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

Jan 2014

Project Reference Number

NIA_NGGD0017

Project Registration

Project Title

Tier One Replacement System (TORS)

Project Reference Number

NIA_NGGD0017

Project Licensee(s)

Cadent

Project Start

July 2013

Project Duration

0 years and 4 months

Nominated Project Contact(s)

Andrew Farnfield – Project Manager and Andrew Newton – Innovation Portfolio Manager

Project Budget

£268,241.00

Summary

The scope of this project includes 2 key elements; the practical demonstration of the refined concept, and Business Benefits Analysis.

This will include a demonstration event of the refined TORS concept and production of a report to detail lessons learnt, technical evaluation, practical evaluation and next steps proposal.

The Business Benefits Analysis element will summarise possible applications and benefits analysis.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

Current methods of replacing Tier One gas distribution mains are costly, disruptive to customers and road users. This project seeks to determine a method of achieving the outputs of mains and service replacement with increased customer satisfaction and whilst being quicker and cheaper than current methods.

The renewal of mains and services within a street could be possible via two single excavations, one at each end of the street, this would result in reduced cost and effort, improved safety, environmental benefits through reduced waste to landfill and reduced customer and third party disruption, leading to improved customer satisfaction.

A common method of replacement of gas mains and services involves excavation and flow stop onto the main at either end of the area to be renewed, in order to decommission the existing pipe work. Further excavations are then opened where each service connects to the decommissioned main, usually within the public highway, to remove the existing mains to service connection to affect the renewal of the replacement gas services. The old metallic main is then inserted with a replacement Polyethylene (PE) main that is pressure

tested, commissioned and reconnected to the network, whilst all the services are replaced, pressure tested and then commissioned. This is followed by the reinstatement of all excavations.

Method(s)

This project will undertake a feasibility investigation into the practicalities and benefits of a solution, to facilitate the remote connection of a replaced PE service and a PE replacement main inserted in a metallic carrier pipe.

This feasibility investigation will build on the proof of concept work that was undertaken in a previous Innovation Funding Incentive (IFI) project. This previous IFI project was commissioned to prove the concept of a remote connection, in which a remote connection between a 25mm PE service inside 1 1/4" steel service via an in-line side entry connection to a 250mm PE main inserted inside a 12" carrier metallic pipe was successfully achieved.

Within this project it is proposed to target a further demonstration, this time focussed on a more complex service connection and smaller replaced and carrier mains sizes. In addition this project will consider practical application methodologies to facilitate a next level benefits analysis.

Scope

The scope of this project includes 2 key elements; the practical demonstration of the refined concept, and Business Benefits Analysis.

This will include a demonstration event of the refined TORS concept and production of a report to detail lessons learnt, technical evaluation, practical evaluation and next steps proposal.

The Business Benefits Analysis element will summarise possible applications and benefits analysis.

Objective(s)

The aim of this project is to deliver a feasibility investigation into the practicalities and benefits of a technological solution to facilitate the remote connection of a replaced PE service and a PE replacement main inserted in a metallic carrier pipe, within the context of the TORS initiative. This feasibility investigation will build on the proof of concept work undertaken in a previous IFI project.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Success of this project will be the delivery of the feasibility study which assesses the TORS technique and informs of the practicality and benefits of the identified solution for use on remote connections.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This project covers a single demonstration, which is deemed necessary in order to evaluate the success of the remote connection of a replacement PE service to the replacement PE main, when both are inserted within metallic carrier pipes, as the objective of the overall TORS initiative cannot be achieved without a solution to this problem.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL3 Proof of Concept

Geographical Area

Demonstration expected to take place in Hinckley, Leicestershire All other works Synthotech offices – Harrogate, North Yorkshire

Revenue Allowed for the RIIO Settlement

Tier 1 mains replacement/risk removal under Efficient and Safe Work Delivery and Removal of Risk.

Total Repex in allowance = £3.2bn.

Allowances as per Ofgem RIIO-GD1 Final Proposals and all figures are in 2009/10 prices.

Indicative Total NIA Project Expenditure

£268,241 total NIA project expenditure

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)

£8m per annum

Please provide a calculation of the expected benefits the Solution

Not applicable – research only

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

This Method could be applied to Tier One pipe replacement across the whole of GB, the scale of which will vary upon Network Licensee.

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

Rollout costs will consist of equipment purchase or hire, training costs and the cost of any required changes to relevant national or local policy for this work type. All costs will vary with the level of take up both locally within each GDN and from a national perspective. It is expected that these costs will be significantly outweighed by the benefits but a figure is difficult to propose at this stage due the variables highlighted.

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

Learning generated will be in the form of a feasibility output report, which will articulate the success of performing the remote connection of a replacement PE service to the replacement PE main, when both are inserted within metallic carrier pipes. This output report can be freely shared for use by all relevant Network Licensees for their perusal.

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

Not applicable

- ☑ 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