Market Code Schedule 23

Code Subsidiary Document No. 0207

RF Charge Calculation, Allocation and Aggregation

Version 10.0

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Change History

Version Number	Date of Issue	Reason For Change	Change Control Reference	Sections Affected
1.0	2010-03-29	New Release for RF Calculation	MCCP046-CC	All
1.1	2010-10-27	Clarification reapplication of SGES Credit	MCCP064	Footnote to section 2.4.10
1.2	March 2011	Enduring Rollover Solution	MCCP053	Equation section 2.3.19
1.3	2012-03-29	Introduction of Deregistration	MCCP052, MCCP079	Sections 2.12.1 and 3.13.1
2.0	2013-04-12	Trade Effluent Changes	MCCP095	Sections throughout CSD
3.0	2013-05-01	Trade Effluent Changes	Commission Letter 29/04/2013	Sections 3.3, 3.4, AppendixAppendix
4.0	2013-10-14	Trade Effluent Changes	Commission Letter 11/10/2013	Sections 3.3, 3.4, AppendixAppendix
5.0	2014-09-21	Typos	MCCP149	
6.0	2015-03-31	SGES Changes	MCCP161-CC	Sections 2, 3 and Appendix
7.0	2015-09-24	Remove Trade Effluent (TE) Vols Remove Transitional Indicators (TI)	MCCP166 MCCP173	
8.0	2017-03-16	Vacancy Charging	MCCP204-CC MCCP207-CC	Sections 2 and 3
9.0	2017-09-17	Editorial changes	MCCP213	Sections 2 and 3
10.0	2018-02-01	Live RV Charging and Transition February 2018 CSD Drafting	MCCP214 – CC MCCP219	Sections 2 and 3

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Contents

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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[1]. 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 paramaterised.

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.

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[1] As of the time of writing

Overview of Wholesale Charges Components			
SERVICE	**COMPONENT**	**SUB COMPONENT**	**SERVICE ELEMENT**
Primary Water Charges	Water Charges	Measured Supply Point	Meter Based Charges
			Volumetric Charges
		Unmeasured Supply Points – RV Based Charges	Meter Based Charges
			Volumetric Charges
		Unmeasured Supply Points – Re-assessed Charges	Meter Based Charges
			Volumetric Charges
	Miscellaneous Charges	Field Troughs and Drinking Bowls	Farms
			Crofts
		Outside Taps	Farms
			Crofts
Primary Sewerage Charges	Foul Sewerage	Measured Supply Point	Meter Based Charges
			Volumetric Charges
		Unmeasured Supply Points – RV Based Charges	Meter Based Charges
			Volumetric Charges
		Unmeasured Supply Points – Re-assessed Charges	Meter Based Charges
			Volumetric Charges
	Property Drainage		
	Roads Drainage		
	Trade Effluent Charges		

1.2.2. The CMA shall re-compute 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 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.

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.

$$D_l^A = SPID\ Connection\ Date$$

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

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.

2.1.6. If $D_l^A \geq D_u^A$ 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

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

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" $D_{Kl}^A \leq d < D_{Ku}^A$. If the T17 Meter Chain has not been removed from the Water SPID then set $D_{Ku}^A = D_u^{RF}$

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

$$D_{Kl}^C = \max(D_{Kl}^A, D_l^S)$$
$$D_{Ku}^C = \min(D_{Ku}^A, D_u^S)$$

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.

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:

Standard Volume Charges	Price
Greater than zero and up to VFA	0
Greater than VFA and up to V_1	B_1
Greater than V_1 and up to V_2	B_2
Greater than V_2	B_3

Yearly proportion for the Allocated Tranche *VFA*

2.3.5. For each T17 Meter Chain, define the term PVT_K as [2]

$$PVT_K = \begin{cases} 0 & \text{if the } T17 \text{ Meter Chain Treatment is SWWater or LogicalWater} - ie \text{ not a Private Meter} \\ 1 & \text{otherwise} - ie \text{ Private} \end{cases}$$

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

$$MA_{Kd} = \begin{cases} 1 & \text{if} \quad D^C_{Kl} \leq d < D^C_{Ku} \\ 0 & \text{otherwise} \end{cases}$$

