Market Code Schedule 23

Code Subsidiary Document No. 0207

RF Charge Calculation, Allocation and Aggregation

Version 67.0

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<th>Version Number</th>
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<td>MCCP052, MCCP079</td>
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Document reference CSD0207

Version 6.7.0

RF Charge Calculation,
Allocation and Aggregation
1. Purpose and Scope

1.1. Introduction

1.1.1. The purpose of this document is to provide details of how the CMA will calculate the Primary Charges for Water and Sewerage in accordance with the Scottish Water Wholesale Charges Scheme and allocate them to the appropriate Licensed Provider for the Tariff Year Settlement Run (RF). For the avoidance of doubt, no calculations are carried out in respect of the Non-Primary components of the Wholesale Charges.

1.1.2. This document describes a detailed charge calculation process which forms the CMA’s interpretation of the Scottish Water Wholesale Charges Scheme (WCS) for the Financial Years 2008-09 to 2013-14 inclusive. Specific assumptions in respect of how the calculation implements the Wholesale Charges Scheme are documented in the Appendix to both provide transparency and to formalise their adoption.

1.1.3. The process will also calculate the Primary Charges for Water and Sewerage for years beyond 2013-14 provided that the form of the Charges described in the WCS do not diverge from the form of the Charges for 2008-09 to 2013-14, and that the Charges can be successfully parameterised.

1.1.4. The process (including the process in respect of Trade Effluent Charges) will be a complete re-calculation based upon the data submitted by the Market Participants and as it exists in the Central Systems at the time of the RF Settlement Run. The process assumes that data has been correctly submitted, and does not necessarily fully describe situations where either incomplete or inconsistent data has been submitted by Market Participants.

1.2. Scheme of Charges

1.2.1. The process details the computation, allocation and aggregation of the various components of the Primary Charges described in the WCS. The various components of the Services are shown in the following table.

---

1 As of the time of writing
<table>
<thead>
<tr>
<th>SERVICE</th>
<th>COMPONENT</th>
<th>SUB COMPONENT</th>
<th>SERVICE ELEMENT</th>
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<tr>
<td>Primary Water Charges</td>
<td>Water Charges</td>
<td>Measured Supply Point</td>
<td>Meter Based Charges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Volumetric Charges</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unmeasured Supply Points – RV Based Charges</td>
<td>Meter Based Charges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Volumetric Charges</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unmeasured Supply Points – Re-assessed Charges</td>
<td>Meter Based Charges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Volumetric Charges</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous</td>
<td>Field Troughs and Drinking Bowls</td>
<td>Farms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Crofts</td>
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<tr>
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<td></td>
<td>Outside Taps</td>
<td>Farms</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Crofts</td>
</tr>
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<td>Primary Sewerage Charges</td>
<td>Foul Sewerage</td>
<td>Measured Supply Point</td>
<td>Meter Based Charges</td>
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<tr>
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<td>Volumetric Charges</td>
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<td>Unmeasured Supply Points – RV Based Charges</td>
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<td>Volumetric Charges</td>
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<td>Unmeasured Supply Points – Re-assessed Charges</td>
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<td></td>
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<td>Volumetric Charges</td>
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<td>Property Drainage</td>
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<tr>
<td>Roads Drainage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade Effluent Charges</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.2.2. The CMA shall recompute all the components of Primary Water Charges and Primary Sewerage Charges. This calculation will take into account all relevant changes to the chargeable parameters associated with the Tariff Year Settlement, and take account of all the data submitted to the Central Systems at the time the RF Settlement Run is carried out. A detailed specification of the computation of each of the components is given below.

1.2.3. The Tariff Year Settlement Run (RF) is the final Settlement Run for any Year. It has three key differences from the monthly Invoice Period Settlement Runs:

- The single calculation of the full Tariff Year Settlement;
- In respect of Measured Supply Points (both water and sewerage) the calculation of a single Actual Weighted Average Unit Rate (AWA) to compute the charges for all measured volumes for the Tariff Year; and
- The application of annual minimum charges for Trade Effluent.

1.2.4. Details of certain transitional charging arrangements which are catered for in the WCS are provided in the appendices to CSD0205. The various arrangements including LUVA discounts, small meter premium and the phasing premium are fully taken into account in the process described below.
2. Primary Water Charges

2.1. General

2.1.1. The following calculation is carried out for each Water SPID which is or has been Tradable when the Settlement Run is carried out. This includes SPIs which are currently Tradable or Temporarily Disconnected, as well as Disconnected or Deregistered SPIs which have been Tradable. The calculation excludes SPIs which are Disconnected or Deregistered but were New, Partial or Rejected when they were so Disconnected or Deregistered.

2.1.2. A Settlement Day runs from midnight to midnight.

2.1.3. Define the RF Settlement Period by a pair of days $D_{l}^{RF}$, $D_{u}^{RF}$ such that the RF Settlement Period comprises Settlement Days $d$ such that $D_{l}^{RF} \leq d < D_{u}^{RF}$. Note that the lowest bound day $D_{l}^{RF}$ is included, but the upper bound day $D_{u}^{RF}$ is not. In this description the full Settlement Year 2008-09 would be described by

$$D_{l}^{RF} = 1st\ April\ 2008$$
$$D_{u}^{RF} = 1st\ April\ 2009$$

2.1.4. If the SPID has a Permanent Disconnection Date, define the SPID Disconnection Date to be the date of Permanent Disconnection. If the SPID has a Deregistration Date, define the SPID Disconnection Date to be the date of Deregistration.

2.1.5. Define the SPID Chargeable Period as the period for which the SPID is in (potentially) charge from the SPID Connection Date to the day before the SPID Disconnection Date (if it exists) or the last day of the tariff year (if the SPID Disconnection Date does not exist) inclusive. Here, “potentially” refers to the condition above that the SPID is or has been Tradable. This SPID Chargeable Period can equivalently be defined by a pair of days $D_{l}^{A}$, $D_{u}^{A}$ where.

$$D_{l}^{A} = SPID\ Connection\ Date$$
$$D_{u}^{A} = \begin{cases} \text{the SPID Disconnection Date, if it exists} \\
\text{otherwise, the day immediately after the end of the tariff year} \\
\end{cases}$$

and the SPID is chargeable for all days $d$ where $D_{l}^{A} \leq d < D_{u}^{A}$. The lower bound day is included, but the upper bound day is not.
2.1.6. If $D_l^A \geq D_l^R$ then there are no chargeable days.

2.1.7. For the avoidance of doubt the SPID Chargeable Period includes periods of vacancies, temporary disconnections, SGES etc. Appropriate adjustments for charges for these periods are made further on in the process.

2.1.8. For each SPID, establish the SPID Settlement Chargeable Period $D_l^S \leq d < D_u^S$ which is the (possibly empty) sub-period for which the SPID Chargeable Period intersects the RF Settlement Period, and is given by $D_l^S$, $D_u^S$ where

$$D_l^S = \max (D_l^A, D_l^R)$$

$$D_u^S = \min (D_u^A, D_u^R)$$

2.1.9. If $D_l^S \geq D_u^S$ then the SPID does not have a SPID Settlement Chargeable Period for that RF Settlement Period. If there is no such SPID Settlement Chargeable Period then no charges are computed for this SPID. The remaining sections in respect of Primary Water Charges are only applicable to SPIDs for which charges will be computed.

2.2. Measured Supply Points - Overview

2.2.1. First compute the AWA for each Water SPID which is a Measured Supply Point or a Re-assessed Supply Point, and then compute, allocate and aggregate the Meter Based Charges and the Volumetric Charges Re-assessed charges are implemented as if they were metered charges see section 2.7 for details.

2.3. AWA Algorithm for Water SPID

2.3.1. For each T17 Meter Chain $K$, establish the T17 Meter Chain “Active Period” $D_l^K \leq d < D_u^K$ if the T17 Meter Chain has not been removed from the Water SPID then set $D_u^K = D_u^R$

2.3.2. For each T17 Meter Chain $K$, establish the T17 Meter Chain Chargeable $D_l^K \leq d < D_u^K$ which is the (possibly empty) sub-period for which the Active Period intersects the SPID Settlement Chargeable Period, and is given by $D_l^K$, $D_u^K$ where

$$D_l^K = \max (D_l^K, D_l^S)$$

$$D_u^K = \min (D_u^K, D_u^S)$$
2.3.3. If \( D_{Kl}^c \geq D_{Ku}^c \) then the T17 Meter Chain does not have a Chargeable period for that RF Settlement Period.

### Standard Volume Bank Limits

2.3.4. Let the Allocated Tranche be \( VFA \), and \( V1 \) and \( V2 \) be the knots described in the Scheme of Charges which define the bands for the Standard Volume Charges above the Allocated Tranche. Let \( B1, B2 \) and \( B3 \) be the corresponding prices. Thus:

<table>
<thead>
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<th>Standard Volume Charges</th>
<th>Price</th>
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</thead>
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<tr>
<td>Greater than zero and up to ( VFA )</td>
<td>0</td>
</tr>
<tr>
<td>Greater than ( VFA ) and up to ( V1 )</td>
<td>( B1 )</td>
</tr>
<tr>
<td>Greater than ( V1 ) and up to ( V2 )</td>
<td>( B2 )</td>
</tr>
<tr>
<td>Greater than ( V2 )</td>
<td>( B3 )</td>
</tr>
</tbody>
</table>

#### Yearly proportion for the Allocated Tranche VFA

2.3.5. For each T17 Meter Chain, define the term \( PVT_{K} \) as \(^2\)

\[
PVT_{K} = \begin{cases} 
0 & \text{if the T17 Meter Chain Treatment is SWWater or LogicalWater – i.e. not a Private Meter} \\
1 & \text{otherwise – i.e. Private}
\end{cases}
\]

2.3.6. Define Meter Active (\( MA_{Kd} \)) for a specific T17 Meter Chain \( K \) as

\[
MA_{Kd} = \begin{cases} 
1 & \text{if } D_{Kl}^c \leq d < D_{Ku}^c \\
0 & \text{otherwise}
\end{cases}
\]

i.e. \( MA_{Kd} \) has the value of 1 when \( d \) is within a T17 Meter Chain Chargeable Period.

2.3.7. Then for each Settlement Day \( d \) in the SPID Settlement Chargeable Period define SPID SWWater Meter Active (\( SSWM_{MA_{d}} \)) as

\[
SSWM_{MA_{d}} = \max_{K} ( MA_{Kd} \times (1 - PVT_{K}))
\]

\(^2\) This is also applicable pre-MCCP095, as all existing meters were set to Meter Treatment SWWater.
and the Vacancy Adjusted SPID SWWater Meter Active \((VASSWMA)\) as

\[
VASSWMA_d = SSWMAd \times (1 - VAC_d)
\]

where

\[
VAC_d = \begin{cases} 
1 & \text{if the SPID is vacant during the Settlement Day } d; \\
0 & \text{if the SPID is occupied}
\end{cases}
\]

2.3.8. Compute the Total SWWater Meter Active Days \((TSWMAD)\) as

\[
TSWMAD = \sum_d VASSWMA_d
\]

2.3.9. Then define the Yearly Proportion \(YP\) as

\[
YP = \frac{TSWMAD}{DIY}
\]

where \(DIY\) is the total number of days within the Settlement Period (i.e., 365 days or 366 days as appropriate for an RF Settlement).

2.3.10. Then the Proportional Volume Limits \(PV1\) and \(PV2\) are given by

\[
PV1 = YP \times V1 \\
PV2 = YP \times V2
\]

**Allocated Tranche**

2.3.11. For each meter \(K\) for each Settlement Day \(d\) in the T17 Meter Chain Chargeable Period establish the Water Chargeable Meter Size \(WCMS_{Kd}\). Note the Wholesale Charges Scheme refers to the “Tariff Meter Size” rather than the “Chargeable Meter Size”.

For each day define the Meter Free Allocation \((MFA)\) as

\[
MFA_{Kd} = \begin{cases} 
VFA \times MFA_{Kd} & \text{if } WCMS_{Kd} > 0 \\
0 & \text{otherwise}
\end{cases}
\]

2.3.12. The Proportional Free Allocation \(PFA\) is given by

\[
PFA = \sum_{Kd} \frac{(1 - VAC_d) \times MFA_{Kd}}{DIY}
\]
2.3.13. The Wholesale Charges Scheme defines meter related charges in respect of a limited number of meter sizes, and for each non-zero Chargeable Meter Size provides a mapping from the Chargeable Meter Size to an entry in the corresponding table of meter sizes.

