

Metering Dispensation D/508 – Perivale GSP

ISG234

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Summary

Southern Electric Power Distribution has applied for a lifetime Metering Dispensation (D/508), against Code of Practice 1, for the Metering Equipment associated at its Perivale Grid Supply Point (GSP). D/508 replaces an existing Metering Dispensation (D/010) and, additionally, covers the Metering Equipment for a new circuit at Perivale GSP. We invite the ISG to approve D/508 on a lifetime basis and note that, if the ISG approves D/508, Elexon will remind Southern Electric Power Distribution to withdraw the existing Metering Dispensation, D/010.

1. BSC requirements

- 1.1 Section L¹ of the Balancing and Settlement Code (BSC) requires all Metering Equipment to either:
 - comply with the requirements set out in the relevant Code of Practice (CoP) at the time the Metering System is first registered for Settlement; or
 - be the subject of, and comply with, a Metering Dispensation.
- 1.2 Section L allows the Registrant of a Metering System to apply for a Metering Dispensation if, for financial or practical reasons, Metering Equipment will not or does not comply with some or all the requirements of a CoP.
- 1.3 The process for applying for a Metering Dispensation is set out in [BSCP32](#)².

2. Confidentiality

- 2.1 BSCP32 allows the Metering Dispensation applicant to request confidentiality via the application form (BSCP32/4.1).
- 2.2 In this case, the applicant has noted on the application form that the application itself is not confidential. However, the applicant has requested that we keep the metering single line diagram and other documents (Attachment D-G), confidential. This is to prevent Elexon making these details public on the BSC Website.

3. Background to Metering Dispensation D/010 for Perivale GSP (and D/057 for Greenford GSP)

- 3.1 National Grid Electricity Transmission (NGET) owns the 275/66kV substation at Willesden, including the 66kV busbars. A simplified³ single line diagram (Attachment C) shows the existing arrangements and location of the Settlement metering related to the circuit connections at (i.e. feeders from) the Willesden 66kV busbars.
- 3.2 In September 1991 Southern Electric plc applied for a Metering Dispensation (D/010) for the location of the Metering Equipment at its Perivale 66/11kV substation (GSP PERI_H - MSID 1623). The Defined Metering Point (DMP) is the point of connection to the 66kV busbars at the Willesden 275/66kV substation.

¹ 'Metering'

² 'Metering Dispositions'

³ It does not show the exact number of circuits or their configuration (e.g. tee points) or transformers.

- 3.3 In May 1992 Southern Electric plc also applied for a similar Metering Dispensation (D/057) for the location of the Metering Equipment at its Greenford 66/11kV substation (GSP GREE_H - MSID 1636). The 66kV busbars at the Willesden 275/66kV substation also feed the Greenford substation. Again, the DMP is the point of connection to the 66kV busbars at the Willesden 275/66kV substation.
- 3.4 Southern Electric plc made these applications at the time because they stated that it would cost £80,000, per 66kV circuit (of which there were, and still are, three), to purchase combined current and voltage transformers and then install them at the (shared) DMP for these two GSPs.
- 3.5 In the existing configuration, the Perivale substation has two 66/11kV power transformers fed by two feeders from the Willesden substation. One of these feeders is shared with one of the two power transformers at the Greenford substation.
- 3.6 The Actual Metering Point (AMP) for both Perivale and Greenford substations is on the lower voltage (LV) sides of their power transformers (two at Perivale (B1MT and B2MT) and two at Greenford (B1MT and B2MT)).
- 3.7 An additional power transformer (B3MT) is being installed at Perivale substation and will be fed from the Willesden substation by the addition of a Tee-connection on an existing feed from the Willesden substation that currently only feeds the Greenford substation.
- 3.8 In the new configuration, there will be three feeders from the Willesden substation that feed the Perivale and Greenford substations supplying five power transformers (two at Greenford and three at Perivale) (Attachment D).

