

## Market Process for Readings Processing for NQH Meters

### 1. Introduction

#### 1.1 Scope

This Procedure describes the requirements for the data processing for NQH meter readings.

#### 1.2 History of Changes

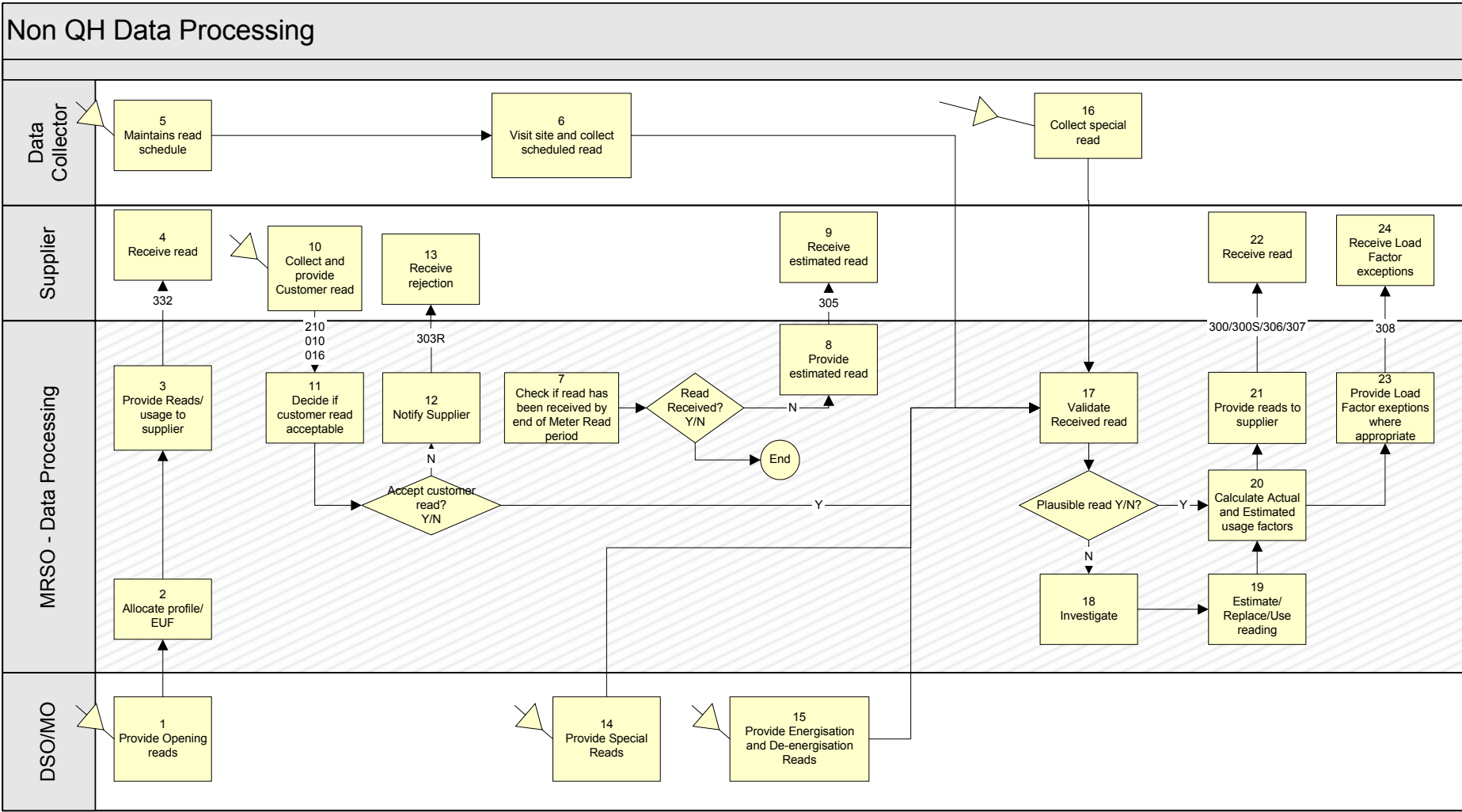
This Procedure includes the following changes