2.3.14. The Central Systems holds a related table comprising Lower Meter Size \( LMS_i \), Upper Meter Size \( UMS_i \) and the Capacity Volume Threshold \( CVT_i \) for \( i = 1 \ldots n_T \), where

\[
\begin{align*}
LMS_1 &= 1 \\
LMS_i &= UMS_{i-1} + 1 \text{ for } i = 2 \ldots n_T \\
UMS_{n_T} &= \infty (\text{in practice, the largest integer representable in the CS})
\end{align*}
\]

and \( n_T \) is the number of entries in the table.

2.3.15. Thus each Water Chargeable Meter Size \( WCMS_{kd} > 0 \) falls uniquely within a single band \( LMS_i \leq WCMS_{kd} \leq UMS_i \), and each such band \( (LMS_i, UMS_i) \) maps to a unique Capacity Volume Threshold \( CVT_i = CVT_i(LMS_i, UMS_i) \)

2.3.16. The Meter Capacity Volume Threshold \( MCVT_{kd} \) is then given by the table of Capacity Volume Thresholds

\[
MCVT_{kd} = \begin{cases} 
0 & \text{if } WCMS_{kd} = 0 \\
CVT_i(LMS_i, UMS_i) \times MA_{kd} & \text{if } WCMS_{kd} > 0 \\
0 & \text{otherwise}
\end{cases}
\]

where \( (LMS_i, UMS_i) \) is the band corresponding to \( WCMS_{kd} \).

2.3.17. The Proportional Capacity Volume Threshold \( PCVT \) applicable for the SPID for the year is given by

\[
PCVT = \sum_{kd} \frac{(1 - VAC_{kd}) \times MCVT_{kd}}{DIY}
\]

2.3.18. For each T17 Meter Chain which has a Chargeable Period in the Settlement Year, for each Settlement Day \( d \) in the T17 Meter Chain Chargeable Period, establish whether the day is within a
2.3.19. For each Settlement Day \( d \) within a Meter Advance Period, the Meter Advance Volume \( (MAV) \) is given by \( MAV = R_2 - R_1 + \text{flag}_2 \times 10^n \) where

- \( D_1 \) is the first date of the Meter Advance Period;
- \( R_1 \) is the corresponding read;
- \( D_2 \) is the day after the last date of the Meter Advance Period.
- \( R_2 \) is the day after the last date of the Meter Advance Period.
- \( \text{flag}_2 = \begin{cases} 1 & \text{if the Rollover Flag has been set for the meter reading } R_2 \\ 0 & \text{if it has not been set, and} \end{cases} \)
- \( n \) is number of digits on the meter dial

2.3.20. Compute the Meter Advance Chargeable Days \( MACD \) as

\[
MACD = \sum_{d=0}^{D_2-1} (1 - VAC_d) \times (1 - TDISC_d) \times CONN_d
\]

where

- \( TDISC_d = \begin{cases} 1 & \text{if the SPID is Temporarily Disconnected during the Settlement Day } d \text{; or} \\ 0 & \text{otherwise} \end{cases} \)
- \( CONN_d = \begin{cases} 1 & \text{if } D_A^d \leq d < D_U^d, \text{and} \\ 0 & \text{otherwise} \end{cases} \)

2.3.21. For each day \( d \) within the Meter Advance Period compute the Unadjusted Actual Daily Volume \( UADV_{kd} \) as

\[
UADV_{kd} = \frac{MAV}{MACD}
\]

And the Actual Daily Volume \( ADV_{kd} \) as

\[
ADV_{kd} = \begin{cases} \frac{MAV}{MACD} & \text{if } MACD > 0 \\ 0 & \text{if } MACD = 0 \end{cases}
\]

\(^3\) Note - the terms "Meter Pre-Advance Period", "Meter Advance Period" and "Meter Post-Advance Period" are all formally defined in the Market Code, Schedule 1. However, non-definitive diagrams describing each of these periods are provided in the Appendix A.3.4.
2.3.22. For days within a Meter Post-Advance Period compute the Unadjusted Estimated Daily Volume $UEDV_{kd}$ as

$$UEDV_{kd} = UADV_{kd} for the last day d for which there is a value of UADV_{kd}$$

2.3.23. The Estimated Daily Volume $EDV_{kd}$ is calculated as

$$EDV_{kd} = UEDV_{kd} \times (1 - VAC_d) \times (1 - DISC_d)$$

2.3.24. For days within a Meter Pre-Advance Period compute the Unadjusted Estimated Daily Volume $UEDV_{kd}$ as

$$UEDV_{kd} = \begin{cases} YVE_{DIV} & \text{for the meter in the T17 Meter Chain if that meter has an LPYVE; else} \\ ILE_{DIV} & \text{the Industry Level Estimate for that meter} \end{cases}$$

2.3.25. To establish the $ILE$ for a meter $K$ for the Settlement Day $d$ first establish the Water Chargeable Meter Size $WCMS_{kd}$

2.3.26. The Central Systems have a table Industry Level Estimates, comprising a series of monotonically increasing Meter Size $MS_i$ and Industry Level Estimates $ILE_i$, for $i = 1 \ldots n_T$ where $n_T$ is the number of entries in the table. (Note This is potentially a different $n_T$ from the one in 2.3.13) Then the Tabular Meter Size ($TMS_{kd}$) in respect of the Industry Level Estimate for the T17 Meter Chain $K$ for the Settlement Day $d$ is

$$TMS_{kd} = \begin{cases} MS_j & \text{where j has the minimum value such as } MS_j \geq WCMS_{kd} \\ MS_{n_T} & \text{if } WCMS_{kd} \geq MS_{n_T}; else \end{cases}$$

And the Industry Level Estimate $ILE$ for the T17 Meter Chain $K$ for the Settlement Day $d$ is then given by the table of Industry Level Estimates as

$$ILE = ILE_i(TMS_{kd})$$

2.3.27. Not used.

2.3.28. For all $K, d$ compute the Daily Volume $DV_{kd}$
2.3.29. For each meter \( K \), and Settlement Day \( d \), the Derived Daily Volume \( DDV_{K,d} \) is calculated as

\[
DDV_{K,d} = \begin{cases} 
ADV_{K,d} & \text{for periods within a Meter Advance Period} \\
EDV_{K,d} & \text{for period within a Meter Pre – Advance or Post – Advance Period} \\
0 & \text{for any other Settlement Day } d 
\end{cases}
\]

Note The above equation describes the subtraction of sub-meter volumes from a main meter volume to establish the Derived Daily Volume. It has not yet been possible to verify that interaction of (i) the subtraction of the meter volumes, and (ii) the shifting of volumes described above in respect of vacancy works precisely in the order specified by the equation. The intention is to document the Central Systems behaviour rather than to propose any changes to the Central Systems behaviour.

2.3.30. The Actual Yearly Volume (AYV) for the Water SPID is then

\[
AYV = \sum_{K,d} DDV_{K,d} \times (1 - PV\bar{T}_{d})
\]

2.3.31. For each Settlement Day \( d \) in the SPID Settlement Chargeable Period define LUVA Chargeable \( (LC_{d}) \) as

\[
LC_{d} = \begin{cases} 
1 & \text{if the SPID has the LUVA flag set, and } SWMC_{d} > 0 \\
0 & \text{if the SPID does not have the LUVA flag set, or } SWMC_{d} = 0 
\end{cases}
\]

2.3.32. Compute the Total LUVA Days (TLD) as

\[
TLD = \sum_{d_{t} \leq d < d_{u}} LC_{d} \times (1 - VAC_{d})
\]
2.3.33. The LUVA Proportion \( LUVAP \) is defined as 

\[
LUVAP = \frac{TLD}{DIY}
\]

2.3.34. The Proportional LUVA Volume limits \( PLVL \), \( PLV_1 \), \( PLV_2 \) are given by

\[
\begin{align*}
PLVL &= LUVAP \times VLL \\
PLV_1 &= LUVAP \times V_1 \\
PLV_2 &= LUVAP \times V_2
\end{align*}
\]

where \( VLL \) is the lower limit for the LUVA Adjustment as defined in the Wholesale Charges Scheme.

2.3.35. Define the LUVA Annual Volume \( LAV \) (which is similar to the \( AYV \) sum above as defined in paragraph 2.3.30) except that the condition that the SPID has the LUVA flag set for each Settlement Day must be applied.

\[
LAV = \sum_{K_d} DDV_{K_d} \times LC_d \times (1 - PVT_d)
\]

**Phasing Premium**

2.3.36. For each Settlement Day \( d \) in the SPID Settlement Chargeable Period, for each T17 Meter Chain \( K \) define Premium Chargeable \( PC_{K_d} \) as

\[
PC_{K_d} = \begin{cases} 
0 & \text{if } WCMS_{K_d} = 0 \\
1 & \text{if the SPID is not in a LUVA period, and } 1 \leq LMS_i \leq 20 \text{ and } MA_{K_d} > 0 \\
0 & \text{otherwise}
\end{cases}
\]

where \( LMS_i \) is the lower limit of the band \((LMS_i, UMS_i)\) corresponding to \( WCMS_{K_d} \) identified in Section 2.3.13.

2.3.37. Define the Uncapped Premium Annual Volume \( UPAV \) as

\[
UPAV = \sum_{K_d} DDV_{K_d} \times PC_{K_d} \times (1 - PVT_d)
\]

2.3.38. Define the Total Premium Days \( TPD \) as

\[
TPD = \sum_{Kd} (1 - VAC_d) \times PC_{Kd}
\]
2.3.39. Define the Proportional Premium Volume Limit $PPVL$ as

$$PPVL = \sum_{kd} (1 - VAC_d) \times MCVT_{kd} \times PC_{kd} / DIY$$

**Charges – the Standard Volume Charges**

2.3.40. The Wholesale Charges Scheme defines charges for a volume $V$ which is allocated across different charge bands (based upon a whole year’s usage) in accordance with paragraph 2.3.42.44.

2.3.41. The Proportional Free Allocation is $PFA$ and the Proportional Volume Limits are $PV_1$ and $PV_2$ have already been defined. The Actual Yearly Volume is $AYV$. Then allocate the $AYV$ into the different charge bands for the Allocated Tranche $VFA$, and Charge Bands $1$, $2$ and $3$ ($VA_1, VA_2$ and $VA_3$) as

$$VFA = \max(\min(AYV, PFA), 0)$$
$$VA_1 = \max(\min(AYV, PV_1) - PFA, 0)$$
$$VA_2 = \max(\min(AYV, PV_2) - PV_1, 0)$$
$$VA_3 = \max(AYV - PV_2, 0)$$

2.3.42. The Standard Volume Charge ($SVCHARGE$) is defined as

$$SVCHARGE = B_1 \times VA_1 + B_2 \times VA_2 + B_3 \times VA_3$$

**Charges – Capacity Volume Charges**

2.3.43. If the Capacity Volume Price as defined in the Scheme of Charges is $CVP$, then the Capacity Volume Charge $CVCHARGE$ is

$$CVCHARGE = CVP \times \max(0, \min(AYV, PCVT) - PFA)$$

**Charges – LUVA Adjustment**

2.3.44. Allocate the LUVA Annual Volume ($LUVA$) into volumes $LVA_1, LVA_2$ and $LVA_3$ over the various charge bands to establish the LUVA adjustment.
\[ LVA_1 = \max(\min(LAV, PLV_1) - PLV_{LL}, 0) \]
\[ LVA_2 = \max(\min(LAV, PLV_2) - PLV_1, 0) \]
\[ LVA_3 = \max(LAV - PLV_2, 0) \]

2.3.45. If the LUVA adjustments are \( LPP_1, LPP_2 \) and \( LPP_3 \), then the LUVA Adjustment Charge (\( LACHARGE \)) is

\[ LACHARGE = LPP_1 \times B_1 \times LVA_1 + LPP_2 \times B_2 \times LVA_2 + LPP_3 \times B_3 \times LVA_3 \]

2.3.46. The Proportional Phasing Premium Free Allocation (\( PP\overline{PFA} \)) is

\[ PP\overline{PFA} = \frac{TPD \times VFA}{DIY} \]

and the Premium Volume (PVA) on which the charge is payable is therefore

\[ PVA = \max(\min(UPAV, PPVL, AYV) - PP\overline{PFA}, 0) \]

2.3.47. If the Premium Phasing for the Year is \( PP_Y \), then the Phasing Premium Charge (\( PPCHARGE \)) is given by

\[ PPCHARGE = PP_Y \times (B_1 + CVP) \times PVA \]

2.3.48. The Annual Weighted Average (AWA) for the SPID is then given by:

\[ AWA = \begin{cases} 
0 & \text{if } AYV \leq 0 \\
SVCHARGE + CVCHARGE + LACHARGE + PPCHARGE & \text{if } AYV > 0
\end{cases} \]

---

4 Expressed as percentages in Central Systems, but used here as fractions
5 Expressed as a percentage in Central Systems, but used here as a fraction
2.4. Measured Supply Points – Charges

2.4.1. Define the Discounts for the SPID for each day \(d\) in the SPID Chargeable Period, i.e. Water Schedule 3 (\(WS_{3,d}\)), Schedule 29e (\(S_{29e,d}\)) and whether the SPID is eligible for Scottish Government Exemption Scheme (\( SGES_d \) and \( PCE_d \)).