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 ($SSWMA_d$) as

$$SSWMA_d = \max_K (\ MA_{Kd} \times (1 - \ PVT_K))$$

and the Vacancy Adjusted SPID SWWater Meter Active ($VASSWMA$) as

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[2] This is also applicable pre-MCCP095, as all existing meters were set to Meter Treatment SWWater

$$VASSWMA_d = SSWMA_d \times (1 - VAC_d)$$

where

$$VAC_d = \begin{cases} 0 & \text{if the SPID is occupied, or if the } CId \text{ is True for a single MAV within a} \\ & \text{continuous period of Settlement Days } d \text{ when the SPID is vacant} \\ 1 & \text{otherwise} \end{cases}$$

Where Ci_d is the Consumption Indicator and is set to True only for a day, d, within a Meter Advance Period with MAV > 0, for days on or after 2017-04-01.

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 (ie 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

$$\begin{aligned} PV_1 &= YP \times V_1 \\ PV_2 &= YP \times V_2 \end{aligned}$$

Allocated Tranche

2.3.11. For each meter in a T17 Meter Chain *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

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

2.3.12. The Proportional Free Allocation PFA is given by

$$PFA = \sum_{Kd} \frac{(1 - VAC_d) \times MFA_{Kd}}{DIY}$$

Capacity Volume Charges

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 $i = 1 \dots n_T$, where

$$\begin{aligned} LMS_1 &= 1 \\ LMS_i &= UMS_{i-1} + 1 \; for \; i = 2 \dots n_T \\ UMS_{n_T} &= \infty \; (in \; practice, the \; largest \; integer \; representable \; in \; the \; CS) \end{aligned}$$

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

$$MCVT_{Kd} = \begin{cases} 0 & if \; WCMS_{Kd} = 0 \\ CVT_i(LMS_i, UMS_i) \times MA_{Kd} & if \; WCMS_{Kd} > 0 \\ 0 & otherwise \end{cases}$$

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

$$PCVT = \sum_{Kd} \frac{(1 - VAC_d) \times MCVT_{Kd}}{DIY}$$

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 Meter Pre-Advance Period, a Meter Advance Period (MAP) or a Meter Post-Advance Period. (see definitions in section A.3). [3]

2.3.19. For each Settlement Day *d* within a Meter Advance Period, the Meter Advance Volume (MAV) is given by $MAV = R_2 - R_1 + flag_2 \times 10^n$ 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 corresponding read.*
$flag_2 = \begin{cases} 1 & \text{if the Rollover Flag has been set for the meter reading} R_2 \\ 0 & \text{if it has not been set, and} \end{cases}$
n *is number of digits on the meter dial*

2.3.20. Compute the Meter Advance Chargeable Days $MACD$ as

$$MACD = \sum_{d=D_1}^{D_2 - 1} (1 - VAC_d) \times (1 - TDISC_d) \times CONN_d$$

where

$$TDISC_d = \begin{cases} 1 & \text{if the SPID is Temporarily Disconnected during the Settlement Day } d; \text{ or} \\ 0 & \text{otherwise} \end{cases}$$

$$CONN_d = \begin{cases} 1 & \text{if } D_l^A \leq d < D_u^A, \text{and} \\ 0 & \text{otherwise} \end{cases}$$

2.3.21. For each day *d* within the Meter Advance Period compute the Unadjusted Actual Daily Volume $UADV_{Kd}$ as

$$UADV_{Kd} = \frac{MAV}{MACD}$$

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[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.3A.3

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And the Actual Daily Volume ADV_{Kd} as

$$ADV_{Kd} = \begin{cases} \dfrac{MAV}{MACD} & if\ MACD > 0 \\ 0 & if\ MACD = 0 \end{cases}$$

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

$$EDV_{Kd} = UEDV_{Kd} \times (1 - VAC_d) \times (1 - TDISC_d)$$

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

$$UEDV_{Kd} = \begin{cases} \dfrac{YVE}{DIY} & for\ the\ meter\ in\ the\ T17\ Meter\ Chain\ if\ that\ meter\ has\ an\ LP\ YVE;\ else \\ \dfrac{ILE}{DIY} & the\ Industry\ Level\ Estimate\ for\ that\ meter \end{cases}$$

