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

Apr 2015

Project Reference Number

Project Registration

Project Title

Temporary Oil Containment

Project Reference Number

Project Licensee(s)

National Grid Electricity Transmission

Project Start

January 2013

Project Duration

0 years and 3 months

Nominated Project Contact(s)

National Grid TO Innovation Team

Project Budget

£103,000.00

Summary

Where a transformer needs to be stored (even on a temporary basis) the applicable specification is National Grid TS 2.20 which requires that a National Spare Transformer be stored in a reinforced concrete Oil Retaining Area that is sufficient "to provide an effective life in excess of 40 years". The oil retaining area must incorporate a drainage system that allows for water to escape without allowing oil to seep into the water course. The cost of this permanent solution is of the order of £750k and takes around 8 months (from design) to implement following the decision to build it.

The proposed system constructs the Oil Retaining Area (tank) from a geo-membrane sheet, held together with pre-stressed aluminium sections. The geo-membrane is designed to resist weathering, ultraviolet light and rain as well as many chemical substances (e.g. acids, bases and hydrocarbons). It has a high resistance to tearing, piercing and abrasion. Rain water is filtered through a Filtrelec Petro-Pipe, so it does not need to be connected to an interceptor. The filters simply allow rainwater to pass through but block in the presence of hydrocarbons. In the worst case (low probability) scenario where the transformer has emptied all its oil into the bund, the Petro-Pipe has blocked and it is raining, a siphon allows the rain water sitting at the bottom of the tank to drain whilst leaving the oil in the bund. The system is covered by a 12 month warranty.

The supplier's existing temporary storage tank designs are not large enough to meet National Grid specifications for oil capture and containment. It is anticipated that the proposed design will use two separate tanks, one to store the transformer and another to store the cooler banks, the two tanks will be connected by piping hence creating a sufficiently large storage capacity.

Landulph Substation has been identified as an appropriate trial site as there was already a scheme in place to construct a permanent bund to store a "Solar Spare". (The plan is then to redeploy the transformer when the GIC risk has passed).

Nominated Contact Email Address(es)

box.NG.ETInnovation@nationalgrid.com

Problem Being Solved

Method(s)

Scope

Objective(s)

The project will deliver a proven method for the deployment of a temporary oil containment storage facility (temporary is defined as up to 5 years) that will give National Grid a greater degree of flexibility in the delivery of transformer replacement schemes.

It will provide a means to mitigate temporarily heightened risks at a site by strategically deploying a National Spare Transformer to a site where it would not normally be stored. The identified risks are (i) the failure of a transformer during a geomagnetically induced currents (GIC) peak; and (ii) system outage planning or other constraints that mean we may not be able to replace an asset that has reached a state requiring replacement in the desired timeframe.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

n/a

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

n/a

Geographical Area

Revenue Allowed for the RIIO Settlement

Indicative Total NIA Project Expenditure

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)

n/a

Please provide a calculation of the expected benefits the Solution

n/a

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

n/a

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

n/a

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

n/a

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

Please demonstrate how the learning from the project can be successfully disseminated to Network Licensees and other interested parties.

Please describe how many potential constraints or costs caused, or resulting from the imposed IPR arrangements.<

Please justify why the proposed IPR arrangements provide value for money for customers.

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