

208/02 - APPLICATION FOR A NON-STANDARD BM UNIT CONFIGURATION AT HORNSEA ONE WIND FARM

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Purpose of paper For Decision

Classification Public

Summary Hornsea 1 Limited (DONG013) has applied for three non-standard BM Units for the assets associated with its Hornsea One wind farm. We invite the ISG to approve the application.

1. Background

1.1 Hornsea 1 Limited (DONG013) is developing the 1.2GW Hornsea One Offshore wind farm. The Hornsea One wind farm is made up of three sections:

- Hornsea 1A;
- Hornsea 1B; and
- Hornsea 1C.

1.2 Each section of wind farm is connected to one of three 220/34kV Offshore substations and exports to the onshore Transmission System via three 220kV export cables and a 220kV mid-point Reactor Compensation Substation (RCS). The project consists of 12 Offshore Power Park Modules (PPMs) in total - four Offshore PPMs for each of the three 220/34kV Offshore substations.

1.3 There are 12 High Voltage (HV) Transmission System Boundary Points (TSBPs) between Hornsea One and the Offshore Transmission System User Assets¹ (OTSUA) on the three Offshore substations. These lie on the lower voltage side of the pairs of 220/34kV power transformers for each of the three Offshore substation, at the circuit breakers marked on Attachment A as '1T0B', '2T0B', '1T0A' and '2T0A' (within the boxed areas marked as 'Z11', 'Z12' and 'Z13').

1.4 There are 46, low voltage (LV), TSBPs:

- five located in the shared onshore substation;
- five located in the shared Offshore Reactor Compensation Substation (RCS); and
- 12 located on each of the three Offshore substations.

1.5 DONG013 intends to register each set of four PPMs as single Combined Offshore BM Units (CoBMU), as agreed with the Transmission Company. The exception is Hornsea 1B that will also have in its configuration the five onshore LV assets and five LV assets located at the RCS. DONG013 has installed HV Metering Equipment at each substation HV TSBP which is at the Defined Metering Point. The HV Metering Equipment is shown on the Attachments B, C and D (for Hornsea 1A, Hornsea 1B and Hornsea 1C, respectively).

¹ Section X, Annex X-1: OTSUA has the meaning given to that term in the Grid Code.

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- 1.6 The generator's onshore and Offshore LV assets (46 in total) will be supplied via the OTSUA, meaning that each set of assets will have a 'generator – OTSUA' Boundary Points (BP). The onshore BPs are shown in Attachment E; whereas the Offshore ones are shown in the Attachment F and G and are metered at the Defined Metering Point (i.e. the point of connection to the OTSUA).
- 1.7 The generator's LV circuits mainly supply the protection and control system and the communication system of the wind farm, and as such are essential to the wind farm operation.
- 1.8 Two out of five LV Meters in the onshore substation, two out of five LV Meters in the RCS and four out of 12 LV Meters on each of the Offshore substations are Direct Current (DC) as opposed to Alternating Current (AC) Meters. All of the DC Meters meet the criteria of the [generic Metering Dispensation, D/461](#).

2. Non-standard BM Unit application

- 2.1 Where a BM Unit does not fit into the standard configurations set out in the BSC (as summarised in Appendix 1 'BM Unit Configurations' to this paper), the ISG, under authority delegated from the BSC Panel, must consider and determine the outcome for an application for a non-standard BM Unit configuration.
- 2.2 As the assets at Hornsea One wind farm connect through 58 (46 LV BPs and 12 HV BPs) Boundary Points, the standard BM Unit set up would require 12 PPM BM Units and 46 LV asset BM Units. Since the Transmission Company has already agreed that the 4 PPMs associated with each Offshore platform can be a single BM Unit (a CoBMU) this reduces to 3 CoBMUs and 46 LV asset BM Units.
- 2.3 DONG013 is seeking approval for three non-standard BM Units instead (Attachment H). DONG013 would like to combine:
 - its LV assets (connected at 22 BPs), associated with the onshore substation, the RCS and Hornsea 1B substation, with the CoBMU for Hornsea 1B (as this will be the first Offshore platform to be energised along with the onshore and RCS BPs).
 - its LV assets (connected at 12 BPs), associated with the Hornsea 1A substation, with the CoBMU for Hornsea 1A; and
 - its LV assets (connected at 12 BPs), associated with the Hornsea 1C substation, with the CoBMU for Hornsea 1C.
- 2.4 According to BSC Section K3.1.4, each individual premise directly connected to Transmission System could be registered as a standard BMU (per K3.1.4(c)). As summarised above, DONG013 believes there are good reasons why it would be appropriate to combine all the importing and exporting Plant and Apparatus for the plant into three non-standard BMUs.
- 2.5 Under Section K, paragraph 3.1.2(a), responsibility for the Plant and Apparatuses' Imports and/or Exports must lie with one Party. For this BM Unit, there is one Party, DONG013.
- 2.6 Under Section K, paragraph 3.1.2(b), the Imports and/or Exports to/from the Plant and Apparatus comprised in the BM Unit must be capable of being controlled independently of any other BM Units'. DONG013 confirmed that the imports and exports to plant and apparatus comprised in the BM Unit will be controlled independently of any other imports and exports to plant and apparatus comprised in another BM Unit.
- 2.7 Under Section K, paragraph 3.1.2(c), a BM Unit must have Metering Equipment which is installed pursuant to Section L and conforming to the appropriate Code of Practice (CoP) that registers quantities of electricity Imported and Exported only by the Plant and Apparatus comprised in the BM Unit and no other Plant or Apparatus. DONG013 has confirmed that.

