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

Feb 2017

Project Reference Number

NIA_NGN_173

Project Registration

Project Title

Core and Vac Drilling machine Anchorage

Project Reference Number

NIA_NGN_173

Project Licensee(s)

Northern Gas Networks

Project Start

February 2017

Project Duration

2 years and 0 months

Nominated Project Contact(s)

Scott Kitchingman & Gordon Thompson

Project Budget

£116,681.00

Summary

The scope of this project is to design, trial and produce a drill base that can be secured to the main without the need for conventional chain assembly and be fully compatible with the ALH System 1 drilling machine. It includes technical approval according to industry standards (G23) which allows for implementation, network-wide roll-out and commercialisation of the finished design and the production of Work Procedures & Operator Manuals to facilitate the latter.

Third Party Collaborators

ALH Systems Ltd

Nominated Contact Email Address(es)

innovation@northerngas.co.uk

Problem Being Solved

Current and proven methods of drilling buried gas mains require the drilling machine base to be anchored to the main via chains. The conventional drilling method is via a Wask drilling machine and base but this activity proves to be difficult and time consuming if used in a 600mm core excavation when trying to thread chains under main and secure to the drill base. The Wask drilling machine is also difficult to operate from the road surface in a Key Hole excavation. Therefore, there is a requirement to develop a new mechanical method of secure anchorage of the drilling machine base to allow the use of the existing ALH System 1 drilling machine which incorporates both a manual and motorised drive system.

Method(s)

ALH Systems have an approved drilling and tapping equipment, ‘System 1’, along with the ability to carry out a range of work and fully approved for use in the UK. The current system is designed to be used by an operative whilst in the excavation. Within 6 months, ALH Systems will design, develop and trial an advanced range of tooling that uses the existing system to enable operatives to carry out a

Drill and Tap process through a Core and Vac excavation.

- It is anticipated that the application by securing the Service Valve to the main will be via a mechanical process, thus ensuring securing the service valv to the main will be via a mechanical proces, thus ensuring securing the service valve is assured rather than rely on an external source, hydraulically for example.
- Alongside the drill and tap process, ALH Systems will be developing a number of Long Handled Tooling items that will enable fittings to be installed on the networks, such as completion plugs, top tees, etc, employ Twinbag flowstopping and the launch of cameras and Flexspray delivery systems.

Scope

The scope of this project is to design, trial and produce a drill base that can be secured to the main without the need for conventional chain assembly and be fully compatible with the ALH System 1 drilling machine. It includes technical approval according to industry standards (G23) which allows for implementation, network-wide roll-out and commercialisation of the finished design and the production of Work Procedures & Operator Manuals to facilitate the latter.

Duration Extension

Whilst a number of field trials have been successfully undertaken, they have identified a number of minor modifications that are required to be made to the tools ancillaries. The modifications are foreseen as readily 'straightforward'. However, to be assured the modification work as intended, it is essential further field trials are undertaken. The project will be extended to the 31st December to ensure succesful completion of the project.

Objective(s)

The objective of this project is to deliver an innovative design solution which is robust, safe and easy to operate within the Key Hole environment. In detail, the finished design will:

- allow a drill base to be fitted and securely clamped to the main from the road surface with long handled tooling, within a 600mm diameter keyhole excavation.
- hold the base to the main in a rigid manner, providing a gas tight seal during both the drilling operation and during deployment of various 'live launch' equipment, such as Acoustic CCTV and Internal Mainspray.
- provide a time saving of approx. 30 minutes per occasion for the Team when installing the drilling machine prior to launch of the acoustic camera or other live launch equipment.
- Have an ergonomic benefit in that the operation will be easier to carry out for the operative, allowing the use of the ALH System 1 Drilling machine with manual and motorised drive resulting in less physical exertion for the operative

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The project is deemed succesful , if a product is developed that :

- meets the requirements as set out in the project's Objectives and
- obtains technological readiness as set out in the project's Scope.

Project Partners and External Funding

This project is completely funded by NIA allowance.

Northern Gas Networks

ALH Systems Ltd

Potential for New Learning

Further advancement of Keyhole techniques and Long Handled tooling.

Scale of Project

This project will not result in high unit volume. Initially, the solution will be specific to Key Hole excavation activities but will assist this work type greatly. Going forward, the solution may replace the use of chains to secure drill bases during normal conventional, non-key

hole activities.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The product will be trialled across NGN's network. The finalised product will have the National potential to be used across the UK Gas Industry.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

£89,100 (external expenditure)

£29,581 (internal expenditure)

£116,681 (total expenditure)

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)

NGN estimate that this could save £134,00 per year.

Please provide a calculation of the expected benefits the Solution

It is anticipated that NGN will use the new equipment just under 200 times per annum. We have estimated that this would save £709 per use equating to a total of **£134,761** per year.

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

This is an estimate for NGN's network. By using the ratio split of 4:2:1:1 for the other networks it can be estimated that this could potentially save a total of **£943,327** across the GDN's.

This will be depend on the utilisation of each network.

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

We are unable to provide an estimate for roll out at this moment in time.

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

- ☐ 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 problem addressed by this project is industry-wide which is why the developed solution will be applicable to all relevant network licensees.

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 will address NGN's innovation strategy focus areas of Customer Service, EH&S and Asset and Network Management.

- ☑ 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.

Currently, this solution does not exist in UK Gas Industry. ALH Systems Ltd currently supply standard drill bases with conventional anchorage. This project requires an innovative design solution which is robust, safe and easy to operate within the Key Hole environment. ALH Ltd are key contributors in Key Hole tooling within the UK Gas Industry.

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