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

Sep 2018

Project Reference Number

NIA_CAD0027

Project Registration

Project Title

Above Ground Crossing Inspection Mapping

Project Reference Number

NIA_CAD0027

Project Licensee(s)

Cadent

Project Start

October 2018

Project Duration

0 years and 11 months

Nominated Project Contact(s)

Cadent Innovation Team

Project Budget

£203,500.00

Summary

Develop a cost effective technical solution to undertake the visual inspection of pipe bridge structures utilising various technologies to capture, process and store the information relating to the structure and pipeline with the aim of improving asset data quality. The solution aims to provide an efficient and lower cost method to obtain a consistent deliverable that can be uploaded to and accessed via a cloud based solution within Cadent.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

The existing methods for the inspection of pipe bridge structures have historically been undertaken from ground based vantage points, reliant upon manual processing and are inherently costly to undertake. The data can also be poor quality and inconsistent due to access and proximity restrictions and have a long lead time from initiation to delivery of the inspection report. Access to the data is also limited by format and existing digital infrastructure.

Method(s)

Develop a cost effective technical solution to undertake the visual inspection of pipe bridge structures utilising various technologies to capture, process and store the information relating to the structure and pipeline with the aim of improving asset data quality. The solution aims to provide an efficient and lower cost method to obtain a consistent deliverable that can be uploaded to and accessed via a cloud based solution within Cadent.

Scope

It is envisaged that the project will be executed utilising the Cadent change management approach with defined success criteria for each of the phases and deliverables.
The sanction value is to fund development and testing of an end to end solution for above ground inspection work e.g. pipe crossings. This will then allow us to reduce future costs for current manual techniques which can be around £17k per site. The new solution will also improve access and over time the quality of our site drawings.

Currently new technologies are widely used as standard across other industry sectors for inspection e.g. drones, however they still require specialist high end hardware to process and store the digital site records which is the innovative model we are testing.
The funding will test the new technique and infrastructure end to end to ensure the accuracy of the new approach when compared to the manual inspection methodology of today.
The future benefits will reduce costs associated with inspection work requested by Network Engineering and Asset and Investment Strategy. It should also over time reduce processing time and costs associated with accessing our current records repository as well as improving accuracy and therefore supporting future investment

Objective(s)

To develop a cost effective solution to undertake the visual inspection of pipe bridge structures utilising various technologies to capture, process and store the information relating to the structure and pipeline. The solution aims to provide an efficient and lower cost method to obtain a consistent deliverable that can be uploaded to and accessed via a cloud based solution within Cadent.
The proposed solution shall aim to provide:
• Faster Data Capture
• Reduction In Inspection time and cost
• Consistent and Accurate Deliverable
• Remotely Accessible Data via Centralised System For Handling Complex Data Sets
• 3D Digital Representation
• Improved Health and Safety
• Improved Data Quality of Existing Assets

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Comparable inspections of the same or better quality for a lower cost and improved data collection & storage

Project Partners and External Funding

The project will be wholly funded by the NIA
• Premtech - £165,000
• Internal Costs - £22,000
• Project Contingency - £16,500
Total: £203,000

Potential for New Learning

The assumption is this will be a brought in service, giving Cadent the option to procure this type of survey through its existing suppliers for a fraction of the current cost method. Greater storage of data and analytics available within the cloud platform could future proof accessibility and usability of such data.

Scale of Project

The scale of this project will be across all Cadent networks however learning will inform all Gas Distribution Networks which have similar issues with inspection of their networks. The scale of investment in this project is necessary as feasible solutions have not yet been identified which can improve upon current inspection methodologies.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

This project will be delivered from Premtech facilities with support from The University of Derby's Institute for Innovation (IISE) and the Cadent network.

Revenue Allowed for the RIIO Settlement

No revenue allowed for in the RIIO settlement.

Indicative Total NIA Project Expenditure

£203,000

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)

This project can provide future savings if the proposed solution is further developed through significant enhancement of current inspection activities, providing a method for inspection which could lead to improvements in time, efficiency and cost. The platform will also provide a future improvement in Cadent's Asset Management data collection.

Please provide a calculation of the expected benefits the Solution

Current planned works over 7 years = 175 sites Total cost current method = £2.975m, Future cost method = £1.050 with a total saving = £1.925m. Average annual saving = £0.275m

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

The proposed solutions for above ground crossings can be rolled out across all gas network licensees.

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

Due to this being a buy in service, no implementation costs to be considered.

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 proposed solutions can be adopted by other GDN's which face similar problems related to the inspection of their network and crossings

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 strategy to continually improve network reliability and minimise the cost and disruption of maintenance programmes.

☑ 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 looks at new technology to carry out above ground crossing inspection. Although similar discreet projects have been carried out previously this project is unique as it aims to reduce technology barriers and costs associated with discreet solutions.

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 links known technologies to a cloud based service which will have analytical capability which is not currently done in inspections, this is currently a manual inspection & report.

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 will not fund this project as business as usual due to its innovative nature of work, and the high level of risk

associated with the possibility that solutions will prove to be unsuitable for this type of inspection.

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

This project can only be undertaken with the support of the NIA as it looks to innovatively explore possible solutions that include previously unused technologies for inspection.

This project has been approved by a senior member of staff

☑ Yes