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NIA Project Registration and PEA Document

Date of Submission

Nov 2014

Project Reference Number

NIA_NGGD0044

Project Registration

Project Title

KOBUS Gas Pipe Puller

Project Reference Number

NIA_NGGD0044

Project Licensee(s)

Cadent

Project Start

November 2014

Project Duration

1 year and 4 months

Nominated Project Contact(s)

National Grid – Neil Russell - 07876391177, tRiIO – Mark Anderson – 07753 739435, KOBUS – Chris Evans - 07773 908604

Project Budget

£337,307.00

Summary

The scope of the project includes:

Concept Design Refinement

Detail Design and Development

Prototype Manufacture and Build

Field trials and Proof of Concept Tasks

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

The current method for replacement of ¾ inch service pipes is costly and disruptive to customers. The KOBUS initiative seeks to determine a method of achieving the outputs of service replacement with increased customer satisfaction and while being quicker and cheaper than current methods.

The renewal of service pipe via the KOBUS system would result in a reduction in cost for backfill and reinstatement, increased safety as hole sizes are considerably smaller and reduced risk of third party disruption.

Method(s)

The project will look to develop the water KOBUS pipe puller so it is fit for purpose within the gas industry. This will take place through stages from conceptual design, detailed design, concept modeling, field trials and a final report.

Scope

The scope of the project includes:

Concept Design Refinement

Detail Design and Development

Prototype Manufacture and Build

Field trials and Proof of Concept Tasks

Objective(s)

The aim of the project is to create a method of extracting and renewing ¾ inch service pipe avoiding the need to open cut the service.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Success for this project will mean approval of the KOBUS gas pipe puller as an effective operating technique for the extraction and replacement of ¾ service pipes.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project will be carried out over 5 stages covering:

- To complete product initial design, 3D output and to agree commercial & operational scope.
- Complete final engineering design, safety analysis and finite cost target agreed.
- Fabricate preproduction unit, create field trial documentation and test regime.
- Field trial, data collection and production of training material.
- Modification and design sign off.

Technology Readiness at Start

TRL4 Bench Scale Research

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

KOBUS office - Unit 17, Forge Trading Estate, Mucklow Hill, Halesowen, West Midlands, B62 8TP

Field trials – tRIIO GDSP footprint East of England Network

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 RII0-GD1 Final Proposals and all figures are in 2009/10 prices.

Indicative Total NIA Project Expenditure

£337,307 (£303,576 recoverable under NIA)

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)

If successful it is believed that the project could deliver a [%] saving on cost and materials required to complete the work compared to traditional open cut or moling techniques. A detailed explanation can be seen below.

Please provide a calculation of the expected benefits the Solution

In tRIIO, 8000 $\frac{3}{4}$ services have been identified in year 2. 5000 anticipated to mole service with 3000 to be open cut. Assume open cut trench average 6m (length) x 0.3m (width) x 0.8m (depth) = 1.44m³ of spoil.

KOBUS system creates 2 x excavations which we have specified must be 850mm x 750mm and taking the average depth gives you = 0.51m³ per hole x 2 = 1.02m³ of spoil. A saving of 0.42m³ per service job.

3000 open cut services x 1.44m³ = 4320m³ of spoil excavated.

3000 KOBUS services x 1.02m³ = 3060m³ of spoil excavated. A difference of 1260m³

Split 50/50 through verge and footpath(acting as driveway) = 1500 services each

Backfill & reinstatement of verge trench = £577 x 1500 = £865,500

Backfill & reinstatement of footpath trench = £626.41 x 1500 = £939,615

Total = £1,805,115 p/annum

If we assume that using KOBUS will lead to a 30% reduction in excavation size, and that we would only be able to use KOBUS on 50% of the open cut services, we could save around £270,767 a year.

Assuming we have 6 years remaining of RIIO following implementation of the KOBUS system, and that we will have roughly the same number of $\frac{3}{4}$ services in Balfour Beatty GDSP, National Grid along could save £3.25 million in the remaining RIIO period, across the UK as a whole this could mean £6.5m savings for customers on service replacement activities. There are also potential benefits as fewer excavations should potentially lead to higher customer satisfaction scores, and fewer complaints regarding reinstatements, improving the customer experience.

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

The method is replicable for ¾ inch service replacement on other gas distribution networks across Great Britain.

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

Costs to roll out would include the cost of the KOBUS gas pipe puller and associated equipment, cost of training and costs associated with introducing new stock of winching wires. The product will also have to undertake field testing which will incur a cost. The exact amount for roll out costs is to be confirmed.

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

If the product is found to be a successful alternative to open cutting of ¾ inch and 1 inch services then the other Gas Distribution Networks could also use this learning themselves to go about approval of the product for use on their networks.

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

improve customer and stakeholder satisfaction – Provide value for money

Efficient and safe work delivery and removal of risk – Keep people safe

(RIIO GD-1 priority – National grid Innovation priority)

- 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