



Making a positive difference
for energy consumers

Company Secretary
National Grid Electricity
Transmission plc
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

Direct Dial: 020 3263 7159
Email: Geoffrey.Randall@ofgem.gov.uk

Date: 17 January 2018

Dear Company Secretary,

Network Innovation Competition (NIC) – amendments to National Grid Electricity Transmission plc (NGET) Offgrid Substation Environment for the Acceleration of Innovative Technologies (OSEAIT) project (the Project)

The NIC funds a number of large-scale innovation projects and was set up to encourage network companies to innovate in the design, development, and operation of their networks.

The purpose of the Project¹ is to modify an existing 400kV substation into an easily reconfigurable field trial facility to replicate a live substation environment. The aim of the Project is to overcome the operational barriers associated with the implementation of innovative methods and technologies on the electricity network.

Paragraph 8 of the Project Direction required us to approve the final estimate of the substation conversion costs before the construction works could begin.

This letter contains our decision to approve NGET's final estimate of the cost of the substation conversion, and the revised Project costs. We have also amended the Project Direction to reflect this. The amended Project Direction is set out in the schedule to this letter.

Background

On 11 December 2015, we issued the OSEAIT Project Direction². The Project Direction contains the terms to be complied with by the Project as a condition of it being funded under the NIC. Paragraph 8 of the Project Direction required NGET to submit an application to us to justify the final estimates of the costs of the substation conversion, and for us to approve this before the construction works begin.

1) NGET's final estimate of the cost of the substation conversion

NGET submitted its final estimates of the costs of the substation conversion in May 2016. We sought additional justification and detail which was submitted in June 2016.

¹ All capitalised terms not otherwise defined in this letter have the meaning given to them in the Project Direction.

² The OSEAIT Project Direction issued 11 December 2015 can be found here:

<https://www.ofgem.gov.uk/publications-and-updates/network-innovation-competition-project-direction-oseait>

NGET's final estimate of the cost of the substation conversion is £10,885,000. This is a reduction of £1,248,000 from its estimate of the cost of the substation conversion as stated in its Full Submission.³

Our view

Having considered the evidence that has been submitted, and following discussions with NGET, we are satisfied with NGET's final estimation for the cost of the substation conversion. We believe the conversion will deliver value for money to the consumer and that funding beyond the conversion costs should be returned to customers.

Schedule 1 of this decision shows the revised schedule to the Project Direction reflecting our acceptance of NGET's final estimation for the cost of the substation conversion and the revised project costs.

2) Return of unspent NIC funds to customers

As a result of the reduction in estimated costs of the substation conversion, NGET will return £1,152,107.50 of the Project's £12,015,120.30 Project Budget to consumers. This is due to the original funding arrangement of the Project, whereby 100% of the cost of the substation conversion, and 50% of the substation conversion contingency, were funded through NIC funding.

Next steps

Schedule 1 of this decision shows the revised Project Budget in the Project Direction. We will incorporate this amount into the Funding Direction we will issue in January.

Decision

We consider that NGET's final estimate of the costs of the substation conversion are justified and will maximise the expected benefits for customers.

In accordance with Section 14 of the revised Project Direction, we hereby amend the Schedule to the Project Direction in the manner set out in the schedule to this letter. This letter constitutes notice of reasons for our decision pursuant to section 49A of the Electricity Act 1989.

If you would like to discuss any of the issues raised in this letter, please contact Shilen Shah at Shilen.Shah@ofgem.gov.uk.

Yours sincerely



Geoffrey Randall,
Associate Partner, RIIO Networks
For and on behalf of the Authority

³ <https://www.ofgem.gov.uk/publications-and-updates/electricity-nic-submission-national-grid-electricity-transmission-oseait>

Schedule 1 – Project Direction changes

Schedule to Project Direction

1. TITLE

Project Direction ref: NGET / Offgrid Substation Environment for the Acceleration of Innovative Technologies / 11 December 2015.