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 $i = 1 \dots n_T$ 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

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

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}

$$DV_{Kd} = \begin{cases} ADV_{Kd} & for\ periods\ within\ a\ Meter\ Advance\ Period \\ EDV_{Kd} & for\ period\ within\ a\ Meter\ Pre-Advance\ or\ Post-Advance\ Period \\ 0 & for\ any\ other\ Settlement\ Day\ d \end{cases}$$

2.3.29. For each meter *K* , and Settlement Day *d,* the Derived Daily Volume DDV_{Kd} is calculated as

$$DDV_{Kd} = \begin{cases} DV_{Kd} - \sum_{L} DV_{Ld} & or \\ 0 & for\ any\ d\ not\ in\ the\ T17\ Meter\ Chain\ Chargeable\ Period \end{cases}$$

where the sum is over all meters *L* which are sub-meters of meter *K*. The derivation of the appropriate terms DV_{Ld} for the sub-meters is the same as for the meter *K*.

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

$$AYV = \sum_{Kd} DDV_{Kd} \times (1 - PVT_K)$$

Volumes for the LUVA Charges

2.3.31. For each Settlement Day *d* in the SPID Settlement Chargeable Period define LUVA Chargeable (LC_d) as

$$LC_d = \begin{cases} 1 & if\ the\ SPID\ has\ the\ LUVA\ flag\ set, and\ SWMC_d > 0 \\ 0 & if\ the\ SPID\ does\ not\ have\ the\ LUVA\ flag\ set, or\ SWMC_d = 0 \end{cases}$$

2.3.32. Compute the Total LUVA Days (TLD) as

$$TLD = \sum_{D_l^S \leq d < D_u^S} LC_d \times (1 - VAC_d)$$

2.3.33. The LUVA Proportion $LUVAP$ is defined as

$$LUVAP = \frac{TLD}{DIY}$$

2.3.34. The Proportional LUVA Volume limits $PLVLL$, PLV_1, PLV_2 are given by

$$
\begin{aligned}
PLVLL &= LUVAP \times VLL \\
PLV_1 &= LUVAP \times V_1 \\
PLV_2 &= LUVAP \times V_2
\end{aligned}
$$

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.

$$LAV = \sum_{Kd} DDV_{Kd} \times LC_d \times (1 - PVT_K)$$

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_{Kd}) as

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

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

2.3.37. Define the Uncapped Premium Annual Volume $UPAV$ as

$$UPAV = \sum_{Kd} DDV_{Kd} \times PC_{Kd} \times (1 - PVT_K)$$

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

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

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 2.3.4

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

$$
\begin{aligned}
VFA &= \max(\min(AYV, PFA), 0) \\
VA_1 &= \max(\min(AYV, PV_1) - PFA, 0) \\
VA_2 &= \max(\min(AYV, PV_2) - PV_1, 0) \\
VA_3 &= \max(AYV - PV_2, 0)
\end{aligned}
$$

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

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

Charges – LUVA Adjustment

2.3.44. Allocate the LUVA Annual Volume (LAV) into volumes $LVA_1, LVA_2 and \, LVA_3$ over the various charge bands to establish the LUVA adjustment.

$$
\begin{aligned}
LVA_1 &= \max(\min(LAV, PLV_1) - PLVLL, 0) \\
LVA_2 &= \max(\min(LAV, PLV_2) - PLV_1, 0) \\
LVA_3 &= \max(LAV - PLV_2, 0)
\end{aligned}
$$

2.3.45. If the LUVA adjustments are $LPP_1, LPP_2 and LPP_3$[4] then the LUVA Adjustment Charge ($LACHARGE$) is

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

Charges – Phasing Premium

2.3.46. The Proportional Phasing Premium Free Allocation ($PPPFA$) is

$$PPPFA = \frac{TPD \times VFA}{DIY}$$

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

$$PVA = \max(\min(UPAV, PPVL, AYV) - PPPFA, 0)$$

2.3.47. If the Premium Phasing for the Year is PP_Y[5] then the Phasing Premium Charge $PPCHARGE$ is given by

$$PPCHARGE = PP_Y \times (B_1 + CVP) \times PVA$$

AWA

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

$$AWA = \begin{cases} 0 & if\ AYV \leq 0 \\ \dfrac{SVCHARGE + CVCHARGE + LACHARGE + PPCHARGE}{AYV} & if\ AYV > 0 \end{cases}$$

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 ($WS3_d$), Schedule 29e ($S29e_d$) and whether the SPID is eligible for Scottish Government Exemption Scheme ($SGES_d\ and\ PCEd$).

