

**BSCP32/4.1 Application for a Metering Dispensation**

## Part A – Applicant Details

<b>To: BSCCo</b>	<b>Date Sent:</b> 27/08/2020
<b>From: Requesting Applicant Details</b>	
Name of Sender:	
Contact email address:	
Contact Tel. No.	Contact Fax. No. _____
Name of Applicant Company: Southern Electric Power Distribution	
Address: No. 1 Forbury Place, 43 Forbury Road, Reading	
Post Code: RG1 3JH	Our Ref: Perivale AMP to DMP – adding 3 <sup>rd</sup> feeder
<b>Name of Authorised Signatory:</b> _____	
Authorised Signature:	Password:

**Confidentiality:**

Does any part of this application form contain confidential information?

**Request for Confidentiality**    **YES/NO\***

*\*Delete as applicable*

If 'YES', please state the parts of the application form that are considered confidential, including justification below. Information that is considered confidential:

Reasons for requesting confidentiality:

.....  
 number, site name, expiry date (if any) and BSC Panel determinations will routinely be made available in the public domain unless the applicant informs BSCCo otherwise at the time of application

**BSCP32/4.1 Application for a Metering Dispensation (Cont.)****Part B - Affected Party Details**Number of Affected parties 1<sup>1</sup>

Contact Name at Affected party:	
Contact email address:	
Contact Tel. No.	Contact Tel. No.
Company Name of Affected party: National Grid Electricity System Operator	
Address: 1-3 Strand	
London	
Post Code: WC2N 5EH	

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<sup>1</sup> For more than one Affected party, Part B should be completed for each, using additional copies of Part B as required.

**BSCP32/4.1 Application for a Metering Dispensation (Cont.)****Part C – Reason for Application**

If the application is an extension or update for an existing Metering Dispensation, enter existing ref: D/010

Site Specific / ~~Generic~~\* *\*Delete as applicable.*

Describe why you require a Metering Dispensation. Include any steps you propose to limit the impact on Settlement and other Registrants:

A replacement to Metering Dispensation D/010 is required for the Systems Connection Point metering at the Perivale substation due to changes in plant. The Metering Dispensation relates to the Actual Metering Point (AMP) not being located at the Defined Metering Point (DMP). The DMP is the point of connection to the 66kV busbars at the Willesden 275/66kV substation.

In the existing configuration the Perivale substation has two 66/11kV Power Transformers fed by two feeders from the Willesden 275/66kV. One of these feeders is shared with one of the Power Transformers at the Greenford substation (GSP GREE\_H / MSID 1636).

The AMP of the existing Systems Connection Point metering for both Perivale and Greenford substations is on the LV sides of their Power Transformers (two at Perivale and two at Greenford). The DMP is on the outgoing feeders off the 66kV busbars at the Willesden 275/66kV. The metering at Perivale is part of the GSP PERI\_H using MSID 1623 and has been the subject of a lifetime Metering Dispensation D/010 relating to the AMP not being located at the DMP. The metering at Greenford substation also has an existing lifetime Metering Dispensation D/057 relating to the AMP not being located at the DMP.

An additional Power Transformer (B3MT) is being installed at Perivale substation and will be fed from the Willesden 275/66kV by the addition of a Tee-connection on an existing feed from Willesden 275/66kV that currently only feeds the Greenford substation.

In the new configuration, there will be three feeders from Willesden 275/66kV that feed the Perivale and Greenford substations supplying five Power Transformers (two at Greenford and three at Perivale). Please see included diagrams of the existing and final configurations for reference.

It's proposed that the existing AMPs at Greenford and Perivale substations are retained, and an additional set of Metering Equipment is installed at the same relative AMP on the LV side of the new Power Transformer at Perivale substation. This solution would cost approximately £9,500 while the cost of installing a compliant Metering System at

the DMP on the three outgoing feeders from Willesden 275/66kV is approximately £92,500 per feeder.

**Period of Metering Dispensation required**

Lifetime / ~~Temporary~~\*      \*Delete as applicable.

If temporary, indicate for how long the Metering Dispensation is required.

