BSCP32/4.1 Application for a Metering Dispensation

Part A – Applicant Details

To: BSCCo	**Date Sent:** 26/07/2023
From: Requesting Applicant Details Name of Sender: Contact email address: Contact Tel. No.	Contact Fax. No. N/A
Name of Applicant Company: EDF Energy Ltd	
Address: 90 Whitfield Street,	
Post Code: W1T 4EZ	Our Ref: RedBridgeBSCP32/4.1
Name of Authorised Signatory: Authorised Signature:	Password:

Request for Confidentiality YES

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: Areas to remain confidential are as follow: See Appendix 1 for Supporting Confidential Information. References are made to this appendix in the following sections where appropriate. • Part D1 - Loss Adjustments for Power Transformer and/or Cable/Line Losses • Materiality • Site details • Technical details Reasons for above to remain confidential is due to the customers connected to the private wire and commercial values of installed assets. …… 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

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Part B - Affected Party Details

Number of Affected parties___5__[1]
Does this Metering Dispensation affect the metering arrangements for a generator that has applied for/obtained a CFD Agreement? ☐Yes ☒No
If Yes, you must contact the Low Carbon Contracts Company and advise them of your Metering Dispensation application and include them as an Affected Party.
Have you notified all Affected Parties? ☒Yes ☐No

Contact Name at Affected party:	
Contact email address:	
Contact Tel. No.	Contact Tel. No.
Company Name of Affected party: Fastned UK Limited	
Address: 3 Bath Place, 1 Floor, London, England	
Post Code: EC2A 3DR	

Contact Name at Affected party:	
Contact email address:	
Contact Tel. No.	Contact Tel. No.
Company Name of Affected party: Tesla Motors Ltd	
Address: 109 Devonshire Road, London, England	
Post Code: W4 2AN	

Contact Name at Affected party:	
Contact email address:	
Contact Tel. No.	Contact Tel. No.

[1] For more than one Affected party, Part B should be completed for each, using additional copies of Part B as required.

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Company Name of Affected party: Oxford City Council
Address: Town Hall Offices, St. Aldates, Oxford, United Kingdom
Post Code: OX1 1BX

Contact Name at Affected party:	
Contact email address:	
Contact Tel. No.	Contact Tel. No.
Company Name of Affected party: Pivoted Power LLP	
Address: Alexander House, 1 Mandarin Road, Rainton Bridge Business Park, Houghton Le Spring, Sunderland	
Post Code: DH4 5RA	

Contact Name at Affected party:	
Contact email address:	
Contact Tel. No.	Contact Tel. No.
Company Name of Affected party: Go-Ahead Group (Oxford Bus Company)	
Address: Cowley House, Watlington Rd, Oxford	
Post Code: OX4 6GA	

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Part C – Reason for Application

If the application is an extension or update for an existing Metering Dispensation, enter existing ref: D/549

Site Specific

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

This Metering Dispensation application updates and supplements the information provided in D/549 in order to further clarify non-compliances as summarised below and explained in greater detail in subsections that follow:

A. ***Clarifying the non-compliances with CoP2 for the Metering Equipment of the existing three embedded Customers at Redbridge substation as identified within D/549***
B. ***Addition of a new embedded customer (Oxford Bus Company (OBC)) to the private wire network identified in D/549 and clarifying the non-compliances with CoP2 for the associated Metering Equipment***
C. ***Update of the metering compensation factors calculated in D/549, required for each existing embedded Customer on the Cowley private network due to the addition of the new Customer load at OBC. In addition, a separate compensation factor is developed to be applied at the new embedded OBC customer Meter.***

Section A

Guidance from Elexon has identified that a Metering Dispensation from the CoP applicable to the Boundary Point circuit (CoP2 for Cowley BESS BMU) is required for the existing embedded customers as previously identified within D/549. The previous understanding was that the embedded circuit Metering Equipment would have to comply with CoP3 due to the circuit capacities all being below 10MVA.