2. PREAMBLE

This Project Direction is issued by the Gas and Electricity Markets Authority (the "Authority") to National Grid Electricity Transmission plc (the "Funding Licensee") pursuant to the Electricity NIC Governance Document issued pursuant to Part E of Special Condition 3I (Network Innovation Competition) of the Electricity Transmission Licence (the "Licence") of the Funding Licensee. It sets out the terms to be followed in relation to Offgrid Substation Environment for the Acceleration of Innovative Technologies (the "Project") as a condition of it being funded under the Network Innovation Competition (NIC) and the Funding Return Mechanisms.⁴

Unless otherwise specified, defined terms in this Project Direction are defined in Appendix 1 of the Electricity NIC Governance Document.

References to specific sections of the Funding Licensee's Full Submission in this Project Direction are, for ease of reference, made by referring to the section number in the Funding Licensee's Full Submission pro-forma.

3. COMPLIANCE

The Funding Licensee must comply with Special Condition 3I of the Licence and with the Electricity NIC Governance Document (as may be modified from time to time in accordance with Special Condition 3I and as modified and/or augmented in respect of the Project by this Project Direction) and with this Project Direction.

Any part of the Approved Amounts that the Authority determines not to have been spent in accordance with this Project Direction (or in accordance with the Electricity NIC Governance Document) is deemed to be Disallowed Expenditure.

Pursuant to Special Condition 3I.12 of the Licence, Disallowed Expenditure is revenue received (whether by the Funding Licensee or by another Licensee) under the NIC and Funding Return Mechanisms that the Authority determines not to have been spent in accordance with the provisions of the Electricity NIC Governance Document or with those of the relevant Project Direction.

Pursuant to paragraph 8.66 of the Electricity NIC Governance Document, Disallowed Expenditure includes any funds that must be returned if the Project is halted without Ofgem's permission, any funds that have not been spent in compliance with the approved Project Budget contained within the Project Direction, and any unspent funds on the completion of the Project.

4. APPROVED AMOUNT FOR THE PROJECT

The Approved Amount is £10,863,012.80 ~~£12,015,120.30~~.

⁴ The Funding Return Mechanism is defined in part C of Special Condition 3I.

5. PROJECT BUDGET

The Project Budget is set out in Annex 1 of this Project Direction.

The Funding Licensee will report on expenditure against each line under the category total in the Project Budget, and explain any projected variance against each line total in excess of 5% as part of its detailed report which will be provided, in accordance with Chapter 8 of the Electricity NIC Governance Document. Ofgem will use the reported expenditure and explanation to assess whether the funding has been spent in accordance with the Electricity NIC Governance Document and with this Project Direction.

For the avoidance of doubt this reporting requirement does not change or remove any obligations on the Funding Licensee with respect to reporting that are set out in the Electricity NIC Governance Document.

6. PROJECT IMPLEMENTATION

The Funding Licensee must undertake the Project in accordance with the commitments it has made in the Full Submission approved by the Authority pursuant to the Electricity NIC Governance Document and with the terms of this Project Direction. These include (but are not limited to) the following:

- (i) undertake the Project in accordance with the description set out in Section 2 (Project Description);
- (ii) provide a Network Licensee Compulsory Contribution of £2,780,233.76;
- (iii) complete the Project on or before the Project completion date of 31 October 2020; and
- (iv) disseminate the learning from the Project at least to the level described in Section 5 (Knowledge Dissemination).

7. REPORTING

Ofgem will issue guidance (as amended from time to time) about the structure and content of the reports required by paragraph 8.17 of the Electricity NIC Governance Document. The Funding Licensee must follow this guidance in preparing the reports required by paragraph 8.17 of the Electricity NIC Governance Document.

As required by paragraph 8.22 of the Electricity NIC Governance Document, the Funding Licensee must inform the Authority promptly in writing of any event or circumstance likely to affect its ability to deliver the Project as set out in its Full Submission.

