MHHS PROGRAMME
Industry-led, Elexon facilitated

# MHHS Demand Disconnection Event: Methodology Statement

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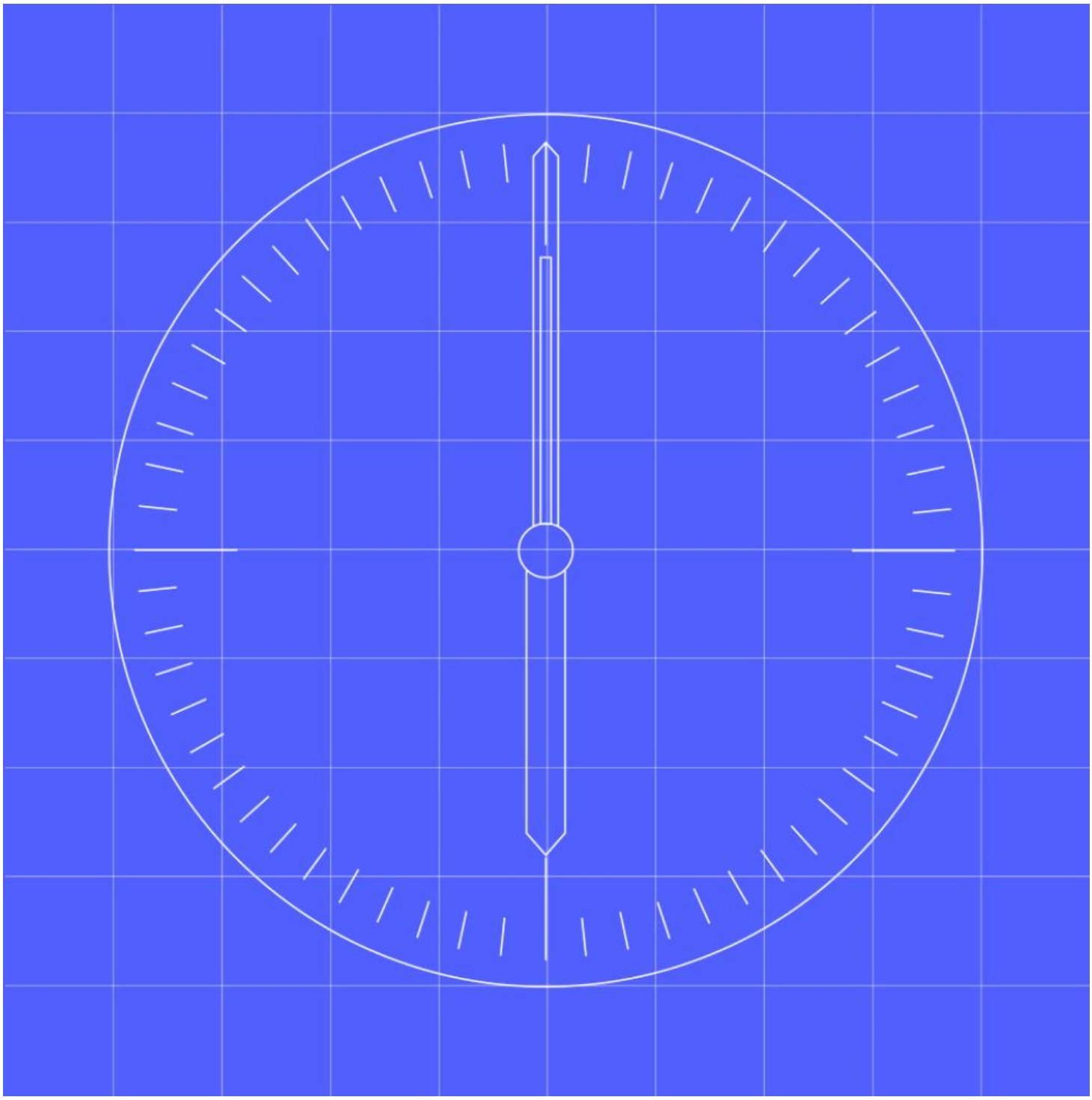


# Contents

# Section A Background

1.1 This document sets out the methods to be used by the Market-wide Data Service (MDS) and the Volume Allocation Service (VAS) for calculating the outputs needed for Demand Disconnection Events (DDE).

1.2 The DDE calculations will need data as produced by both the MDS and VAS services as described within their requisite Method Statements.

1.3 This document uses the term Metering Point Administration Number (MPAN) rather than MSID (which is the Balancing and Settlement Code variant of the term).