It is noted that Modification P453 will be implemented on 2 November 2023 and will clarify, in the CoPs, that the relevant CoP for embedded metered circuits is based on the CoP applicable to the circuit capacity of the metered circuit and not the circuit capacity of the Boundary Point circuit. However, due to EDF seeking a Metering Dispensation approval prior to this point, Metering Dispensation is required on the embedded circuits from the CoP applicable to the Boundary Point circuit (CoP2) due to the following non-compliances:

a) Whilst a dedicated set of current transformers (CTs) are provided for each of the three metered circuits, the CTs used on each of the existing three Redbridge embedded customers are class 0.5s (i.e. CoP3 compliant) and are therefore not in accordance with the clause 5.1.1 of CoP2:

5.1.1 Current Transformers

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"A dedicated set of current transformers in accordance with BS EN/IEC 61869-2 and with a minimum standard of accuracy to class 0.2S (irrespective of the secondary current rating of the CTs) shall be provided solely for the Settlement Metering of each circuit."

b) For the existing three metered circuits at the Redbridge substation (as identified D/549), voltage readings are supplied via a single busbar connected voltage transformer (VT) of class 0.5 – 3P (Note: CoP3 requires class 1.0 VTs). The use of a busbar connected VT primary winding to supply all three sets Meters is not in accordance with clause 5.1.2 in CoP2:

"5.1.2 Voltage Transformers

Voltage transformer primary windings shall be connected to the circuit being measured for Settlement purposes…"

Main and check Meters for the existing three circuits are supplied through a single secondary winding which is therefore non-compliant with CoP2. Other windings are used for "RPA relay" and "spare". The use of a single VT secondary winding to supply all three sets of Meters is not in accordance with clauses 5.1 and 5.1.2 in CoP2:

"5.1 Measurement Transformers

…For each circuit current transformers (CT) and voltage transformers (VT) shall meet the requirements set out in clauses 5.1.1 and 5.1.2."

"5.1.2 Voltage Transformers

…a dedicated secondary winding shall be provided for the main and check metering. The voltage transformer secondary winding shall be in accordance with BS EN/IEC 61869-3 and with a minimum standard of accuracy to Class 0.5. Where a voltage transformer has other secondary windings these may be used for the check metering of that circuit and for other purposes provided the overall accuracy requirements in clause 4.3.1 are met"

Section B

In addition to the update of D/549 for the existing three customers, as identified in section A above, this Metering Dispensation is also requested to cover the associated non-compliances with CoP2 for the new Customer (OBC) being added to the Cowley private network at a new (intermediate) substation upstream of the existing Redbridge site. Due to both substations sharing common metering arrangements, and equipment specifications, the additional Customer at the upstream substation also requires a Metering Dispensation from the CoP applicable to the Boundary Point circuit (CoP2) due to the following non-compliances:

a) Whilst a dedicated set are provided for the metered circuit, CTs used are class 0.5s[2] and are therefore not in accordance with the clause 5.1.1.

5.1.1 Current Transformers

[2] It should be noted that the attached schematics (001-9-1544 R00 & 001-9-1545) show the CTs as class 0.5. Class 0.5s is correct.

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"A dedicated set of current transformers in accordance with BS EN/IEC 61869-2 and with a minimum standard of accuracy to class 0.2S (irrespective of the secondary current rating of the CTs) shall be provided solely for the Settlement Metering of each circuit."

It should be noted that whilst the same busbar type VT is being used for both embedded customer substations; a Metering Dispensation from CoP2 is not required for the OBC customer as at present, as secondary winding from the VT is dedicated for metering only the OBC circuit. Any additional embedded customer added to this substation, and receiving readings from this same VT, would require an update to the Metering Dispensation described herein.

Section C

This Metering Dispensation is also requested for a private wire network because the Metering Equipment for the three existing embedded customer sites (Fastned, Tesla and Oxford City Council (OCC)) isn't located at the Defined Metering Point (DMP) and it is financially unviable to locate the metering for the private wire at the DMP. In addition to this, the Metering Equipment for the new customer at OBC also isn't located at the DMP as it is financially unviable to locate the metering for the private wire at the DMP.

Metering Dispensation D/549 provided loss compensation factors for the existing three embedded customers at the Redbridge substation based on bands for total expected Redbridge substation load. Due to the addition of the aforementioned embedded customer load, 4.5km downstream of the Redbridge substation at OBC, loss factors for the existing embedded circuit Meters have changed. Calculations previously provided in D/549 have been updated by an independent HV contractor, Power Systems UK, who was responsible for the design and installation of the entire private wire network. Relevant losses information can be found in the updated supporting document (Updated PSUK DOC attached).