B93	Identification of (withdrawn) meter readings
B96	Implausible reads
B98	Changes to estimation and validation rules
B105	Changes to aggregation approach incorporating re-aggregation and usage factors
	Changes applied since version 3.1
B166	Changes to the application of usage factors
B168	Customer Own Read Read date
B117	Changes to readings processing for CoLE
B157	Usage Factors for incomplete reads
B200	Updated to handle situations where the estimate used for a COS is greater than the next actual read
B204/Written Supplier Clarification 10	Updated section 3.4 to clarify that a customer read received whilst a Scheduled Meter Read Order is open will be used for DUoS Billing
	<b>Change applied since Version 4.0 DRAFT</b>
	Updated text to indicate that manual intervention between MRSO and the Supplier may occur prior to customer read rejection

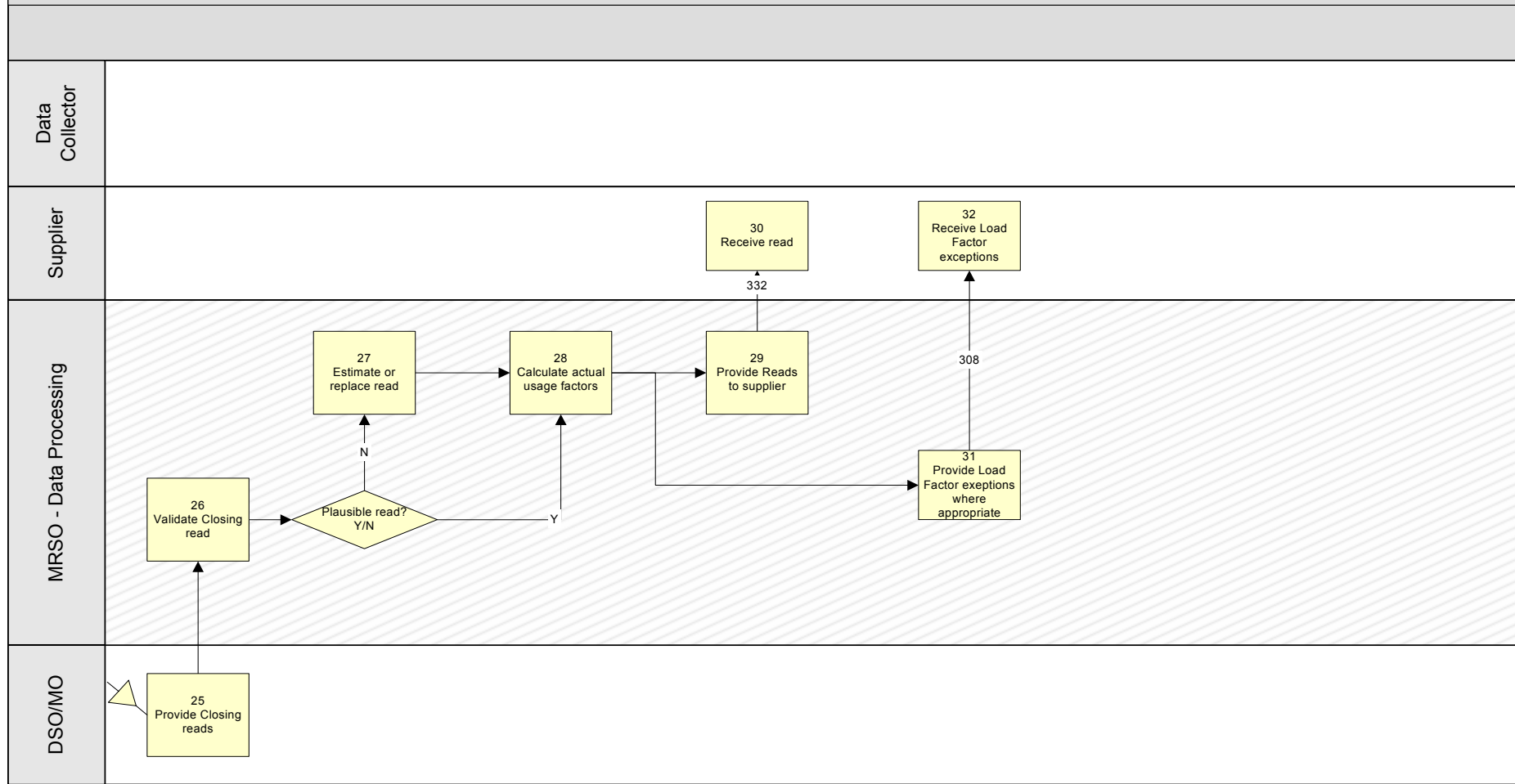
### **1.3 Issues**

- Length of base period required for estimation to be defined
- Values for initial EUF are to be researched and defined.

## 2. Process Map



# Non QH Data Processing



## 2.1 Process Description

Step	Role	Action	Interface
1, 14, 15, 25	<b>DSO</b>	<p>The DSO will collect and provide the following types of reading to MRSO.</p> <ul style="list-style-type: none"> <li>• Opening and closing readings relating to meter works<sup>1</sup></li> <li>• Readings relating to energisation and de-energisation</li> <li>• Special readings</li> </ul> <p>The DSO will take all reasonable measures to ensure that MRSO can accept the readings and is responsible for investigating and resolving the causes of any rejection.</p>	
2, 3	<b>MRSO</b>	<p>MRSO will provide to the Supplier all opening readings that were obtained.</p> <p>MRSO will provide opening readings together with closing readings and estimates for registers where no readings were obtained.</p> <p>For opening reads MRSO will also provide Load Profile and EUF<sup>2</sup> data allocated in accordance with agreed rules (see section 3.10).</p>	332 to Supplier
5	<b>Data Collector</b>	<p>The Data Collector will inform the Supplier of the read schedule for each Meter Point.</p> <p>The Data Collector will keep Suppliers informed of permanent changes to the read schedule dates.</p>	321 to Supplier
