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

Nov 2018

Project Reference Number

NIA_CAD0030

Project Registration

Project Title

Kobus Gas Pipe Puller Stage 2

Project Reference Number

NIA_CAD0030

Project Licensee(s)

Cadent

Project Start

November 2018

Project Duration

2 years and 5 months

Nominated Project Contact(s)

Cadent Innovation Team

Project Budget

£107,860.00

Summary

This stage 2 project seeks to identify potential materials and methods to protect the PE service pipes during installation and conduct field trials to verify the efficacy of the proposed solution.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

The Kobus Gas Pipe Puller project began in 2014 (under a different and now completed contract) with the development of a trenchless technique for the replacement of gas service pipes with a diameter of less than 1 ¼", with a focus on ¾". In current practice, ¾" services are generally too small to accommodate PE insertion so the new service is either open cut or moled which can be costly and disruptive to our customers. The Pipe Puller removes the need for disruptive open cut techniques as it pulls the steel service out of the ground whilst pulling the new PE service into the void behind it. It also offers reduced risk for damage of other services compared to the moling technique in instances where this risk exists. Technology trials in early 2017 determined further development is necessary to eliminate gouging of the PE service pipe as it is pulled into position.

Method(s)

This stage 2 project seeks to identify potential materials and methods to protect the PE service pipes during installation and conduct field trials to verify the efficacy of the proposed solution.

Scope

This project will engage two suppliers:
• Kobus Services Ltd – who will develop, manufacture and trial the modified Gas Pipe Puller.
• ROSEN – who will research potential PE protection methods and provide independent verification of its success via analysis of the field trial samples.

The overall proposed work will comprise four phases:

• R&D into any potential materials & methods to protect new PE service pipes during installation.
• Design and prototype manufacture.
• Field trials of prototype to prove the concept.
• Testing of PE pipe samples to verify improvement in condition of installed pipe compared to pipe which is not protected.

Objective(s)

The objective of the project is to develop and trial a successful method of protecting the PE service during the Gas Pipe Puller installation process.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

There are a number of key success criteria within each of the four 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 –- £107,860 NIA funding
Kobus – Nil external funding
Rosen – Nil external funding

This project will be wholly NIA funded.

Potential for New Learning

There is currently no comparable commercially available product available to the gas industry. The process that the Kobus Gas Pipe Puller utilises to replace small diameter gas service pipes can be employed by all the GDN's once the issue of pipe damage during insertion is addressed and this provides the potential for new learning.

Scale of Project

This iteration of the Kobus Gas Pipe Puller project will broadly encompass research, development and field trial assessment where the project will install a number of PE gas service pipes within the Cadent Gas distribution network.
Four field trial sites, providing up to 60 samples from 30 service replacements, are deemed to be a reasonable number to prove the technique.

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

£107,860

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 savings for this project will come primarily from avoiding the need to excavate an open cut trench, and associated reinstatement costs, on customer property (driveways and gardens) to replace small diameter gas service pipes.

Cadent Gas Assumptions:
- Volume of work forecast to be delivered equals 640 services per year, which is 10% of the ¾" workstack or 0.4% of total workstack.
- Estimated year on year network benefit = £211k

Please provide a calculation of the expected benefits the Solution

Base cost: Average of 20m ¾" service replacement via open cut, predominately in garden with some driveway replacement. Direct and indirect costs total £785/service

Method cost: Kobus pulling machine with launch and receive pit. Direct and indirect costs total £455/service

Base minus method cost = £211k per annum

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

Each GDN could utilise the technology to replace small diameter gas services to negate the need for open cut or moling.

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 will aim to reduce capital expenditure through utilizing our 'hire' partners to invest in the equipment.

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 ¾" gas services 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 replace gas services as quickly and safely possible.

☑ 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 is further development of a previous NIA project and is not duplicating any other projects currently registered on the ENA portal.

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

The project is innovative because the process of pulling a steel service out of the ground whilst pulling in the replacement PE is not commercially available in the gas industry (outside of the previous iteration of the Kobus Gas Pipe Puller project) and is very different to the methods currently used. The project was initiated when Kobus Services Ltd approached Cadent Gas with the idea to develop the technology specifically for 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

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 its 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 risk associated to the project. One of the key risks to the project is the possibility of damaging or gouging the PE pipe as it’s pulled into the ground which is why this is the focus of the first stage of the project.

This project has been approved by a senior member of staff

☑ Yes