### Meter Based Charges

2.4.2. Carry out the following calculations for each SPID which has a SPID Settlement Chargeable Period for the RF Settlement Period.

2.4.3. Carry out the following calculations for each T17 Meter Chain which has a Chargeable Period for that RF Settlement Period:

2.4.4. In accordance with 2.3.12, the Wholesale Charges Scheme defines meter related charges in respect of a limited number of meter sizes, and for each non-zero Chargeable Meter Size provides a mapping from the Chargeable Meter Size to an entry in the corresponding table of meter sizes.

2.4.5. The Central Systems holds a related table comprising Lower Meter Size (\(LMS_i\)), Upper Meter Size (\(UMS_i\)) and the Water Meter Annual Non-Volumetric Charges (\(WMANVC_i\)) for \(i = 1 \ldots n_T\), where

\[
\begin{align*}
LMS_1 &= 1 \\
LMS_i &= UMS_{i-1} + 1 \text{ for } i = 2 \ldots n_T \\
UMS_{n_T} &= \infty \text{ (in practice, the largest integer representable in the CS)}
\end{align*}
\]

and \(n_T\) is the number of entries in the table.

2.4.6. Thus each Water Chargeable Meter Size \(WCMS_{kd} > 0\) falls uniquely within a single band \(LMS_i \leq WCMS_{kd} \leq UMS_i\) and each such band \((LMS_i, UMS_i)\) maps to a unique Water Meter Annual Non-Volumetric Charges \(WMANVC_i = WMANVC_i(LMS_i, UMS_i)\)

2.4.7. The Unadjusted Water Meter Based Charge (\(UWMBC_{kd}\)) is then given by the table of Water Meter Annual Non-Volumetric Charges as
\[ \text{UWMB}_{K_d} = \begin{cases} 0 & \text{if } WCMS_{K_d} = 0 \\ \text{WMANVC}_i (LMS_i, UMS_i) \times MA_{K_d} \times (1 - \text{VAC}_d) & \text{if } WCMS_{K_d} > 0 \\ 0 & \text{otherwise} \end{cases} \]

where \( \{LMS_i, UMS_i\} \) is the band corresponding to \( WCMS_{K_d} \)

2.4.8. The Unadjusted Water Meter Based Charge \( UDWMBC_{K_d} \) is then given

\[ UDWMBC_{K_d} = \text{UWMB}_{K_d} \times (1 - WS_d - S29_d) \]

2.4.9. \textbf{Not Used} The Transition Adjusted Water Meter Based Charge \( TAWMB_{K_d} \) is

\[ TAWMB_{K_d} = \begin{cases} UDWMBC_{K_d} & \text{if not on Transition} \\ MT_Y \times UDWMBC_{K_d} & \text{if on Transition} \end{cases} \]

where \( MT_Y \) is the Metering Transition\(^6\) applicable for the Financial Year \( Y \). For the Financial Year \( Y = 2008-09 \), \( MT_Y = 0\% \), and for \( Y = 2009-10 \), \( MT_Y = 33\% \). The Metering Transitions for other years are defined in the relevant Wholesale Charges Scheme.

2.4.10. The Water Meter Based Charge \( WMBC_{K_d} \) is

\[ WMBC_{K_d} = \begin{cases} UAUDWMBC_{K_d} & \text{if not } SGES_d \text{ or } SER_d = 0 \\ UAUDWMBC_{K_d} \times (1 - PCEd) - SGESWR_Y / (DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 \end{cases} \]

where \( SGESWR_Y \) is the SGES Water refund applicable for the Financial Year \( Y \), \( PCEd \) is the percentage of the exemption applicable on that day, and where \( SER_d \) is the number of Service Element Reports for the SPID.

2.4.11. For each Settlement Day \( d \) for a Water SPID there are:

- two Service Element Reports for each T17 Meter Chain which is chargeable on that day;
- two Service Element Reports for each Unmeasurable Service Element which is chargeable on that day; and
- a Service Element Report for each Miscellaneous Charge which is chargeable on that day.

The Miscellaneous charges are:

\(^6\)\text{Expressed as a percentage in Central Systems, but used here as a fraction}\n
\(^7\)\text{There are rare circumstances where the allocation of the SGES refund in the Central Systems is not uniformly distributed across the various Service Element Reports as in this equation. This is as a result of the practical implementation of the algorithms described in this CSD, which are based upon calculating charges for chunks of time where the charging parameters are otherwise constant. However, even in such cases, the total of the SGES distributed across the various Service Elements will still be correct.}
2.4.12. The CMA will allocate the Meter Based Charge to Licensed Provider for which the SPID was registered in respect of each Settlement Day. It will then aggregate Volumes and Charges, and report them in accordance with CSD0201.

### Volumetric Charges

2.4.13. The Unadjusted Daily Metered Cost ($UDMC_{K,d}$) is

$$UDMC_{K,d} = AWA \times DDV_{K,d} \times (1 - WS_{3,d} - S29e_d) \times (1 - PVT_K)$$

2.4.14. **Not Used. Apply the Transition Adjustment to obtain the Transition Adjusted Daily Metered Cost (TADMC).**

$$TADMC_{K,d} = \begin{cases} 
    UDMC_{K,d} & \text{if not on Transition} \\
    \frac{MTC \times UDMC_{K,d}}{MTC} & \text{if on Transition}
\end{cases}$$

2.4.15. The Daily Metered Cost ($DMC_{K,d}$) is

$$DMC_{K,d} = \begin{cases} 
    TADMC_{K,d} & \text{if not SGES or SER}_d = 0 \\
    \sqrt{TADMC_{K,d} \times (1 - PCEd) - SGESWR_Y/(DIY \times SER_d)} & \text{if SGES}_d \text{ and } \text{SER}_d > 0
\end{cases}$$

where $SGESWR_Y$ is the SGES Water refund applicable for the Financial Year $Y$, PCEd is the percentage of the exemption applicable on that day, and where $SER_d$ is the number of Service Element Reports for the SPID.

2.4.16. The CMA will allocate the Meter Based Charge to the Licensed Provider for which the SPID was registered in respect of each Settlement Day. It will then aggregate Volumes and Charges, and report them in accordance with CSD0201.

### 2.5. Unmeasured Supply Points – Overview

2.5.1. The following Water SPIDs are subject to Unmeasured Charging:

- RV Based Charging
  - Water SPIDs with meters which are subject to transition charging

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*Compare the footnote at section 2.4.10*
2.6. RV Based Charges

**RV Non-Volumetric Charges**

2.6.1. Define the discounts for the SPID for each day \(d\) in the SPID Chargeable Period, i.e. Water Schedule 3 (\(WS3_d\)), Schedule 29e (\(S29e_d\)) and whether the SPID is eligible for the Scottish Government Exemption Scheme (\(SGES_d\)).

2.6.2. The SPID Settlement Chargeable Period has already been defined as the period time given by the days \(D_l, D_u\).

2.6.3. The relevant SPID RV Unmeasurable Period is defined as the period of time for which either:

- The Water SPID has an active meter which is subject to transition charging;
- The Water SPID does not have a meter, but is subject to transition charging; or
- The Water SPID has been declared unmeasurable

and is likewise given by a pair of days \(D_l^{RV}, D_u^{RV}\).

2.6.4. Then the SPID RV Unmeasurable Chargeable Period \(D_l^{C} \leq d < D_u^{C}\) which is the (possibly empty) sub-period for which the RV Unmeasurable Period intersects the SPID Settlement Chargeable Period, and is given by \(D_l^{C}, D_u^{C}\) where

\[
\begin{align*}
D_l^{C} &= \max (D_l^{RV}, D_l^3) \\
D_u^{C} &= \min (D_u^{RV}, D_u^3)
\end{align*}
\]

2.6.5. If \(D_l^{C} \geq D_u^{C}\) then the SPID does not have an RV Unmeasurable Period for that RF Settlement Period.

2.6.6. For each Settlement Day \(d\) in the SPID RV Unmeasurable Chargeable Period define the Rateable Value \(RV_d\)
2.6.7. In accordance with the Wholesale Scheme of Charges define the Water Chargeable Meter Size \((WCMS_d)\) which corresponds to \(RV_d\), and each \(WCMS_i\) corresponds to a unique Water Meter Annual Non-Volumetric Charge \((WMANVC_i = WMANVC(WCMS_i))\).

2.6.8. The Unadjusted Water Meter Based Charge \((UWMBC_d)\) is given by the table of Water Meter Annual Non-Volumetric Charges as
\[
UWMBC_d = \frac{WMANVC(WCMS_i)}{DIV}
\]

2.6.9. The Unadjusted Discounted Water Meter Based Charge \((UDWBC_d\)) is then given by
\[
UDWBC_d = UWMBC_d \times (1 - VAC_d)
\]

2.6.10. Not Used. For each Settlement Day \(d\) the Transition Adjusted Water Meter Based Charge \((TAWBC_d)\) is
\[
TAWBC_d = \begin{cases} 
UDWBC_d & \text{if the SPID has been declared Unmeasurable} \\
UDWBC_d & \text{if the SPID is on Transition and does not have an Active Meter} \\
(1 - MTY) \times UDWBC_d & \text{if the SPID is on Transition and has an Active Meter}
\end{cases}
\]

where \(MTY\) is the Metering Transition \(^9\) applicable for the Financial Year \(Y\). For the Financial Year \(Y = 2008-09\), \(MTY = 0\%), and for \(Y = 2009-10\), \(MTY = 33\%). The Metering Transitions for other years are as defined in the relevant Wholesale Charges Scheme.

2.6.11. The Water Meter Based Charge \(^{10}\) \((WMBC_d)\) is
\[
WMBC_d = \begin{cases} 
(1 - PCEd) - \frac{SGESWR_Y}{DIV \times SER_d} & \text{if} \ SGES_d \text{and} \ SER_d > 0 \\
(1 - PCEd) & \text{if} \ not \ SGES_d \text{or} \ SER_d = 0
\end{cases}
\]

Where, as above, \(SGESWR_Y\) is the SGES Water refund applicable for the Financial Year \(Y\), \(PCEd\) is the percentage of the exemption applicable on that day, and \(SER_d\) is the number of Service Element Reports for the SPID.

2.6.12. The CMA will allocate the Meter Based Charge to Licensed Provider for which the SPID was registered in respect of each Settlement Day. It will then aggregate Volumes and Charges, and report them in accordance with CSD0201.

\(^{9}\) Expressed as a percentage in Central Systems, but used here as a fraction
\(^{10}\) Compare the footnote at section 2.4.102.4.10
RV Volumetric Charges

2.6.13. For each Settlement Day \( d \) in the SPID RV Unmeasurable Chargeable Period define the Rateable Value \( RV_d \).

2.6.14. The equivalent Actual Yearly Volume \( AYV_d \) is given by

\[
AYV_d = \begin{cases} 
(0.0373 \times RV_d - 24) \times (1 - VAC_d) & \text{if } RV_d \geq 650 \\
0 & \text{otherwise}
\end{cases}
\]

and the equivalent Derived Daily Volume \( DDV_d \) is given by

\[
DDV_d = \frac{AYV_d}{DIY}
\]

2.6.15. The same calculation used to derive AWA in section 2.3 can be used to derive an Equivalent AWA \( AW_A_d \) for each day of the RV Unmeasurable Chargeable Period, based upon an equivalent whole year calculation and using the equivalent Actual Yearly Volume \( AYV_d \) and the meter size \( WCMS_d \).

