

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**

Aug 2015

### **Project Reference Number**

NIA\_NGGD0062

## **Project Registration**

### **Project Title**

Tier One Replacement System Stage 5

### **Project Reference Number**

NIA\_NGGD0062

### **Project Licensee(s)**

Cadent

### **Project Start**

July 2015

### **Project Duration**

2 years and 4 months

### **Nominated Project Contact(s)**

Andy Newton

### **Project Budget**

£2,960,049.00

## **Summary**

The general scope of this project extends to low pressure pipes in the Tier One RIIO range.

The focus is primarily on domestic type mains renewal schemes where the excavation density is typically highest and the benefits are therefore maximized.

This project will undertake field testing of an end to end solution.

### **Nominated Contact Email Address(es)**

Innovation@cadentgas.com

## **Problem Being Solved**

Current methods of replacing Tier One gas distribution mains are costly, disruptive to customers and road users. This TORS initiative seeks to determine a method of achieving the outputs of mains and service replacement with increased customer satisfaction and whilst being quicker and cheaper than current methods.

The renewal of mains and services within a street could be possible via one at each end of the street; this would result in reduced cost and effort, improved safety, environmental benefits through reduced waste to landfill and reduced customer and third party disruption, leading to improved customer satisfaction.

## **Method(s)**

This project will build on previous stages that have already delivered a feasibility investigation into the practicalities and prototype solutions.

## **Scope**

The general scope of this project extends to low pressure pipes in the Tier One RIIO range.

The focus is primarily on domestic type mains renewal schemes where the excavation density is typically highest and the benefits are therefore maximized.

This project will undertake field testing of an end to end solution.

### **Objective(s)**

Deliver an end to end field tested, pre-commercialised operational system for 4” applications.

Deliver a prototype demonstration system for 6” applications.

### **Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)**

n/a

### **Success Criteria**

Compelling case to continue to Stage 5

### **Project Partners and External Funding**

n/a

### **Potential for New Learning**

n/a

### **Scale of Project**

Interim and final stage reports. Representative but non-operational site progressing to small scale operational field testing activity.

### **Technology Readiness at Start**

TRL4 Bench Scale Research

### **Technology Readiness at End**

TRL7 Inactive Commissioning

### **Geographical Area**

NGG Offices, Hinckley, Leicestershire

Synthotech offices – Harrogate, North Yorkshire .

Off site activity at sites selected by and close to Synthotech, North Yorkshire.

Field test sites within NGG footprint – TBC.

### **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 RIIO-GD1 Final Proposals and all figures are in 2009/10 prices.

### **Indicative Total NIA Project Expenditure**

£1929900 total NIA 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)

~£8m per annum (within the range £6m-£19m)

#### Please provide a calculation of the expected benefits the Solution

It is estimated that around £80m of service replacement activity remains on Tier 1 mains in the plan to be delivered from 2016/17 through to 2020/21. This project will seek to deliver the capability to remove a significant proportion of the excavation and reinstatement element associated with that cost.

If TORS technique was applied to between 30% to 60% of the anticipated relay service work and achieved cost reductions of between 25% to 40% when applied savings in the range £6m to £19m could be anticipated over the period.

This does not include any consequential benefits within the main laying element of the job costs. Consequent savings expressed in customer and stakeholder satisfaction, reduced MOP injuries, reduced cable and other utility damage and reduced time on the highway are yet to be fully quantified and will be explored as part of the project.

The TORS project is completely new and novel, robotics have not been used for this activity before.

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

This Method could be applied to Tier One pipe replacement across the whole of GB, the scale of which will vary upon Network Licensee.

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

Rollout costs will consist of equipment purchase or hire, training costs and the cost of any required changes to relevant national or local policy for this work type. All costs will vary with the level of take up both locally within each GDN and from a national perspective. It is expected that these costs will be significantly outweighed by the benefits but a figure is difficult to propose at this stage due the variables highlighted.

### 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

Learning generated will be in the form of an output report, which will articulate the success of the project. This output report can be freely shared for use by all relevant Network Licensees for their perusal.

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

Not applicable.

- 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