Provide justified reasoning for the period of Metering Dispensation requested in the box below:

**Rationale for duration of Metering Dispensation:**

Characteristics of the cabling, Power and Measurement Transformers shouldn't change. The accuracy of the Metering sub-Systems (new and existing) will be maintained as per relevant metering Code of Practice requirements.

## Part D1 - Loss Adjustments for Power Transformer and/or Cable/Line Losses

Where loss adjustments are proposed and applied (or are to be applied) to the Metering System for power transformer and/or cable/line losses, provide the following information:

Describe how do you propose to correct the Metering System to account for the losses of this power transformer?

The power flows seen by the metering system will be corrected by compensation applied within the meters. This compensation will account for the fixed and variable losses based on the transformer electrical parameters taken from the test certificates.

In order to validate the loss adjustments applied (or to be applied) to the Metering System please provide the following information together with supporting data (e.g. power transformer test certificates):

Attachments: Single-line diagram, power transformer test certificates, meter manuals

What are the iron losses for this power transformer?

The iron losses for the primaries of the power transformers at Perivale are as given below. These values are taken from the test certificates as attached.

	Iron losses (W)	Serial number
PERI B1MT	15010	161142
PERI B2MT	15010	161141
PERI B3MT (new)	12404	F380730

What are the copper losses for this power transformer?

The following are the copper losses for the power transformer for rated current, as stated in the transformer test certificates.

	Copper losses (W)	Serial number
PERI B1MT	445400	161142
PERI B2MT	445400	161141
PERI B3MT (new)	283989	F380730

Note – the electrical parameters for PERI B1MT are taken to be the same as PERI B2MT, as both transformers are from the same manufacturer and installed at the same time. The Test certificate for PERI B1MT cannot be located. The nominal tap position for PERI B1MT and PERI B2MT is position 7. The nominal tap position for the new PERI B3MT transformer is 9.

Are there any other losses that have been taken into account? Yes/No\*. If Yes what are they?

N/A.

Demonstrate how these elements of loss have been used in the corrections to the Metering System.

These elements of loss will be programmed into the meters. The parameters to be programmed into the meters will be the combined totals of the Power Transformer and power line/cable losses. The proposed figures are given in the table below.

Circuit	Copper Loss % (Active)	Iron Loss % (Active)
PERI B1MT	1.309	0.0528
PERI B2MT	1.216	0.0591
PERI B3MT	0.813	0.0527

NB No reactive compensation of Copper and Iron loss required so values for these are not shown in the above table.

All the meters at this site are Cewe Prometer W. The capabilities of the meters are detailed in the attached meters manuals.

\*Delete as applicable.

Describe how do you propose to correct the Metering System to account for the losses of the power cable/line?

The power flows seen by the metering system will be corrected by compensation within the Meters. The compensation will account for the fixed and variable losses based on the typical cable parameters taken from historical circuit databases.

In order to validate the loss adjustments applied (or to be applied) to the Metering System please provide the following information together with supporting data (e.g. cable/line manufacturer's data sheet):

Impedances are based on historical databases. The table below gives the typical cable data for the various cable types which comprise these 66 kV circuits.

IMPEDANCES						
Conductor size	Circuit type	R+ (Ω/km)	X+ (Ω/km)	C (μF/km)	Rdc (Ω/km)	
0.4in <sup>2</sup>	1/c O/F	0.086	0.097	0.580	0.067	
185mm <sup>2</sup>	3/c Cu O/F	0.127	0.095	0.425	0.099	
240mm <sup>2</sup>	3/c O/F	0.098	0.092	0.485	0.075	
300mm <sup>2</sup>	3/c Cu O/F	0.079	0.087	0.535	0.060	
400mm <sup>2</sup>	3/c Cu O/F	0.063	0.085	0.615	0.047	

What is the type of power cable/line?

There are several 66 kV cable types for these circuits, as identified in the table above.

What is the length of this power cable/line?

Circuit lengths are as given in the attached single-line diagram.

What is the DC resistance of this power cable/line?

The DC resistance of the power cables are given in the attached single-line diagram.

What is the impedance of this power cable/line?