2.6.16. The Unadjusted Daily Metered Cost \( UDMC_d \) is given by

\[
UDMC_d = AW_A_d \times DDV_d \times (1 - WS_d - S_{29_e_d})
\]

2.6.17. Not Used. Apply the Transition Adjustment to obtain the Transition Adjusted Daily Metered Cost \( TADMC_d \).

\[
TADMC_d = \begin{cases} 
UDMC_d & \text{if the SPID has been declared Unmeasurable} \\
UDMC_d \times (1 - MT_d) \times DIY & \text{if the SPID is on Transition and does not have an Active Meter} \\
TADMC_d & \text{if the SPID is on Transition and has an Active Meter}
\end{cases}
\]

2.6.18. The Daily Metered Cost \( DMC_d \) is

\[
DMC_d = \begin{cases} 
TADMC_d & \text{if not } SGES_d \text{ or } SER_d = 0 \\
TADMC_d \times (1 - PCEd) - SGESWR_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0
\end{cases}
\]

Where, as above, \( SGESWR_Y \) is the SGES Water refund applicable for the Financial Year \( Y \), \( PCEd \) is the percentage of the exemption applicable on that day and \( SER_d \) is the number of Service Element Reports for the SPID.

\[11\] Compare the footnote at section 2.4.10.4.40
2.6.19. The CMA will allocate the Meter Based Charge to the Licensed Provider for which the SPID was registered in respect of each Settlement Day. It will then aggregate Volumes and Charges, and report them in accordance with CSD0201.

2.7. Re-assessed Charges

2.7.1. Re-assessed Charges were introduced on 1st April 2009. However, it should be noted that the methods within the Central Systems for calculating Re-assessed Charges do not carry out any verification that the data only applies for periods of time on or after the date of introduction of Re-assessed Charges.

2.7.2. Re-assessed Charges are implemented by the use of Pseudo Meters. CSD0104 describes the installation, removal and maintenance of Pseudo Meters.

2.7.3. Subject to the one minor exception noted in the following paragraph, the CMA computes charges for Pseudo Meters as for all other T17 Meter Chains in accordance with sections 2.32.3 and 2.42.4. For example, where a SPID has a Pseudo Meter installed for part of a year and a physical meter for part of the year, the CMA will compute a single AWA which is applicable to both the Pseudo Meter volume and the physical meter volume.

2.7.4. When a Pseudo Meter is installed, Scottish Water is obliged under CSD0104 to provide an opening meter read of 0, and a YVE. While the Pseudo Meter is installed, the CMA will reject any other meter reads which are submitted. The CMA will therefore compute the Derived Daily Volume using the value of YVE submitted by Scottish Water. When a Pseudo Meter is removed, Scottish Water must provide a final closing meter read of 0. However, the CMA does not store the closing meter within the meter reads table. Thus, following the removal of the Pseudo Meter, and the CMA will continue to compute the Derived Daily Volumes during a T17 Meter Chain Chargeable Period using the value of YVE submitted, rather than using the opening and closing meter reads of 0 (which would otherwise provide a zero volume).

2.8. Miscellaneous Charges

2.8.1. This section applies to the following Miscellaneous Charges:
• Field Troughs and Drinking Bowls; and
• Outside Taps.

2.8.2. Define the Discounts for the SPID for each day \(d\) in the SPID Chargeable Period i.e. Water Schedule 3 (\(WS3_d\)), Schedule 29e (\(S29e_d\)) and whether the SPID is eligible for Scottish Government Exemption Scheme (\(SGES_d\) and \(PCE_d\)).

2.8.3. The SPID Settlement Chargeable Period has already been defined as the period time given by the days \(D^S_l\), \(D^S_u\). As above define the relevant Chargeable Period for each of the Miscellaneous Charges.

2.8.4. For each miscellaneous charge define and for each Settlement Day \(d\) in the relevant Chargeable period define

• the number of Troughs and Drinking Bowls (\(TDB_d\)); and
• the number of Outside Taps (\(OT_d\)).

2.8.5. Also for each Settlement Day \(d\) define

\[
FARM_d = \begin{cases} 
1 & \text{if the SPID is classified as being farm} \\
0 & \text{otherwise}
\end{cases}
\]

and

\[
CROFT_d = \begin{cases} 
1 & \text{if the SPID is classified as being croft} \\
0 & \text{otherwise}
\end{cases}
\]

2.8.6. Let the following prices be defined as per the Wholesale Charges Scheme:

- Annual Price Farm Troughs and Drinking Bowls: \(FTDBP\)
- Annual Price Croft Troughs and Drinking Bowls: \(CTDBP\)
- Annual Price Farm Outside Tap: \(FOTP\)
- Annual Price Croft Outside Tap: \(COTP\)

2.8.7. Calculate the Unadjusted Troughs and Drinking Bowls Charge \(UTDBC_d\) and the Unadjusted Outside Taps Charge \(UOTC_d\) as

\[
UTDBC_d = (FTDBP \times FARM_d + CTDBP \times CROFT_d) \times TDB \times (1 - VAC_d) / DIY
\]

\[
UOTC_d = (FOTP \times FARM_d + COTP \times CROFT_d) \times OT \times (1 - VAC_d) / DIY
\]
2.8.8. The Unadjusted Discounted Troughs and Drinking Bowls Charge $U_D T_D B_C \_d$ and the Unadjusted Discounted Outside Taps Charge $U_D O_T C \_d$ are given by

\[
U_D T_D B_C \_d = U_T D_B_C \_d \times (1 - W_S 3, a - S_2 9_e \_a)
\]
\[
U_D O_T C \_d = U_O T_C \_d \times (1 - W_S 3, a - S_2 9_e \_a)
\]

2.8.9. The Troughs and Drinking Bowls Charge $T_D B_C \_d$ and the Outside Taps Charge $O_T C \_d$ are given by

\[
O_T C \_d = \begin{cases}
U_D O_T C \_d & \text{if not } S_G E_S_d \text{ or } S_E_R_d = 0 \\
U_D O_T C \_d \times (1 - P_C E_d) - S_G E_S W_R \_Y(D_I Y \times S_E_R_d) & \text{if } S_G E_S_d \text{ and } S_E_R_d > 0
\end{cases}
\]
\[
T_D B_C \_d = \begin{cases}
U_D T_D B_C \_d & \text{if not } S_G E_S_d \text{ or } S_E_R_d = 0 \\
U_D T_D B_C \_d \times (1 - P_C E_d) - S_G E_S W_R \_Y(D_I Y \times S_E_R_d) & \text{if } S_G E_S_d \text{ and } S_E_R_d > 0
\end{cases}
\]

Where, as above, $S_G E_S W_R \_Y$ is the SGES Water refund applicable for the Financial Year $Y$, $P_C E_d$ is the percentage of the exemption applicable on that day, and $S_E_R_d$ is the number of Service Element Reports for the SPID.

2.8.10. The CMA will allocate the Miscellaneous Charges to the Licensed Provider for which the SPID was registered in respect of each Settlement Day. It will then aggregate the volumes and charges, and report them in accordance with CSD0201.

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12 Compare the footnote at section 2.4.10.
3. Primary Sewerage Charges

3.1. General

3.1.1. The following calculation is carried out for each Sewerage SPID which is or has been Tradable when the Settlement Run is carried out. This includes SPIDs which are currently Tradable or Temporarily Disconnected, as well as Disconnected or Deregistered SPIDs which have been Tradable. The calculation excludes SPIDs which are Disconnected or Deregistered but were New, Partial or Rejected when they were so Disconnected or Deregistered.

3.1.2. A Settlement Day runs from midnight to midnight.

3.1.3. Define the RF Settlement Period by a pair of days \(D_{RF}^l, D_{RF}^u\) such that the RF Settlement Period comprises Settlement Days \(d\) such that \(D_{RF}^l \leq d < D_{RF}^u\). Note that the lowest bound day \(D_{RF}^l\) is included, but the upper bound day \(D_{RF}^u\) is not. In this description the full Settlement Year 2008-09 would be described by

\[
D_{RF}^l = 1st April 2008 \\
D_{RF}^u = 1st April 2009
\]

3.1.4. If the SPID has a Permanent Disconnection Date, define the SPID Disconnection Date to be the date of Permanent Disconnection. If the SPID has a Deregistration Date, define the SPID Disconnection Date to be the date of Deregistration.

3.1.5. Define the SPID Chargeable Period as the period for which the SPID is in (potentially) charge (from the SPID Connection Date to the day before the SPID Disconnection Date if it exists) or the last day of the tariff year (if the SPID Disconnection Date does not exist) inclusive. Here, “potentially” refers to the condition above that the SPID is or has been Tradable. This SPID Chargeable Period can equivalently be defined by a pair of days \(D_1^a, D_2^a\)

where

\[
D_1^a = \text{SPID Connection Date} \\
D_2^a = \begin{cases} 
\text{the SPID Disconnection Date, if it exists} \\
\text{otherwise, the day immediately after the end of the tariff year}
\end{cases}
\]
and the SPID is chargeable for all days $d$ where $d \geq D_l^A$ and $d < D_u^A$. The lower bound day is included, but the upper bound day is not.

3.1.6. If $D_l^A \geq D_u^A$ then there are no chargeable days.

3.1.7. For the avoidance of doubt the SPID Chargeable Period includes periods of vacancies, temporary disconnections, SGES etc. Appropriate adjustments for charges for these periods are made further on in the algorithm.

3.1.8. For each Sewerage SPID, establish the SPID Settlement Chargeable Period $D_l^S \leq d < D_u^S$ which is the (possibly empty) sub-period for which the SPID Chargeable Period intersects the RF Settlement Period, and is given by $D_l^S$, $D_u^S$ where

$$D_l^S = \max (D_l^A, D_l^{RF})$$
$$D_u^S = \min (D_u^A, D_u^{RF})$$

3.1.9. If $D_l^S \geq D_u^S$ then the Sewerage SPID does not have a SPID Settlement Chargeable Period for that RF Settlement Period. If there is no such SPID Settlement Chargeable Period then set $A_W A = 0$ and skip the test of the AWA Calculation of this Sewerage SPID.

3.2. Measured Supply Points - Overview

3.2.1. First compute the AWA for each Sewerage SPID which is either a Measured Supply Point or a Re-assessed Supply Point, and then compute, allocate and aggregate the Meter Based Charges and the Volumetric Charges. Re-assessed charges are implemented as if they were metered charges, see section 3.7.2 for details.

3.3. AWA Algorithm for Sewerage SPID

3.3.1. Establish if there is a Related Water Supply Point (RWSP). If there is no such Related Water Supply Point, then set $A_W A = 0$ and skip the rest of the AWA Calculation for this Sewerage SPID.

3.3.2. For each T17 Meter Chain $K$ associated with the RWSP (a "Related T17 Meter Chain") establish the T17 Meter Chain Active Period $D_l^K \leq d < D_u^K$. If the Related T17 Meter Chain has not been removed from the RWSP then set $D_u^K = D_u^{RF}$.
3.3.3. For each Related T17 Meter Chain \( K \), define the T17 Meter Chain Chargeable Period \( D_{Kl}^C \leq d < D_{Ku}^C \), which is the (possibly empty) sub-period for which the Active Period intersects the SPID Settlement Chargeable Period for the Sewerage SPID, and is given by \( D_{Kl}^C, D_{Ku}^C \), where

\[
D_{Kl}^C = \max (D_{kl}^A, D_{l}^S) \\
D_{Ku}^C = \min (D_{ku}^A, D_{u}^S)
\]

3.3.4. If \( D_{Kl}^C \geq D_{Ku}^C \), then the Related T17 Meter Chain does not have a Chargeable period for that RF Settlement Period.

3.3.5. Establish if there are any Trade Effluent consents (DPIDs) associated with the Sewerage SPID. For each such DPID \( T \) associated with the Sewerage SPID establish the DPID Active Period \( D_{Tl}^A \leq d < D_{Tu}^A \).