6, 16	<b>Data Collector</b>	<p>The Data Collector will collect the scheduled readings and make these available to MRSO. If a visit is made but no readings are collected, the no-read reason will be provided to MRSO.</p> <p>If no visit is made then a no read indicator is sent to MRSO.</p> <p>The Data Collector will undertake on-site meter read verification and reporting as specified in section 3.3.</p>	

<sup>1</sup> Opening readings are obtained for newly installed meter registers, closing readings are obtained for removed meter registers

<sup>2</sup> EUF is a statement of expected consumption in kWh for the next year

Step	Role	Action	Interface
		<p>The Data Collector may also provide customer and special readings to MRSO, subject to the same checks as scheduled reads.</p> <p>The Data Collector will take all reasonable measures to ensure that the readings can be accepted (see section 3.4) and is responsible for investigating and resolving the causes of any rejection.</p>	
7, 8	<b>MRSO</b>	<p>Where the Data Collector does not visit the site, or is unable to obtain a reading as a result of a visit, MRSO will provide to the Supplier an estimate, as at the planned read date, together with consumption for all registers where no reading was obtained.</p> <p>Usage factors are not re-calculated in these circumstances.</p>	305 to Supplier
10	<b>Supplier</b>	A Supplier may provide readings (determined by the Supplier or obtained from a customer) to MRSO for any Meter Points except for Maximum Demand sites.	010 / 210 / 016 to Data Processor
11, 12	<b>MRSO</b>	<p>MRSO will determine the acceptability of Supplier provided readings in accordance with section 3.4 and will advise the Supplier of any rejected readings.</p> <p>Where possible, MRSO will endeavour to contact the Supplier manually to correct the cause of the rejected reading.</p>	303R to Supplier
17, 18	<b>MRSO</b>	<p>MRSO<sup>3</sup> will validate customer, special, scheduled, energisation and de-energisation readings according to the agreed rules (see section 3.5).</p> <p>Where a reading is originally determined to be implausible MRSO will review the reading and take appropriate action (see section 3.6).</p>	
20	<b>MRSO</b>	Where a plausible read is obtained MRSO will calculate actual usage factors (AUF <sup>4</sup> ) and estimated usage factors (EUF <sup>5</sup> ) for use in aggregation as described in section 3.8.	