~~8. APPROVAL OF SUBSTATION CONVERSION COSTS~~

~~In Appendix VIII of the Full Submission the Funding Licensee provides a commentary for the estimated conversion costs of the substation.~~

~~Before the construction works begin, and no later than 31 July 2016, the Funding Licensee must submit an application to the Authority to justify the final estimates of the costs of the substation conversion. The Authority will then assess the reasonableness of these costs, which may be no higher than the estimate provided in the Full Submission. The Authority may request further evidence to justify the costs.~~

~~The Authority will aim to approve the final estimate of the conversion costs as soon as reasonably practical once it has received sufficient evidence to make its assessment. Any difference between the estimate in the Full Submission and the amount approved by the Authority will be considered Disallowed Expenditure to be returned to customers. The~~

~~construction stages may not start before the Authority has approved the final estimate of the conversion costs.~~

8 9. DELIVERY OF INDIVIDUAL TEST TRIALS

In Appendix X of the Full Submission the Funding Licensee provides details on the 14 individual trials that it plans to undertake at the facility. The Full Submission explains that the final programme of trials will be subject to the agreement of the governing Technical Advisory Board.⁵

The Funding Licensee must ensure that these trials are achieved during the Project's timescale or are replaced by trials achieving equivalent benefits to the GB transmission system. Alternative trials will be subject to approval from the Project's Technical Advisory Board. Each of the trials must meet the NIC qualifying evaluation criteria set out in for the Electricity NIC governance document (ie are 'Electricity NIC-compliant').

Aligned with the Successful Delivery Reward Criteria described in Table 3, at each innovation programme approval stage, the Funding Licensee must submit, to the Authority, the costs and estimated benefits from the trials that will be undertaken, as well as the cumulative costs and estimated benefits for Electricity NIC-compliant trials undertaken during the Project to that point. It must also present full details of the trials and justify the extent to which they satisfy the Electricity NIC criteria. If, within three months of the final innovation programme approval stage, based on its assessment, the Authority decides that the trials are not Electricity NIC compliant or the cumulative Electricity NIC-compliant trials do not have the potential to achieve an equivalent level of benefit to the trials articulated in its Full Submission, the Funding Licensee must:

- Continue to maintain the facility at its own cost until such time that the Authority deems sufficient Electricity NIC-compliant trials have been conducted that have the potential to achieve an equivalent level of benefit to that in the Full Submission; or
- Return an appropriate proportion of the substation conversion cost to customers. This value will be approved by the Authority based on the proportion of the costs associated with any unapproved trials or otherwise calculated to reflect the reduction in estimated benefits to the GB transmission system.

9 10. FACILITY USE POST THE NIC PROJECT PERIOD

By no later than 31 October 2019, the Funding Licensee must submit a report to the Authority which outlines the options for how the facility will be managed and paid for beyond the Project's period. This report should also set out the ongoing commercial arrangements and how profits derived from the facility during the RIIO-T2 period will be shared with consumers. The Authority will then approve the Funding Licensee's proposals relating to the future management, funding and commercial arrangements of the facility as part of the Funding Licensee's RIIO-T2 settlement.

10 11. COST OVERRUNS

The maximum amount of Contingency Funding that the Funding Licensee can request as additional funding for cost overruns on the Project is 5%.⁶

⁵ The Technical Advisory Board is defined in Appendix XII of the Full Submission.

⁶ This is the amount requested by the Funding Licensee in its Full Submission.

11 12. INTELLECTUAL PROPERTY RIGHTS (IPR)

In Section 5 (Knowledge Dissemination) the Funding Licensee has stated that the Project conforms to the default IPR arrangements set out in Section Five of the Electricity NIC Governance Document for the parts of the Project that have been fully funded by the NIC. Where the trials are fully funded by the NIC, the Funding Licensee must undertake the Project in accordance with the default IPR arrangements. In other circumstances the Funding Licensee must ensure that the IPR arrangements comply with Section 5.3 of its Full Submission.

12 13. SUCCESSFUL DELIVERY REWARD CRITERIA

The Project will be judged by the Authority for the purposes of the NIC Successful Delivery Reward against the Successful Delivery Reward Criteria (SDRCs) set out in Table 1 below (that comply with paragraphs 8.56– 8.65 of the Electricity NIC Governance Document).⁷

The second set of SDRCs, relating to the delivery of the innovation programme, are currently not compliant with the Governance Document requirements. The Funding Licensee will need to submit revised, compliant, SDRCs to the Authority for approval during the Project, as the innovation programme is finalised. When submitting the trial-specific SDRCs for approval, the Funding Licensee must demonstrate how each trial meets the evaluation criteria of the Electricity NIC Governance document.

