

Decision

National Grid Electricity Transmission (NGET) Bengeworth Road Grid Supply Point (GSP) Project

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This document sets out our decision to approve funding and set outputs for the Bengeworth Road Grid Supply Point (GSP) project.

National Grid Electricity Transmission (NGET) submitted a request for funding of this project through its RIIO-2 licence. We consulted on the request on 16 April 2021, and following consideration of responses received, have decided that the appropriate funding for the direct costs for this project is £80.76m. This document also sets out the evaluative Price Control Deliverable (PCD) that the funding is subject to.

The statutory notice published alongside our decision sets out the proposed licence condition to be incorporated in NGET's RIIO-2 licence.

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Executive summary

This document sets out our decision to approve funding and set outputs for the Bengeworth Road Grid Supply Point (GSP) project.

In April 2021, we consulted on the needs case; the range of options that met the needs case; and the justification for proposing the Bengeworth Road GSP project as the preferred option to satisfy the needs case. We also consulted on our view of the allowance for that project's direct costs.

Following consideration of the two responses received, we are confirming our minded-to position on the approval of the needs case of the project, with an associated direct cost allowance of £80.76m in 18/19 prices. This document also sets out the key elements of the project delivery that the funding will be subject to.

Concurrent with this decision, we are publishing a Statutory Consultation on how this decision will be implemented through NGET's RIIO-2 licence.

1. Introduction

Context and related publications

1.1. This document presents our decision on the needs case, cost allowance and outputs for the Bengeworth Road Grid Supply Point (GSP) project (the project) proposed by National Grid Electricity Transmission (NGET).

1.2. The project was originally submitted as part of NGET's RIIO-2 business plan, but the information provided at that time fell short of evidencing the justification of the option proposed. Accordingly, we did not approve the funding as part of the baseline allowances in our Final Determination (FD) for NGET. Instead, we provided a re-opener in the NGET licence¹ where NGET could provide additional information for us to conduct a considered assessment of the project.

1.3. Since the publication of NGET's RIIO-2 Final Determination, we have been working with NGET and the related party UKPN to obtain the additional information necessary to assess the project. We issued a consultation on 16 April 2021 (the consultation) which set out our minded-to views on the needs case, optioneering and cost efficiency of the proposed project. We received two responses, which can be viewed on our website².

1.4. Following consideration of the issues raised by respondents, we are confirming our view of the needs case, the optioneering and the efficient costs to set the project allowance and outputs.

Your feedback

1.5. We believe that consultation is at the heart of good policy development. We are keen to receive your comments about this report. We'd also like to get your answers to these questions:

1. Do you have any comments about the overall quality of this document?
2. Do you have any comments about its tone and content?

¹ Special Condition 3.35 of NGET plc's Electricity Transmission Licence

² [National Grid Electricity Transmission \(NGET\) Bengeworth Road Grid Supply Point \(GSP\) Project | Ofgem](#)

3. Was it easy to read and understand? Or could it have been better written?
4. Are its conclusions balanced?
5. Did it make reasoned recommendations?
6. Any further comments?

Please send any general feedback comments to RIIO2@ofgem.gov.uk.

2. Review of consultation responses and Ofgem's decision

Section summary

Having reviewed consultation responses, we have decided to proceed with our minded-to position and approve funding for the Bengeworth Road GSP project.

Recap of our consultation

2.1. NGET proposed to develop a new substation at the Bengeworth Road Grid Supply Point (GSP)³. This was presented by NGET, in collaboration with the connecting party UK Power Networks' (UKPN), as the best system-wide solution to address the two issues identified below:

2.1.1. First, a significant proportion of UKPN's underground cables in the Wimbledon - Bengeworth – Deptford region of south London are deteriorating and will not function adequately unless extensive repair or replacement is carried out.

2.1.2. Second, significant forecast demand growth in that same region over the coming decades will require additional network capacity.

2.2. The consultation set out our minded-to position on the Bengeworth Road GSP project in the following areas:

2.2.1. the needs case

2.2.2. the alternative options and the justification for the project

2.2.3. the efficient costs for the project.

2.3. Our consultation position on each of these aspects is given below.

³ A Grid Supply Point (GSP) is a Systems Connection Point at which the Transmission System is connected to a Distribution System.

The needs case

2.4. We agreed that the evidence provided on the deterioration of UKPN's cables indicated that they would require a substantive intervention to ensure a robust network for the customers they supply.

2.5. We also agreed that additional capacity will be required in south London to support expected demand growth, although the optimal solution will depend on the extent of this growth, which is uncertain.

2.6. On that basis, we accepted that the needs case was valid.

The alternative options and justification for the project

2.7. We considered the range of solutions proposed by NGET, in collaboration with UKPN, to address the needs case. We concluded that they had considered an appropriate set of options.

2.8. We considered that, of the technically feasible options presented to us, the Bengeworth Road GSP project was the optimal strategic choice. From an economic perspective, it had the lowest relative cost of all of the options and provided a range of other benefits such as increasing network resilience and reducing likely supply disruption to consumers.

