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

Nov 2016

Project Reference Number

NIA_NGET0201

Project Registration

Project Title

Portable Earthing Device

Project Reference Number

NIA_NGET0201

Project Licensee(s)

National Grid Electricity Transmission

Project Start

November 2016

Project Duration

1 year and 1 month

Nominated Project Contact(s)

National Grid TO Innovation Team

Project Budget

£210,000.00

Summary

The scope of this project is to design manufacture and test a portable earthing device. The project can be split into three stages.

1. Concept Design
2. Engineering Design
3. Manufacturing and commissioning

Nominated Contact Email Address(es)

box.NG.ETInnovation@nationalgrid.com

Problem Being Solved

It is not always possible to use an earth switch when working on equipment as there is not always a suitable earth switch at the point of work. Where an earth switch is not available a portable earth is used. Portable earths are often difficult to install, they pose a significant manual handling risk and due to height of busbars a MEWP is often required to fit them.

Method(s)

This project is to design, manufacture and test a new portable earthing device which is capable of installing and removing portable earths in a safe and controlled manner. Some previous work was done in this area from 2009-2011 which produced an initial prototype. This project will use the learning gained from the initial project but produce a prototype which addresses the design issues that were found with the previous prototype and look to develop a product that is cost effective to manufacture.

Scope

The scope of this project is to design manufacture and test a portable earthing device. The project can be split into three stages.

1. Concept Design
2. Engineering Design
3. Manufacturing and commissioning

Objective(s)

The objective of this project is to design, manufacture and test a portable earthing device that removes the need to manually install portable earths in locations that are difficult to access.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

This project will be successful if a portable earthing device is developed that is fit for purpose and safe to use.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This project will include concept design, engineering design, manufacturing and commissioning stages in order to develop a product that is ready to be tested and trialed in live substation.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The design and development work for this project will be carried out at Aldercote's offices, Yorkshire. The trial will take place in a National Grid substation.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£210,000

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)

The primary benefit of this project will be to around health and safety. The current methods for installing portable earths pose the following health and safety risks :

- Manual handling: for large clamps and high level bars the job becomes physically challenging
- Loss of control: both weather conditions and human factors can impact on loss of control of MEWP or earth.
- Safety from the system: no interlocking facilities could result in earth being applied to live bar in error

The development of a portable earthing device will try and address these health and safety concerns as well as providing some cost savings through providing a more efficient way of working.

Please provide a calculation of the expected benefits the Solution

Financial savings are difficult to estimate at this stage because the production cost of the portable earthing device is unknown. The portable earthing device should however offer a much more efficient way of applying portable earths. It is estimated that with the use of this device the earth would be quicker to install. Currently the cost of applying a portable earth on to a high level busbar is estimated at £700 base on the following costs:
MEWP Hire: £400 per day
2 x operatives for 3 hours: £300

If it is assumed we use the portable earthing device twice a month and the cost saving per application is £400 the saving could be in the region of £20,000 a year. However, this is an activity that is undertaken on a daily basis at substations across the country so the device could potentially deliver further savings. If the prototype is rolled out to sites across the country the cost saving could be £145,000 per year.

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

The outputs of this project are applicable to a similar extend across all LNO's

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

There would be a small cost for dissemination. Upon testing and commissioning of the portable earthing device, the relevant policies

and procedures will be updated, along with operator training.

Assuming the technology is proven, a number of the new portable earthing devices will be purchased by National Grid and the technology will be shared with all other LNO's.

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 from this project and the product developed from this project can be directly applied to other network licenses that experience similar issues when using portable earths.

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

This project fits within the Managing Assets value area of the Electricity Innovation Strategy:

☑ 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