1.4 The term Settlement Period Consumption refers to consumption or export data that is of Settlement Period Duration. MDS and VAS must have flexibility as to the duration of a UTC/Settlement Period. The MDS and VAS must be able to process varying durations of a Settlement Period. The Settlement Period Duration will not change in a Settlement Day. All services should, where possible, build in the ability to configure the Settlement Period Duration during their solution design, in order to support any future move to a different Settlement Period Duration,

# Section B General Requirements

## 2. DDE General requirements

For the purposes of the Code, a Demand Control Impacted Settlement Period shall be:

(a) each Settlement Period that corresponds with:

(i) any Demand Control Event Start Point; or

(ii) any Demand Control Event End Point; or

(b) any intervening Settlement Period(s).

As soon as reasonably practical after receipt of notification from the ESO, the BMRA shall send each Demand Control Event Notice to the MDS, the SAA and the CDCA.

2.1 The MDS shall:

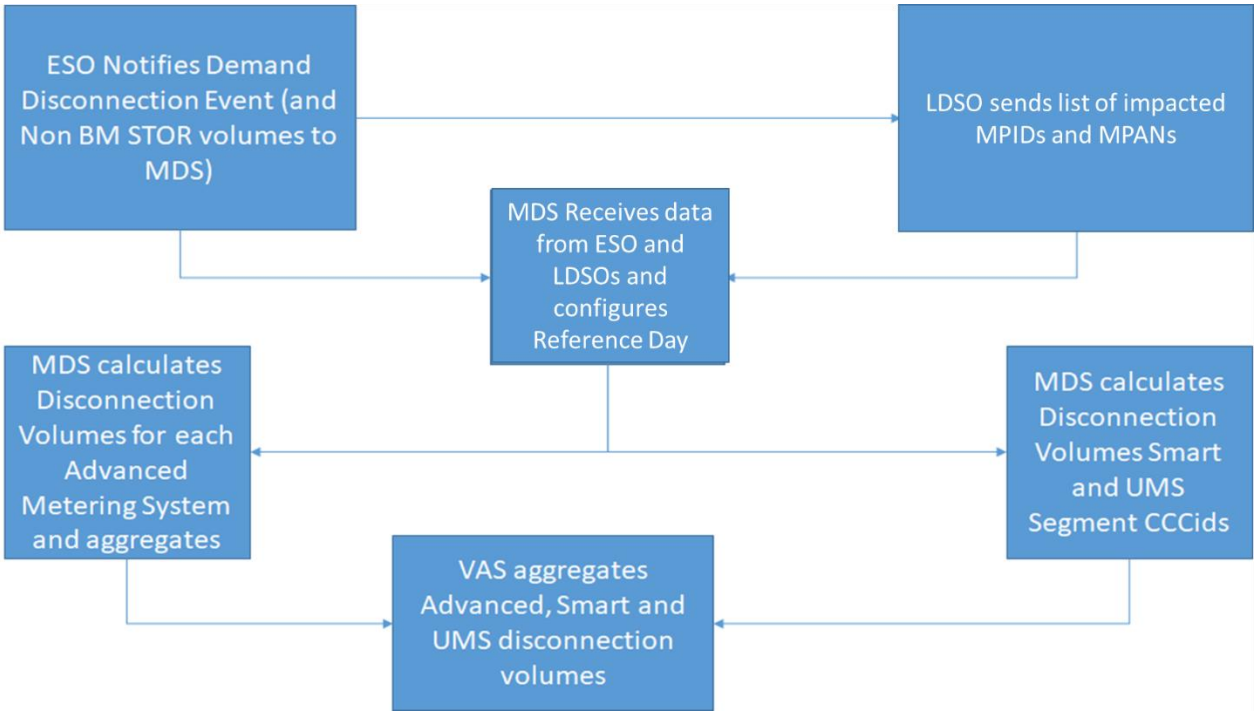
- Receive information from Electricity System Operator (ESO) and impacted Licensed Distribution System Operators (LDSOs) for the DDE;
- Receive information from BSCCo on the reference day as directed by the BSC Panel;
- Calculate Disconnection Volumes for Advanced Metering Systems;
- Calculate Disconnection Volumes for the Smart and UMS Consumption Component Classes; and
- Provide the Disconnection Volumes to VAS.

2.2 The VAS shall:

- Receive Disconnection volumes from MDS;
- Calculate the Total BM Disconnection Volumes; and
- Report the disconnection volumes to the SAA and Market Participants

If a DDE spans 2 days two reports will be required. Both would report the same start dates and end times as provided by the ESO. The reports will include the volumes for the relevant periods on each date.

