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

Mar 2014

Project Reference Number

NIA_SGN0047

Project Registration

Project Title

Gas Risk in No Access Properties

Project Reference Number

NIA_SGN0047

Project Licensee(s)

SGN

Project Start

April 2014

Project Duration

1 year and 9 months

Nominated Project Contact(s)

Richard Mason, - Innovation Project Manager

Project Budget

£23,331.00

Summary

The level of risk of gas in no access properties is currently undefined. This project aims to better understand the exact risk of not being able to access these properties and will aid us in the eradication or minimisation of the adverse affects of these risks to which our employees and the public could be exposed to.

Technical consultants DNV GL will develop the QRA, the results of which will be used to reassess the 'Immediate Action Criteria' and the work procedure for no access properties.

DNV GL will manage the entire QRA process; scoping the QRA, collecting the necessary data, and evaluating a number of failure cases in order to build the QRA model. Based on the QRA model developed, DNV GL will also perform analysis of results including assessment against acceptance criteria and identification of measures for mitigating risks. In order to build the QRA a representative sample of properties within our Scotland network will be used. This will be a mainly be desktop exercise but may also involve some property visits.

DNV GL will use QRA to update the work procedures, so results can be used by FCO operatives. SGN's Operations Department keep records and details of all call outs, including the no access properties. Once the project has ended the call out times and associated cost records will be collated and compared with previous years. The project may benefit financially, should the call out times and costs be reduced.

SGN's Operations records can also be used to assess the effects the QRA will have on SGN's performance. Should the records show a reduction in the average time spent resolving emergency call outs during the new procedures, it can be concluded as a more efficient and therefore enhanced gas emergency service. The records will also illustrate whether fewer 'false positive' decisions are made during use of the QRA. Should this be successful, our more accurate emergency service will contribute to our improved procedures when dealing with inaccessible properties. If fewer calls out times are recorded and the number of return visits to properties reduces also, the costs associated with the emergency services would therefore decrease. If the records show that the QRA provides more accuracy in risk assessment during our emergency services then this will lead to a reduction in risk when dealing with inaccessible properties.

Nominated Contact Email Address(es)

sgn.innovation@sgn.co.uk

Problem Being Solved

The role of our First Call operatives (FCOs) is to investigate and safely manage reported gas escapes for both methane and Carbon Monoxide (CO). Situations where gas may be present in an inaccessible location such as inside a locked premise are encountered daily on all GB networks. These situations arise when members of the public call the national gas emergency number (0800 111 999) to report a possible gas escape but when the FCO arrives he/she traces the source of the gas to be inside a locked property. This can present significant safety challenges.

For methane gas escapes inside 'no access' properties, our FCOs are reliant on initial checks with gas detection equipment in and around properties. If gas readings are detected and the gas supply can be isolated from outside the FCO will do so and remain on site until the readings have vented. A notice is then left for the customer, requesting them to contact SGN on their return. If unable to isolate the supply, depending on the level of the readings, the FCO may wait for a locksmith and police to attend site before exercising the rights of entry. If the FCO has to force access to the property immediately we then call a joiner and the police afterwards.

However, in some properties, such as high rise flats, this can be problematic as ingress points do not always exist or are often not easily accessible for FCO's. Therefore, the FCO needs to make an informed assessment based on visual signs as to whether 'immediate action' (i.e. forced entry) is required.

In the case of potential CO inside a 'no access' property, there is no detection device which can be used and therefore the operative has to base his/her judgement on visible signs of CO such as condensation on windows or sooting around the flue.

On average SGN encounters between 100 – 150 gas escapes (methane and CO) each day in 'no access' properties. Depending on the initial findings by the FCO, these callouts usually take 30-45 mins to deal with. In the majority of these calls-outs, no gas readings are detected during the first visit and in these cases SGN can visit a property 3 or 4 times (leaving a postcard on each occasion) before either gaining access with the owner's permission or the SGN manager decides to terminate the job until the customer contacts us again. Therefore, in both instances, safety is heavily reliant on the personal judgement of the operative and the situation can be time consuming and costly to deal with. The current procedures used by FCOs to decide whether to force entry or revisit properties are based on risk assessment of the situation a limited number of factors. The procedures tend to result in many 'false positive' decisions; forced entry and revisits are used in situations where it is then found there was no safety risk.

This project aims to address the problems outlined above by developing a more sophisticated risk model to enable FCOs to make use of more factors to assess the situation objectively This will allow the FCO to determine the exact level of risk and identify what measures, if any, could be applied to reduce that risk to an acceptable level, consequently increasing safety whilst reducing onsite investigation times and reducing the number of unnecessary revisits and forced entries.

Method(s)

The exact level of risk to our operatives, the public or a property posed by possible methane or CO inside a locked premise has never been quantified. In each case, the risk is a correlation between likelihood and consequence and can be quantified by assessing a number of contributing factors such as property type, ventilation, appliance type and service history, visual signs, position of Emergency Control Valve (ECV) etc. Where this data is available it could be taken into account by FCOs in risk assessment and used to make more informed decisions about the safety of a situation and the most appropriate action to take as a result.