2.9. We acknowledged that if no demand growth were to transpire, progressing with the Bengeworth Road GSP project would be an inefficient investment decision relative to some of the other options available. However, we considered the no-growth scenario to be unlikely. Accordingly, we were minded to accept the justification for the Bengeworth Road GSP project.

The efficient costs for the project

2.10. We considered the costs presented by NGET. We accepted most of these as appropriate but proposed two main areas of change: risk and contingency, and project management (PM).

2.11. For risk and contingency, we proposed reducing the requested amount by setting the total risk allowed within the contracts at 7.5% of contract⁴ cost. This percentage approximates to the average level of outturn risk and contingency on a range of RIIO-1 electricity transmission projects that we reviewed when setting the RIIO-2 baseline allowances. We considered that this allowance, together with the allowances embedded in the contracts, provided adequate cover for the entire project risk.

2.12. We also removed NGET's PM cost submission from the assessment as, under the RIIO-2 arrangements, NGET will be remunerated through the opex escalator for PM and all other indirect costs incurred in the development of this project⁵.

2.13. Accordingly, we set our proposed direct capex allowance for the project as £80.76m (in 18/19 prices), excluding the opex escalator uplift.

Consultation responses

2.14. We received two responses to the consultation: one from NGET, and one from UKPN. The following sections set out the main points made in the response against each of the three areas we consulted on.

The needs case

2.15. UKPN agreed that the needs case for the project was valid. NGET stated that our view of the deterioration of UKPN's underground cables aligned with their understanding, and they also agreed with our view of UKPN's forecast of demand growth in south London.

The alternative options and justification for the project

2.16. We posed two questions in this section of the consultation: "Do you agree with our technical assessment of the range of solutions to meet the needs case?" and "Do you agree with our minded-to view of the solution proposed by NGET?"

⁴ These were Engineering, Procurement and Construction (EPC) contracts, as against construction only contracts

⁵ NGET's opex escalator uplift rate for RIIO-2 is 16.89% of direct costs

2.17. On the first of these, UKPN agreed with our view, and reiterated its position that based on the difficulties faced by NGET through the London Power Tunnels project⁶, both the “open-cut cable replacement” and “UKPN sole-use tunnel” alternative options represented a much greater risk than the Bengeworth Road GSP project.

2.18. NGET’s response also agreed with our technical assessment, but noted that although paragraph 3.14 of the consultation document stated “NGET are likely to have to replace the New Cross 275kV substation with a 400kV substation before 2050”, there are other solutions to an increased capacity requirement at New Cross that would not require the whole site to be updated to 400kV.

2.19. Both UKPN and NGET agreed with Ofgem’s minded-to position to accept the solution proposed by NGET.

The efficient costs for the project

2.20. UKPN agreed with our cost assessment of the project.

2.21. NGET said that they agreed in the round with Ofgem’s minded-to position on total funding as it would allow them to progress with this important strategic project, but had two major reservations with Ofgem’s approach:

- 2.21.1. It considered that our disallowance of NGET’s “client-side” risk and contingency submission was incorrect. NGET stated that irrespective of the New Engineering Contract (NEC⁷) structure it used with its contractors, NGET will still retain some contractual risk, such that even “fixed-price” contracts are not wholly fixed-price. It gave as an example contractor costs incurred due to delays in achieving Local Authority planning approvals which would still sit with NGET.

⁶ London Power Tunnels phase 1 built 32km of tunnels and two new substations in north London. Phase 2 is building a new network of cable tunnels, 32.5km in length, between Wimbledon and Crayford. The phase 2 route is in close proximity to the Bengeworth Road site and crosses similar urban terrain but has an average tunnel depth of 30m to minimise disruption.

⁷ The New Engineering Contract (NEC) is a series of contracts designed to manage any project from start to finish. The contracts are written in plain English with a straightforward structure and are designed to be easily understood. NEC contracts aim to prevent costly disputes.

2.21.2. It stated that Ofgem’s proposed approach of implementing an average risk and contingency cap was second-best to that of using project-specific risk registers, especially for higher-value bespoke projects. It also noted that they had not seen the analysis underpinning Ofgem’s proposed risk and contingency cap level of 7.5%.

2.22. It concluded that Ofgem’s position on risk and contingency was unsustainable and looked forward to resolving these issues for future projects.

Other points raised by respondents

2.23. NGET commented that they agreed with Ofgem’s view that this project is best tracked as an evaluative Price control Deliverable (PCD) and it would work with Ofgem to set the project’s specific output deliverables.

Ofgem’s view of respondents’ points

2.24. Our view of the issues raised by respondents are as follows.

The needs case

2.25. We note the agreement of respondents that the needs case is valid.

The alternative options and justification for the project

2.26. We acknowledge the additional points of detail put forward by respondents on the viability of the alternative options. We do not consider that these affect our minded-to conclusions that NGET and UKPN has considered the appropriate range of options, and that the Bengeworth Road GSP project was the best option across most likely scenarios.