Table 1. Successful Delivery Reward Criteria

Successful Delivery Reward criteria	Evidence
1) The design and development of the facility	
<ul style="list-style-type: none"> • Formal agreement on Terms of Reference with Technical Advisory Board members: In order to achieve the efficiency required to meet the projects objectives it is essential that the other Transmission Licensees fully engage in the Technical Advisory Board. An early indication that this project will succeed will be in this Board agreeing the Terms of Reference. 	<ul style="list-style-type: none"> • Signed Terms of Reference for the Technical Advisory Board in place (31 March 2016).
<ul style="list-style-type: none"> • Detailed design of the facility completed and approved: The completion of both the infrastructure and technical layout designs are an important milestone on the way to delivery of the overall project as they will determine the level of testing / evaluation that can be carried out and at which stage. 	<ul style="list-style-type: none"> • Detailed designs of the facility for all stages of construction and technical availability signed off by the Technical Advisory Board (31 July 2016).
<ul style="list-style-type: none"> • Design, develop and publish internet site: One of the fundamental knowledge and dissemination channels for the project is the utilisation of the facility website, which will provide a secure area to share the outputs with the other Transmission Licensees. 	<ul style="list-style-type: none"> • Successful creation and launch of the facility website (July 2016).
<ul style="list-style-type: none"> • Scope of work for the phase 1 innovation programme approved: With there being a phased handover of assets it is essential to the project's success that a detailed plan be put in place, based on the assets available and trials proposed during this phase. This plan 	<ul style="list-style-type: none"> • Agreement and approval of the phase 1 innovation programme by the Technical Advisory Board. • Submission to Ofgem on details of trials, including costs, estimated benefits and justification of how

⁷ These are the Successful Delivery Reward Criteria set out in the Funding Licensees Full Submission

Successful Delivery Reward criteria	Evidence
<p>will include costs of the proposed trial projects, there estimated benefits and justification for how the trials satisfy the Electricity NIC criteria. The plan will also include any Network Innovation Allowance (NIA) projects which are able to be undertaken at this time.</p>	<p>the trials meet the Electricity NIC criteria (December 2016).</p>
<ul style="list-style-type: none"> • Completion of stage 1 construction works: The completion of the construction of the buildings and the transfer of the protection and control panels to the new control room are a key milestone to the effective functioning and monitoring of the facility, as is securing the perimeter of the overhead line enclosure. 	<ul style="list-style-type: none"> • Successful approval of stage 1 of the construction works and hand-over by NGET's Construction Team (June 2017).
<ul style="list-style-type: none"> • Scope of work for the phase 2 innovation programmes approved: The continuation of the phased handover of assets is essential to the project's success and a detailed plan is to be put in place, based on the assets available and trials proposed during this phase. This plan will include costs of the proposed trial projects, there estimated benefits and justification for how the trials satisfy the Electricity NIC criteria. The plan will also include any Network Innovation Allowance (NIA) projects which are able to be undertaken at this time. 	<ul style="list-style-type: none"> • Agreement and approval of the phase 2 Innovation Programme by the Technical Advisory Board. • Submission to Ofgem on details of trials, including costs, estimated benefits and justification of how the trials meet the Electricity NIC criteria (March 2018).
<ul style="list-style-type: none"> • Completion of stage 2 construction works: The completion of the construction of the internal access road is a key milestone to the effective functioning of the facility, as this will enable the necessary vehicles to be able to access all areas of the facility. 	<ul style="list-style-type: none"> • Successful approval of the second stage of construction works and hand-over by NGET's Construction Team (May 2018).
<ul style="list-style-type: none"> • Scope of work for the phase 3 innovation programme approved: The continuation of the phased handover of assets is essential to the project's success and that a detailed plan is put in place, based on the assets available and trials proposed during this phase. This plan will include costs of the proposed trial projects, there estimated benefits and justification for how the trials satisfy the Electricity NIC criteria. The plan will also include any Network Innovation Allowance (NIA) projects which are able to be undertaken at this time. 	<ul style="list-style-type: none"> • Agreement and approval of the phase 3 innovation programme by the Technical Advisory Board. • Submission to Ofgem on details of trials, including costs, estimated benefits and justification of how the trials meet the Electricity NIC criteria (March 2019).
<ul style="list-style-type: none"> • Commencement of phase 3 innovation programme: The delivery of the innovation programme testing / evaluation is a key milestone within the project and the ability to commence operations at the facility is 	<ul style="list-style-type: none"> • Appropriate dissemination and reporting on each of the projects uploaded to the facility website and published within the relevant journals / articles (April 2019).

