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

Jun 2014

Project Reference Number

NIA_WWU_013

Project Registration

Project Title

Ductile Iron Window Cutter Tool

Project Reference Number

NIA_WWU_013

Project Licensee(s)

Wales & West Utilities

Project Start

June 2014

Project Duration

0 years and 8 months

Nominated Project Contact(s)

Gareth Davies

Project Budget

£87,312.00

Summary

This project will design and develop a prototype tool that will be tested thoroughly through onsite trials & further development, specifically:

- Design and develop a cutter to allow the removal of a window from a ductile iron main that has been inserted with a PE main.
- Develop a working prototype and carry out off site testing.
- Carry out onsite trials to review the solution with field operatives
- Recommend any necessary modifications

Nominated Contact Email Address(es)

innovation@wwutilities.co.uk

Problem Being Solved

Wales & West Utilities replace approximately 90% of their network with Live Mains Insertion. This is predominantly on cast iron pipe where the PE pipe is exposed by breaking out sections with a bar or hydraulic pipe cracker. WWU have identified a need to develop a method of effectively cutting ductile iron mains to enable this method of installation to be transferred. A tool is required to reduce the time it takes to cut out a window for the transfer of the original service onto the PE after a ductile iron main has been live inserted. This tool needs to be simple and safe to use and be able to work within a typical service excavation without requiring additional cost excavating or damaging other utility apparatus.

Method(s)

Following the completion of some scoping and capability analysis work this project will see the development of a hand held tool that will be tested in the field and developed to provide a safe window cut in ductile iron.

Scope

This project will design and develop a prototype tool that will be tested thoroughly through onsite trials & further development, specifically:

- Design and develop a cutter to allow the removal of a window from a ductile iron main that has been inserted with a PE main.
- Develop a working prototype and carry out off site testing.
- Carry out onsite trials to review the solution with field operatives
- Recommend any necessary modifications

Objective(s)

The objective of the project is to develop a tool that is able to cut a window in ductile iron mains in a quicker manner that is currently available and to do so safely to allow the continuation of live main insertion in ductile iron mains.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

To produce a hand held window cutting tool that has been tested in the field and that is at a stage to be transferred to business as usual for all networks advantage.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

To maximize the potential of this project, we will develop 5 prototype models that will be trialled across the network area following the initial design and development stages and will include all modifications identified and agreed during the trail stage.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The design and development of the tool will be at Steve Vick's offices which will then be trialled across the network area. The locations will be determined by the replacement programmes (yet to be identified).

Revenue Allowed for the RIIO Settlement

WWU have an allowance for the replacement of mains and it is likely that there will be savings on the cost of labour and time if this project proves successful.

Indicative Total NIA Project Expenditure

The total project cost is £87,311.5.

Total external costs £65,500.

Total internal costs £21,811.5.

NIA eligible expenditure £78,580.35

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)

There would be substantial savings when replacing ductile iron mains. Currently, mains replacement activities on this main material is limited due to the costs involved. It is anticipated that an increase in the replacement of ductile iron mains will be seen if this project is successful.

Please provide a calculation of the expected benefits the Solution

It currently takes 45 minutes to cut ductile iron mains using the traditional methods of cutting ductile iron pipe. It is anticipated that the new method will complete a window cut in 20 mins, giving a saving of 25 mins per cut.

To illustrate this further as a calculation we have assumed that a service connection is positioned at 10m intervals. The number of window cuts needed based upon the overall length of ductile iron main identified for replacement for the project financial year is therefore 1,900.

The base cost is calculated as 1,900x 45 mins labour cost at £65 / hour = £92,625

The method cost is calculated as 1,900 x 20 mins labour cost at £65 / hour = £37,050

This gives an overall expected financial benefit based upon this example of £55,575 per year.

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

The use of the ductile iron cutting tool, on completion of development, can be re-created across any network whilst undertaking replacement activities on ductile iron mains.

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

We anticipate the costs will be predominantly through purchase of the equipment, maintenance of the equipment and minimal training in its use.

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 networks will encounter the need to replace ductile iron mains in the most efficient method which reduces impact to customers and offers them the best value for money. The learning generated and successful implementation of tooling could be used by all networks within their replacement programmes.

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

Stakeholder feedback and future challenges

The sustainability challenge of ensuring that there is a longer term viability of gas networks, with lower environmental impact.

Reducing the societal impact of our works programmes on street works and reinstatement issues.

☑ 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