**High level process diagram**



# Section C DDE Service Methods

## 3. Using Settlement Period consumption data for DDE

3.1 The DDE calculations in MDS will use Settlement Period Consumption ($SPC_{kDj}$) where 'j = 1' is the first Settlement Period of the Settlement Day 'D'.

## 4. Identifiers and terms used in this Method Statement

3.2 The following identifiers and terms are used in this document:

| Identifier/Term | Data item name |
|---|---|
| D | Settlement Day |
| E | Reference Day |
| J | Settlement Period |
| I | BMU Unit (base or additional) |
| k | Represents a MPAN |
| H | GSP Group |
| N | Consumption Component Class |
| L | Line Loss Factor (LLF) ID |
| X | Consumption Component Class (not for line losses) associated with the Consumption Component Class "N" (CCC for Line Losses) |
| C | Load Shape Category |
| MPAN | Metering Point Administration Number (represents a metering system) |
| $SPC_{kDj}$ | Settlement Period Consumption |
| $BMPC_{iHNDj}$ | Uncorrected BM Unit's Period Level Consumption |

## 6. Use of data items calculated by MDS for DDE

3.3 The MDS must use the following data calculated by MDS (see MDS method statement, MHHSP-METH007_MDS_Method_Statement):

- Settlement Period Consumption ($SPC_{KDj}$); and
- Uncorrected BM Unit's Period Level Consumption ($BMPC_{iHNDj}$).

## 7. Accessing ESO, LDSO and BSC Panel data

3.4 In calculating Supplier disconnection volumes associated with a Demand Disconnection events, the MDS:

a) must be able to receive a notice of Demand Disconnection Event from ESO and LDSO;

b) must receive the Reference Day for Demand Disconnection Event from BSCCo (as determined by the BSC Panel);

c) must receive a list of impacted MPANs for each DDE from the LDSO; and

d) the start and end date and time in Co-ordinated Universal Time at which the Metering System was subject to Demand Disconnection from the LDSO. Note: these times will need to be converted to Clock Times for the MDS calculations.

## 8. Duties of BSCCo

3.5 BSCCo shall perform its obligations set out in BSC Section S 9.2A Demand Disconnection Event Threshold Methodology. BSCCo shall determine whether the Demand Disconnection Event Obligations shall be performed.

3.6 BSCCo must facilitate the process for the BSC Panel determining the Reference day for a Demand Disconnection Event.

## 9. Duties of the ESO

3.7 The ESO shall undertake all obligations for Demand Disconnection events as set out within BSC Section Q 6.9.

3.8 Within the period of 25 Business Days commencing on the Business Day after the cessation of a Demand Disconnection Event or as soon as reasonably practicable thereafter, for each MPAN that has been subject to a Non-BM STOR Instruction the ESO shall send to the MDS:

a) The Demand Disconnection Event ID;

b) The MPAN (Non-BM STOR);

c) the estimated Non-BM STOR Instruction Volume anticipated to have been delivered by the MPAN, during each Demand Disconnection Impacted Settlement Period; and

d) Each Party that is a provider of Non-BM STOR shall co-operate with the ESO and provide such information as the ESO may require for the purposes of complying with this requirement.

## 10. Duties of a Licensed Distribution System Operator

3.9 As regards an Embedded Distribution System that is connected to a Distribution System operated by a Host LDSO, that Host LDSO shall notify the Embedded LDSO as soon as reasonably practicable where it becomes aware of any Demand Disconnection Events affecting that Embedded Distribution System.

3.10 Following the cessation of a Demand Disconnection Event, a Demand Disconnection Impacted LDSO shall, using the relevant Registration Service (SMRS), identify each impacted MPAN that is connected to its Distribution System (either directly or through any private distribution system) but not including any MPANs that:

a) have been de-registered; or

b) have voluntarily reduced consumption at the request of the Demand Disconnection Impacted LDSO.

3.11 Each Demand Disconnection Impacted LDSO shall, in respect of each Impacted MPAN identified, notify the Market-wide Data Service:

a) the MPIDs of all impacted a; and

b) the start and end date and time in Co-ordinated Universal Time (UTC) at which the MPAN was subject to Demand Disconnection.

3.12 Any notification given shall be given within the period of 5 Business Days commencing on the Business Day after cessation of Demand Disconnection Event.

3.13 Each Demand Disconnection Impacted LDSO shall update any notice as soon as reasonably practical after becoming aware of any necessary amendments to this information.

## 11. Duties of the Market-wide Data Service for DDE

3.14 The Market-wide Data service shall be directed as to a ‘Reference Day’ (by the BSC Panel) for use in the calculations that is of the same day-type as identified in ISD and similar temperature profile as the day on which the disconnection event occurred. The MDS shall store the details of the directed Reference Day. The MDS must identify the impacted Settlement Periods for each MPAN using the data provided by the LDSO.

