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 2016

Project Reference Number

NIA_SPEN0011

Project Registration

Project Title

LV Elbow Joints

Project Reference Number

NIA_SPEN0011

Project Licensee(s)

SP Energy Networks Distribution

Project Start

March 2016

Project Duration

1 year and 9 months

Nominated Project Contact(s)

Nicol Gray

Project Budget

£120,000.00

Summary

This project aims to deliver a safer, less disruptive and more resource efficient way of upgrading and replacing LV links boxes so as to provide an improved service to our customers. The following work packages are intended to trial, evaluate and rollout the LV Elbow joint kits and to establish the potential benefits it could offer UK DNOs

To deliver this project SPEN has identified four key Work Packages:

1. Product approval and Factory Acceptance Testing of concept ‘elbow’ and ‘180 degree’ joint kits as per BS:50393.
2. Class room training and policy update to allow for the new elbow joints to be tested and used on the network. This will include the training for internal staff.
3. Onsite trials in Edinburgh and Merseyside Districts to allow for a detailed analysis of the kits and quantification of business benefits, including saving generated
4. Adoption by the business (BaU) including internal / external dissemination

Nominated Contact Email Address(es)

innovate@spenergynetworks.co.uk

Problem Being Solved

Renewing and upgrading underground Low Voltage (LV) link-boxes can be costly and time consuming activity that is also disruptive to customers, businesses and road users alike. Although the current method of modernisation is well established and has been optimised for improved internal efficiency, significant cost are still incurred through the excavation and reinstatement process as this makes up the majority of cost for this type of work.

The conventional DNO approach for this activity is for open cut trenching to allow for enough space for the new equipment and cables

to be safely installed as per the manufacturer's recommendations. This can include significant additional excavations to allow cables to be installed with the correct bending radius. This additional excavation work can greatly increase the cost for the work, ties up limited resources from front line activities and can cause significant disruption for local business and road users as increase traffic management is often required.

Method(s)

This project aims to work with a key cable joint kit manufacturer Tyco, to investigate the feasibility of using elbow and 180 degree joint kits to significantly reduce the footprint and consequently civil costs required for link-box modernisation work.

SPEN has previously worked closely with Tyco to help design and develop a suite of joint kits which will be trialed to establish whether significant savings could be achieved from the wide scale adoptions across the business

Scope

This project aims to deliver a safer, less disruptive and more resource efficient way of upgrading and replacing LV links boxes so as to provide an improved service to our customers. The following work packages are intended to trial, evaluate and rollout the LV Elbow joint kits and to establish the potential benefits it could offer UK DNOs

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Objective(s)

The objectives of each discrete Work Package is as follows;

1: FAT

· Laboratory testing to ensure kits are compliant with BS 50393

2: Training and Policy

· Class room training with SPEN jointers and excavation teams to establish good working practices

· Training using the joint kits and associated link boxes

· Redesign / modification of kits

· Generation of rules when kit can be used

· Identify key policy (internal and external)

3: Onsite installation

· On site testing and installation

· Establish benefits generated for LV

· Benefit tracker to establish saving achieved and potential business case for wide scale role out. Including the investigation into what other areas this technology could offer benefits.

4: Requirements for Business as Usual (BaU) adoption and UK DNO dissemination

· Identify any further enhancements that can deliver additional benefits to DNOs and customers.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The project will be considered successful if the aforementioned objectives are realised.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

To generate a representative understanding of the potential benefits the LV elbow joints may have, and to facilitate the most cost effective and efficient way to assess the joints, SPEN has highlighted one district area in each licence areas to conduct field trials on up to 100 of each joint kit.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

Edinburgh District & Merseyside District

Revenue Allowed for the RIIO Settlement

n/A

Indicative Total NIA Project Expenditure

£120,000

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)

It is estimated that the new joint kits could realistically reduce excavation cost up to 30% compared to traditional methods. Although not all locations will benefit from these kits it is estimated that over the ED1 period around 15% could use elbow joint kits accounting for around 100 link-boxes per year

Please provide a calculation of the expected benefits the Solution

Base cost to replace 100 link-boxes using conventional methods: £561,000

Method cost: £512,000

Potential Financial Benefit per 100 link boxes = Base Cost – Method Cost = £49,000

This equates to arround £490 per link box however the exact savings to be determined during the trial phase.

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

The method will be replicable across all Network Licensee areas where there is a requirement to modernise LV link boxes and pillars

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

The costs to roll out this solution will be at the discretion of the respective DNOs and their internal policy requirements

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 UK DNOs have a large volume of LV link box which will require significant investment to modernize. The new 'elbow' joint kits could offer a realistic opportunity to reduce costs.

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