



Making a positive difference  
for energy consumers

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Date: 16 December 2016

Dear Company Secretary,

**Project Direction ref: LPN / PowerFuL-CB / 16 December 2016**

London Power Networks plc (LPN) submitted the project Power Electronic Fault Limiting Circuit Breaker (PowerFuL-CB) (the Project) in August 2016 to be considered for funding through the Electricity Network Innovation Competition (NIC). In this year's decision<sup>1</sup>, we selected the Project<sup>2</sup> for funding.

This Project Direction contains the terms to be followed by LPN as a condition of the Project receiving funding through the Electricity NIC. It must comply with these terms, which can be found in the Schedule to this Project Direction.

**Project direction**

Chapter 5 of the Electricity NIC Governance Document<sup>3</sup> states that a Project Direction will:

- set out the Project-specific conditions that the Network Licensee (which for this project is LPN) is committing to in accepting funding;
- require the Network Licensee to undertake the Project in accordance with the commitments it has made in the Full Submission. Where appropriate, the Project Direction may therefore include extracts from the Full Submission or refer to specific sections of the Full Submission;
- set out the Approved Amount for the Project, that will form part of the calculation contained in the Funding Direction issued by the Authority under Chapter 7 of the Governance Document;
- set out the Project budget that the Network Licensee must report against and how variances against the Project budget will be reported and approved; and
- set out the mechanism for the Network Licensee receiving the Approved Amount as set out in section 4 of the Funding Direction.

<sup>1</sup> <https://www.ofgem.gov.uk/publications-and-updates/electricity-network-innovation-competition-2016-funding-decision>

<sup>2</sup> Unless otherwise specified, defined terms in this Project Direction have the meaning given to them in Appendix 1 of the Electricity NIC Governance Document.

<sup>3</sup> <https://www.ofgem.gov.uk/publications-and-updates/version-2-1-network-innovation-competition-governance-documents>

These are described for the Project in the Schedule to this Project Direction.

**Decision**

Provided LPN complies with the Electricity NIC Governance Document and with the Schedule to this Project Direction, the Project is deemed to be an Eligible NIC Project.<sup>4</sup>

This Project Direction constitutes notice pursuant to section 49A (Reasons for decisions) of the Electricity Act 1989.

**Geoffrey Randall**  
**Head of RIIO Electricity Transmission**  
**For and on behalf of the Authority**

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<sup>4</sup> Eligible NIC Project has the meaning given in definitions of the Electricity Distribution licence.

## Schedule to Project Direction

### 1. TITLE

Project Direction ref: LPN / PowerFuL-CB / 16 December 2016.

### 2. PREAMBLE

This Project Direction is issued by the Gas and Electricity Markets Authority (the "Authority") to London Power Networks plc (the "Funding Licensee") pursuant to the Electricity NIC Governance Document issued pursuant to Part E of Charge Restriction Condition 5A (The Network Innovation Competition) of the Electricity Distribution Licence (the "Licence"). It sets out the terms to be followed in relation to PowerFuL-CB (the "Project") as a condition of it being funded under the NIC and the Funding Return Mechanisms.<sup>5</sup>

Unless otherwise specified, defined terms in this Project Direction have the meaning given to them 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. CONDITION PRECEDENT

The Funding Licensee will not access any funds from the Project Bank Account until it has signed contracts with the Project Partners named in Table 1.

#### Table 1. Project Partners

ABB Applied Materials
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### 4. COMPLIANCE

The Funding Licensee must comply with Part E of Charge Restriction Condition 5A of the Licence and with the Electricity NIC Governance Document (as may be modified from time to time in accordance with Part E of Charge Restriction Condition 5A 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 Charge Restriction Condition 5A, 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 Chapter 8 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 accordance with the approved Project

<sup>5</sup> The Funding Return Mechanism is defined in part C of Charge Restriction Condition 5A.

Budget contained within the Project Direction, and any unspent funds on the completion of the Project.

## **5. APPROVED AMOUNT FOR THE PROJECT**

The Approved Amount is **£4,594,431.65**

## **6. 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.

## **7. 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 £518,121.93
- (iii) complete the Project on or before the Project completion date of 31 August 2021; and
- (iv) disseminate the learning from the Project at least to the level described in Section 5 (Knowledge Dissemination).

## **8. REPORTING**

Ofgem may issue guidance (as amended from time to time) about the structure and content of the Project Progress Report required by Chapter 8 of the Electricity NIC Governance Document. The Funding Licensee must follow this guidance in preparing the reports.

As required by Chapter 8 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.

## **9. COST OVERRUNS**

The maximum amount of Contingency Funding that the Funding Licensee can request as additional funding for cost overruns on the Project is 0% of the approved amount.<sup>6</sup>

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<sup>6</sup> This is the amount requested by the Funding Licensee in its Full Submission.

## 10. INTELLECTUAL PROPERTY RIGHTS (“IPR”)

In Section 5 of its Full Submission (Knowledge Dissemination) the Funding Licensee has stated that the Project conforms to the default IPR arrangements set out in Chapter 9 of the Electricity NIC Governance Document. The Funding Licensee must therefore undertake the Project in accordance with the default IPR arrangements.

## 11. SUCCESSFUL DELIVERY REWARD CRITERIA

The Project will be assessed by the Authority for the purposes of the NIC Successful Delivery Reward against the SDRCs set out in Table 2 below (which comply with Chapter 5 of the Electricity NIC Governance Document).