**Advanced Market Segment**

**Method:** For each Advanced MPAN 'k' that is a MPAN identified by the LDSO above for each Settlement Day 'D' and each Settlement Period 'j' and for each GSP Group 'H' the MDS shall estimate the Advanced Demand Disconnection Volume ($ADDV_{ikHNLDj}$) within Consumption Component Class 'N' (which Consumption Component Class shall be a Consumption Component Class not for line losses), within each Supplier BM Unit 'i' of such Supplier for a particular Line Loss Factor Identifier (LLF ID) 'L' in accordance with the following formula:

$ADDV_{ikHNLDj} = max\ (0, SPC_{ikHNLEj} – SPC_{ikHNLDj} – NonBM_{ikHNLDj})$

where:

$SPC_{ikHNLEj}$ is the actual, estimated or load shaped consumption or export in disconnection impacted Settlement Period(s) in normal conditions on the Reference Day 'E' as directed to the MDS;

$SPC_{ikHNLDj}$ is the actual, estimated or load shaped Advanced Metering System Metered consumption or export during the Demand Disconnection Impacted Settlement Period(s);

$NonBM_{ikHNLDj}$ is the estimated Non-BM STOR Instruction Volume anticipated to have been delivered during the Demand Disconnection Impacted Settlement Period(s).

**Method:** The MDS shall calculate the Supplier's Advanced Demand Disconnection Volume ($SADDV_{iHNDj}$) for each Advanced MPAN/ MPID combination within each GSP Group notified by the LDSO using the following formula:

$$\mathrm{SADDV}_{\mathrm{iHNDj}} = \sum_{k} \mathrm{ADDV}_{ikHNDj}$$

**Method:** For each Advanced MPAN 'k' that is a MPAN identified by the LDSO above for each Settlement day 'D' and each Settlement Period 'j' and for each GSP Group 'H' the MDS shall estimate the Supplier Advanced Demand Disconnection Volume Losses ($SADDVL_{iHNDj}$) within Consumption Component Class 'N' (which Consumption Component Class shall be a Consumption Component Class for line losses), within each BM Unit 'i' of such Supplier in accordance with the following formula:

$$\mathrm{SADDVL}_{\mathrm{iHNDj}} = \sum_{kL} \left(LLF_{Lj} - 1\right) * \mathrm{ADDV}_{ikHXLDj}$$

where 'X' is the Consumption Component Class (not for line losses) associated with the Consumption Component Class 'N' for which the value of $SADDVL_{iHNj}$ is to be determined.

3.15 For each BMU 'i' the MDS shall provide the Volume Allocation Service (VAS) with the $SADDV_{iHNj}$ and $SADDVL_{iHNj}$ volumes for each of the Settlement Periods impacted by the Demand Disconnection Event.

**Smart and Unmetered Market Segments**

3.16 The MDS must identify the impacted Settlement Periods for each MPAN using the data provided by the LDSO. The MDS shall then make the following calculation for each MPAN 'k':

**Method:** For each Smart or Unmetered MPAN 'k' that is a MPAN identified by the LDSO above for each Settlement Day 'D' and each Settlement Period 'j' and for each GSP Group 'H' the MDS shall estimate the BMU Demand Disconnection Volume ($BMDDV_{ikHNLDj}$) within Consumption Component Class 'N' (which Consumption Component Class shall be a Consumption Component Class not for line losses), within each Supplier BM Unit 'i' of such Supplier in accordance with the following formula:

$BMDDV_{ikHNLDj} = max\ (0, SPC_{ikHNLEj} – SPC_{ikHNLDj})$

where:

$SPC_{ikHNLEj}$ is the actual, estimated or load shape consumption or export in disconnection impacted Settlement Period(s) in normal conditions on the Reference Day 'E' as directed to the MDS;

$SPC_{ikHNLDj}$ is the smart or unmetered Metering System Metered consumption or export during the Demand Control Impacted Settlement Period;

**Method:** The MDS shall calculate the Supplier's BM Demand Disconnection Volume ($BMDDV_{iHNDj}$) for each MPAN/ MPID combination within each GSP Group notified by the LDSO using the following formula:

$$\mathrm{BMDDV}_{\mathrm{iHNDj}} = \sum_{k} \mathrm{BMDDV}_{ikHNLDj}$$

**Method:** For each smart or unmetered MPAN 'k' that is a MPAN identified by the LDSO above for each Settlement day 'D' and each Settlement Period 'j' and for each GSP Group 'H' the MDS shall estimate the BMU Demand Disconnection Volume Losses ($BMDDVL_{iHNLDj}$) within Consumption Component Class 'N' (which Consumption Component Class shall be a Consumption Component Class for line losses), within each Supplier BM Unit 'i' of such Supplier for a particular LLF ID 'L' in accordance with the following formula:

$$\mathrm{BMDDVL_{iHNDj}} = \sum_{kL} \left(LLF_{Lj} - 1\right) * \mathrm{BMDDV}_{ikHXLDj}$$

where 'X' is the Consumption Component Class (not for line losses) associated with the Consumption Component Class 'N' for which the value of $BMDDVL_{iHNDj}$ is to be determined.

