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 2014

Project Reference Number

NIA_NGET0090

Project Registration

Project Title

Cable Extraction

Project Reference Number

NIA_NGET0090

Project Licensee(s)

National Grid Electricity Transmission

Project Start

April 2013

Project Duration

2 years and 11 months

Nominated Project Contact(s)

Richard Attwell

Project Budget

£480,000.00

Summary

The scope of the project covers the trial of the modified drilling hd developed by JSM on three decomissioned transmission cable routes with different types of cable backfill material. Typically cables are installed in Cement Bound Sand (CBS) backfill (a mixture of cement and sand), sand only, soil, and in some places, concrete.

Nominated Contact Email Address(es)

box.NG.ETInnovation@nationalgrid.com

Problem Being Solved

National Grid Electricity Transmission recognises that the current approach to removing decommissoined underground cables by excavating trenches alogn their length is both distruptive and costly. National Grid is seeking to develop and demonstate alterantive methods for the removal of decomissioned underground assets (specifically HV Cable).

Method(s)

Development

National Grid and JSM are developing a methodology for extracting HV cables based on a varient of directional drilling, which uses a novel drilling head that sits around the cable and agitates the surrounding material, allowing the cable to be pulled out from one end.

the technique will be trialed at three different sites with different types of backfill around the cable:

S1: Kingsnorth-Beddington

S2: Ross-on-Wye

S3: High Marnham

Scope

The scope of the project covers the trial of the modified drilling hd developed by JSM on three decomissioned transmission cable routes with different types of cable backfill material. Typically cables are installed in Cement Bound Sand (CBS) backfill (a mixture of cement and sand), sand only, soil, and in some places, concrete.

Objective(s)

The project objective is to produce a solution that can extract HV cables without trench digging.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Successful removal of cable at one or more of the sites at which the trials are being carried out.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This project has taken a stage-gated approach with 3 trials.

Stage 1: Kingsnorth-Beddington Trial

Stage 2: Ross-on-Wye Trial

Stage 3: High Marnham Trial

These 3 trial areas have been identified and technically accepted as they all have different materials surrounding the cable. If National Grid reduce the scope of the work to one trial backfill material, there is a significant risk that the efficacy and applicability of the method will be over estimated.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The project will deliver in London, Ross-on-Wye, and High Marnham.

Revenue Allowed for the RIIO Settlement

Zero

Indicative Total NIA Project Expenditure

£480,000

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)

If National Grid were to remove the cable using current techniques, a direct excavation methodology would have to be used. This would be expensive, and would cause large scale disruption for consumers. This would cost in the region of £110,000 for 3x150m for 3" Cu/Pb 400kV Oil Filled Cables.

Please provide a calculation of the expected benefits the Solution

Base = £110,000

Method = quoted at £55,000 if successful (for the same 3x150m of 3" Cu/Pb 400kV OFC)

B-M= £55,000

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

This methodology can be applied to the whole of the GB Underground Transmission System.

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

There are 270km of cables to be decommissioned in the RIIO-T1 period. This technology can be used to extract these cables at the best available cost to the consumer. On top of this, there is over 50km of decommissioned cables already in the ground that could be extracted by this technique.

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)

- [x] 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)

This project addresses the following areas of the innovation strategy:

Safety : Safe Working Practices

Environment : The environment and reducing emissions

Strategic : Circular Economy

Customer Satisfaction & Commercial

- [x] Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

Is the default IPR position being applied?

- [x] 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