BSCP32/4.1 Application for a Metering Dispensation

Part A – Applicant Details

To: BSCCo	**Date Sent:** 02/09/2022
From: Requesting Applicant Details	
Name of Sender:	
Contact email address:	
Contact Tel. No.:	Contact Fax. No.
Name of Applicant Company: Zenobe Wishaw Energy	
Address: First Floor - Burdett House	
15-16 Buckingham Street	
London	
Post Code: WC2N 6DU	Our Ref:
Name of Authorised Signatory:	
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___[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: National Grid ESO	
Address: Faraday House	
Warwick Technology Park	
Warwick	
Post Code: CV34 6DA	

[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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Part C – Reason for Application

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

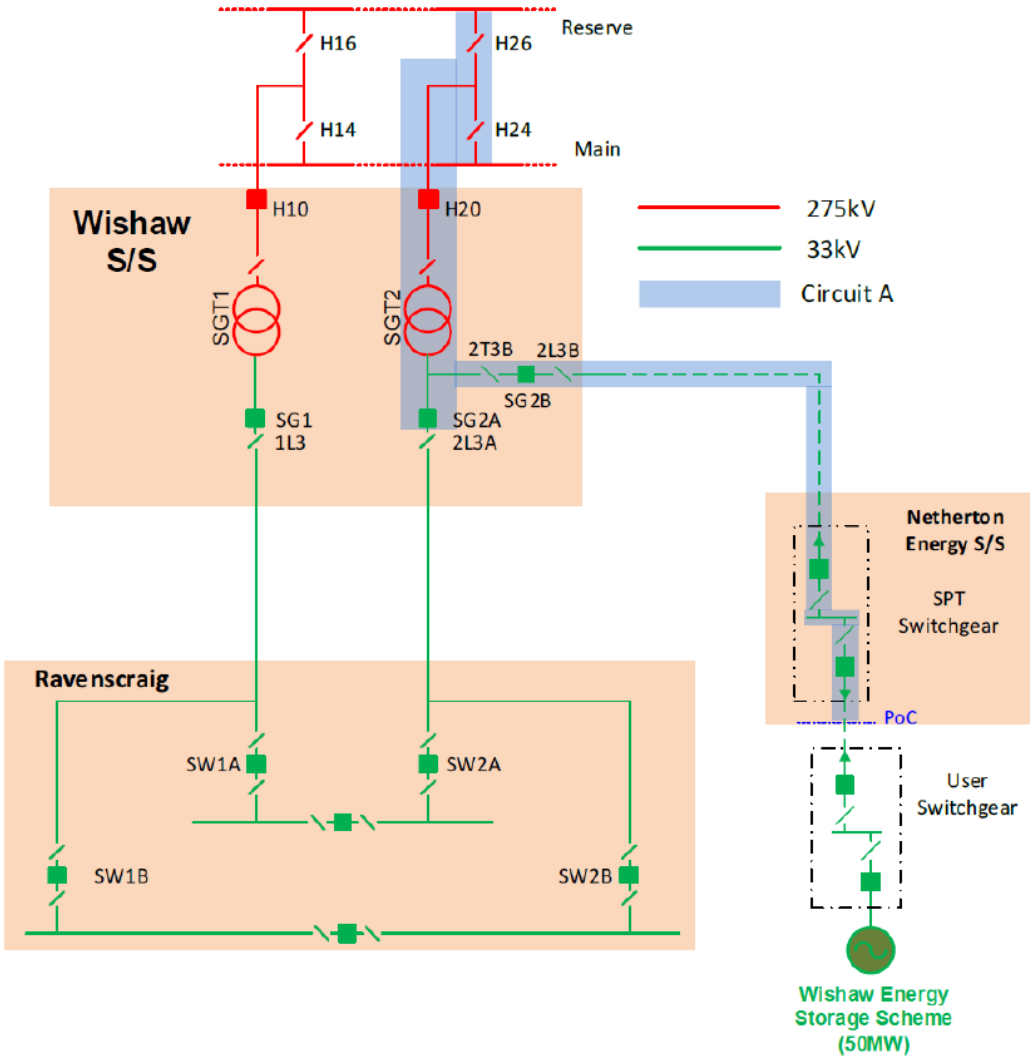
Site Specific

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

This is a 50MW/100MWh BESS connecting at Wishaw 275kV substation SGT2 33kV cable tee-off connection. The BESS is 1km away from the substation by connecting to a new 2 panels Netherton Energy substation to be owned and operated by the SPT. Please see the SLD below for more details.