The impedance ( $R1+jX1$ ) of the power cables are given in the attached single-line diagram.

What is the capacitance of this power cable/line?

The shunt susceptance ( $B1=1/Xc$ ) of the power cables are given in the attached single-line diagram.  
( $Xc$  = shunt capacitive reactance)

Are there any other losses that have been taken into account? ~~Yes~~/No\*. If Yes what are they?

N/A

Demonstrate how these elements of loss have been used in the corrections to the Metering System.

These elements of loss will be corrected by application of parameters programmed into the meters. The parameters to be programmed into the meters will be the combined totals of the Power Transformer and power line/cable losses. The proposed values are given in the table in the equivalent section to this in the Power Transformer compensation details.

All the meters at this site are Cewe Prometer W. The capabilities of the meters are detailed in the attached meters manuals.

\*Delete as applicable.

**Materiality**

Please complete the following:

What is the cost of providing compliant Metering Equipment?	What does this cost entail?
£92,500 per feeder	Installation of metering on three feeders off the 66kV busbars at Willesden 275/66kV would require installation of GIS disconnectors with a dedicated VTs & CTs for metering approx. £90,000 per circuit. Purchase of meters approx. £2,500 per circuit.
What is the cost of the proposed solution?	What does this cost entail?
£9,500	Metering for the new circuits would require the installation of CTs (£9,500) along with installation of the meters (£ 2,500 for purchase of the meters). Suitable VTs already installed as part of protection with spare secondary winding available.
What is the impact to Settlement of your proposed solution?	Why?
None	Proposed solution will result in volumes used in Settlement being within the accuracy range given in the relevant metering CoP at the DMP.
What is the impact to other Registrants of your proposed solution?	Why?
None	Proposed solution will result in volumes used in Settlement being within the accuracy range given in the relevant metering CoP at the DMP.

**Site Details (for Site Specific Metering Dispensation)**

Site Name:	Perivale Substation (fed from Willesden 275/66kV)
Site Address:	Alperton Lane, Perivale, London
MSID(s):	1623
Registered in: CMRS / SMRS*:	CMRS



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*Delete as applicable.	
For SMRS, please advise of SMRA in space provided.	

**Manufacturer Details (for Generic Metering Dispensation)**

Manufacturer Name:	
Metering Equipment Details:	

**BSCP32/4.1 Application for a Metering Dispensation (Cont.)**
**Part D - Technical Details**
**Code of Practice details**

Metering Dispensation against Code of Practice*	2		
Issue of Code of Practice*:	Issue 4, version 14.0		
Capacity of Metering Circuits/Site Maximum Demand (MW/MVA):	40 MVA		
(Proposed) Commissioning Date of Metering:	Oct-2020		
Accuracy at Defined Metering Point:	Active Energy		
	CONDITION	LIMIT OF ERRORS AT STATED SYSTEM POWER FACTOR	
	Current expressed as a percentage of Rated Measuring Current	Power Factor	Limits of Error
	120% to 10% inclusive	1	± 1.0%
	Below 10% to 5%	1	± 1.5%
Below 5% to 1%	1	± 2.5%	
120% to 10% inclusive	0.5 lag and 0.8 lead	± 2.0%	
Accuracy of Proposed Solution (including loss adjustments):	Remains within CoP limits.		
Outstanding non-compliances on Metering Systems:	None		
Deviations from the Code of Practice (reference to appropriate clause):	Appendix A Paragraph 3 – AMP not located at DMP at a site where more than one Distribution System connects to the same busbar which is fed from the Transmission System.		

\* insert Code of Practice number and issue

**Any Other Technical Information**

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**Declaration**

We declare that other than as set out above we are in all other respects, in compliance with the requirements of the relevant Code of Practice and the BSC. A schematic is attached to this application for clarification of the metering points involved.

*Signature:* ..... *Date:* 27/08/2020

*Password:*

Duly authorised for and on behalf of Applicant Company

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**Confirmation of Receipt and Reference**

BSCCo acknowledges receipt of this document and has assigned the reference number as indicated on the first page.

*Signature:* ..... *Date:* ..... 27 August 2020

Duly authorised for and on behalf of BSCCo