The updated Meter scaling factors based on a updated total site load of 14.5MW (7MW existing at Redbridge and a new load of 7.5MW at OBC) that will be applied to each Meter at the Redbridge Substation are as shown below:

MVA scale	Loss correction factor applied to meter
0 < ¼ Load	0.041%
¼ Load < ½ Load	0.164%
½ Load < ¾ Load	0.370%
¾ Load < Full Load	0.657%

As the new embedded Customer, to be connected to the Cowley private wire network, is upstream of the Redbridge substation, the associated losses from the cable run connecting the two substations is not applicable to the new OBC site.

A separate set of scaling factors based on a total site load of 14.5MW (7MW existing at Redbridge and a new load of 7.5MW at OBC) that will be applied to the OBC Customer's Meters located at the OBC substation as shown below:

MVA scale	Loss correction factor applied to meter

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0 < ¼ Load	0.023%
¼ Load < ½ Load	0.094%
½ Load < ¾ Load	0.0.211%
¾ Load < Full Load	0.375%

The Meter Operator Agent (MOA) will be instructed to update the Meters with the loss adjustment percentage within the individual existing and newly installed Meter(s).

The new OBC customer will be assigned their own BM Unit and Aggregation Rules will be applied to each BM Unit:

The sum of the four (previously three as within D/549) Customer site Aggregation Rules will be differenced off the Aggregation Rule for the Cowley BESS, so as to work out the BESS BM Unit Metered Volumes:

Cowley BESS BM Unit Metered Volume = $(AE\text{-}AI)_{BESS} - \{(AE\text{-}AI)_{Fastned} + (AE\text{-}AI)_{Tesla} + (AE\text{-}AI)_{OCC} + (AE\text{-}AI)_{OBC}\}$

Fastned BM Unit Metered Volume = $(AE\text{-}AI)_{Fastned}$;

Tesla BM Unit Metered Volume = $(AE\text{-}AI)_{Tesla}$;

OCC BM Unit Metered Volume = $(AE\text{-}AI)_{OCC,}$ and

OBC BM Unit Metered Volume = $(AE\text{-}AI)_{OBC}$

It is noted that if a new embedded BM Unit is introduced in the future, at any point in the private wire network, the network losses will change and therefore require a further update to the loss factor calculations described herein.

Period of Metering Dispensation required

Lifetime

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

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

Rationale for duration of Metering Dispensation:

Metering Dispensation is required for the lifetime of the asset which is 30 years.

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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 or Asset Metering System for power transformer and/or cable/line losses, provide the following information:

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

N/A because there are no power transformers between the DMP and the embedded customers and the power transformers of the embedded customers are downstream of their CoP2 Metering Systems. The DMP and BM Units' metering point measurement is taking place at the same voltage (33kV).

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

What are the iron losses for this power transformer?

N/A

What are the copper losses for this power transformer?

N/A

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.

N/A

*Delete as applicable.

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

Cable loss calculations have updated from D/549 by the HV electrical supplier. Losses will be applied to the individual Customer Meters in-line with scaling factors.
None of the Customer BM Units will be able to Export.

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

What is the type of power cable/line?
See Appendix 1

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What is the length of this power cable/line?
See Appendix 1

What is the DC resistance of this power cable/line?
See Appendix 1

What is the impedance of this power cable/line?
See Appendix 1

What is the capacitance of this power cable/line?

See Appendix 1

Are there any other losses that have been taken into account? No

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

Following on from D/549, calculated losses for all customers have been updated to account for the load increase as a result of the OBC customer being added.

The calculated losses will be applied to the Meters only and reviewed in-line with Customer consumption.

Should a new Customer be contracted with, ahead of them joining the network, the losses will be reviewed and updated for the network.

The loss factors applied to the Meters will be percentages based on the Meters' Rated Power. These loss factors can be seen above in part C.

*Delete as applicable.

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Materiality

Please complete the following:

What is the cost of providing compliant Metering Equipment or Asset Metering Equipment?	What does this cost entail?
See Appendix 1	See Appendix 1
What is the cost of the proposed solution?	What does this cost entail?
See Appendix 1	See Appendix 1
What is the impact to Settlement of your proposed solution?	Why?
Settlements will not be impacted by this solution	Loss factors will be applied to the metered circuits to accommodate circuit losses of remote Metering Systems
What is the impact to other Registrants of your proposed solution?	Why?
None	Difference metering will be put in place so any errors in the loss factors will mean the Registrant of the BESS Metering System will pick these up.