User: Zenobe Wishaw Limited
Connection Site: Netherton Energy 33kV Substation

Diagram



A Metering Dispensation is required because the Actual Metering Points (AMPs) for each of the two Wishaw Battery Energy Storage System (BESS) Balancing Mechanism Units (BMUs) in this application are 20m from the shared Defined Metering Point (DMP). This is due to the configuration of the connection of two BMUs at the site, to the single point of connection at the Wishaw 33kV substation.

The BESS BMU (including the future additional BESS feeder Meter to be included within it), with maximum 50MW capacity, will be connecting through CoP2 Meters. The CoP2 Meters' accuracy will be met at the DMP due to the short distance of 20m apart, over which the cable losses will be negligible.

The demand BMU will be connecting through the CoP3 meter where it will only be supplying a maximum demand of 1.5MVA for the site which is less than 10MVA. The CoP3 accuracy will also be met at the DMP due to the short distance of 20m apart, over which the cable losses will be negligible.

Period of Metering Dispensation required

Lifetime

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: The connection equipment, configuration, and the distance from the AMPs to the DMP for the two Wishaw BMUs will not change over the lifetime of the asset therefore the Metering Dispensation should be for the asset's lifetime. There are additional spare feeders with CoP2 Metering Equipment installed for future AC augmentation of the BESS where the site capacity will remain the same.

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?

N/A

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):

N/A

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?

Yes, the cable losses are considered below but are negligible due to short distance of 20m.

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 to account for the losses of the power cable/line?

There will be losses in the 20m 33kV XLPE Cable connection from the customer's 33kV switchgear to SPT 33kV switchgear. If required (i.e. the calculated losses are considered to be non-negligible), the Copper Loss for the 33kV XLPE Cable connection can be compensated for using the Meter's Power Transformer Load Loss (Cu Loss) Loss parameter.

If required to do so, the Meters effectively apply this loss using the resistance information for active power compensation and reactance information for reactive power compensation.

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):

Please see the attached file WISHAW BES - Cable - EPM65931*

What is the type of power cable/line?

Two 3 x single core 630mm2 AL XLPE cable

What is the length of this power cable/line?

20m

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

0.0469 (Ω/km)

What is the impedance of this power cable/line?

0.118 (Ω/km)

What is the capacitance of this power cable/line?

0.34 (µF/km)

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

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

The active loss in this cable will be proportional to the square of the current flowing in it (I^2R) loss.

The Meter compensates the active power according to the following:

Total Losses Active (TLA) = Cu Loss *(As Fe No Load Losses are negligible)*

TLA = Cu Loss = $I_{1\ meas}{}^2.R + I_{2\ meas}{}^2.R + I_{3\ meas}{}^2.R$ *(R = cable resistance)*

$R = \frac{20}{(2\ x\ 1000)} \times 0.0469 = 0.000469\ \Omega$ *(Note 2 cores per phase)*

Import Active Energy:
Compensated Active Import Energy (CA+) = Metered Active Energy Import (A+) +TLA
CA+ = (A+) +TLA

Export Active Energy:
Compensated Active Export Energy (CA-) = Metered Active Energy Export (A-) - TLA
CA- = (A-) - TLA

Note, at nominal current (1,000 A) and unity power factor, this loss (TLA) equates to approx. 0.469 kW per phase (1.407 kW total) ≡ 0.0025% nominal active power.

The reactive loss in this cable will be proportional to the square of the current flowing in it (I^2X) loss.