**Table 2. Successful Delivery Reward Criteria**

<b>Successful Delivery Reward criterion</b>	<b>Evidence</b>
<b>9.1 Work with industry to advance new FLMTs based on FLCB technology</b>	
9.1.1 Prototype and lab test a substation-based solution (Method 1)	<b>Publish Learning Report – Development of a FLCB for substations</b> , which will include: recommendations for specifying a substation-based FLCB; results and learning from type tests (including a short circuit test) conducted at an accredited high power laboratory; and requirements for integrating FLCBs into existing networks and ensuring safety. (31 May 2019)
9.1.2 Prototype and lab test a customer-based solution (Method 2)	<b>Publish Learning Report – Development of a FLCB for customers</b> , which will include: recommendations for specifying a customer-based FLCB; results and learning from type tests (including a short circuit test) conducted at an accredited high power laboratory; and requirements for integrating FLCBs into existing networks and ensuring safety. (31 August 2019)
9.1.3 Independent review of safety case	<b>Issue preliminary safety case to relevant ENA panel(s) for independent review</b> which will include: Definition and justification of acceptable levels of risk; analysis of failure modes and effects; details of proposed mitigations; and claims, arguments, and evidence to demonstrate that the proposed mitigations reduce the overall level of risk to an acceptably low level. (31 May 2018)
9.1.4 Safety case for FLCB installation without back-up	<b>Publish preliminary safety case</b> which will include the technological and operational safety case to the time when the trial equipment could be deployed as BAU without the FLCBs being installed in series with a back-up circuit breaker. (31 May 2018)
<b>9.2 Trial the technical suitability of these two technologies including effectiveness and safety considerations for relieving fault level constraints for 11kV networks</b>	
9.2.1 Install and commission solution at an 11kV substation (Method 1)	<b>Publish Interim Learning Report – Demonstration of a FLCB for substations</b> , which will include results and learning from installation, commissioning, and operation to date of a FLCB at a substation. (31 July 2020)
9.2.2 Install and commission	<b>Publish Interim Learning Report – Demonstration of</b>

<b>Successful Delivery Reward criterion</b>	<b>Evidence</b>
solution at a customer's premises (Method 2)	<b>a FLCB for customers</b> , which will include results and learning from installation, commissioning, and operation to date of a FLCB at a customer's premises. (31 July 2020)
9.2.3 Demonstration of solution at an 11kV substation (Method 1)	<b>Publish Final Learning Report – Demonstration of a FLCB for substations</b> , which will include results and learning from operating and maintaining a substation containing a FLCB, and technical performance of the FLCB and overall solution under real network conditions. (30 June 2021)
9.2.4 Demonstration of solution at a customer's premises (Method 2)	<b>Publish Final Learning Report – Demonstration of a FLCB for customers</b> , which will include results and learning from operating and maintaining a FLCB at a customer's premises, and technical performance of the FLCB and overall solution under real network conditions. (30 June 2021)
<b>9.3 Assess the suitability of the solutions against customers' needs</b>	
9.3.1 Review the customer needs for these two FLCBs technologies on behalf of DNOs and DG stakeholders	<b>Publish Learning report – Understanding customers' requirements</b> , which will describe our findings from customer dialogue sessions, i.e. understanding their requirements and concerns about FLCBs, and customer feedback. (31 October 2017)
9.3.2 Assess the (commercial) business case based on the technical and customer findings, focusing on investment decision criteria and trade-offs, such as cost, time to connect, space and impact on security of supply	<b>Publish Learning report – Suitability of FLCBs</b> , which will inform generation customers of the solutions, answer frequently-asked questions, and provide enough information for customers to assess whether the solution meets their requirements (e.g. cost, time to connect, space required, operational impacts). (31 March 2020)
<b>9.4 Share the learning throughout the project with the wider utility industry</b>	
9.4.1 Share overall learning from the project with customers, regulators, other DNOs, other manufacturers, and academia via a stakeholder event.	<b>Publish key materials</b> from the stakeholder event (e.g. slides), and provide Ofgem with a list of invitees and attendees. (30 September 2021)

The maximum amount of the Electricity NIC Successful Delivery Reward (which will not exceed the Network Licensee Compulsory Contribution) that the Project will be eligible for is £518,121.93.

## 12. USE OF LOGO

The Funding Licensee and Project Partners, External Funders and Project Supporters<sup>7</sup> may use the NIC logo for purposes associated with the Project but not use the Ofgem or Ofgem E-Serve logos in any circumstances.

## 13. AMENDMENT OR REVOCATION

<sup>7</sup> As listed in Box 1.6 in Section 1 of the Full Submission pro-forma.

As set out in Chapter 8 of 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; or
- (ii) if Ofgem agrees to provide Contingency Funding, which requires the re-issue of the Project Direction; 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; or
- (iv) to reflect amendments made to the Licence.

#### **14. HALTING OF PROJECTS**

This Project Direction is subject to the provisions contained in paragraphs Chapter 8 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 Part E of Charge Restriction Condition 5A.

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 Charge Restriction Condition 5A 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.

## ANNEX 1: PROJECT BUDGET

<b>Cost Category</b>	<b>Cost (£)</b>
<b>Labour</b>	
	1,073,800.02
<b>Equipment</b>	
	1,180,650.44
<b>Contractors</b>	
	2,240,188.61
<b>IT</b>	
	0
<b>IPR Costs</b>	
	0
<b>Travel &amp; Expenses</b>	
	91,200.00
<b>Payments to users</b>	
	12,864.00
<b>Contingency</b>	
	547,500.00
<b>Decommissioning</b>	
	154,838.40
<b>Other</b>	
<b>Total</b>	<b>5,301,041.47</b>