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

Sep 2014

Project Reference Number

NIA_WWU_018

Project Registration

Project Title

Asset Health Modelling (Pipelines, Special Crossings, Block Valves)

Project Reference Number

NIA_WWU_018

Project Licensee(s)

Wales & West Utilities

Project Start

September 2014

Project Duration

0 years and 5 months

Nominated Project Contact(s)

Gareth Robinson

Project Budget

£115,484.00

Summary

The purpose of the project is to provide a new methodology for delivering the requirements for Ofgem reporting. The collaborative working across the GDNs will provide a consistent benchmark for reporting a complex solution in a pragmatic way. The external service provider will be looking to determine pioneering research into deterioration models and probability of failure analysis using a nationwide data set. This will then be cross referenced with condition analysis based on current data and historical trends.

Nominated Contact Email Address(es)

innovation@wwutilities.co.uk

Problem Being Solved

Following submission of the Gas Distribution Network's (GDN's) business plans, Ofgem recognised the significant work carried out by the GDNs to report asset health, probability of failure and deterioration. However, it was recognised that the framework did not provide consistent results between the GDNs.

Ofgem intended the framework to provide a consistent means of comparing information between GDNs and enable GDNs to compare information about the condition of assets over time. In addition, Ofgem sought evolution over time to combine information from different asset classes to form an overall view of the condition of GDN assets and risk therein.

Currently each GDN has derived individual methodologies which they have developed independently of the other GDNs. To provide the consistency that the license condition requires the Safety & Reliability Working Group (SRWG) have been working to derive a consistent methodology for each of the 47 agreed asset groups for reporting to Ofgem by July 2015. For many of the asset groups the

SRWG have derived “simple” methodologies. For the more complex asset groups a more complex methodology is required and the SRWG have established that external consultation is required.

Method(s)

The proposed solution is to provide a consistent framework for reporting asset health, probability of failure and deterioration. The project will seek assistance from an external company to liaise with all the GDNs and work to create this consistent framework reportable to Ofgem. Although all asset groups within the GDNs will need to be scored, this project will focus solely on the following above 7 bar pipeline asset categories: LTS Pipelines, Special Crossings, Sleeves (Nitrogen & Other) and Block Valves.

Due to the interdependencies between these asset groups they will be considered as a single proposal which will enable consistency across the groups which will fulfil a key Ofgem requirement.

Scope

The purpose of the project is to provide a new methodology for delivering the requirements for Ofgem reporting. The collaborative working across the GDNs will provide a consistent benchmark for reporting a complex solution in a pragmatic way. The external service provider will be looking to determine pioneering research into deterioration models and probability of failure analysis using a nationwide data set. This will then be cross referenced with condition analysis based on current data and historical trends.

Objective(s)

The objective of this project is to:

- Develop a consistent reporting framework that is able to score Pipelines on asset health, probability of failure and deterioration.
- Provide a system that must be readily accessible and easily incorporated into the asset management working activities of all the GDNs.
- Liaise with all GDNs throughout the process to establish key milestones, interrogate current asset repositories and relevant fault data

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Throughout the project there will be frequent meetings held by the SRWG and with the external candidate to update on project progress and keep within key milestones. Each stage will have its own deliverables and targets which the project will measure against the original scope. The project seeks to deliver:

- Demonstrable models for deriving asset health, probability of failure and deterioration
- Provide a solution that meets the needs of Ofgem
- Integration of the model into the businesses of each GDN
- Provide final project report

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project will be split up into three key stages:

Stage 1 - Review of the different approaches currently used by the different GDNs to define asset health, probability of failure and deterioration of piggable pipelines, sleeves, crossings and valves. Also, to consider which main factors need to be used to determine a consistent approach and therefore, to produce a report defining these main factors and a justification for each. Also to review the current approach dictated under Intervals 2 to see if this can provide the baseline framework.

Stage 2 - Carry out a quantified fundamental review and analysis of the data currently available in databases such as the UKOPA

database to support the factors identified from the above activity and to produce a report outlining these results.

Stage 3 - Devise a new cause-based approach for asset health, probability of failure and deterioration for consideration by the GDNs based on available characteristics, data and measurements. The results will then be obtained and updated within existing resources, providing the same meaningful comparison between different assets within the same category. A report will be provided outlining the approach and detailing relevant algorithms and formulae required to calculate the asset health, probability of failure and deterioration

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL6 Large Scale

Geographical Area

UK Mainland - All GDN's

Revenue Allowed for the RIIO Settlement

There are no direct savings expected from any allowances awarded.

Indicative Total NIA Project Expenditure

The expected total cost is £115,484.40 90% of which is allowable NIA expenditure (£103,935.96). The costs are being shared proportionally amongst the 4 GDNs as follows:

SGN - external NIA expenditure £21,675.00

SGN – internal NIA expenditure £7,196.10

SGN Total NIA Expenditure - £28,871.10

NGN - external NIA expenditure £10,837.50

NGN – internal NIA expenditure £3,598.05

NGN Total NIA Expenditure - £14,435.55

WWU - external NIA expenditure £10, 837.50

WWU – internal NIA expenditure £3,598.05

WWU Total NIA Expenditure - £14,435.55

NGG - external NIA expenditure £43,350.00

NGG – internal NIA expenditure £14,392.20

NGG Total NIA Expenditure - £57,742.20

Total NIA Expenditure - £115,484.40

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)

The creation of a consistent model for reporting asset health, probability of failure and deterioration across all GDNs for the 8 year duration of this price control period. The model will effectively enhance the asset health knowledge, asset criticality knowledge which will ultimately generate a risk ranking mechanism. This mechanism will provide the foresight to prioritise investment on these assets, which will subsequently provide the best whole life cost and whole life value solutions – thus providing a consumer and customer benefit.

Please provide a calculation of the expected benefits the Solution

In the broadest terms the cost of installing on LTS pipeline is £1m per kilometre. Each GDN has been allocated different allowances for the work they need to carry out on their LTS assets, however assuming each GDN lays up to 1km per annum (64km over 8 "networks" over 8 years of RIIO) and the GDNs are able to create efficiencies of 3% then this is a saving of £1.92m

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

The purpose of the project is to provide a new methodology for delivering the requirements for Ofgem reporting. The project is in collaboration with the other GDNs and therefore, there is no issue with regards to replicating the method in future work.

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

There should be no foreseen costs of rolling this method out across GB. All networks are collaborating on this project.

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

All GDNs will be able to use the learning generated as the outcomes will be related to each individual and the models implemented from this project will be the same. As a result, this will be easily adopted into the individual GDN businesses

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

For business plan submission there was inconsistency across each GDN in each of their methodologies for determining and reporting asset health, probability of failure and deterioration. The project specifically challenges to reduce the key output risks of safety and reliability without excessive recourse to investment.

☑ 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

- [x] Yes