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

Dec 2013

Project Reference Number

NIA_NGET0122

Project Registration

Project Title

Identification and Mitigation of Large Equipment Transport Issues

Project Reference Number

NIA_NGET0122

Project Licensee(s)

National Grid Electricity Transmission

Project Start

January 2014

Project Duration

1 year and 3 months

Nominated Project Contact(s)

Doug Dodds & Richard Josebury

Project Budget

£65,000.00

Summary

The scope of the project covers a desktop study to identify constraint issues around delivery of large assets in Stage 1, and then using the information gathered to produce a solution that overcomes these constraints in Stage 2.

Whilst transformer design is one avenue of mitigation, another option is to alter the design of the trailer systems used for delivery of the units. The current position is limited to the use of only 2 trailers within the UK as they have the capability to handle loads in excess of 148 tonnes. This study will investigate the feasibility of National Grid developing, on its own or in partnership, a trailer system specifically designed to our requirements, and take into account potential contraints, while looking at methods to overcome them. This will allow us to fix delivery, and standardise the delivery approach and associated costs. Ideally, this will take account of and document / make available current and future possible constraints, identifying the ideal design parameters of a trailer / delivery system in order to mitigate, reduce and standardise delivery risks.

Nominated Contact Email Address(es)

box.NG.ETInnovation@nationalgrid.com

Problem Being Solved

It is becoming increasingly difficult to obtain an authorised access and egress route to Transmission substation sites for the delivery of transformers to site, and the redistribution of strategic spares. Constraints imposed to reduce axle weights mean with existing trailers an increase in dimensions is caused, which then introduces negotiability constraint issues.

Current delivery costs for large assets such a Transformers, range from £150,000 to £900,000+ depending on the delivery site and complexity of movement. Access may not appear to be an issue at the start of a scheme, but due to the evolving nature of large construction projects, become apparent later on. National Grid are looking at altering Transformer designs, however the specification for electrical performance must take priority over the physical specifications, due to the nature of the network.

National Grid require the flexibility to move assets when required, rather than being constrained on the availability of the routes and trailers. This project aims to investigate the feasibility of redesigning a trailer and give NG the capability to move assets on demand in an easier manner, with less restrictions. This may have a knock on impact on the consumer, who should benefit from less disruption caused by assets being moved.

Method(s)

Research & Development

This project will take a stage gated approach to this problem. Only stage 1 is currently being funded.

Stage 1: This is a desktop assessment of current site constraints, to be used in developing design criteria and feasibility of design of trailer and transformer.

The target of the studies is to develop the design criteria for a system which can be tailored to ensure any of our assets can be transported to any of our sites.

Stage 2: This will innovatively re-design a trailer in order to meet increased flexibilty requirements

Scope

The scope of the project covers a desktop study to identify constraint issues around delivery of large assets in Stage 1, and then using the information gathered to produce a solution that overcomes these constraints in Stage 2.

Whilst transformer design is one avenue of mitigation, another option is to alter the design of the trailer systems used for delivery of the units. The current position is limited to the use of only 2 trailers within the UK as they have the capability to handle loads in excess of 148 tonnes. This study will investigate the feasibility of National Grid developing, on its own or in partnership, a trailer system specifically designed to our requirements, and take into account potential contraints, while looking at methods to overcome them. This will allow us to fix delivery, and standardise the delivery approach and associated costs. Ideally, this will take account of and document / make available current and future possible constraints, identifying the ideal design parameters of a trailer / delivery system in order to mitigate, reduce and standardise delivery risks.

Objective(s)

- Assess risks associated with the location / routes used by Abnormal loads.
- Critically review sites and assets to categorise into traffic light vulnerability bands.
- Develop a methodology for ensuring information on transformer movements is accessible.
- Develop the design criteria for a system which can be tailored to ensure all NG assets can reach all NG sites.
- Increase the options available to deal with abnormal loads.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

- Production of a traffic light based risk assessment for transport to sites
- Production of action plans to address the traffic light contraints
- Production of design criteria document for a trailer that meets the needs of National Grid when transporting large assets.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This is a desktop study. As such, we cannot reduce the scale any further.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL5 Pilot Scale

Geographical Area

This will provide a tool that will cover all NG sites, and is therefore covering all of England & Wales.

Revenue Allowed for the RIIO Settlement

Zero

Indicative Total NIA Project Expenditure

£65,000

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)

Standardisation and fixing of delivery costs has the potential to reduce asset delivery costs, both in normal delivery & emergency scenarios. As detailed before, costs can be upwards of £900,000, so even a small reduction would be acceptable.

Please provide a calculation of the expected benefits the Solution

Research Project - Not required.

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

This will produce a tool that is applicable to the whole of the National Grid transmission system.

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

We have assumed a similar cost would be required for a similar assessment in Scotland.

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 generated could be used by other licensees as they will have similar problems transporting large & heavy goods to sites. This makes the project widely replicable in the other licensees 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)

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