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[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

2.4.2. 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 2.3.13 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.

2.4.5. 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 $i = 1 \dots n_T$, where

$$
\begin{aligned}
LMS_1 &= 1 \\
LMS_i &= UMS_{i-1} + 1 \; for \; i = 2 \dots n_T \\
UMS_{n_T} &= \infty \; (in \; practice, the \; largest \; integer \; representable \; in \; the \; CS)
\end{aligned}
$$

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

$$
UWMBC_{Kd} = \begin{cases} 0 & if \; WCMS_{Kd} = 0 \\ WMANVC_i(LMS_i, UMS_i) \times MA_{Kd} \times (1 - VAC_d) & if \; WCMS_{Kd} > 0 \\ 0 & otherwise \end{cases}
$$

For days prior to 2017-04-01 and

$$
UWMBC_{Kd} = \begin{cases} 0 & if \; WCMS_{Kd} = 0 \\ WMANVC_i(LMS_i, UMS_i) \times MA_{Kd} & if \; WCMS_{Kd} > 0 \\ 0 & otherwise \end{cases}
$$

For days on or after 2017-04-01

where (LMS_i, UMS_i) is the band corresponding to $WCMS_{Kd}$

2.4.8. The Unadjusted Discounted Water Meter Based Charge ($UDWMBC_{Kd}$) is then given

$$UDWMBC_{Kd} = UWMBC_{Kd} \times (1 - WS3_d - S29e_d)$$

2.4.9. Not Used.

2.4.10. The Water Meter Based Charge [6] $WMBC_{Kd}$ is

$WMBC_{Kd}$
$$= \begin{cases} UDWMBC_{Kd} & if\ no\ SGES_d\ or\ SER_d = 0 \\ UDWMBC_{Kd} \times (1 - PCEd) - SGESWR_Y/(DIY \times SER_d) & if\ SGES_d\ and\ SER_d > 0 \end{cases}$$

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:

  – Field Troughs and Drinking Bowls; and

  – Outside Taps.

---

[6] 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.

<div style="background-color:#00ff00">Volumetric Charges</div>

2.4.13. The Unadjusted Daily Metered Cost ($UDMC_{Kd}$) is

$$UDMC_{Kd} = AWA \times DDV_{Kd} \times (1 - WS3_d - S29e_d) \times (1 - PVT_K)$$

2.4.14. Not Used.

2.4.15. The Daily Metered Cost [7] DMC_{Kd} is

$$DMC_{Kd} = \begin{cases} UDMC_{Kd} & if\ no\ SGES_d\ or\ SER_d = 0 \\ UDMC_{Kd} \times (1 - PCEd) - SGESWR_Y/(DIY \times SER_d) & if\ SGES_d\ and\ SER_d > 0 \end{cases}$$

where $SGESWR_Y$ is the SGES Water refund applicable for the Financial Year *Y,* PCEd is the percentage of the exemption applicable on that da*y*, 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 which have been declared unmeasurable
- Re-assessed Charging
  - Water SPIDs which have been agreed are subject to Re-Assessed Charging

---

[7] Compare the footnote at section 2.4.10~~2.4.10~~

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2.6. RV Based Charges

<div style="background-color:green">RV Non-Volumetric Charges</div>

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^S, D_u^S

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

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

$$
\begin{aligned}
D_l^C &= \max \left(D_l^{RV}, D_l^S \right) \\
D_u^C &= \min \left(D_u^{RV}, D_u^S \right)
\end{aligned}
$$

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, the Live Rateable Value LRV_d and the RV Transition Flag $RVTF_d$

Where

$$
RVTF_d = \begin{cases} 1 \ if \ the \ Supply \ Point \ is \ in \ transition \ for \ the \ purposes \ of \ RV \ Volumetric \\ \qquad \qquad \qquad and \ RV \ Non-Volumetric \ Charges \\ 0 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \quad Otherwise \end{cases}
$$

