

## NIA Project Registration and PEA Document

### Date of Submission

Jan 2014

### Project Reference

NIA\_NGGT0025

## Project Registration

### Project Title

Architectural Design of Compressor Site

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NIA\_NGGT0025

### Project Licensee(s)

National Grid Gas Transmission

### Project Start

February 2013

### Project Duration

1 year and 0 months

### Nominated Project Contact(s)

Michael Jordin (box.GT.innovation@nationalgrid.com)

### Project Budget

£200,000.00

## Summary

National Grid has to operate in an ever more stringent planning environment. The implementation of the Planning Act 2008 has resulted in all Nationally Significant Infrastructure Projects being captured by the Planning Act. The result of this has been a greater responsibility on a developer to provide evidence that a full and open engagement has been undertaken with both statutory and non statutory organisations and particularly the public at large and further that opinions expressed by third parties have been properly noted and where possible used to influence the final design submitted for consent to the Planning Inspectorate.

National Grid is committed to being the industry leader in the implementation of the requirements of the Planning Act. To this end, where National Grid is required to construct an above ground installation, it is imperative that they investigate fully all alternatives available to minimise the impact of the development on its environment and those who live in that environment. As part of the early stages of the public consultations on the Don Valley Power CCS project, preliminary compressor site design drawings and animations were created for three different design options:

- Contemporary
- Farmstead
- Landscaped.

The overwhelming preference from the public was for the landscape design (i.e. the environmental option).

## Nominated Contact Email Address(es)

Box.GT.Innovation@nationalgrid.com

## Problem Being Solved

National Grid has to operate in an ever more stringent planning environment. The implementation of the Planning Act 2008 has resulted in all Nationally Significant Infrastructure Projects being captured by the Planning Act. The result of this has been a greater responsibility on a developer to provide evidence that a full and open engagement has been undertaken with both statutory and non statutory organisations and particularly the public at large and further that opinions expressed by third parties have been properly noted and where possible used to influence the final design submitted for consent to the Planning Inspectorate.

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The issues this innovation project of work will address include:

- Increasingly stringent planning consent regime
- Resistance to major infrastructure projects during public consultations
- Commitment to improve efficiency of Compressor facilities
- Mitigate and, where possible, improve environmental impacts associated with compressor facilities

## Method(s)

- Investigate design options for the exterior structure of buildings required to accommodate a typical compressor site, taking account of the design assumptions identified.
- Three environmentally sensitive compressor site designs will be considered that can demonstrate National Grid's commitment to reduce the impacts associated with developing an infrastructure project in conjunction with improving efficiencies.
- Present options which can be incorporated in the design and indicative costs for their options both Capital Expenditure and Operational Savings over the conventional building design for a typical 20 year period.
- All three designs will be worked-up into sufficient detail by Architects to produce three dimensional animations and models and construction sequences.

## Scope

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1. Contemporary
2. Farmstead
3. Landscaped

The overwhelming preference from the public was for the landscape design (i.e. the environmental option).

## Objective(s)

This project will explore three environmentally sensitive architectural design alternatives that will be suitable for a typical compressor site, based on size (one small, two medium).

## Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

### Success Criteria

National Grid will be able to use the resulting 3D animations and models for presentations during public consultations, as appropriate, where projects are being planned, and for submissions to the Planning Inspectorate to gain a Development Consent Order, with a view to improve the efficiency of the National Grid Compressor facilities in the future.

### Project Partners and External Funding

n/a

### Potential for New Learning

n/a

### Scale of Project

Three hypothetical compressor site options will be investigated representative of typical sites across the National Transmission System (NTS). Two site designs will be based on a medium sized electric drive compressor station; one at a coastal location and a second at an inland green-field site location. The third site design will be based on a small compression site in a coastal environment.

### Technology Readiness at Start

TRL3 Proof of Concept

### Technology Readiness at End

TRL4 Bench Scale Research

### Geographical Area

The architectural designs are designed to be viable for application on future infrastructure concerns across the National Transmission System (NTS) in the UK.

### Revenue Allowed for the RIIO Settlement

None

### Indicative Total NIA Project Expenditure

IFI - £ 29k

NIA - £171k

## 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)

Reduction in operating costs through the use of renewable energy sources, reduced maintenance costs and positive environmental impacts on the area surrounding future National Grid development is anticipated to be realized upon the successful completion of the three designs. This project has been initiated in response to consumer feedback. The scope of this research and design project is theoretical and does not include demonstration in a working environment; savings can not be quantified at this stage.

#### Please provide a calculation of the expected benefits the Solution

n/a - research project

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

The provision of design specifications and associated data surrounding compressor facilities will be available for and applicable to all proposed future above ground infrastructure developments across the National Transmission System (NTS).

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

This project will not undertake demonstration of the designs within a working environment; it centered on research and design development, and therefore implementation cost can not be quantified at this stage.

### 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 will be made available via the ENA Smart Portal as well as on [www.nationalgrid.com/innovation](http://www.nationalgrid.com/innovation), NIA progress and annual reports will be available online and disseminated via industry groups as required. The supplier, AECOM, has signed a letter of assurance in support of NIA principles in relation to the execution of this project including the dissemination of learning.

### 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 addresses key elements within the Environmental and Strategic themes.

- 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