4. Metering Dispensation application D/508

- 4.1 Southern Electric Power Distribution (SEPD) has applied for a lifetime Metering Dispensation (D/508), against [Code of Practice 1⁴⁵](#), for the Metering Equipment associated with its Perivale Grid Supply Point (GSP) (Attachment A (original) and Attachment B (updated)).
- 4.2 SEPD proposes to retain the existing AMPs at Greenford and Perivale substations and install an additional set of Metering Equipment (to CoP2⁶ standard) at the same relative AMP on the LV side of the additional power transformer at the Perivale substation. This solution will cost approximately £12,000, while the cost of installing a compliant Metering System at the DMP, on the three outgoing feeders from Willesden, was originally estimated to cost approximately £92,500 per feeder, i.e. £277,500.
- 4.3 Since then, and following comments from a Metering Dispensation Review Group (MDRG) member, SEPD has submitted an updated application (Attachment B) in which it estimates the cost to be approximately £1.5m to install CoP1 Metering Equipment at Willesden. This is on the basis that no other work is required to create space to install the new Metering Equipment. If further work is required to create space SEPD estimates that this could rise to £10m.
- 4.4 D/508 will replace the existing Metering Dispensation (D/010) and, additionally, cover the new Metering Equipment on the LV side of the new power transformer at the Perivale substation.

5. MDRG comments

- 5.1 We circulated the original Metering Dispensation application (and attachments) to the MDRG for comments (Attachment A and Attachments D-H).
- 5.2 Two out of four MDRG members responded:
- One MDRG member does not support the application and believes that Metering Equipment should be installed at the Willesden 275/66kV substation.
 - One MDRG member wanted to wait for further information from the applicant, before providing a view, as they thought it might be difficult to install metering at Willesden from previous experience of the site.
- 5.3 The MDRG member that does not support the Metering Dispensation notes that the applicant states the proposed commissioning date is Oct 2020. They also say that the implication is that the design, which has been several years in the consideration (evidenced by Scottish & Southern Electricity Networks (SSEN) public

⁴ 'Code of Practice for the metering of circuits with a rated capacity exceeding 100MVA for Settlement purposes'

⁵ Elexon has requested a further update to the application form to reference CoP1 as the applicable CoP SEPD needs to seek a Metering Dispensation application from, not CoP2.

⁶ 'Code of Practice for the metering of circuits with a rated capacity not exceeding 100MVA for Settlement purposes'

documents), has not addressed the BSC metering requirements sufficiently in advance to recognise the need to apply for a Metering Dispensation early in the design phase.