<sup>3</sup> For readings provided by the Data Collector, the Data Collector may carry out these validations and investigate any implausible reads on behalf of and as specified by MRSO

<sup>4</sup> AUF is the kWh consumption in a read period extrapolated to an annual figure based on the demand profile applied to the meter point

<sup>5</sup> EUF is a statement of expected consumption in kWh for the next year

Step	Role	Action	Interface
19, 21	<b>MRSO</b>	<p>MRSO will provide to the Supplier all plausible readings that were obtained together with consumption.</p> <p>For registers without plausible readings, MRSO will provide to the Supplier an estimated meter reading and consumption. However, in the case of special readings it is DSO policy to collect actual readings for every register. Suppliers will advise appropriate access arrangements from the customer to facilitate the collection of actual readings.</p> <p>MRSO will provide to the Supplier the AUF and EUF where calculated.</p>	300, 300S, 306, 307 to Supplier
26, 27	<b>MRSO</b>	<p>MRSO will validate closing readings according to the agreed rules (see section 3.5).</p> <p>Where a closing reading is originally determined to be implausible MRSO will review the reading and take appropriate action to determine a plausible reading (see section 3.6).</p>	
28	<b>MRSO</b>	MRSO will calculate actual usage factors (AUF) for use in aggregation as described in section 3.8.	
29	<b>MRSO</b>	<p>MRSO will provide to the Supplier all closing readings that were obtained together with consumption.</p> <p>Where possible, MRSO will provide closing readings together with opening readings and estimates for registers where no readings were obtained.</p> <p>For closing reads MRSO will also provide the AUF.</p>	332 to Supplier
	<b>MRSO</b>	MRSO will forward, for meters identified as interruptible that are independently supplied, readings to TSO.	Manual
31, 32	<b>MRSO</b>	<p>Subject to installation of the appropriate metering, MRSO will also report to the Supplier on load factor exceptions (see section 3.12).</p> <p>Based on the new load factor, MRSO may change the Profile associated with the Meter Point.</p>	308 to Supplier

### 3. Supplementary Information

#### 3.1 Calculating Estimates and Expected Advances – Consumption and Wattless

An estimated reading will be calculated as the last plausible actual, customer or estimated reading plus the expected advance since that reading.

The expected advance will be determined as:

$$\text{Base advance} \quad \text{multiplied by} \quad \frac{\text{Profiled weight}^6 \text{ of expected advance period}}{\text{Profiled weight of base advance period}}$$

The base advance will be the advance in an equivalent actual read period in the previous year provided that this period is representative. If a previous year advance is not available the base advance will be the advance in the immediate preceding read period provided that this period is representative.

Where neither previous year nor preceding period advances are available then the base advance will be the annual Period Consumption assigned by DSO for the register. In this case the profiled weight of the base advance period is 1.

#### 3.2 Calculating Estimates and Expected Advances – Maximum Demand

The expected demand will be determined as the maximum demand in the previous read period.

If previous meter readings are not available then the expected demand will be the Period Demand assigned by DSO for the register.

For accumulating registers the expected advance is the expected demand adjusted for any multipliers.

#### 3.3 Site Checks

The Data Collector will report on the following:

- Stopped, damaged or otherwise faulty meters
- Evidence of tampering or the taking of supply on a de-energised meter

---

<sup>6</sup> The profiled weight of an advance period is the sum of the daily weighting coefficients assigned to the register from period start to the period end date, inclusive. Over a period of one year the sum of daily weighting coefficients is 100%. Profiled weights will be maintained in line with, but may not be identical to, DSO provided Derived Load Profiles as used in aggregation.



- Wrongly functioning time-switch or clock
- Occupation of a vacant premise

As a result of these reports the Data Collector will initiate any relevant investigations.

