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 2016

Project Reference Number

NIA_WWU_042

Project Registration

Project Title

Portable gas Reading Equipment (PRE)

Project Reference Number

NIA_WWU_042

Project Licensee(s)

Wales & West Utilities

Project Start

January 2017

Project Duration

1 year and 1 month

Nominated Project Contact(s)

Travis Wheatle – Graduate Engineer

Project Budget

£71,368.00

Summary

This project will fully demonstrate the technologies capabilities and will be thoroughly tested through onsite trials, specifically but not limited to the following:

- Leakage surveys on >7bar pipelines. We will undertake a survey on a targeted short length location, on different depths of cover to check if gas escapes can be identified if the pipe is not exposed and follow up with a further safety check;
- On our offtakes before the gas gets odorized when it would be harder to detect possible leaks;
- Multi Occupancy Buildings where it is difficult or costly to inspect a pipe that runs up the side of a building we can assess them from the ground to check the distances a leak can be detected (laser and camera only);
- Undertaking surveys of gas storage facilities (bullets, laser and camera only)
- For the location of gas leaks on made and unmade ground
- On above ground crossings for example above a river or railway line (laser and camera only);
- For use on ‘driving surveys’ or flight surveys(laser and camera only); and
- Recommend any necessary modifications

The testing criteria will compare the results against the technology used in the handheld probe - a ‘Gasco seeker’.

Nominated Contact Email Address(es)

innovation@wwutilities.co.uk

Problem Being Solved

Wales & West Utilities (WWU) constantly strive to innovate and demonstrate that we are delivering value for money to our customers . We constantly strive to raise the bar on safety to improve standards for our customers and colleagues.

Leakage detection methods in the UK have remained unchanged for many years. Our engineers use equipment that helps them scan

an area for escaping gas by using a hand probe that displays the concentration of gas on a display that gives a reading of percentage gas in air and percentage Lower Explosive Limit (LEL, which is equal to 5% gas) when in proximity of a leak. Although this is an effective method of detection, the detection probe, operated at arms lengths, needs to be close to the leak source.

Method(s)

This Project will examine the practical and technical benefits of using infrared and laser technology to identify and locate gas leaks. The below products were selected, after assessment, to demonstrate how effective and safe the innovative technologies are.

- IRwin mobile methane leak detectors
- FLIR optical gas imaging technology
- LaserMethane mini

Scope

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Objective(s)

To undertake a series of demonstration trials of the technlogy, using the three products, to clearly understand whether the technology will assist in helping us to locate gas escapes.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

To identify if the products trialed will offer enhancements to locate gas escapes in a variety of applications

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project will fund the provision of an optical camera survey in each of the scenarios identified in the project scope ,the purchase of two LaserMeathane mini's and two IRwin mobile methane leak detectors.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

The demonstration trials will be undertaken within the boundary area of Wales & West Utilities – throughout Wales and the south west of England.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

External cost - £53,526

Internal costs – £17,842

Total - £71,368

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)

By improving the methods of detection, a leak will be located quicker, thus reducing the time spent investigating by an engineer. The accuracy of the technology inside the detectors could also have an impact of reduced excavations and size. The laser and thermal imaging camera can detect escapes from a distance thus avoiding the need to hire expensive equipment to inspect multi occupancy buildings and bridges.

Please provide a calculation of the expected benefits the Solution

Wales & West Utilities record approximately 19,000 gas escapes per year, split between 11,000 mains escapes and 8,000 service escapes. On average it takes 75 minutes to locate the escape, at a cost of £56 for a first call operative.

The new detectors have the potential to save 10 minutes per investigation. If this was achieved 50% of the time, there would be a saving of £7 per escape, over the course of a year this would save £66,500

There is also the potential for other benefits that we will be able to quantify during the trails such as calibration and maintenance of equipment, reduced excavations and size, as well as a reduction of gas into the atmosphere due to escapes being located quicker.

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

The method can be replicated by all of the other gas distribution networks. In this project we are assessing technologies for leakage detection that have not been demonstrated in the UK gas industry to our knowledge. The findings of this report will enable GDN's to understand the value and benefits of these alternative technologies to consider rollout for themselves.

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

The cost of rollout will include the purchase of the equipment and the necessary training

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

Gas leakage detection and repair is important to all Network Licensees and has been identified within our strategic list of industry challenges. The outcome of this demonstration project will provide clear results of whether or not the innovative technolgies can provide an alternative method for gas leakage detection.

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

n/a

☑ 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