Successful Delivery Reward criteria	Evidence
<p>fundamental to the measurement of its success.</p>	
<ul style="list-style-type: none"> • Completion of stage 3 construction works: The completion of the construction of the Gas Insulated Switchgear enclosure is a key milestone to the effective functioning of the facility, as this will enable the delivery of GIS and SF6 testing / evaluation projects. 	<ul style="list-style-type: none"> • Successful approval of construction stage 3 and hand-over by NGET's Construction team (May 2019). •
<ul style="list-style-type: none"> • Approval of model for enduring facility: The Technical Advisory Board will determine, based on the flow of projects, the future of the facility. 	<ul style="list-style-type: none"> • All required arrangements put in place for the future of the facility. Dependant on the findings of the Technical Advisory Board and the agreement of the Authority. These arrangements are to be fully documented (October 2020).
<ul style="list-style-type: none"> • Project close down: All project learning will be consolidated and disseminated appropriately. 	<ul style="list-style-type: none"> • TAB approved close-down workshop and close down report submitted to Ofgem (October 2020).
2) Innovation programme	
<p>Projects 1-6:</p> <ul style="list-style-type: none"> • Successful application of new policy: In order to utilise the condition monitoring and degradation curve research, it must be translated into a practically deployable policy which governs asset management decision making. • Successful knowledge dissemination: This will vary depending on the project and will be defined at project approval stage. 	<ul style="list-style-type: none"> • Sample of relevant investments tested to establish whether the replaced asset life had been extended by the policy (October 2020) • Workshops, training courses dissemination material (October 2020).
<p>Project 7:</p> <ul style="list-style-type: none"> • SF6 Leakage is reduced: The research of better SF6 management should be applied in the field to reduce maintenance cost and SF6 purchase cost. • Successful knowledge dissemination: This will vary depending on the project and will be defined at project approval stage. 	<ul style="list-style-type: none"> • SF6 expenditure reviewed to ensure reduction (after adjusting for asset volume changed). Volume of work orders raised for SF6 top up to be checked annually (August 2018). • Workshops, training courses dissemination material (August 2018).
<p>Project 8:</p> <ul style="list-style-type: none"> • Reduction in false call outs: By better interpreting thermal data, unnecessary call outs will be avoided, reducing cost. • Successful knowledge dissemination: This will vary depending on the project and will be defined at project approval stage. 	<ul style="list-style-type: none"> • Number of false call outs will be tracked (October 2018). • Workshops, training courses dissemination material (October 2018).
<p>Project 9:</p> <ul style="list-style-type: none"> • Avoided increase in false call outs: As RFI surveys get rolled out cost increase would be incurred due to false call outs. By better 	<ul style="list-style-type: none"> • The size and cost of the team carrying out the investigations will