The Data Collector will re-verify:

- Advances that are negative based on the previous plausible reading
- Advances that are more 200% of the expected advance or demand

### **3.4 Treatment of Supplier and Customer Readings**

Customer and Supplier readings will be processed for DUoS billing and for Settlement where they meet any of the following criteria:

- Provided for the purposes of a Change of Supplier by a Supplier that has provided an accepted registration
- Provided for the purposes of a Change of Legal Entity
- Provided where a Meter Reading Order is open (the period two days before and up to a maximum of seven days after the scheduled read date where an actual reading has not yet been collected). This period will be shorter where an planned or unplanned estimate is to be made. Any actual read collected as a result of the Meter Read Order but subsequent to the customer read will not become available to be processed.
- Provided to correct a billing over-estimate (i.e. the reading is less than the estimate)

Any other Customer and Supplier readings will be processed for Settlement only.

Readings will be rejected, however, in the following circumstances:

- If a reading is received from a Supplier that is not the registered Supplier, unless for the purpose of a Change of Supplier
- If a reading is received for a Maximum Demand Meter Point.
- If a Change of Supplier reading is provided with a date more than three days prior to the date that DSO receive the read
- If a Change of Legal Entity reading is provided with a date on or prior to the date of the last DuoS bill; unless the MIC is greater than 30 kVA
- If a customer reading, other than Change of Supplier and Change of Legal Entity, is provided with a date on or before the date of the last DUoS bill..
- If the meter id / meter register number or timeslot detail provided with the reading cannot be matched to an installed meter register for the MPRN at the effective read date.

### **3.5 Validation of Readings**

#### **3.5.1 Consumption and Wattless Registers**

Meter advances are calculated from the date of the previous plausible actual, customer or estimated reading. Where a negative advance has been detected then validation will be performed as if a clock-over had occurred. Estimated readings providing a negative advance are ignored.

Consumption and Wattless readings will be deemed as implausible if any of the following occur:

- A meter advance is more than 200% of the expected advance
- A meter advance occurs during a period of de-energisation

Consumption is calculated from the last actual, customer or estimated meter reading and is expressed in kWh after allowing for multipliers and clockovers.

### 3.5.2 Maximum Demand Registers

For accumulating registers the maximum demand is the meter advance adjusted for any multipliers.

Maximum Demand readings will be deemed as implausible if any of the following occur:

- An advance in a Maximum Demand Reset Counter is not 1.
- A maximum demand is more than 200% of the expected demand
- An advance occurs during a period of de-energisation
- A negative maximum demand appears to have occurred

## 3.6 Implausible Reads

Where a reading is originally determined to be implausible MRSO will review the reading and take appropriate action:

- The reading may be set to plausible where previous reading history or evidence from the supplier, customer, meter operator or data collector suggests that the reading is likely to be correct
- The reading may be replaced by an estimate, calculated as in section 3.1, that will be sent to the Supplier. Automated estimation will not take place if the previous reading was a Change of Supplier reading.
- A previous reading or estimate may be withdrawn and replaced in order that the current reading may be plausible. Where the previous reading or estimate was used for a Change of Supplier, then both Suppliers will be informed before any change is made and the change will be effected as per the disputed readings procedure outlined in MPD1.
- MRSO may instigate a meter problem investigation

DSO will retain a copy of the implausible reading. This will be available to Suppliers on request.

### 3.7 Use of Estimates for Usage Factor Calculation

An estimate will be regarded as a plausible reading for the purpose of usage factor calculation where:

- The estimate is calculated to determine a Change of Supplier closing reading.
- The estimate is calculated to determine a Change of Legal Entity closing reading.
- The estimate is calculated to determine a meter works closing or de-energisation reading.
- The estimate replaces an implausible reading and other plausible readings were obtained.

### 3.8 Usage Factor Calculation

When plausible readings (including estimates for closing reads where plausible actual reads are not available) are obtained for any consumption register at a Meter Point and these are not all opening reads then Actual Usage Factors will be calculated for each Timeslot. These values shall be expressed in kWh and used in Data Aggregation.

