

## NIA Project Registration and PEA Document

### Date of Submission

Jun 2015

### Project Reference

NIA\_NGGD0061

## Project Registration

### Project Title

SENSIT Acoustic Pipe Locator

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NIA\_NGGD0061

### Project Licensee(s)

National Grid Gas Distribution

### Project Start

June 2015

### Project Duration

2 years and 1 month

### Nominated Project Contact(s)

Rob Cairns – NGGD Project Manager, Mark Edwards – NGGD Repair Network Manager

### Project Budget

£125,972.00

## Summary

The devices will be trialed across the Repair and Replace and Extend processes. This will allow the trial to cover different processes and different geographical areas.

The acoustic pipe locator uses sound waves to detect underground pipes to a depth of 3m. It will be utilised in conjunction with as laid drawings and cable location devices (C Scope) as part of a holistic tool kit to pin point assets that need to be worked on.

The trial will utilize the pipe locator in the following operational areas,

### Patrolmen Duties

- Attending third parties works to trace and locate gas mains and services
- Surveying Repair works in advance – typically Built over services

### Keyhole Teams

- Locating mains more quickly and accurately

### Repair teams

- On GSR cut off work locating service pipes particularly for disused and inaccessible buildings

- On DR4 works locating mains and services
- On escape works and conditional relay works

#### **GDSP teams**

- On replacement activities locating mains and services

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

Box.GT.Innovation@nationalgrid.com

#### **Problem Being Solved**

The British gas industry has, for a very long time, been unable to trace the route of polyethylene pipe (PE) networks operating at low, district, pressures ( greater pressure systems were protected by the use of detectable marker tape laid along their route).

There are many reasons for needing to know the location of PE pipe systems, the primary being that it is a requirement that mains are to be recorded accurately and correctly. But put very simply, if you can't find the PE main or service, how are you going to repair it, extend it, cut it off, work alongside another PE main ( water or gas ) or be able to advise other parties of their location without, what could very easily be, excavating large areas to find the pipe. Excavations, and their subsequent reinstatement, especially in carriageways, can easily account for around 40% of the total job cost

#### **Method(s)**

The Acoustic Pipe Locator (APL) will reduce the number of excavations and in most cases the apparatus will be located by a lone worker, not a team. If it is necessary to excavate, the APL will reduce the size of those excavations as the current method is to 'search' for the plastic apparatus by increasing the size of the excavations, digging 'blind' until the apparatus are located.

The APL will sense through most surfaces: soil, grass, concrete, gravel and asphalt and will also detect drains, fibre optics, ducts etc. so not just gas apparatus but can ensure that other third party apparatus are avoided. As, for instance, more HDD projects are being sanctioned it is imperative that other parties, as well as your own, kit is located.

#### **Scope**

The devices will be trialed across the Repair and Replace and Extend processes. This will allow the trial to cover different processes and different geographical areas.

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The trial will utilize the pipe locator in the following operational areas,

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#### **Objective(s)**

The main objectives identified for this project are to establish that utilisation of the SENSIT pipe locator will result in;

- Greater accuracy in locating underground assets
- Reduced number and size of excavations
- Reduced reinstatement
- Reduced time spent on site
- Improved customer experience

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

n/a

### **Success Criteria**

The trial will measure;

- Number of excavations
- Size of excavations
- Number of DR4's resolved on first visit and reduced DR4s captured on job
- Reduction in number of on-site damages
- Instances where engineer is able to locate equipment vs Instances where equipment could not be located

If the project is successful. Evidence and finding will be shared and roll out potential of the devices will be scoped out for all processes.

Other considerations;

- Do the engineers like the device and it find easy to us
- Is it a product the engineers can see themselves utilising in day to day
- While also measuring does the product do what we expect/want it to do
- How accurate are the findings.

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

n/a

### **Potential for New Learning**

n/a

### **Scale of Project**

The project will run over a 12 week period of on site testing in the West Midlands Repair process and within the Balfour Beatty/TRiiO Replace and Extend (GDSP) process.

### **Technology Readiness at Start**

TRL8 Active Commissioning

### **Technology Readiness at End**

TRL8 Active Commissioning

### **Geographical Area**

West Midlands and North West geographical areas will be target as part of the trial.

Covering Repair and GDSP work areas.

### **Revenue Allowed for the RIIO Settlement**

None

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

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Total NIA: £125,972

External + Contingency: £94,479

Internal: £31,493

## 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)

1. More accurate view of underground assets
2. Reduced excavation and time on site
3. Reduced reinstatement
4. Overall improved efficiency on site
5. Improved customer experience

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

Estimated support to No Dig efficiencies taken from Keyhole Initiative savings result in approximately £600 saving per hole excavated by a GDN.

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

Roll out has the potential to be applied across all GDN networks across the Replace and Extend and Repair processes. Scalability will be determined in as an output of the project.

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

Approximately £9470 per device at current market price.

### 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

#### RIO-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**

n/a

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

This project supports the reduction in site excavations.

- 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 part of its 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