- 5.4 The MDRG member also believes that the changes at the connection are a 'Material Change' and therefore this is a trigger to correct the existing non-compliant metering arrangement, supported by two Metering Dispensations, and that installing code compliant metering at the DMP removes the need for any Metering Dispensations.
- 5.5 The MDRG member goes on to say that the cost of BSC compliant metering at the DMP is higher than the proposed approach but, it has the following benefits:
- The additional metering costs are small in the scale of the whole project;
 - The arrangement would then be compliant with the BSC;
 - The reactive power measured would be correct. The proposed approach [in the original application] does not correct the reactive values;
 - The existing two lifetime Metering Dispensations could be ended;
 - No new Metering Dispensation would be required;
 - The correct metering will remove the need to compensate the metering for five transformer losses, which together are estimated to account for up to 1.2MW of load. In addition, the uncertainty of the various losses of over 23km of 66kV cabling; and
 - Remove the complexity of relying on summation of seven metering systems, with three at the DMP. More than halving the additional risk of metering faults/estimation.
- 5.6 We provided this MDRG's response to SEPD and asked about the feasibility/timescales, and potential impact on Customers, of installing metering at Willesden.
- 5.7 SEPD has submitted an updated application (Attachment B) providing more detail on the practicality and costs associated with having to meter their three outgoing feeders at the Willesden 275/66kV substation.
- 5.8 In summary, SSE has:
- Clarified that the DMP is the cable connections on the outgoing feeders off the 66kV circuit breakers (CBs) (not busbars) at the Willesden 275/66kV substation;
 - Confirmed the circuit breakers are owned by National Grid and do not have metering class measurement transformers installed;
 - Any modification to the circuit breakers will require a Modification Application to be submitted to National Grid (NG) to advise them of the required work and costs; the application process will cost £35k and take between four to six months before NG issue an acceptance.
 - Confirmed the design of these 66kV CBs prevents modification to accommodate CoP1 standard measurement transformers and the location of the CBs has restricted space due to other adjacent circuits that have been added;
 - Estimated the cost to replace the three CBs to achieve CoP1 metering at the DMP to be £1.5m:
 - Replacement of 66kV circuit breakers with CoP1 CTs fitted;
 - Installation of CoP1 VTs, with associated structures;
 - Commissioning;
 - Provision for metering cubicle; and
 - Purchase of CoP1 meters is approx. £3,200 per circuit; but
 - that the cost could potentially increase to £10m if work is required on adjacent CBs to create sufficient space;
 - Projected that any work at Willesden 275/66kV substation has a £2.5m risk related to CI (Customer Interruptions) and CML (Customer Minutes Lost) to SSEN alone. A similar financial risk exists to other parties who share this site;
 - Modified the Active Energy, and provided Reactive Energy, loss compensation factors for programming the Perivale Meters;
 - Confirmed the VT and CT ratios;
 - Explained, and provided an example of, how it calculated the Active and Reactive Losses; and
 - Suggested that if there are any future reinforcement projects in this area they will consider relocating metering to the DMP. This will require Modification with National Grid to initiate a process for a Technical and Investment assessment.
- 5.9 We circulated the updated (and redlined) application (Attachment B), and a simplified SLD of the Willesden 275/66kV substation connections (Attachment C), to the MDRG (and NETSO) and requested final comments and their rationale:

- 5.10 One out of four MDRG members responded to the request for comments on the updated application:
- 5.11 The MDRG member, who was originally waiting for further information, confirmed they have no objection to the dispensation extension / update. The MDRG member says the life dispensation was provided for a good reason during the early 90s and it was not possible for National Grid to place metering VT/CTs at the DMP due to confined spaces in the London Area.

6. NETSO comments

- 6.1 We circulated the original Metering Dispensation application (and attachments) to the National Electricity Transmission System Operator (NETSO) for comments.
- 6.2 The NETSO has no objection to the ISG granting a Metering Dispensation based on the original application.
- 6.3 We circulated the updated Metering Dispensation application, and the simplified SLD of the Willesden 275/66kV substation connections, to the NETSO but it did not respond to our request for further comments.

7. ELVA comments

- 7.1 We circulated the original and updated Metering Dispensation application, transformer and cable data and the proposed compensation factors to the Electrical Loss Validation Agent (ELVA) for assessment.
- 7.2 The ELVA requested further information from the applicant and, at the time of writing, is currently waiting for the applicant to get back.
- 7.3 Elexon proposes to provide the ISG with a verbal update, at its meeting, of the ELVA's assessment of the validity of the proposed Active and Reactive Energy compensation factors.

8. Elexon's view

- 8.1 Elexon disagrees with the MDRG member's view that the changes at Perivale are a 'Material Change' that should be a trigger to correct the existing non-compliant metering arrangement. This view is based on the BSC definition of material change, which is in relation to changes to existing, registered, Metering Equipment, and the requirements of BSCP32, in relation to existing, registered, Metering Equipment or Metering Systems, where the conditions of an approved Metering Dispensation have changed.
- 8.2 Paragraph 3.3 of [Section L](#)⁷ defines a "material change" in relation to Metering Equipment (and components of them being changed), requiring materially changed Metering Equipment (i.e. existing and registered) to comply with the current version of the relevant CoP. It does not relate to registered Metering Systems and the composition of them changing (e.g. by adding Metering Equipment for new circuits to an existing registered Metering System):
- "3.3.1 Notwithstanding paragraph 3.2⁸, where any material change is made to any Metering Equipment, the version of the Code of Practice current at the time of that material change shall, from that time, be the relevant Code of Practice in respect of that Metering Equipment as so changed as if that date was the date of that Metering System's first commissioning."
 - "3.3.2 "material change" means a change to the Metering Equipment other than a change by way of repair, modification or replacement of any component which is not, in the judgement of the Meter Operator Agent acting in accordance with Good Industry Practice, a substantial part of the Metering Equipment even where an enhanced or equivalent component is used for the repair, modification or replacement rather than an identical component."
- 8.3 Under L3.2, the new Metering Equipment at Perivale GSP is required to comply with the current version of CoP1, unless subject to an approved Metering Dispensation, which SEPD has applied for (D/508) because the new Metering Equipment will not be located at the DMP and will comply with CoP2 Metering Equipment standards, and overall accuracy limits at the DMP, instead.