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- 2.8 Under Section K, paragraph 3.1.2(d), the BM Unit shall not comprise Plant and Apparatus whose Imports and Exports are measured by both CVA Metering System(s) and SVA Metering System(s). DONG013 has confirmed that the Plant and Apparatuses' Imports and Exports will only be measured by CVA Metering Systems.
- 2.9 Under Section K, paragraph 3.1.2(e), a BM Unit must be the smallest aggregation of Plant and/or Apparatus that satisfies paragraphs K3.1.2(a), (b) and (c). Although in theory each PPM can be individually controlled and therefore would be the smallest aggregation of Plant and Apparatus to satisfy paragraph K3.1.2(a), (b) and (c), in practice there is only one control system per Offshore substation.
- 2.10 DONG013 believes that registering three non-standard BM Units for its assets, as opposed to 49 separate standard BM Units is the most appropriate set-up for DONG013. This is because it reduces the cost and complexity associated with the management and Settlement of 49 individual BM Units.

3. Transmission Company and ELEXON comments

- 3.1 The Transmission Company has reviewed this application. The Transmission Company has not identified any operational or use of system issues with this application and is happy to support it.
- 3.2 ELEXON notes that the ISG has previously granted non-standard BM Units to combine onshore and Offshore LV assets connected at multiple Transmission System Boundary Points with the PPM BM Unit(s). ELEXON recommends that the ISG approve this application. This is because it would be inefficient and unnecessary to register 46 BM Units for the LV assets when they can be incorporated into three COBMUs, and that there would be no adverse impact on Settlement as the Settlement Meters capture the entire LV supplied energy associated with the wind farm's operation. ELEXON also note that the Transmission Company has no issue with the non-standard application.

4. Recommendations

- 4.1 We invite you to:
- a) **APPROVE** three non-standard BM Units for the onshore and Offshore LV assets associated with the Hornsea One wind farm.

Appendices

Appendix 1 – BM Unit Configurations

Attachments

Attachment A (CONFIDENTIAL) – Hornsea 1 Overall SLD V01_EFA001 HOW01

Attachment B (CONFIDENTIAL) – Hornsea 1A_Z11AA_EFA001

Attachment C (CONFIDENTIAL) – Hornsea 1B_Z12AA_EFA001

Attachment D (CONFIDENTIAL) – Hornsea 1C_Z13AA_EFA001

Attachment E (CONFIDENTIAL) – HOW01 SLD-Rev.E_Onshore LV SLD

Attachment F (CONFIDENTIAL) – HOW01=Z01B_EFA010_RCS LV SLD

Attachment G (CONFIDENTIAL) – HOW01=Z12B_EFA001 - OSS LV SLD

Attachment H (CONFIDENTIAL) – Hornsea 1 DONG013 non-standard BM Unit application letter

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APPENDIX 1 - BM UNIT CONFIGURATIONS

The BSC states that a BM Unit shall comprise Plant and/or Apparatus for who's Exports and / or Imports a Party is responsible (Section K3.1.1).

A BM Unit must satisfy the following conditions (K3.1.2):

- responsibility for the BM Unit would lie with one Party;
- it would be capable of independent control;
- it would be visible to the Settlement Administration Agent (SAA) as a metered quantity separately from anything that is not included in the BM Unit;
- the BM Unit does not comprise of CVA and SVA Metering Systems that measure the same Imports or Exports
- it would be the smallest aggregation of Plant and Apparatus that satisfies the first three bullet points above.

The BSC also sets out a number of standard configurations of BM Units (Section K3.1.4), including:

- a single Generating Unit (GU), Combined Cycle Gas Turbine (CCGT) or Power Park Module (PPM);
- a Combined Offshore BM Unit;
- the Plant and Apparatus which Imports electricity through the station transformers of a Generating Plant, where the Metering System measuring those Imports is, or is to be, registered in the Central Meter Registration Service; or
- premises (of a Customer supplied by a BSC Party) which are directly connected to the Transmission System at one Boundary Point only.

The BSC states that a Registrant and/or Central Data Collection Agent (CDCA) / Central Registration Agent (CRA) can apply to the Panel for a non-standard BM Unit configuration in the following circumstances (K3.1.5):

- the Plant / Apparatus does not fall into a category listed in section K3.1.4 or the CDCA / CRA considers that there is reasonable doubt that this is the case;
- the Plant / Apparatus does fall into a category listed in K3.1.4 but the responsible Party considers that a different configuration would satisfy the requirements set out in K3.1.2; or
- there is more than one set of Exports / Imports at a CVA boundary Point and more than one Party is responsible for these.