The Meter compensates the reactive power according to the following:

Total Losses Reactive (TLR) = Cu Loss *(As Fe No Load Losses are negligible)*

TLR = Cu Loss = $I_{1\ meas}{}^2.X + I_{2\ meas}{}^2.X + I_{3\ meas}{}^2.X$ *(X = cable reactance)*

$X = \frac{20}{(2\ x\ 1000)} \times 0.108 = 0.00108\ \Omega$ *(Note 2 cores per phase)*

Import Reactive Energy:
Compensated Reactive Import Energy (CR+) = Metered Reactive Energy Import (R+) + TLR
CR+ = (R+) + TLR

Export Reactive Energy:
Compensated Reactive Export Energy (CR-) = Metered Reactive Energy Export (R-) - TLR
CR- = (R-) - TLR

Note, at nominal current (1,000 A) and zero power factor, this loss (TLR) equates to approx. 1.08 kVAr per phase (3.24 kVAr total) ≡ 0.0057% nominal reactive power.

Please refer to the Calculations Report (Wishaw_BESS_Power_Cable_Loss_Calculations (Kenda)) for more details.

In conclusion, having performed the relevant calculations, losses of 0.0025% and 0.0057% in active and reactive power respectively are deemed to be so small that they can be considered as negligible and therefore, we would conclude that there is no need to actually apply them to the Meters.

*Delete as applicable.

Materiality

Please complete the following:

What is the cost of providing compliant Metering Equipment?	What does this cost entail?
>£1m	To provide metering at the DMP would require configurations as either a single BMU (which does not meet the Applicant's business case, which requires two individual BMUs), or by providing two cable systems. There is no room for this at the SPT substation.
What is the cost of the proposed solution?	What does this cost entail?
£160k	This is the cost of providing one set of CoP2 Meters (Generator BMU) and one set of CoP3 Meters (Demand BMU) and CoP2 measurement transformers at the 33kV busbar. CoP2 measurement transformers has been provided for the spare 33kV feeder and space will be available for future CoP2 Meters when the BESS is being augmented in the future.
What is the impact to Settlement of your proposed solution?	Why?
No impact.	Meter values for each BMU of the system, up to the DMP, will not include the 20m cable losses as it is considered negligible. Therefore, the losses will not be allocated to the Generator in Settlement.
What is the impact to other Registrants of your proposed solution?	Why?
No impact.	Under the Metering Dispensation the losses will not be allocated to the Generator BMU Meter and Demand BMU Meter. The cable losses are negligible as shown in the cable calculation above.

Site Details (for Site Specific Metering Dispensation)

Site Name:	Wishaw Battery Energy Storage
Site Address:	Wishaw Battery Energy Storage Facility (BESS), 200 Netherton Street,

	Wishaw ML2 0EF United Kingdom
MSID(s):	8388
Registered in: CMRS / SMRS*: *Delete as applicable.	CMRS
For SMRS, please advise of SMRA in space provided.	N/A

Manufacturer Details (for Generic Metering Dispensation)

Manufacturer Name:	N/A
Metering Equipment Details:	N/A

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Part D - Technical Details

Code of Practice details

Metering Dispensation against Code of Practice*	Code of Practice Two (CoP2)
Issue of Code of Practice*:	CoP2 Issue 5
Capacity of Metering Circuits/Site Maximum Demand (MW/MVA):	T_WISHB-1 51 MW (metered to CoP2 standards at AMP) T_WISHD-2 1 MW (metered to CoP3 Standards at AMP)
(Proposed) Commissioning Date of Metering:	October 2022
Accuracy at Defined Metering Point:	Within tolerances of relevant CoPs
Accuracy of Proposed Solution (including loss adjustments):	Within tolerances of relevant CoPs
Outstanding non-compliances on Metering Systems:	None
Deviations from the Code of Practice (reference to appropriate clause):	All relevant clauses of CoP2 and CoP3 to meter to the applicable standard for the circuit capacity at the AMPs. The DMP is at the point of connection to the Transmission System however, the AMP for each of the two BMUs is 20m away from the DMP. (For Generating Plant connections to the Transmission System clause 4.3.3 requires a Metering Dispensation to be applied for where the AMP does not coincide with the DMP and, where necessary, accuracy compensation for power transformer and/or line losses provided to meet the overall accuracy at the DMP.) In this case the cable losses will not be applied to the two BMUs as the losses has been proven negligible.

* insert Code of Practice number and issue

Any Other Technical Information

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: 02/09/2022*

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: 4 October 2022*

Duly authorised for and on behalf of BSCCo