3.17 For each Supplier MPID the MDS shall provide the Volume Allocation Service (VAS) with the $BMDDV_{iHNLDj}$ and $BMDDVL_{iHNDj}$ volumes for each of the Settlement Periods impacted by the Demand Disconnection Event.

## MDS Post-calculation Validation Requirements

3.18 The MDS must convert the DDE output to Mega Watt hours (MWh) and round to 6 decimal places before providing it to VAS.

3.19 For each Settlement Period the MDS must validate that processing has completed correctly without error prior to completing the MDS calculations for DDE.

3.20 If validation fails an investigation into the cause of failure must be undertaken to correct the validation failure and the MDS calculations for DDE must be re-run. If no error is identified the data is assumed to be correct.

## 12. Access of MDS data by VAS for DDE

3.21 The VAS must use the following data provided by MDS to VAS:

- $SADDV_{iHNDj}$ and $SADDVL_{iHNDj}$ volumes; and
- $BMDDV_{iHNDj}$ and $BMDDVL_{iHNLDj}$ volumes, for each GSP Group,

for each of the Settlement Periods impacted by the Demand Disconnection Event.

## 13. Processing Total Demand Disconnection Volumes ($TBMDDV_{HNDij}$)

3.22 For each Demand Disconnection Impacted Settlement Period, the VAS shall determine the Total BM Disconnection Volume ($TBMDDV_{HNDij}$) for each BMU and GSP Group identified by the LDSO using the following formula:

$TBMDDV_{HNDij} = SADDV_{iHNDj} + SADDVL_{iHNDj} + BMDDV_{iHNDj} + BMDDVL_{iHNLDj}$

## 14. Determination of the Corrected Disconnection Component ($CORDC_{iNDj}$) for each Consumption Component Class

3.23 The Corrected Disconnection Component ($CORDC_{iNDj}$) for each Consumption Component Class 'N' within Supplier BM Unit 'i' shall be determined by the VAS according to the following formula:

**Import CCCids:**

$CORDC_{iNDj} = TBMDDV_{iHNDj} * (1 + (GCFI_{HDj} - 1) * WT_N)$

where $WT_N$ is the associated GSP Group Correction Scaling Weight and $GCFI_{HDj}$ is the value of Import GSP Group Correction Factor for the GSP Group 'H' associated with the Supplier BM Unit 'i'.

**Export CCCids**

$CORDC_{iNDj} = TBMDDV_{iHNDj} * (1 + (GCFE_{HDj} - 1) * WT_N)$

where $WT_N$ is the associated GSP Group Correction Scaling Weight and $GCFE_{HDj}$ is the value of Export GSP Group Correction Factor for the GSP Group 'H' associated with the Supplier BM Unit 'i'.

## 15. Determination of BM Unit Allocated Demand Disconnection Volume

3.24 In respect of each Supplier BM Unit ‘i’, the VAS shall determine the BM Unit Allocated Demand Disconnection Volume (BMUADDViDj) for each Settlement Period ‘j’ according the following formula:

$BMUADDV_{iDj} = \Sigma_N CORDC_{iNDj}$

Where data is summed over all Consumption Component Classes ‘N’ where, in such summation, values associated with Consumption Component Classes associated with Third Party Generating Plant (AE) comprised in MPANs shall be subtracted and values associated with all other Consumption Component Classes shall be added.

3.25 The VAS shall provide the SAA with the BM Unit Allocated Demand Disconnection Volume ($BMUADDV_{iDj}$) for each Supplier BM Unit ‘i’ for each Settlement Period ‘j’ for each Volume Allocation Run.

## 16. VAS Post-calculation Validation Requirements

3.26 For each Settlement Period the VAS must validate that processing has completed correctly without error prior to completing the VAS calculations for DDE.

3.27 If validation fails an investigation into the cause of failure must be undertaken to correct the validation failure and the VAS calculations for DDE must be re-run. If no error is identified the data is assumed to be correct.