3.3.6. For each DPID \( T \) the DPID Chargeable Period \( D_{Tl}^C \leq d < D_{Tu}^C \) is the (possibly empty) sub-period for which the DPID Active Period intersects the SPID Settlement Chargeable Period for the Sewerage SPID, and is given by \( D_{Tl}^C, D_{Tu}^C \), where

\[
D_{Tl}^C = \max (D_{Tl}^A, D_{l}^S) \\
D_{Tu}^C = \min (D_{Tu}^A, D_{u}^S)
\]

3.3.7. If \( D_{Tl}^C \geq D_{Tu}^C \), then the DPID does not have a Chargeable Period for that RF Settlement Period.

3.3.8. For each Settlement Day \( d \) for each DPID \( T \) with a Chargeable Period \( D_{Tl}^C \leq d < D_{Tu}^C \) establish the Non Domestic Allowance \( \text{NDA}_{Td} \). For all other days \( d \) for each DPID \( T \) set \( \text{NDA}_{Td} = 0 \).

Note there is a difference in interpretation between the usage of NDA for Settlement Runs covering periods before \(^{14}\) 1st April 2013 and those on or after 1st April 2013. For Settlement Runs covering periods before 1st April 2013 the cutover, NDA referred to a non-domestic allowance for the whole...
of the Sewerage SPID. For Settlement Runs covering periods after 1st April 2013, NDA refers to a non-domestic allowance only in respect of Water Meters (SWater or PrivateWater meters) associated with the Trade Effluent DPID.

### Sewerage Standard Volume Band Limits

3.3.9. Let the $SFA$ be the Sewerage Allocated Tranche, and $BS_1$ be the price for Sewerage Standard Volumes above the Allocated Tranche as defined in the Wholesale Charges Scheme. Thus:

<table>
<thead>
<tr>
<th>Sewerage Standard Volume Charges</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater than zero and up to $SFA$</td>
<td>0</td>
</tr>
<tr>
<td>Greater than $SFA$</td>
<td>$BS_1$</td>
</tr>
</tbody>
</table>

3.3.10. Define the Sewerage Meter Chargeable ($SMC_{Kd}$) for a Related T17 Meter Chain $K$ as

$$SMC_{Kd} = \begin{cases} 1 & \text{if } D_{Ki}^C \leq d < D_{Ku}^C \text{ and } RTS_{Kd} > 0 \\ 0 & \text{otherwise} \end{cases}$$

where $RTS_{Kd}$ is the Return to Sewer allowance for the Related T17 Meter Chain $K$ for the Settlement Day $d$.

3.3.11. For each Settlement Day $d$ in the SPID Settlement Chargeable Period define Total Sewerage Meter Chargeable ($TSMC_{Kd}$) as

$$TSMC_{Kd} = \sum K SMC_{Kd}$$

### Sewerage Free Allocation

3.3.12. For each meter $K$ for each Settlement Day $d$ in the T17 Meter Chain Chargeable Period establish the Sewerage Chargeable Meter Size $SC_{Kd}$

3.3.13. For each day define the Meter Sewerage Free Allocation ($MSFA_{Kd}$) as

15 Expressed as a percentage in Central Systems, but used here and elsewhere as a fraction
3.3.14. The Sewerage Proportional Free Allocation $SPFA$ is given by

$$SPFA = \sum_{i=1}^{n} \frac{(1 - VAC_i) \times MSFA_{k,i}}{DIY}$$

### Volume limits for the Sewerage Capacity Volume Charges

3.3.15. The Wholesale Charges Scheme defines meter related charges in respect of a limited number of meter sizes, and for each non-zero Sewerage Chargeable Meter Size provides a mapping from the Sewerage Chargeable Meter Size to an entry in the corresponding table of meter sizes. The table entries in respect of Sewerage do not necessarily correspond to the table entries in respect of water.

3.3.16. The Central Systems holds a related table comprising Lower Meter Size $(LMS_1)$, Upper Meter Size $(UMS_i)$ and the Sewerage Capacity Volume Threshold $(SCVT_i)$ for $i = 1 \ldots n_T$, where

$$LMS_1 = 1$$

$$LMS_i = UMS_{i-1} + 1 \text{ for } i = 2 \ldots n_T$$

$$UMS_{n_T} = \infty (\text{in practice, the largest integer representable in the CS})$$

3.3.17. Thus each Sewerage Chargeable Meter Size $SCMS_{k,i} > 0$ falls uniquely within a single band $LMS_1 \leq SCMS_{k,i} \leq UMS_1$, and each such band $(LMS_i, UMS_i)$ maps to a unique Sewerage Capacity Volume Threshold $SCVT_i = SCVT_i(LMS_i, UMS_i)$

3.3.18. The Meter Sewerage Capacity Volume Threshold $(MSCVT_{k,i})$ is then given by the table of Sewerage Capacity Volume Thresholds as

$$MSCVT_{k,i} = \begin{cases} 
0 & \text{if } SCMS_{k,i} = 0 \\
SCVT_i(LMS_i, UMS_i) \times SMG_{k,i} & \text{if } SCMS_{k,i} > 0 \\
0 & \text{otherwise}
\end{cases}$$

where $(LMS_i, UMS_i)$ is the band corresponding to $SCMS_{k,i}$

3.3.19. The Sewerage Proportional Capacity Volume Threshold $(SPCVT_i)$ applicable for the Sewerage SPID for the year is given by
3.3.20. Then derive $DDV_{Kd}$ as per the AWA Algorithm for Water in the paragraphs following 2.3.18

3.3.21. For Settlement Runs relating to periods before 1st April 2013, the Sewerage Derived Daily Volume $SDDV_{Kd}$ for each Related T17 Meter Chain $K$ for each day $d$ in a Related T17 Meter Chain Chargeable Period is

$$SDDV_{Kd} = \begin{cases} \sum_d (1 - VAC_d) \times MSCVT_{Kd} \times NDAT_d \times RTS_{Kd} & \text{for all days } d \text{ which } \sum_d NDAT_d > 0, \text{ and } \sum_d TSMC_d > 0 \\ DDV_{Kd} \times RTS_{Kd} & \text{otherwise} \end{cases}$$

3.3.22. For Settlement Runs relating to periods after 1st April 2013 each DPID $T$ may be associated with a meter $K$. This association can be described by a variable $MDASSOC_{KTd}$ which will take the value 1 when there is an association, and take the value 0 when there is no association. Each meter-DPID association has a related meter-DPID Volume $(MDVOL_{KTd})$ which represents the fraction $16$ of a specific meter’s volume which is associated with a DPID. For the avoidance of doubt, if there is no association, i.e. $MDASSOC_{KTd} = 0$, then $MDVOL_{KTd}$ will also be taken to be 0.

3.3.23. Define the term NDA Split $(NDA_SPLIT_{Td})$ as

$$NDA_SPLIT_{Td} = \sum_K MDASSOC_{KTd} \times MSC_{Kd}$$

Then,

---

16 Expressed as a percentage in Central Systems but used here as a fraction
\[ SDDV_{Kd} = \begin{cases} (1 - VAC_d) \times (1 - TDISC_d) \times SMC_{Kd} \times \frac{\sum_{T where NDASSOCIATE_d=1 and NDASPLIT_d>0 and T_is_active} NDA_{Kd} \times NDASPLIT_d}{DOL} & \text{when } \sum_{T where NDASSOCIATE_d=1 and NDASPLIT_d>0 and T_is_active} NDA_{Kd} \times NDASPLIT_d > 0 \\ DDV_{Kd} \times RTS_{Kd} & \text{otherwise} \end{cases} \]

3.3.24. Then for all Settlement Runs, Actual Sewerage Yearly Volume (ASYV) for the Sewerage SPID is then

\[ ASYV = \sum_{Kd} SDDV_{Kd} \]

**Charges – Standard Sewerage Volume Charges**

3.3.25. The Wholesale Charges Scheme defines charges for a volume which is allocated across different charge bands (based upon a whole year’s usage) in accordance with paragraph 3.3.9.

3.3.26. The Sewerage Proportional Free Allocation is SPFA and the Actual Sewerage Yearly Volume is ASYV and have both previously been defined. Then calculate the Sewerage Standard Volume Charge (SSVCHARGE) as

\[ SSVCHARGE = BS_1 \times \max(ASYV - SPFA, 0) \]

**Charges – Sewerage Capacity Volume Charges**

3.3.27. If the Sewerage Capacity Volume Price as defined in the Scheme of Charges is SCVP, then the Sewerage Capacity Volume Charge SCVCHARGE is

\[ SCVCHARGE = SCVP \times \max(\min(ASYV - SPCVT) - SPFA, 0) \]

**AWA**

3.3.28. The Annual Weighted Average (AWA) for the Sewerage SPID is then given by:
\[
AWA = \begin{cases} 
0 & \text{if } ASV \leq 0 \\
\frac{SSV\text{CHARGE} + SCV\text{CHARGE}}{ASV} & \text{if } ASV > 0
\end{cases}
\]

3.4. Measured Sewerage Supply - Charges

3.4.1. The discounts for the SPID for each day \(d\) in the SPID Chargeable Period are Sewerage Schedule 3 \((SS3_d)\), Schedule 29e \((S29e_d)\) and whether the SPID is eligible for Scottish Government Exemption Scheme \((SGES_d\) and \(PCE_d\)).

3.4.2. Carry out the following calculations for each SPID which has a SPID Settlement Chargeable Period for the RF Settlement Period.

3.4.3. Carry out the following calculations for each Related T17 Meter Chain which has a Chargeable Period for that RF Settlement Period:

<table>
<thead>
<tr>
<th>Meter Based Charges</th>
</tr>
</thead>
</table>

3.4.4. As per 3.3.15 the Wholesale Charges Scheme defines meter related charges in respect of a limited number of meter sizes, and for each non-zero Chargeable Meter Size provides a mapping from the Chargeable Meter Size to an entry in the corresponding table of meter sizes.

3.4.5. The Central Systems holds a table comprising Lower Meter Size \((LMS_i)\), Upper Meter Size \((UMS_i)\) and the Sewerage Meter Annual Non-Volumetric Charges \((SMANVC_i)\) for \(i = 1 \ldots n_T\), where

\[
\begin{align*}
LMS_1 &= 1 \\
LMS_i &= UMS_{i-1} + 1 \text{ for } i = 2 \ldots n_T \\
UMS_{n_T} &= \infty \text{ (in practice, the largest integer representable in the CS)}
\end{align*}
\]

and \(n_T\) is the number of entries in the table.

3.4.6. Thus each Sewerage Chargeable Meter Size \(SCMS_{k,d} > 0\) falls uniquely within a single band \(LMS_i \leq SCMS_{k,d} \leq UMS_i\), and each such band \((LMS_i, UMS_i)\) maps to a unique Sewerage Meter Annual Non-Volumetric Charged \(SMANVC_i = SMANVC_i (LMS_i, UMS_i)\).

3.4.7. Then Unadjusted Sewerage Meter Based Charge \((UMBC_{k,d})\) is then given by the table of Sewerage Meter Annual Non-Volumetric Charges as
\[ USMC_{kd} = \begin{cases} 0 & \text{if } SCMS_{kd} = 0 \\ SMANV_i(LMS_i, UMS_i) \times SMG_{kd} \times (1 - VAC_d) & \text{if } SCMS_{kd} > 0 \\ 0 & \text{otherwise} \end{cases} \]

where \( \{LMS_i, UMS_i\} \) is the band corresponding to \( SCMS_{kd} \)

3.4.8. Then the Unadjusted Discounted Sewerage Meter Based Charge \( UDSMBC_{kd} \) is then given

\[ UDSMBC_{kd} = USMC_{kd} \times (1 - SS3_d - S29_e_d) \]

3.4.9. Not Used. The Transition Adjusted Sewerage Meter Based Charge \( TASMBC \) is

\[ TASMBC = \begin{cases} UDSMBC_{kd} & \text{if not Transition} \\ MT_Y \times UDSMBC_{kd} & \text{if Transition} \end{cases} \]

where \( MT_Y \) is the Metering Transition applicable for the Financial Year \( Y \).

3.4.10. The Sewerage Meter Based Charge \( SMBC_{kd} \) is

\[ SMBC_{kd} = \begin{cases} TA_{U}USMBC_{kd} & \text{if not SGES or SER}_d = 0 \\ TA_{U}USMBC_{kd} \times (1 - PCE_d) - SGESSR_Y/(DIY \times SER_d) & \text{if SGES}_d and SER_d > 0 \end{cases} \]

where \( SGESSR_Y \) is the SGES Sewer refund applicable for the Financial Year \( Y \), \( PCE_d \) is the percentage of the exemption applicable on that day and \( SER_d \) is the number of Service Element Reports for the SPI.D.