An Actual Usage Factor (AUF) is calculated for the Timeslot for the read period terminated by the reading as follows:

$$\text{AUF} = \text{Sum for all registers associated with the Timeslot of the kWh consumption divided by the Profiled Proportion of Year}^7 \text{ of the period of consumption}$$

For each meter reading period a new estimated usage factor (EUF) is calculated for the Timeslot by the following method:

$$\text{Re-calculated EUF} = \text{The average of AUF, weighted according to the length of the read period, over the previous year.}$$

Estimated usage factors shall not be aggregated in respect of Timeslots for which all meter registers are removed.

Estimated usage factors shall not be aggregated in respect of Meter Points that are de-energised.

### 3.9 Initial Allocation of Profiles and Estimated Usage Factors

For each Timeslot where one or more meter registers record consumption to be settled a Derived Load Profile and an EUF will be initially allocated on installation in accordance with published rules for the combination of:

- For non-MD sites, whether the meter point is rural domestic, urban domestic or non-domestic, as determined by the DUoS Group
  - For MD sites, the load factor
- The Timeslot

Wherever there is a change in the meter configuration then a new Derived Load Profile and EUF will be automatically allocated in accordance with the published rules

---

<sup>7</sup> The Profiled Proportion of Year is the sum of the profile coefficients, determined from the derived load profiles, assigned to the Timeslot from the read period start to the read period end date, inclusive. . Over a period of a 365-day year the sum of coefficients is 1.

Whenever there is a change in the load factor or DuoS group then a new Derived Load Profile will be allocated in accordance with published rules but the EUF will not be changed

### 3.10 Read Date Management

Each reading and usage factor will be associated with a read date and time. These are managed as follows:

	Deemed Read Date/Time	Start of Read Period Actual and Estimated Usage Factor	End of Read Period Actual Usage Factor
Customer, Special or Scheduled Read	23h59 on Read Date	Day following Read Date	23h59 on Read Date
New Meter Opening Read	00h00 on Install Date	Install Date	Not applicable
Removed Meter Closing Read (Meter not Exchanged)	23h59 on Removal Date	Not applicable	23h59 on Removal Date
Removed Meter Closing Read (Meter Exchanged)	23h59 on day before Exchange Date	Not applicable	23h59 on day before Exchange Date
Energisation Read	00h00 on Energisation Date	Energisation Date	23h59 on day before Energisation Date (Consumption expected to be zero)
De-Energisation Read	23h59 on De-Energisation Date	Day following Energisation Date EUF is not used until Re-Energisation	23h59 on De-Energisation Date

### 3.11 Readings Reversal

MRSO will have the ability to reverse and, optionally, replace a reading at any point.

In general, readings will only be reversed and replaced if:

- A reading is successfully disputed; or
- A subsequent event proves a reading is wrong; or
- Suppliers agree that a Change of Supplier reading is to be replaced.

Readings will be reversed but not replaced if they are applied to the wrong meter point, meter, register or date. A reading reversal will be communicated to a supplier, without replacement, if a reading was previously sent but the Supplier does not have a registration at the read date.

For Meter Points with MIC greater than 30kVA the Supplier will be informed, with the reason, in advance.

When a reading is reversed this will be confirmed to the Supplier using messages 300W, 306W, 307W, 310W, 320W or 332W as appropriate to the data being reversed. Any resultant changes to aggregated usage will be calculated and passed to the SSA as part of the re-aggregation process.

When a reading is replaced this will be confirmed to the Supplier using a new message 300, 300S, 306, 307, 310, 320 or 332 as appropriate.

### **3.12 Load Factor Exceptions**

A load factor exception occurs if there is a consistent change to load factors in two consecutive reads. The load factor is calculated as the total annual consumption<sup>8</sup> divided by (maximum demand \* consumption hours). The maximum demand figure used is the average in the last twelve months, discounting the highest and lowest figure.

A load factor exception does not render a meter reading implausible.

---

<sup>8</sup> Measured using the valid readings closest to one year prior to the current read. Consumption hours will be 8760 if this equates to 365 days.