

Application:

Why are you applying for a Non-Standard BM Unit (please tick)

The Plant and Apparatus does not fall into one of the standard categories in K3.1.4	
The Plant and Apparatus does fall into one of the standard categories in K3.1.4 but a different configuration satisfies the requirements for BM Units in K3.1.2	
The Plant and Apparatus Exports or Imports are at a CVA Boundary Point at which there are other Exports or Imports for which another person is responsible (the Plant and Apparatus may or may not be of a Standard BM Unit configuration)	

Description of Non-Standard BM Unit configuration

Please contact BSCCo for guidance on how to complete this section

East Anglia (EA) ONE Offshore Wind Farm is located in the North Sea, with two 220/66/66kV Offshore transformers. EA ONE Offshore wind farm consists of 102 wind turbine generating units (WTGs), 7MW per generating unit (7MW/WTG), with a total of 714MW installed power output. Although the WF will be capable of producing 714 MW, there is a 680 MW Export limit (340MW per each connection limit) as agreed with National Grid.

There are four Power Park Modules (PPMs) connected to the Offshore substation, two PPMs are connected to each 220/66/66kV Offshore transformer.

EA ONE Offshore Wind Farm has confirmed with the Transmission Company that two PPMs feeding each Offshore Transformer can be comprised in two separate Combined Offshore BM Units (COBMUs) instead of being comprised of four standard BM Units (one per PPM). As shown on the diagram, there is some interconnection between the PPMs and burbars. In case of an outage, generation from one PPM can be rerouted to another PPM's busbar. As the output of those WTGs is measured by HV meters above the PPM busbars, such interconnection does not impact the Aggregation Rules and therefore Settlement.

This application seeks approval to register and manage EA ONE's Low Voltage (LV) Offshore demand and its Low Voltage (LV) onshore demand under each of its 2 COBMUs, rather than as 4 separate standard Balancing Mechanism Units (BMUs). The metering scheme has been designed and developed around two BMUs as advised by National Grid SO, identified as NG BM Unit IDs EAAO-1 and EAAO-2. National Grid as the Transmission Company also agrees with the configuration of 2COBMUs.

Each non-standard COBMU will include Boundary Point Meters covering all energy flows across the transmission to generator system boundaries as follow, considering the nomenclature of the [EA1-ENG-DU-IBR-044128 Rev 1 Overall Single Line Diagram](#)

The EA ONE Windfarm is connected at 66kV to the 220/66/66kV Offshore Transmission System which will transfer to an OFTO.

The Generator and OFTO Metering points are identified in the attached diagram "EA1-GRD-DU-IEC-004686 Rev 6 ENGN Settlement Metering Simplified Single Line Diagram- markup names", with the names of each equipment identified

BM Unit EAAO-1 will include:

- 220/66kV Busbar 1 – Tx AAT10 (1 x Offshore HV Import / Export considering PPM 1, EAAO-1) : FDR1AM & FDR1AC (Main and Check meters)
- 220/66kV Busbar 1 – Tx AAT10 (1 x Offshore HV Import / Export considering PPM 2, EAAO-1) : FDR1BM & FDR1BC (Main and Check meters)
- 66kV Busbar – Aux Tx BGT10 (1 x Offshore Aux Tx HV Import / Export , connecting to PPM1, EAAO-1): AUX1M & AUX1C Main and check meters

- 66kV/0.4 kV - 1 x Offshore Generator LV Auxiliary services (Import / Export connecting to PPM1, EAAO-1): OFFLV1M
- 34.5/0.4 kV Busbar – Tx BGT10 (1 x onshore LV Import / Export, EAAO-1): ONLV1M

BM Unit EAAO-2 will include:

- 220/66 Busbar – Tx AAT20 (1 x Offshore HV Import / Export considering PPM 4, EAAO-2): FDR2AM & FDR2AC Main and Check meters
- 220/66 Busbar – Tx AAT20 (1 x Offshore HV Import / Export considering PPM 3, EAAO-2): FDR2BM & FDR2BC (Main and Check meters)
- 66kV Busbar – Aux Tx BGT40 (1 x Offshore Aux Tx HV Import / Export , connecting to PPM4, EAAO-2): AUX2M & AUX2C (Main and check meters)
- 66kV/0.4 kV - 1 x Offshore Generator LV Auxiliary services (Import / Export connecting to PPM4, EAAO-1): OFFLV2M
- 34.5/0.4 kV Busbar – Tx BGT10 (1 x onshore LV Import / Export, EAAO-1): ONLV2M

Please also note that the Generator's assets connected onshore can alternatively be supplied by a separate DNO supply at the onshore substation, and are therefore outside of the scope of this application.

The DNO supply is UKPN, there is a single source through the STATCOM, as per the drawing attached: "EA1-overall lv Burstall draft". This drawing is a draft version; there will be a nicer copy soon. The MPAN is xxxx³, only for reference.

The total LV energy flow is a maximum of 70kW, however normal consumption is expected to be 40.5kW with annual consumption estimated to be 350.4MWh shared between the two LV supplies

Please provide electrical single line diagram(s) of the Plant and Apparatus included in the Non-Standard (and any Standard) BM Unit(s) to support your application. The diagrams need to clearly show the location of the Metering Equipment, in particular the Settlement Current and Voltage Transformers (CTs/VTs) and CT/VT ratios, all existing Boundary Points and any System Connection Points at or near the proposed Boundary Point(s) and which items of Plant and Apparatus comprise which Non-Standard (and any Standard) BM Unit(s).

EA1-GRD-DU-IEC-004686 Rev 6 ENGN Metering simplified single line diagram-markup names

EA1-ENG-DU-IBR-044128 Rev 2 Overall Single Line Diagram

EA1 -overall lvac Burstall draft

Rationale

Rationale with reference to BSC Section K3.1 for the request for the Non-Standard BM Unit:

EA ONE understands its obligations relating to Section K3.1.4.c of BSC which stipulates that the LV demand, being directly supplied from Transmission assets, ought to be registered as single BMUs.

However, EA ONE is of the opinion that combining these LV supplies with the COBMUs reduces cost and complexity associated with their registration, operation and Settlement as single BMUs. EA ONE has approached the design and integration of the metering scheme in line with direction given by National Grid (2 BMUs, 4 PPMs), which has confirmed and agreed this design, and has engineered a solution in line with these requirements. It is also noted that the LV flows are expected to be very small in comparison to the overall COBMU energy flows and aggregation of metered flows is expected to provide an efficient account of Settlement volumes.

EA ONE is therefore formally seeking approval from the Imbalance Settlement Group (ISG) to combine the 6 LV supplies into the 2 COBMUs, as per Section 3.1.6 of the BSC. In doing so, EA ONE will not be complying with Sections K 3.1.2 (e) (not the smallest aggregation of Plant and Apparatus) and K3.1.4 (c) (no separate BM Units for the LV Plant and Apparatus at each LV Boundary Point) of the BSC, but will be complying with the remaining relevant paragraphs of Section K of the BSC.

³ The MPAN was included in the document sent to ELEXON but removed from the ISG paper version for confidentiality.

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