2.6.7. For days prior to 2017-04-01, 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 ($WMANVC_i = WMANVC_i(WCMS_d)$). For days on or after 2017-04-01 and prior to 2018-04-01, in accordance with the Wholesale Scheme of Charges, for days when the SPID is not vacant, 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 ($WMANVC_i = WMANVC_i(WCMS_d)$). For days on or after 2018-04-01, in accordance with the Wholesale Scheme of Charges, for days when the SPID is not vacant, define LRVWCMSd, corresponding to LRVd to create either an LRVWMANVCi or a WMANCi and define RVWCMSd, corresponding to RVd to create an RVWMANVCi. For days when the SPID is vacant (on or after 2017-04-01), WCMSd, RVWCMSd and LRVWCMSd shall be 20mm.

2.6.8. The Unadjusted Water Meter Based Charge ($UWMBC_d$) is given by the table of Water Meter Annual Non-Volumetric Charges as

$$UWMBC_d = \frac{WMANVC_i(WCMS_i) \times (1 - VAC_d)}{DIY}$$

for days prior to 2017-04-01 and

$$UWMBC_d = \frac{WMANVC_i(WCMS_i)}{DIY}$$

for days on or after 2017-04-01 and prior to 2018-04-01.

$$UWMBC_d = \begin{cases} RVF.RVUWMBCd + (1 - RVF).LRVUWMBCd & if\ RVTFd = 1 \\ RLRVUWMBCd & if\ RVTFd = 0 \end{cases}$$

where

$$RVUWMBC_d = \frac{RVWMANVC_i(RVWCMS_i)}{DIY}$$

and

$$LRVUWMBC_d = \frac{LRVWMANVCi(LRVWCMSi)}{DIY}$$

and

$$RLRVUWMBC_d = \frac{WMANVCi(LRVWCMSi)}{DIY}$$

for days on or after 2018-04-01, where RVF is a transition factor established in accordance with the Wholesale Scheme of Charges.

2.6.9.   The Unadjusted Discounted Water Meter Based Charge ($UDWMBC_d$) is then given by

$$UDWMBC_d = UWMBC_d \times (1 - WS3_d - S29e_d)$$

2.6.10.   Not Used.

2.6.11.   The Water Meter Based Charge [8] $WMBC_d$ is

$$WMBC_d = \begin{cases} UDWMBC_d & if\ no\ SGES_d\ or\ SER_d = 0 \\ UDWMBC_d \times (1 - PCEd) - SGESWR_Y/(DIY \times SER_d) & if\ SGES_d\ and\ SER_d > 0 \end{cases}$$

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.

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.

RV Volumetric Charges

2.6.13.   For each Settlement Day d in the SPID RV Unmeasurable Chargeable Period define the Rateable Value RV_d, the Live Rateable Value LRVd and the RV Transition Flag RVTFd.

2.6.14.   The equivalent Actual Yearly Volume AYV_d given by

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

for days prior to 2018-04-01.

---

[8] Compare the footnote at section 2.4.10~~2.4.10~~

The equivalent RV based Actual Yearly Volume RVAYVd given by

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

And the equivalent LRV based Actual Yearly Volume LRVAYVd given by

$$LRVAYV_d = \begin{cases} [(0.0248 \times LRV_d - 24)] \times (1 - VAC_d) & if\ LRV_d \geq 960 \\ 0 & otherwise \end{cases}$$

for days on or after 2018-04-01, where RVF is a transition factor, established in accordance with the Wholesale Scheme of Charges

and the equivalent Derived Daily Volume DDV_d is given by

$$DDV_d = \frac{AYV_d}{DIY}$$

for days prior to 2018-04-01.

The equivalent RV based Daily Derived Volume RVDDVd is given by

$$RVDDV_d = \frac{RVAYV_d}{DIY}$$

for days on or after 2018-04-01 and

the equivalent LRV based Daily Derived Volume LRVDDVd is given by

$$LRVDDV_d = \frac{LRVAYV_d}{DIY}$$

for days on or after 2018-04-01.