Successful Delivery Reward criteria	Evidence
<p>interpreting RFI data, unnecessary call outs will be avoided, reducing cost increase.</p> <ul style="list-style-type: none"> • Successful knowledge dissemination: This will vary depending on the project and will be defined at project approval stage. 	<p>be monitored to ensure it does not expand (July 2018).</p> <ul style="list-style-type: none"> • Workshops, training courses dissemination material (July 2018).
<p>Project 10:</p> <ul style="list-style-type: none"> • Ability to review asset layout and condition: Better re-use of civil assets and improved construction delivery efficiency. • Successful knowledge dissemination: This will vary depending on the project and will be defined at project approval stage. 	<ul style="list-style-type: none"> • Project requires further development to establish possible tracking mechanism (July 2018). • Workshops, training courses dissemination material (July 2018).
<p>Project 11:</p> <ul style="list-style-type: none"> • Successful application of new policy: In order to utilise the degradation curve research, it must be translated into a practically deployable policy which governs asset management decision making. • Successful knowledge dissemination: This will vary depending on the project and will be defined at project approval stage. 	<ul style="list-style-type: none"> • Sample of relevant investments tested to establish whether the replaced asset life had been extended by the policy (September 2018). • Workshops, training courses dissemination material (September 2018).
<p>Project 12:</p> <ul style="list-style-type: none"> • Mitigation methodology rolled out: The understanding of the causes of noise will allow the development and application of noise mitigation technology. • Successful knowledge dissemination: This will vary depending on the project and will be defined at project approval stage. 	<ul style="list-style-type: none"> • The number of investments replacing recently installed conductors due to noise complaints will be tracked (October 2019). • Workshops, training courses dissemination material (October 2019).
<p>Project 13:</p> <ul style="list-style-type: none"> • Successful application of new policy: The better design should be translated into a new policy applied to new substation builds and some system refurbishments. • Successful knowledge dissemination: This will vary depending on the project and will be defined at project approval stage. 	<ul style="list-style-type: none"> • A sample of like for like secondary systems will be reviewed to establish what cost reduction has been achieved (October 2020). • Workshops, training courses dissemination material (October 2020).
<p>Project 14:</p> <ul style="list-style-type: none"> • Successful application of new policy and technology: The policy determining the use of gasses should be updated to reflect the new options. • Successful knowledge dissemination: This will vary depending on the project and will be defined at project approval stage. 	<ul style="list-style-type: none"> • Sample of GIS tested to establish whether new gasses are being used (October 2020). • Workshops, training courses dissemination material (October 2020).

The maximum amount of the NIC Successful Delivery Reward (which will not exceed the Licensee Compulsory Contribution) that the Project will be eligible for is £2,780,233.76.

13 14. USE OF LOGO

The Funding Licensee and Project Partners, External Funders and Project Supporters may use the NIC logo for purposes associated with the Project but not use the Ofgem or Ofgem E-Serve logos in any circumstances.⁸

14 ~~15~~. AMENDMENT OR REVOCATION

As set out in the Electricity NIC Governance Document and this Project Direction, this Project Direction may be amended or revoked under the following circumstances:

- (i) if the Funding Licensee considers that there has been a material change in circumstance that requires a change to the Project Direction, and the Authority agrees (paragraph 8.23 of the Electricity NIC Governance Document); or
- (ii) if Ofgem agrees to provide Contingency Funding, which requires the re-issue of the Project Direction (paragraph 8.55 of the Electricity NIC Governance Document); or
- (iii) if the Funding Licensee applies for Contingency Funding to cover a decrease in Direct Benefits and the Authority decides it would be in the best interest of customers to make changes to the Project Direction before the Contingency Funding would be awarded (paragraph 8.55 of the Electricity NIC Governance Document).

15 ~~16~~. HALTING OF PROJECTS

This Project Direction is subject to the provisions contained in paragraphs 8.43 to 8.47 of the Electricity NIC Governance Document relating to the halting of projects. By extension, this Project Direction is subject to any decision by the Authority to halt the Project to which this Project Direction relates and to any subsequent relevant Funding Direction issued by the Authority pursuant to Special Condition 3I of the Licence.

In the event of the Authority deciding to halt the Project to which this Project Direction relates, the Authority may issue a statement to the Funding Licensee clarifying the effect of that halting decision as regards the status and legal force of the conditions contained in this Project Direction.

NOW THEREFORE:

In accordance with the powers contained in the Electricity NIC Governance Document issued pursuant to Part E of Special Condition 3I of the Licence the Authority hereby issues this Project Direction to the Funding Licensee in relation to the Project.

This constitutes notice of reasons for the Authority's decision pursuant to section 49A (Reasons for decisions) of the Electricity Act 1989.

⁸ As listed in Box 1.6 in Section 1 of the Full Submission pro-forma.

ANNEX 1: PROJECT BUDGET

Cost Category	Cost (£)
Labour	5,697,983.16
Equipment	7,126,000.00
Contractors	10,269,634.68 11,325,849.68
IT	0
IPR Costs	0
Travel & Expenses	0
Payments to users	0
Contingency	1,695,680.72 1,887,465.72
Decommissioning	0
Other	0
Total	24,789,298.57 26,037,298.57