3.4.11. For each Settlement Day \( d \) there are:

- two Service Element Reports for each Related T17 Meter Chain which is chargeable on that day
- two Service Element Reports for each Unmeasurable Service Element which is chargeable on that day
- a single Service Element for each DPID which is chargeable on that day
- a Service Element Report for Roads Drainage if it is chargeable on that day
- a Service Element Report for Property Drainage if it is chargeable on that day

---

17 Expressed as a percentage in Central Systems, but used here as a fraction
18 Compare the footnote at section 2.4.102.4.10
19 When the RTS is zero there may be less than two Service Elements per Related T17 Meter Chain. In particular, there will be no service element for Meter Based Charges
• a Service Element Report for Sewerage Services to Caravans if it is chargeable on that day

3.4.12. The CMA will allocate the Meter Based Charge to the Licensed Provider for which the SPID was registered in respect of each Settlement Day. It will then aggregate Volumes and Charges, and report them in accordance with CSD0201.

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**Sewerage Volumetric Charges**

3.4.13. The Unadjusted Daily Metered Cost \((UDMC_{Kd})\) is

\[
UDMC_{Kd} = AW A \times SDDV_{Kd} \times (1 - SS3_d - S29_e_d)
\]

3.4.14. **Not Used.** Apply Transition Adjustment if appropriate to obtain Transition Adjusted Daily Metered Cost \((TADMC_{Kd})\)

\[
TADMC_{Kd}^{\text{if not on Transition}} = \frac{UDMC_{Kd}}{MT \times UDMC_{Kd}^{\text{if not on Transition}}}
\]

3.4.15. The Daily Metered Cost \((DMC_{Kd})\) is

\[
DMC_{Kd} = \begin{cases} 
TADMC_{Kd} & \text{if not } SGES_d \text{ or } SER_d = 0 \\
TADMC_{Kd} \times (1 - PCE_d) - SGESSR_f / (DIV \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0
\end{cases}
\]

where \(SGESSR_f\) is the SGES Sewer refund applicable for the Financial Year \(Y\), \(PCE_d\) is the percentage of the exemption applicable on that day and where \(SER_d\) is the number of Service Element Reports for the SPID.

3.4.16. The CMA will allocate the Daily Metered Cost and the Volume to Licensed Provider to whom it was Registered in respect of each Settlement Day. It will aggregate these volumes and charges, and report them in accordance with CSD0201.

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3.5. **Unmeasured Sewerage Supply Points - Overview**

- RV Based Charging
  - Water SPIDs with meters which are subject to transition charging
  - Water SPIDs which do not have meters and are subject to transition charging
  - Water SPIDs which have been declared unmeasurable
- Re-assessed Charging

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20 Compare the footnote at section 2.4.10.4.10  

**Formatted:** Font: +Body (Times New Roman)
3.5.1. The following Sewerage SPIs are subject to Unmeasured charging:

- RV Based Charging

  - Sewerage SPIs which are subject to transition charging and have a Related Water Supply Point with an active meter;
  - Sewerage SPIs which are subject to transition charging and do not have a Related Water Supply Point with an active meter; and
  - Sewerage SPIs which have been declared unmeasurable.

- Re-assessed Charging

  - Sewerage SPIs which have been agreed are subject to Re-assessed Charging.

Information on transition charging is provided in the Appendices to CSD0205.

3.6. RV Based Charges

3.6.1. The discounts for the SPI for each day \( d \) in the SPI Chargeable Period are Sewerage Schedule 3 (\( S_3^d \)), Schedule 29e (\( S_{29e}^d \)) and whether the SPI is eligible for the Scottish Government Exemption Scheme (SGES\( _d \) and PCE\( d \)).

3.6.2. The SPI Settlement Chargeable Period has already been defined as the period time given by the days \( D_L^S \), \( D_U^S \).

3.6.3. The relevant SPI RV Unmeasurable Period is defined as the period of time for which either:

- The Sewerage SPI is subject to transition charging and has a Related Water Supply Point with an active meter.
- The Sewerage SPI is subject to transition charging and does not have a Related Water Supply Point with an active meter.
- The Sewerage SPI has been declared unmeasurable.

and is likewise given by a pair of days \( D_L^{RV} \), \( D_U^{RV} \).

3.6.4. The SPI RV Unmeasurable Chargeable Period is given by \( D_L^{RV} \leq d < D_U^{RV} \) where
\[ D_l^c = \max(D_l^R, D_l^S) \]
\[ D_u^c = \min(D_u^R, D_u^S) \]

3.6.5. If \( D_l^c \geq D_u^c \) then the SPID does not have an RV Unmeasurable Period for that RF Settlement Period.

3.6.6. For each Settlement Day \( d \) in the SPID RV Unmeasurable Chargeable Period define the Rateable \( RV_d \)

3.6.7. In accordance with the Wholesale Scheme of Charges define the Sewerage Chargeable Meter Size \((SCMS_d)\) which corresponds to \( RV_d \), and each \( SCMS_i \) corresponds to a unique Sewerage Meter Annual Non-Volumetric Charge \( SMANVC_i = SMANVC_i(SCMS_d) \)

3.6.8. The Unadjusted Sewerage Meter Based Charge \((USMBC_d)\) is given by the table of Sewerage Meter Annual Non-Volumetric Charges as

\[
USMBC_d = \frac{SMANVC_i(SCMS_i) \times (1 - VAC_d)}{DITY}
\]

3.6.9. The Unadjusted Discounted Sewerage Meter Based Charge \((UDSMBC_d)\) is then given by

\[
UDSMBC_d = USMBC_d \times (1 - SS_d - S29e_d)
\]

3.6.10. Not Used. For each Settlement Day \( d \) the Transition Adjusted Sewerage Meter Based Charge \( TASMBC_d \)

\[
TASMBC_d = \begin{cases} 
(1 - MT_Y) \times UDSMBC_d & \text{if the SPID is on Transition and has an Active Meter} \\
UDSMBC_d & \text{if the SPID is on Transition and does not have an Active Meter} \\
UDSMBC_d & \text{if the SPID has been declared Unmeasurable}
\end{cases}
\]

where \( MT_Y \) is the Metering Transition applicable for the Financial Year \( Y \). For the Financial Year \( Y = 2008-09 \), \( MT_Y = 0\% \), and for \( Y = 2009-10 \), \( MT_Y = 33\% \). The Metering Transition for other years is defined in the relevant Wholesale Charges Scheme.

3.6.11. The Sewerage Meter Based Charge \( SMBC_d \)

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11 Expressed as a percentage in Central Systems, but used here as a fraction
22 Compare the footnote at section 2.4.10

where \( SGESSR_Y \) is the SGES Sewer refund applicable for the Financial Year \( Y \), \( PCE_d \) is the percentage of the exemption applicable on that day and where \( SER_d \) is the number of Service Element Reports for the SPID.

3.6.12. The CMA will allocate the Meter Based Charge to the Licensed Provider for which the SPID was registered in respect of each Settlement Day. It will then aggregate Volumes and Charges, and report them in accordance with CSD0201.

### RV Volumetric Charges

3.6.13. For each Settlement Day \( d \) in the SPID RV Unmeasurable Chargeable Period define the Rateable Value \( RV_d \)

3.6.14. The equivalent Actual Sewerage Yearly Volume \( ASYV_d \) given by

\[
ASYV_d = \begin{cases} 
0.95 \times (0.0373 \times RV_d - 24) \times (1 - VAC_d) & \text{if } RV_d \geq 650 \\
0 & \text{otherwise}
\end{cases}
\]

and the equivalent Sewerage Derived Daily Volume \( SDDV_d \) is given by

\[
SDDV_d = \frac{ASYV_d}{DIY}
\]

3.6.15. The same calculation used to derive AWA in section 3.3.28 can be used to derive an Equivalent \( AW_A_d \) for each day of the RV Unmeasurable Chargeable Period, based upon an equivalent whole year calculation and using the equivalent Actual Sewerage Yearly Volume \( ASYV_d \) and the meter size \( WCMS_d \).

3.6.16. The Unadjusted Daily Metered Cost \( UDMC_d \) =

\[
UDMC_d = AW_A_d \times DDV_d \times (1 - SS3_d - SS9e_d)
\]

3.6.17. Not Used. Apply the Transition Adjustment to obtain the Transition Adjusted Daily Metered Charge \( TAUDMC_d \)
3.6.18. The Daily Metered Cost $DMC_d$ is

$$DMC_d = \begin{cases} 
\frac{1}{UDMC_d} & \text{if the SPID is on Transition and has an Active Meter} \\
(1 - MTY) \times UDMC_d & \text{if the SPID is on Transition and does not have an Active Meter} \\
UDMC_d & \text{if the SPID has been declared Unmeasurable}
\end{cases}$$

where $MTY$ is the Meter Transition Year, $UDMC_d$ is the Unmetered Daily Cost, and $MT$ is the number of meters.

3.6.19. The CMA will allocate the Meter Based Charge to the Licensed Provider for which the SPID was registered in respect of each Settlement Day. It will then aggregate volumes and charges, and report them in accordance with CSD0201.

3.7. Re-assessed Charges

3.7.1. Re-assessed Charges were introduced on 1st April 2009. However, it should be noted that the methods within the Central Systems for calculating Re-assessed Charges do not carry out any verification that the data only applies for periods of time on or after the date of introduction of Re-assessed Charges.

3.7.2. Re-assessed Charges are implemented by the use of Pseudo Meters. In respect of Sewerage SPIDs, the Pseudo Meter is installed at the Related Water Supply Point. In respect of Re-assessed charges, there is always such a Related Water Supply Point as in respect of Sewerage Services only Supply Points, there will be a related Pseudo Water Services Supply Point.

3.7.3. Subject to the one minor exception noted in the following paragraph, the CMA computes charges for Pseudo Meters as for all other T17 Meter Chains in accordance with sections 3.3.3 and 3.4.4. For example, where the related Water SPID has a Pseudo Meter installed for part of a year and a physical meter installed for part of a year, the CMA will compute a single sewerage AWA which is applicable to the sewerage volumes relating to both the Pseudo Meter and the physical meter.

\[ \text{Compare the footnote at section 2.4.102.4.40} \]
3.7.4. When a Pseudo Meter is installed, Scottish Water is obliged under CSD0104 to provide an opening meter read of 0, and both a YVE and a RTS. While the Pseudo Meter is installed, the CMA will reject any other meter reads which are submitted. The CMA will therefore compute the Sewerage Derived Daily Volume using the value of YVE and RTS submitted by Scottish Water (or where applicable appropriate NDA values relating to Trade Effluent). When a Pseudo Meter is removed, Scottish Water must provide a final closing meter read of 0. However, the CMA does not store the closing meter within the meter reads table.

3.7.5. Thus, following the removal of the Pseudo Meter, and the CMA will continue to compute the Sewerage Derived Daily Volumes during a T17 Meter Chain Chargeable Period using the values of YVE and RTS submitted (or where applicable NDA values), rather than using the opening and closing meter reads of 0 (which would otherwise provide a zero volume).

3.8. Property Drainage

3.8.1. This section applies to the Property Drainage charges.

3.8.2. The Discounts for the SPID for each day \(d\) in the SPID Chargeable Period are Sewerage Schedule 3 (\(S_3^3d\)), Schedule 29e (\(S_29^e_d\)) and whether the SPID is eligible for Scottish Government Exemption Scheme (\(SGES_d\) and \(PCE_d\)).

3.8.3. The SPID Settlement Chargeable Period has already been defined as the period time given by the days \(D_1^S\), \(D_2^S\). As above define the relevant Chargeable Period for Property Drainage.

3.8.4. For each Settlement Day \(d\) in the relevant Chargeable Period define the Rateable Value \(RV_d\) and whether Property Drainage \(PD_d\) is chargeable:

\[
PD_d = \begin{cases} 
1 & \text{if Property Drainage is chargeable} \\
0 & \text{if Property Drainage is not chargeable} 
\end{cases}
\]

3.8.5. As per the Wholesale Charges Scheme define the Annual Price Property Drainage per pound Rateable value \((PDP)\).

3.8.6. Then define the Unadjusted Property Drainage Charge \(UPDC_d\) as

\[
UPDC_d = PDP \times PD_d \times RV_d \times (1 - VAC_d) / DIY
\]

3.8.7. The Unadjusted Discounted Property Drainage Charge \(UDPDC_d\) is given by
\[ UDP_{DC_d} = UP_{DC_d} \times (1 - SS_{3_d} - S_{29e_d}) \]

**3.8.8.** The Property Drainage Charge \( PDC_d \) is given by

\[
PDC_d = \begin{cases} 
    UDP_{DC_d} & \text{if not } SGES_d \text{ or } SER_d = 0 \\
    UDP_{DC_d} \times (1 - PCE_d) - SGESSR_Y/\left(D\times SER_d\right) & \text{if } SGES_d \text{ and } SER_d > 0
\end{cases}
\]

Where, as above, \( SGESSR_Y \) is the SGES Sewerage refund applicable for the Financial Year \( Y \), \( PCE_d \) is the percentage of the exemption applicable on that day and \( SER_d \) is the number of Service Element Reports for the SPIID.

