 2019

Project Reference Number

NIA_CAD0038

Project Registration

Project Title

Remote Live Mains Insertion (RLMI)

Project Reference Number

NIA_CAD0038

Project Licensee(s)

Cadent

Project Start

April 2019

Project Duration

2 years and 0 months

Nominated Project Contact(s)

Vishal Dhanji – Cadent Project Manager

Project Budget

£235,000.00

Summary

RLMI will be designed for use from within an excavation and will permanently abandon the annular space between the existing metallic service and the new PE liner. The RLMI solution builds on several robust, approved and commercially available techniques offered by SVI, including 'GIS:LC14 approved' Sealants and Foambag systems.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

A safe, efficient and practical method is required for the replacement of short lengths (<27m) of Tier 1 metallic main in locations of specific engineering difficulty e.g. a main that connects onto its parent main in a major road junction.

The existing approved Sealback 1.5 technique for live mains transfer has several limitations in that the maximum insertion length is 15m, it does not work in situations where tapered pipe sections or changes in pipe diameters are encountered, and relatively minor obstructions within the main cannot be easily seen or dealt with during the insertion process.

Method(s)

RLMI will be designed for use from within an excavation and will permanently abandon the annular space between the existing metallic service and the new PE liner. The RLMI solution builds on several robust, approved and commercially available techniques offered by SVI, including 'GIS:LC14 approved' Sealants and Foambag systems

Scope

The scope has been developed and agreed between Cadent and SVI.

1. In house testing

Steve Vick International Ltd (SVI) will carry out testing on the two Tier 1 pipe diameters. In total there will be 9no. tests of 75mm PE in a 4" host mains & 9no. tests of 125mm PE pipe in 6" host mains. Host mains will include cast iron, ductile iron and steel. The tests will confirm positioning, foambag and annulus sealing performance, through associated pressure testing.

2. Full system testing

This will test the system's ability to be deployed successfully and ability to cope with varying host pipe substrates. The tests will be performed at the SVI depot with a Cadent representative present to witness the testing. A total number of three full system tests will be carried out for each pipe diameter combination using varying host mains.

3. Field trials

Once laboratory testing has been completed successfully, a period of field trials under G23 guidance will be required. The field trials will be carried out on the Cadent network and be witnessed by the SVI project manager and representative(s) from Cadent. The installation will be performed by SVI technician teams. There shall be a minimum of 12 field trials, with six field trials for each pipe diameter size combination.

Objective(s)

The objective of the project is to test the RLMI method through the phases detailed in the project scope, above

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

There are a number of key success criteria within each of the proposed phases of the project but the overarching success criteria is successful product qualification in the field.

Project Partners and External Funding

Cadent Gas Ltd — £235,000 NIA funding
SVI – Nil external funding

This project will be wholly NIA funded.

Note: The cost for all initial Foambag design work and prototyping will be carried out at cost to SVI and forms part of SVI's Background IP

Potential for New Learning

On completion of the this project, there is potential to further develop the technique to accommodate additional complexity such as large tapered reducers from the parent main.

Scale of Project

The project is limited to the amount of laboratory and field testing to a scale which is deemed necessary in order to gain accurate performance reporting to gauge the acceptability of applicability of the RLMI solution.

Technology Readiness at Start

TRL4 Bench Scale Research

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The project will conduct field trials within the Cadent Gas network.

Revenue Allowed for the RIIO Settlement

No Revenue Allowed for in the RIIO Settlement

Indicative Total NIA Project Expenditure

£235,000

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)

£525k per annum

Please provide a calculation of the expected benefits the Solution

Base cost: Average current cost per junction £12k

Method cost: RLMI cost £5k

Estimated 75 applications per annum

Base minus method cost = £525k per annum

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

Each GDN could utilise the technique, in approximate proportion to networks size.

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

Implementation costs specific to this technique will be minimal as the proposed deployment model is contract service offered by Steve Vick.

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 GDN's will have a number of applications where this technology could be applied.

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 the drive for reduced excavations and the ambition to reduce traffic disruption e.g. a main that connects onto its parent main in a major road junction.

- 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 solution is a new and unique technique to a known and yet unsolved problem.

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 solution is a new and unique technique to a known and yet unsolved problem.

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

Although the potential for cost saving has been demonstrated there is still a high degree of risk associated with the project and, as such, Cadent Gas is unable to fund the project as part of it's business as usual activities.

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 project can only be undertaken with the support of the NIA because of the technical and operational risk associated to the project, which will only be mitigated through testing as defined.

This project has been approved by a senior member of staff

Yes