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

Jan 2017

Project Reference Number

NIA_NGET0203

Project Registration

Project Title

Novel acoustic attenuation feasibility study

Project Reference Number

NIA_NGET0203

Project Licensee(s)

National Grid Electricity Transmission

Project Start

February 2017

Project Duration

0 years and 10 months

Nominated Project Contact(s)

Janine Dickinson & Ruth Hooton

Project Budget

£70,000.00

Summary

The key deliverable of this project will be the production of a technical report. The work leading up to the production of the final technical report will be split into two stages.

Stage 1 will involve:

a. The identification and review of available techniques and technology.
b. The production of an interim overview report on the findings of the technology review.
c. A review by the Project manager, confirmation of the approach and agreement to proceed to Stage 2.

Stage 2 will involve:

a. A detailed desk based study of the options identified in Stage 1.
b. The production of a draft report on the findings.
c. Project manager review and feedback.d. Production of the final technical report.

Nominated Contact Email Address(es)

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Problem Being Solved

Where National Grid (NG) is required to mitigate noise as part of a transformer replacement scheme, there are few options available. Currently there are four options for reducing the noise impact of transformers, these are:

1. Procure a quieter (special purchase) transformer - can be costly.
2. Install cladding to external tank – can limit access for operations/maintenance and dB/£ can be unattractive.
3. Installing a noise barrier – site dependent therefore limited applicability.
4. Installing a noise enclosure – effective but expensive.

The options available are often costly when compared to the level of noise reduction (dB/£) which needs to be secured to achieve an acceptable noise climate.

Therefore NG wishes to understand what novel, cost effective, noise reduction options are available (or have the potential to be developed) for use on the transmission network and seeks the recommendation of a specialist organisation on the feasibility of these products. It is anticipated that the output from this study will inform a second phase of work that might support the development of an innovative solution and include testing the shortlisted noise reduction solution at a trial site on a NG substation.

Method(s)

By commissioning a feasibility study NG can further its understanding of what alternatives are available on the market, and if there are innovative solutions in development which would be fit for purpose on an Electricity Transmission substation.

This phased approach will identify suitable solutions before committing to further trials to develop the short-listed solution(s) within a working environment.

Scope

The key deliverable of this project will be the production of a technical report. The work leading up to the production of the final technical report will be split into two stages.

Stage 1 will involve:

a. The identification and review of available techniques and technology.
b. The production of an interim overview report on the findings of the technology review.
c. A review by the Project manager, confirmation of the approach and agreement to proceed to Stage 2.

Stage 2 will involve:

a. A detailed desk based study of the options identified in Stage 1.
b. The production of a draft report on the findings.
c. Project manager review and feedback.
d. Production of the final technical report.

Objective(s)

The objective of this feasibility study is to understand what novel, cost effective, noise reduction options are available on the market, or have the potential to be developed for use on the transmission network.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The outputs from the research will provide the industry with enhanced intelligence of novel noise reduction options that are market-ready, or have the potential to be developed for use on the transmission network.
A report that furthers understanding of the acoustic effectiveness and cost-benefits of the technology, ease of installation and a view of technology readiness.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The delivery of a desk-based feasibility study will allow the efficient development of either a transmission level trial or further (targeted) development work. Without the delivery of a feasibility stage there is a risk that multiple projects could be pursued with few delivering

value for the stakeholders.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL4 Bench Scale Research

Geographical Area

This project is primarily desk based. As part of the feasibility study, there may be visits to engage with suppliers to better understand their technology/product.

Revenue Allowed for the RIIO Settlement

None.

Indicative Total NIA Project Expenditure

£70,000.

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)

In the event a novel noise mitigation solution is identified that is more cost effective than the traditional solutions, and on delivery of the anticipated second phase of this study, the following efficiencies might be realized:

a) By having a range of solutions available and choosing the most appropriate for the job (e.g. not deploying a full noise enclosure capable of reducing noise by 20dBA when a reduction of 3dBA would meet requirements) would ensure that a more efficiently engineered product is used and the relative costs would be lower.

b) Using the best tool for the job could also have a positive impact on the construction programme by reducing the amount of time staff are required on site, reducing the length of outages and reducing other associated costs.

Please provide a calculation of the expected benefits the Solution

Not applicable – research project.

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

The knowledge from this project would be applicable to both electricity transmission and distribution networks because all the equipment produces noise that needs to be managed.

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

There is no cost associated with rolling out this project as it is a feasibility study. The deliverable report will be shared on demand with Network Licensees and a summary of the report will be uploaded to the ENA Portal. The output of this feasibility study could be used by other network licensees; they could review the output of this feasibility study and might:

- Approach NG to work with the identified suppliers to develop a suitable product
- Pursue development of alternative options that are dismissed as not applicable to NG transmission assets.

In the event that the study demonstrates that there is future value in an identified noise mitigation solution, this work will inform a further project. As stated, this future work will only be taken forward when cost savings can be assured (i.e. cost benefit to business and customers).

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 knowledge gained from this feasibility study is applicable to electricity transmission and distribution networks as all of the equipment used by the networks produce noise which may need to be attenuated.

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 corporate responsibility and efficient build value area of the Electricity Transmission Owner 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