**3.8.9.** The CMA will allocate the Property Drainage Charges to the Licensed Provider for which the SPIID was registered in respect of each Settlement Day. It will then aggregate the volumes and charges, and report them in accordance with CSD0201.

**3.8.10.** Note: There are a small number of SPIIDs on Area Based Property Drainage Charges. The calculation for them is the same as above with the price per area replacing the price per pound Rateable Value, and the area replacing the Rateable Value.

**3.9. Roads Drainage**

**3.9.1.** This section applies to the Roads Drainage charges.

**3.9.2.** The discounts for the SPIID for each day \( d \) in the SPIID Chargeable Period are Sewerage Schedule 3 (\( SS_{3_d} \)), Schedule 29e (\( S_{29e_d} \)) and whether the SPIID is eligible for Scottish Government Exemption Scheme (\( SGES_d \) and \( PCE_d \)).

**3.9.3.** The SPIID Settlement Chargeable Period has already been defined as the period time given by the days \( D^R_L \), \( D^R_S \). As above define the relevant Chargeable Period for Roads Drainage.

**3.9.4.** For each Settlement Day \( d \) in the relevant Chargeable Period define the Rateable Value \( RV_d \) and whether Roads Drainage \( RD_d \) is chargeable:

\[
RD_d = \begin{cases} 
    1 & \text{if Roads Drainage is chargeable} \\
    0 & \text{if Roads Drainage is not chargeable}
\end{cases}
\]

**3.9.5.** As per the Wholesale Charges Scheme define the Annual price for Roads Drainage per pound Rateable value (\( RDP \)).

---

\(^{24}\) Compare the footnote at section 2.4.102.4.10
3.9.6. The Unadjusted Roads Drainage Charge $URDC_d$ is

$$URDC_d = RDP \times RD_d \times RV_d \times (1 - VAC_d)/DIY$$

3.9.7. The Unadjusted Discounted Roads Drainage Charge $URDC_d$ is given by

$$URDC_d = URDC_d \times (1 - SS3_d - S29e_d)$$

3.9.8. The Roads Drainage Charge $RDC_d$ is then given by

$$RDC_d = \begin{cases} 
URDC_d & \text{if not } SGES_d \text{ or } SER_d = 0 \\
URDC_d \times (1 - PCE_d) \times \frac{SGES_d}{(DIY \times SER_d)} & \text{if } SGES_d \text{ and } SER_d > 0 
\end{cases}$$

Where, as above, $SGES$ is the SGES Sewerage refund applicable for the Financial Year $Y$, $PCE$ is the percentage of the exemption applicable on that day and $SER_d$ is the number of Service Element Reports for the SPID.

3.9.9. The CMA will allocate the Roads Drainage Charges to the Licensed Provider for which the SPID was registered in respect of each Settlement Day. It will then aggregate the volumes and charges, and report them in accordance with CSD0201.

3.10. Trade Effluent Charges

3.10.1. For each Trade Effluent DPID $T$ establish the DPID "Active Period" $D_{TA} \leq d < D_{TU}$. If the DPID has not been discontinued then set $D_{TA} = D_{TU}$.

3.10.2. For each Trade Effluent DPID $T$ establish the DPID Chargeable Period $D_{TC} \leq d < D_{TU}$ which is the (possibly empty) sub-period for which the Active Period intersects the SPID Settlement Chargeable Period, and is given by where

$$D_{TC} = \max(D_{TA}, D_{TS})$$
$$D_{TU} = \min(D_{TU}, D_{US})$$

3.10.3. If $D_{TC} \geq D_{TU}$ then the DPID does not have a Chargeable Period for that RF Settlement Period.

3.10.4. For Settlement Runs relating to periods before 1st April 2013, the CMA shall use the following procedure for calculating the Daily Actual Volume Discharged ($DAV_d$):

---

25 Compare the footnote at section 2.4.10.2.10
For each DPID which has a Chargeable Period in the Settlement Year, and for each Settlement Day d in the DPID Chargeable Period, establish whether the day is

- within a Discharge Period,
- a day after the last Discharge Period for the DPID (ie is on or after the last Settlement Day for which an Actual Volume Discharge has been notified), or
- is a day for which the DPID has no Discharge Period (ie no Actual Daily Volumes have been notified for the DRID).

For each Settlement Day d within a Discharge Period \( D_1 \leq d \leq D_2 \), the CMA will calculate the Daily Actual Volume Discharged (DAVD) in relation to each Discharge Point by using the following formula:

\[
\text{DAVD} = \frac{\text{DAVD}_d}{(D_2 - D_1)}
\]

where

\( D_T \) is the first date of the Discharge Period,
\( D_2 \) is the day after the last date of the Discharge Period.
\( \text{DAVD}_d \) is the Actual Volume Discharged of Trade Effluent Services notified with effective date \( D_2 \) in relation to a Discharge Point for the period since the previous submission, or commencement of that Discharge Point (for the first notification of Actual Volume Discharged for Trade Effluent).

For each Settlement Day d in a Post Discharge Period for a DPID, the CMA will calculate the Daily Actual Volume Discharged in relation to each Discharge Point by using the following formula:

\[
\text{DAVD} = \text{DAVD}_{d\prime}\text{for the last day } d' \text{ within a Discharge Period.}
\]

For any Settlement Day for a DPID which does not have a Discharge Period, the CMA will compute the Daily Actual Volume Discharged using the following formula

\[
\text{DAVD} = \frac{\text{TEYE}}{\text{DHY}}
\]

where \( \text{TEYE} \) is the Trade Effluent Estimated Yearly Volume as notified for the DRID.

For Settlement Runs relating to periods after 1st April 2013, the CMA shall use the following procedure for calculating the Daily Actual Volume Discharged (DAVD)

For each T17 Meter Chain K define the variable \( \text{TEM}_K \) as
\[ TEM_K = \begin{cases} 1 & \text{if the T17 Meter Chain is either PrivateEffluent or TankeredEffluent} \\ 0 & \text{if the T17 Meter Chain K is either SWater or PrivateWater} \end{cases} \]

noting that a T17 Meter Chain K has a constant meter treatment over its entire history.

\[ NDA \] Included in Sewerage Calculations \[ NDAINC_{Td} \] as

\[ NDAINC_{Td} = \begin{cases} 1 & \text{if } \sum K MDVOL_{KTd} \times (1 - TEM_K) > 0 \\ 0 & \text{if } \sum K MDVOL_{KTd} \times (1 - TEM_K) = 0 \end{cases} \]

Then the Daily Actual Volume Discharged \[ DAVD_{Td} \] is

\[ DAVD_{Td} = \sum K DDV_{Kd} \times (1 - PA_{Td}) \times MDVOL_{KTd} \]
\[ - \left( \frac{NDA_{Td} \times NDAINC_{Td} + FA_{Td}}{DIV} \right) \times (1 - VAC_{d}) \times (1 - TDISC_{d}) \]

where \( PA_{Td} \) is the Percentage Allowance, and \( FA_{Td} \) is the Fixed Allowance.

In accordance with the Wholesale Scheme of Charges define the variables Preliminary Treatment Indicator (PTI), Biological Treatment Indicator (BTI) and Sewage Sludge Indicator (SSI) as per the following table.

<table>
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<tr>
<th>Treatment Types</th>
<th>PTI</th>
<th>SSI</th>
<th>BTI</th>
</tr>
</thead>
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<tr>
<td>Sub-primary</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Primary</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Secondary</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

For Settlement Runs covering periods before 1st April 2013, the values of PTI, BTI, and SSI will all be set to a value of 1 (i.e. as if the Treatment Type were Secondary) irrespective of how the

26 Expressed as a percentage in Central Systems, but used here as a fraction.
Treatment Type is set. Thus, for the avoidance of doubt, a DPID with a Treatment Type set to (say) Primary will be charged as “Secondary” for Settlement Runs covering periods before 1st April 2013 but will be charged as Primary for Settlement Runs covering periods on or after 1st April 2013.

3.10.14.3.10.9. Then the Unadjusted Daily Availability Charge $UAC_{d}$ can be calculated as

$$UAC_{d} = \left( CDV_{d} \times (Ra + PTI \times Va) \right) + (BTI \times Ra \times sBOD_{d}) + (SSI \times Sa \times TSSL_{d}) \times SF \times (1 - VAC_{d})$$

and the Unadjusted Daily Operating Charge ($UOP_{d}$) can be calculated as

$$UOP_{d} = DAVID_{d} \times \left( Ro + PTI \times Vo + (BTI \times Bo \times (Ot_{d}/O_{s})) + (SSI \times So \times (St_{d}/St_{s})) \right)$$

where the following parameters are derived from the Trade Effluent DPID:

- $CDV_{d}$ = Chargeable Daily Volume of the Trade Effluent in m$^3$
- $sBOD_{d}$ = Settled Biochemical Oxygen Demand load of the Trade Effluent
- $TSSL_{d}$ = Total Suspended Solids load of the Trade Effluent
- $SF$ = Seasonal Factor, which is set to a value of 1.2 where a Discharge Point is subject to seasonal discharge in accordance with the provisions set out in the Wholesale Charges Scheme. In all other cases the CMA sets the Seasonal Factor to a value of 1;
- $Ot_{d}$ = the fixed strength (settled Chemical Oxygen Demand) of the Trade Effluent
- $St_{d}$ = the fixed strength (settleable solids) of the Trade Effluent

and the following terms are derived from the Wholesale Scheme of Charges:

- $Ra$ = Reception charging component in pence/m$^3$ per Day
- $Va$ = Volumetric/Primary charging component in pence/m$^3$ per Day
- $Ba$ = Biological Capacity charging component in pence/kg per Day
- $Sa$ = Sludge Capacity charging component in pence/kg per Day
- $Ro$ = Reception charging component in pence/m$^3$
- $Vo$ = Volumetric/Primary charging component in pence/m$^3$
- $Bo$ = Secondary Treatment charging component in pence/m$^3$
- $So$ = Sludge Treatment charging component in pence/m$^3$

3.10.15.3.10.10. The Unadjusted Discounted Daily Availability Charge $UDAC_{d}$ and the Unadjusted Discounted Daily Operating Charge ($UDOP_{d}$) are given by

$$UDAC_{d} = UAC_{d} \times (1 - TES3_{d})$$
$$UDOP_{d} = UOP_{d} \times (1 - TES3_{d})$$

where $TES3_{d}$ is any applicable Trade Effluent Schedule 3 discount.

---

*for the avoidance of doubt, this equation will apply unchanged before and after 1st April 2013*
3.10.16.3.10.11. The Daily Availability Charge \( AC_{Cd} \) and the Daily Operating Charge \( OP_{Cd} \) are given by:

\[
AC_{Cd} = \begin{cases} 
UDAC_{Cd} & \text{if not } SGES_d \text{ or } SER_d = 0 \\
UDAC_{Cd} \times (1 - PCE_d) - SGES_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 
\end{cases}
\]

\[
OP_{Cd} = \begin{cases} 
UDOP_{Cd} & \text{if not } SGES_d \text{ or } SER_d = 0 \\
UDOP_{Cd} \times (1 - PCE_d) - SGES_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 
\end{cases}
\]

Where, as above \( SGE S_Y \) is the SGES Sewerage refund applicable for the Financial Year \( Y \), \( PCE_d \) is the percentage of the exemption applicable on that day and \( SER_d \) is the number of Service Element Reports for the SPID.

3.10.17.3.10.12. The CMA will then calculate the Wholesale Charge payable for the Settlement Day \( DTEC_d \) in respect of a Discharge Point using the following formula:

\[
DTEC_d = AC_{Cd} + OP_{Cd}
\]

3.10.18.3.10.13. For the avoidance of doubt, any monthly Trade Effluent charge computed in accordance with CSD0205 is the sum of the relevant terms \( DTEC_d \).