SGN will employ technical consultants, DNV GL, to develop a quantified risk assessment (QRA) for inaccessible properties to investigate the level of risk arising when access to a premise cannot be obtained in the event of a reported gas leak (methane) or when carbon monoxide (CO) could be potentially present. Their expertise of the gas industry allows them to provide our project with technical assurance, advisory and risk management services required when dealing with demanding environments, which in this instance are inaccessible properties.

The risk assessment developed by DNV GL will give quantitative estimates of the levels of risk and explain the parameters defining them. It will also provide a numerical value for the probability that a defined harm will result from the occurrence of a particular event. A pragmatic approach will be used in the simplification of the results to aid wider dissemination and incorporation of results into the revision of relevant work procedures. This project will find out whether it is safe to update procedure or not i.e. won't be increasing risk to unacceptable levels.

Scope

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Technical consultants DNV GL will develop the QRA, the results of which will be used to reassess the 'Immediate Action Criteria' and the work procedure for no access properties.

DNV GL will manage the entire QRA process; scoping the QRA, collecting the necessary data, and evaluating a number of failure cases in order to build the QRA model. Based on the QRA model developed, DNV GL will also perform analysis of results including assessment against acceptance criteria and identification of measures for mitigating risks. In order to build the QRA a representative sample of properties within our Scotland network will be used. This will be a mainly be desktop exercise but may also involve some property visits.

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SGN's Operations records can also be used to assess the effects the QRA will have on SGN's performance. Should the records show a reduction in the average time spent resolving emergency call outs during the new procedures, it can be concluded as a more efficient and therefore enhanced gas emergency service. The records will also illustrate whether fewer 'false positive' decisions are made during use of the QRA. Should this be successful, our more accurate emergency service will contribute to our improved procedures when dealing with inaccessible properties. If fewer calls out times are recorded and the number of return visits to properties reduces also, the costs associated with the emergency services would therefore decrease. If the records show that the QRA provides more accuracy in risk assessment during our emergency services then this will lead to a reduction in risk when dealing with inaccessible properties.

A change was made to extend the project duration by 8 months due to contract negotiations with the project partner proving more complex than expected and therefore taking longer to complete than originally anticipated. The change is beneficial as it will allow the project to complete as planned and deliver learning which will benefit all Gas Distribution Networks in their FCO operations across GB.

Objective(s)

The objectives of the project are to produce:

- Risk assessment for no access properties in the event of reported carbon monoxide
- Risk assessment for no access properties in the event of a reported gas escape (methane)
- Reporting of findings from each risk assessment
- Work procedures for using and applying risk assessments

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The success criteria for the project are:

- To provide a basis for reducing risk arising from CO and methane build up in inaccessible properties.
- To improve procedures for dealing with inaccessible properties.
- To provide a basis for reducing for reducing costs associated with emergency service activities.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project involves designing the QRA based on a sample number of properties (c.1000) located within our Scotland network. There

would be less potential for learning if the scale of the project was any smaller than this. Similarly there would be no merit in having a larger scale project.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL5 Pilot Scale

Geographical Area

The sample properties will be located within our Scotland network. The area is yet to be identified.

Revenue Allowed for the RIIO Settlement

While no savings are expected during project implementation, there is potential for this research, if proved successful, to result in considerable future savings during RIIO-GD1 in the operational costs associated with dealing with gas in inaccessible locations, while improving safety by reducing risk to the public and to our operatives.

Indicative Total NIA Project Expenditure

The total project expenditure is £23,331, 90% of which is allowable NIA expenditure (£20,998).

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)

In addition to the operational and safety benefits of this project, the development of this risk model has the potential to deliver financial benefits. SGN have been allowed £31.2m each year for Emergency activities under RIIO. However, it is difficult to accurately quantify the actual financial benefit of this project at of this stage because, as indicated by the low start TRL, the Method is at an early stage of development. Nevertheless, we know that on average we have over 45,000 'No Access' gas escapes each year, at a total cost of around £890k. If we can reduce onsite investigation times by even 10 minutes this would equate to a £200k saving per year. Cost estimates will be refined as it is further developed.

Please provide a calculation of the expected benefits the Solution

Due to the low TRL start level, it is not possible provide a calculation of the expected financial benefits of the Project at this stage. However is estimated that the development of the risk assessment will help define new procedures for dealing with inaccessible properties which could lead to reduced time and resources required whilst increasing safety.

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

Every Distribution Network has an emergency service, therefore the development of this risk assessment and subsequent procedures could be adopted by and rolled out across each Network Licensee's area.

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

Due to the low TRL start level, it is not possible an outline cost at this stage. However the main costs would be training for operatives.

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

The learning from this project will benefit all Network Licensees and the way they operate their emergency response service. If the project leads to successful development of a safer and more cost effective solution to the problem of gas in inaccessible properties, other Network Licensees will be able to use the learning generated to embed this new solution in their businesses. This will enable cost reductions and improvements in safety and risk minimisation. In addition, learning the exact risk level has the potential to be applied in the development of new gas detection technology in the future.

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