The efficient costs for the project

2.27. We note NGET’s acceptance of the proposed project allowance, albeit with the strong reservations expressed. We are happy to engage with NGET on the issues they raise so that we can establish a clear understanding for treatment of future project submissions. However, we maintain that our approach in this instance has been reasonable and proportionate:

2.27.1. We agree with NGET that risks should sit with those best placed to manage them. We acknowledge that in the example they quote, NGET does maintain some residual risk. However, they also receive funding to manage these operational risks through the opex escalator allowance uplift. Scheduling risk is all part of the normal business risk that we would expect contract and asset managers within NGET to be well-versed on, and we do not think that it merits additional explicit risk allowance.

2.27.2. NGET queried our use of a benchmark 7.5% risk and contingency cap for the project and expressed preference for the assessment of a bottom-up risk register for projects of this nature. NGET supplied a risk register for the Bengeworth Road GSP project, and we reviewed its content. We did not consider that most of these entries were justified, as we believed there was a degree of duplication between those risks and the risks sitting with their contractors. We believe that our consideration of the risks associated with the project in conjunction with our adoption of a benchmark risk allowance was a proportionate approach, given the levels of information available to us and the urgency of the project assessment.

2.27.3. For future projects, we intend to adopt the approach of using our benchmark level to inform our assessment of risk and contingency. We will also consider any compelling evidence of risks that are outside of the scope of comparable onshore projects when determining whether to incorporate any project-specific adjustments to the risk and contingency component of the allowance.

Other points raised by respondents

2.28. We note NGET's agreement that the project is best considered as an evaluative PCD and we have already engaged to develop the relevant detail. The following chapter presents our decision on the key elements of the PCD for this project.

Conclusion and decision

2.29. We note the general agreement by respondents that: the Bengeworth Road GSP project has a clear needs case; it is the most appropriate solution to that needs case; and, the proposed allowance of £80.76m (in 18/19 prices) is an appropriate level of funding for the project's direct costs.

2.30. On that basis, we are proceeding with a Statutory Consultation to effect changes to NGET's revenue allowance and to set out the associated PCD.

3. Price Control Delivery specification

Section summary

We have decided to use an evaluative Price Control Deliverable (PCD) to hold NGET to account to deliver the funded work as planned.

Introduction

3.1. This chapter sets out the specification of key elements of the evaluative Price Control Deliverable (PCD) for the Bengeworth Road GSP project, which the funding allowance will be subject to.

Specification of Substation Deliverables and future expansion requirements

3.2. In our analysis of both NGET's and UKPN's submissions we concluded there is a need for the Bengeworth Road substation to be readily extendable in future. Given the uncertainty around future demand growth, but the high likelihood of downstream network interventions before 2050, we believe a full double circuit turn-in and a third Super-Grid Transformer (SGT) are likely to be required at this site. Therefore, it is critical that this project delivers an economic option to enable the extension of Bengeworth Road substation in the future. This drives our detailed specification of the outputs for the evaluative PCD.

Specification of Gas Insulating Medium

3.3. In our discussions with NGET following its RIIO-2 business plan submission, they said that they expected a 400kV capable SF₆ alternative⁸ interruption medium would be commercially available by 2024. We indicated that we would expect Bengeworth Road and other 400kV projects delivered after 2024 to be SF₆-free. Subsequent discussions have suggested that this is no longer the expected route for NGET's procurement road map for switchgear.

⁸ Sulphur hexafluoride (SF₆) is a potent and persistent greenhouse gas which is used as an electrical insulator and arc suppressant for high voltage equipment.

3.4. As an interim position for 400kV projects delivered after 2024 we have considered the implications of the use of equipment utilising SF₆. Our view for this project is that we will prescribe a hybrid SF₆ solution. This will permit active components within the Gas Insulated Switchboard (i.e., the Circuit Breaker) to utilise SF₆. We expect NGET to use SF₆-free insulation mediums for the remaining equipment. Due to additional space requirements and noise considerations, we do not believe that an Air Insulated Switchgear (AIS) solution would be appropriate for the site.

Price Control Deliverable outputs

3.5. Construction of one GIS substation, comprising circuit breakers, cable feeder bays and SGT bays with SGTs. SF₆ should only be used for the interruption components; the remaining gas insulation should be SF₆ free.

3.6. Construction of one tunnel head house with cable circuits, two tunnel portals and two cross site cable circuits to link with UKPN's GIS bays.

3.7. In addition, provision should be made for the future addition of cable feeder and SGT bays to the site.

3.8. The detailed specification of requirements are set out in NGET's redacted information document.

Submissions for future projects

3.9. Further to our decision for the Bengeworth Road project as set out above, we would like to set out our expectation for submissions for future projects. A full range of credible solutions must be presented. The minimum level of intervention that would be required to remain compliant with all relevant legislation must be clearly identified. When presenting options, a whole life analysis must be reflected in the options development and where relevant this must contain whole life costs including consideration of electrical losses.

3.10. This approach will be particularly relevant for the use of Gas Insulated Switchboards (GIS), either filled with or without SF₆. Generally, we expect GIS to only be considered for situations where AIS is demonstrably infeasible or is the more expensive option. We accept that consenting for AIS new build, extension or replacement substation works may be more onerous than their GIS counterparts, but we would expect a licensee to engage in the consenting process with the most economic and efficient option over the life of the asset.