3.10.19.3.10.14. In respect of RF annual charges, a minimum charge (as set out in the Wholesale Charges Scheme) is payable in respect of a Discharge Point. At the end of each Year, as part of the RF Settlement Run, the CMA will calculate whether the Wholesale Charges payable in respect of a Discharge Point are less than the minimum charge.

3.10.20.3.10.15. Where either

- a Sewerage Service Supply Point (with a related Discharge Point) has been vacant for part of the Year;
- a Sewerage Services Supply Point (with related Discharge Point(s)) has been registered for a period less than a Year;
- a Sewerage Services Supply Point (with related Discharge Point(s)) qualifies for exemption under the Scottish Government Exemption Scheme; or
- a Discharge Point was commenced in the Central Systems during the Year,

\[28\] Compare the footnote at section 2.4.10.4.40
the CMA will calculate the proportionate minimum charge prior to its use in comparing it to the Wholesale Charges payable in respect of the Discharge Point for that Year, using the following formula:

\[ MC_A = MC \times \frac{D_{DP}}{D_Y} \]

where:

- \( MC_A \) is the minimum charge payable for the Discharge Point over the Year;
- \( MC \) is the minimum charge as set out in the Wholesale Charges Scheme for the relevant Year;
- \( D_{DP} \) is the number of days in the relevant Year within the DPID Chargeable Period that the SPI was neither vacant nor exempt under the Scottish Government Exemption Scheme; and
- \( D_Y \) is the number of days in the relevant Year.

3.10.21-3.10.16. The CMA will then aggregate the Year Trade Effluent Charges \( YTEC_{DP} \) for each Discharge point by summing the values \( DTEC_d \) for Days which do NOT have a SGES refund charge.

3.10.22-3.10.17. The CMA will then compare the Year Trade Effluent Charge against the Discharge Point’s minimum charge and where the Year Trade Effluent Charge is less than the Discharge Point’s minimum charge (\( YTEC_{DP} < MC_A \)), then the CMA then will calculate any minimum charge payable by each Licensed Provider (in respect of Settlement Days for which there is not a SGES refund) as follows:

\[ MC_{LP} = MC_A \times \frac{N_{RD_{LP}}}{D_{DP}} \]

Where:

- \( MC_{LP} \) is the minimum charge payable by the Licensed Provider in respect of the Discharge Point over the relevant Year (excluding SGES);
- \( MC_A \) is the minimum charge payable in respect of the Discharge Point for the relevant Year;
- \( N_{RD_{LP}} \) is the number of days in the relevant Year that the relevant Supply Point was Registered to the Licensed Provider and the Discharge Point is neither exempt under the Scottish Government Exemption Scheme nor vacant; and
- \( D_{DP} \) is the number of days in the relevant Year from the date that the Discharge Point was commenced in the Central Systems.
For each Licensed Provider, the CMA will then report the minimum charge
\( MC_{LP} \) (as adjusted by the SGES refund for Settlement Days for which a refund is available.)
A. Appendix

A.1. Matters arising from the Wholesale Charges Scheme

A.1.1. The following assumptions have been made in implementing the various Wholesale Scheme of Charges. This Appendix is provided to clarify and formalise the adoption of the various assumptions.

A.1.2. **20mm Phasing Premium** This charge is applied for all years for SPIDs which have meters which are charged as 20mm meters (or smaller), but excluding meters with a chargeable size of 0mm.

A.1.3. **0mm Meters** Standard volume charges are applied to volumes associated with meters which have been set a chargeable size of 0mm. However, there is no Free Allocation or Capacity Volume associated with such meters, nor are any meter based charges applied.

A.1.4. **TDISC** Following clarification from the Commission, all non-volumetric charges are applied during periods of Temporary Disconnection, including meter based charges, roads drainage, property drainage and charges for miscellaneous services.

A.1.5. **MCCP095** The changes implemented in MCCP095 do not represent a change to the Wholesale Scheme of Charges, but rather represent a more sophisticated implementation within the Central Systems of the Wholesale Scheme of Charges, and in particular in respect of:

- Trade Effluent;
- associated Sewerage Charges; and
- the handling of private water supplies and Sewerage Charges.

A.1.6. **TE Charging – before MCCP095** Users calculated Trade Effluent Volumes off the Central Systems, taking account of all relevant meters and allowances, and submitted the processed volumes to the Central Systems. To ensure that charges were suspended (apart from the minimum TE charge) during vacancy Licensed Providers and Scottish Water needed to ensure that either:

- Trade Effluent DRID is disconnected; or
- a 100% DRID Schedule 3 discount was submitted for the DRID
in accordance with the Appendix to CSD0206. This Appendix provided detailed requirements on
how TE Volumes should be submitted to ensure that they are allocated to the correct periods of
time. Non Domestic Allowance was implemented in the Central Systems, but on the basis of
applying to an entire Sewerage SPID.

A.1.7. TE Charging – after MCCP095 Scottish Water provides associations between Trade
Effluent DPIDs and water meters, together with the necessary allowances to facilitate the Central
Systems carrying out the Trade Effluent volume calculations. Specific provisions were made in
this system for the use of Trade Effluent meters and tankered effluent. Volume processing and
charging during vacancy were automatically handled on the system.

A.1.8. Private Water Meters – after MCCP095 Following the introduction of MCCP095, the
Central Systems specifically catered for Private Water Meters; and in particular ensure that while
water charges were not applied, that sewerage charges and any applicable Trade Effluent charges
would be applied.

A.1.9. Cut-over of charging methods While the pre-MCCP095 calculation applies to
charging periods before 1st April 2013, the post-MCCP095 calculation broadly applies to
charging periods on or after 1st April 2013, with the following exception:

- Settlement Runs in respect of charging periods on or after 1st April 2013, but carried out
  before the cut-over date of 2013-10-14 will have been carried out using the pre-MCCP095
  charging basis. This is important to note in comparing the results of successive
  reconciliation settlement runs for the same period where one Settlement Run was carried
  out before the cut-over date and one run carried out after the cut-over date.

A.1.10. To facilitate correct charging for settlement runs carried out after the cut-over date,
specific Trade Effluent parameters need to be updated with effect from 1st April 2013. Affected
items include NDA, values for the treatment type (Sub-primary, Primary or Secondary) and
values for the Trade Effluent Schedule 3 discount.

A.1.11. AGES For SPIDs which are flagged as exempt under the Scottish Government
Exemption Scheme, a payment is made from Scottish Water to the Licensed Provider and a
specified percentage of all other charges from the Licensed Provider to Scottish Water are
waived.
A.1.12. Re-assessed Charges for meters with a return to sewer allowance of 0%, all associated Foul Sewerage Meter based annual charges are zero in accordance with the Wholesale Scheme of Charges.

A.1.13. Property Drainage The Central Systems have a charging method in respect of Property Drainage Charges whereby a few properties which have the Area Property are charged on an area basis. However, the charges are correctly calculated and labelled by the system as being "Property Drainage RV" as opposed to Area Based Property Drainage charges.

A.1.14. Water and Sewerage Services to Caravans Charges for Water and Sewerage Services for Caravans were removed in the WCS for 2010-11. However, since during the two Financial Years 2008-09, and 2009-10 when such charges were applicable, no such charges were ever levied, following the introduction of MCCP095 the corresponding charging methods were removed from the Central Systems.

A.1.15. Metered Volumes The CSDs have built in specific methods for establishing metered volumes for Measured Supply Points. In particular it has built in rules in respect of Industry Level Estimates and YVE allowances. The CSDs also describe how meter volumes are interpolated, extrapolated and adjusted for vacancy.

A.1.16. Schedule 29e discount and Schedule 3 discount are submitted in respect of a SPID, these discounts are added. No check is carried out that the discounts add to less than 100%. At present, there is no facility in the Central Systems to apply a Schedule 29e discount to Trade Effluent Charges.

A.1.17. The Wholesale Charges Scheme defines charges for a volume V which is allocated across different charge bands (based upon a whole year’s usage). The relevant charge bands are proportioned taking account of (i) the length of time a Supply Point is as a Measured Supply Point and (ii) has the LUVA adjustments applied. Similarly, the Phasing
Premium is proportioned taking account of the length of time the SPIDs have meter(s) to which the Phasing Premium applies.

A.1.19. A.1.12. AWA The whole year AWA calculation is applied to Measured Supply Points and to Supply Points on Reassessed Charges. It is not applied for Unmeasured Supply Points where charges are based upon RV.

A.1.20. A.1.13. Application of LUVA Adjustment and Phasing Premium The LUVA Adjustment and the Phasing Premium in the AWA calculations for the year. Other discounts including Schedule 3, Schedule 29e and SGES are applied per Settlement day.

A.1.21. A.1.14. LUVA Adjustment According to the Scheme of Charges the LUVA Adjustment applies Large User Volume Agreements (LUVA) as in 2006/07. The Central Systems applies the adjustment to SPIDs in accordance with the way the LUVA flag is set for the period or sub-period of the Settlement Run.

A.1.22. A.1.15. Negative Volumes If a series of meter reads is not all monotonically increasing (taking account where applicable of the rollover algorithm) it is possible for the Central Systems to compute negative volumes for a SPID. If the total volume of water or sewerage supplied over the course of a year is negative, then the relevant AWA and the volumetric charges will be zero. However, where the total volume supplied to a SPID to be positive, but negative volumes occur either in respect of a single meter for the full year, or for the SPID for part of the year then the charges in respect of that single meter or that part of the year will be negative.

A.1.23. A.1.16. TE Minimum Charges Minimum Charges for Trade Effluent are applied per DPID rather than per SPID. They are pro-rated for the length of time a DPID is active over the course of the year. In respect of a single SPID with multiple DPIDs, a greater than minimum charge on one DPID does not offset charges on another DPID which does not reach the minimum.

A.1.24. A.1.17. TE Minimum Charges Where there are multiple LPs which share a DPID which needs to have minimum charges applied then the allocation of minimum charges is pro-rata on a daily basis, irrespective of volumetric charges occurred by each LP. See CSD0206 for details.

A.1.25. A.1.18. Percentages and Fractions A number of variables in this CSD which represent fractions are expressed as percentages within the Wholesale Scheme of Charges. The equations in
this CSD use them as fractions rather than as percentage. Thus the CSD has equations with the terms such as \((1 - f)\) rather than terms with explicit percentages such as \(\left(1 - \frac{f}{100}\right)\).

A.2. Variables

A.2.1. This section provides details of all the variables used in this CSD0207.

<table>
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<tr>
<th>Variable Description</th>
<th>Symbol</th>
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</thead>
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<tr>
<td>Actual Daily Volume</td>
<td>(ADV_{kd})</td>
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<tr>
<td>Actual Sewerage Yearly Volume</td>
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<td>Actual Volume Discharged on day (D_2)</td>
<td>(AVD_{D_2})</td>
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<td>(CTDBP)</td>
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<td>Annual Price Farm Outside Tap</td>
<td>(FOTP)</td>
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<td>Annual Price Farm Troughs and Drinking Bowls</td>
<td>(FTDBP)</td>
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<td>Biological Capacity charging component: in pence/kg per Day</td>
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A.3. Meter Advance Periods

A.3.1. The terms "Meter Pre-Advance Periods", "Meter Advance Periods", and "Meter Post-Advance Periods" are all formally defined in the Market Code, Schedule 1. The following diagrams are provided as an aid to the correct interpretation of each of these terms. In the event of a conflict between any of these terms and the diagrams below, the definition in the Market Code shall prevail.

Figure 1: A Single Meter which is Active in Central Systems (from cutover). No reads. Whole period is a "Meter Pre-Advance Period" Volumes estimated from either: YVE if submitted, else Industry Level Estimates (ILE).

Note – as per definition, changes to meter Water or Chargeable Sewerage Size would force multiple Meter Pre-Advance Periods in all the examples.
Figure 2: A T17 Meter Chain which is Active in the Central Systems (from cutover). Two Meter Pre-Advance Periods First meter has a single “End” Read. Volumes estimated from appropriate YVE or ILE. Second meter has a single “Opening” Read. Volumes estimated from appropriate YVE or ILE.

**Note 1:** YVE is set separately for each meter. **Note 2** - a change in meter size for either meter would force a new Meter Pre-Advance Period

Figure 3: A single meter which is Active in the Central Systems (from cutover) with several reads. The diagram shows (i) A Meter Pre-Advance Period; (ii) Several Meter Advance Periods; and (iii) A Meter Post Advance Period