Site Details (for Site Specific Metering Dispensation)

Site Name:	Tesla
Site Address:	Redbridge Park and Ride, Abingdon Rd, Oxford, OX1 4XG
MSID(s) *Delete as applicable.	See Appendix 1
Registered in: CMRS / ~~SMRS / AMRS~~*: *Delete as applicable.	
For SMRS, please advise of SMRA in space provided.	N/A

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Site Name:	Oxford City Council
Site Address:	Redbridge Park and Ride, Abingdon Rd, Oxford, OX1 4XG
MSID(s) *Delete as applicable.	See Appendix 1
Registered in: CMRS / ~~SMRS / AMRS~~*: *Delete as applicable.	
For SMRS, please advise of SMRA in space provided.	N/A

Site Name:	Fastned Charging
Site Address:	Redbridge Park and Ride, Abingdon Rd, Oxford, OX1 4XG
MSID(s) *Delete as applicable.	See Appendix 1
Registered in: CMRS / ~~SMRS / AMRS~~*: *Delete as applicable.	
For SMRS, please advise of SMRA in space provided.	

Site Name:	Oxford Bus Company
Site Address:	Cowley House, Watlington Rd, Oxford OX4 6GA
MSID(s) *Delete as applicable.	See Appendix 1
Registered in: CMRS / ~~SMRS / AMRS~~*: *Delete as applicable.	
For SMRS, please advise of SMRA in space provided.	

Manufacturer Details (for Generic Metering Dispensation)

Manufacturer Name:	N/A
Metering Equipment / Asset Metering Equipment Details*: *Delete as applicable	N/A

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Part D - Technical Details

Code of Practice details

Metering Dispensation against Code of Practice*	Code of Practice 2
Issue of Code of Practice*:	Issue 5
If against Code of Practice 11 against which Asset Metering Type	N/A
Capacity of Metering Circuits/Site Maximum Demand (MW/MVA):	See Appendix 1
(Proposed) Commissioning Date of Metering:	See Appendix 1
Accuracy at Defined Metering Point:	<1% accuracy
Accuracy of Proposed Solution (including loss adjustments):	<1% accuracy
Outstanding non-compliances on Metering Systems or Asset Metering Systems*:	N/A
*Delete as applicable	
Deviations from the Code of Practice (reference to appropriate clause):	***AMP is not at the DMP in accordance with clause 4.3.3. Cable losses will be applied to each embedded Metering System.*** Appendix A Defined Metering Points: "8. For transfers between the Transmission System and a Customer, the DMP shall be at the point(s) of connection to the Transmission System." ***Whilst a dedicated set are provided for each metered circuit the CTs used are class 0.5s and are therefore not in accordance with the clause 5.1.1 of CoP2.*** 5.1.1 Current Transformers "A dedicated set of current transformers in accordance with BS EN/IEC 61869-2 and with a minimum standard of accuracy to class 0.2S (irrespective of the secondary current rating of the CTs) shall be provided solely for the Settlement Metering of each circuit." ***For the 3 metered circuits at the Redbridge substation (as identified D/549), voltage readings are supplied via a single busbar VT of class 0.5 – 3P. Main and check meters for all circuits are supplied***

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	through a single secondary winding and is therefore non-compliant with CoP2. Other windings are used for "RPA relay" and "spare". The use of a single secondary to supply all 3 embedded meters is not in accordance with clause 5.1.2 in CoP2. 5.1.2 Voltage Transformers "…a dedicated secondary winding shall be provided for the main and check metering. The voltage transformer secondary winding shall be in accordance with BS EN/IEC 61869-3 and with a minimum standard of accuracy to Class 0.5. Where a voltage transformer has other secondary windings these may be used for the check metering of that circuit and for other purposes provided the overall accuracy requirements in clause 4.3.1 are met"

* insert Code of Practice number and issue

Any Other Technical Information

N/A

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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:*

Password: .....

Duly authorised for and on behalf of Applicant Company

Confirmation of Receipt and Reference

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

Signature: M Smith *Date:29 August 2023*

Duly authorised for and on behalf of BSCCo

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