⁷ 'Metering'

⁸ i.e., Paraphrasing L3.2 'Compliance with Codes of Practice', Metering Equipment shall comply with: a) the relevant version of the applicable CoP at the time of first registration under the BSC (or be the subject of and comply with an approved Metering Dispensation (L3.4)) and shall only be required to comply with that version of the Code of Practice, and not with any Code of Practice which in any respect later amends, modifies or supersedes that version of the Code of Practice; or b) that version of the Code of Practice applicable under the Pooling and Settlement Agreement, immediately before Go Live; or c) that version of the Code of Practice applicable under Scottish Agreement for Settlement, immediately before the BETTA Effective Date.

8.4 In addition, BSCP32 states that:

“If

- (i) a Metering Dispensation is rendered void; or
- (ii) a Metering Dispensation has been agreed for a limited period and such periods have expired; or
- (iii) a Metering Dispensation has been agreed on conditions that certain circumstances will subsist and any of such circumstances shall cease to apply,

then the Applicant may submit a further application in respect of the subject matter of such Metering Dispensation providing that there has not been any change to the Metering Equipment or Metering System since the original application was made. Otherwise, a new application for a Metering Dispensation shall be submitted.”

8.5 SEPD has submitted a new application for a Metering Dispensation (D/508) because the composition of the Metering System has changed.

8.6 Although this could have been an opportune time to install fully compliant Metering Equipment at the Willesden 275/66kV substation, achieving the benefits mentioned by the MDRG member, the cost would be even higher than the applicant originally estimated and there is a risk of impacting Customers fed from the Perivale and Greenford GSPs. If additional work is required on adjacent feeders (i.e. feeding other GSPs), to make space for new Metering Equipment at the Willesden 275/66kV substation, the costs could escalate and other Customers connected to those other GSPs could be impacted.

8.7 Therefore, Elexon supports this Metering Dispensation application (D/508) as the Registrant will compensate the Meters, for power transformer and cable losses, to ensure the Perivale Metering System maintains overall accuracy of Active and Reactive Energy measurement, within the CoP2 limits, at the DMP.

8.8 If the ISG approves D/508, Elexon will remind Southern Electric Power Distribution to withdraw D/010.

9. Recommendation

9.1 We invite the ISG to:

- a) **APPROVE** Metering Dispensation D/508, for Perivale GSP, on a lifetime basis; and
- b) **NOTE** that, if the ISG approves D/508, Elexon will remind Southern Electric Power Distribution to withdraw the existing Metering Dispensation, D/010.

Attachments

Attachment A – Metering Dispensation application (D/508) (original)

Attachment B – Metering Dispensation application (D/508) (updated and redlined)

Attachment C – Single Line Diagram showing Willesden 275/66kV connections

Attachment D (CONFIDENTIAL) – Single Line Diagram showing Willesden to Perivale (and Greenford) connections

Attachment E (CONFIDENTIAL) – Existing Perivale power transformer rating plate (example)

Attachment F (CONFIDENTIAL) – New Perivale power transformer rating plate (B3MT)

Attachment G (CONFIDENTIAL) – Existing Perivale power transformer manufacturers test record (B2MT)

Attachment H (CONFIDENTIAL) – New Perivale power transformer manufacturers test record (B3MT)

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