2.6.15. The same calculation used to derive AWA in section 2.3 can be used to derive an Equivalent AWA AWA_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 $WCMS_d$ for days prior to 2018-04-01. For days on or after 2018-04-01, an equivalent RVAWA, LRVAWA and RLRVAWA should be calculated, where the same calculation used to derive AWA in

section 2.3 can be used to derive the RVAWAd, the LRVAWAd and the LRVAWAd, based upon an equivalent whole year calculation, using;

- For the RVAWAd. The equivalent RV Actual Yearly Volume RVAYVd and meter size RVWCMSd and specific volumetric prices; RVB_1, RVB_2, RVB_3 and RVCVP.

- For the LRVAWA. The equivalent LRV Actual Yearly Volume LRVAYVd and meter size LRVWCMSd for the LRVAWA and specific volumetric prices; $LRVB_1$, $LRVB_2$, $LRVB_3$ and LRVCVP.

- For the RLRVAWA. The equivalent LRV Actual Yearly Volume LRVAYVd and meter size LRVWCMSd for the LRVAWA and volumetric prices as used for metered Supply Points; B_1, B_2, B_3 and CVP.

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

$$UDMC_d = AWA_d \times DDV_d \times (1 - WS3_d - S29e_d)$$

for days prior to 2018-04-01.

$$UDMC_d = \begin{cases} RVF \times RVUDMCd + (1 - RVF) \times LRVUDMCd & if\ RVTF = 1 \\ RLRVUDMCd & if\ RVTF = 0 \end{cases}$$

where

$$RVUDMC_d = RVAWA_d \times RVDDV_d \times (1 - WS3_d - S29e_d)$$

and

$$LRVUDMC_d = LRVAWA_d \times LRVDDV_d \times (1 - WS3_d - S29e_d)$$

and

$$RLRVUDMC_d = RLRVAWA_d \times LRVDDV_d \times (1 - WS3_d - S29e_d)$$

for days on or after 2018-04-01.

2.6.17. Not Used.

2.6.18. The Daily Metered Cost [9] DMC_d is

$$DMC_d = \begin{cases} UDMC_d & if\ no\ SGES_d\ or\ SER_d = 0 \\ UDMC_d \times (1 - PCEd) - SGESWR_Y/(DIY \times SER_d) & if\ SGES_d\ and\ SER_d > 0 \end{cases}$$

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.

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 2.3 and 2.4 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

---

[9] Compare the footnote at section 2.4.102.4.10

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Version 10.0   26   RF Charge Calculation,
                                                                                Allocation and Aggregation

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 $PCEd$).

2.8.3. The SPID Settlement Chargeable Period has already been defined as the period time given by the days D_l^S, D_u^S. 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

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

and

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

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

$$\begin{aligned} UTDBC_d &= (FTDBP \times FARM_d + CTDBP \times CROFT_d) \times TDB_d \times (1 - VAC_d)/DIY \\ UOTC_d &= (FOTP \times FARM_d + COTP \times CROFT_d) \times OT_d \times (1 - VAC_d)/DIY \end{aligned}$$

for days prior to 2017-04-01 and

$$\begin{aligned} UTDBC_d &= (FTDBP \times FARM_d + CTDBP \times CROFT_d) \times TDB_d \quad /DIY \\ UOTC_d &= (FOTP \times FARM_d + COTP \times CROFT_d) \times OT_d \quad /DIY \end{aligned}$$

for days on or after 2017-04-01.

2.8.8. The Unadjusted Discounted Troughs and Drinking Bowls Charge $UDTDBC_d$ and the Unadjusted Discounted Outside Taps Charge $UDOTC_d$ are given by

$$\begin{aligned} UDTDBC_d &= UTDBC_d \times (1 - WS3_d - S29e_d) \\ UDOTC_d &= UOTC_d \times (1 - WS3_d - S29e_d) \end{aligned}$$

2.8.9. The Troughs and Drinking Bowls Charge $TDBC_d$ and the Outside Taps Charge OTC_d are given by [10]

$$OTC_d = \begin{cases} UDOTC_d & \text{if no } SGES_d \text{ or } SER_d = 0 \\ UDOTC_d \times (1 - PCEd) - SGESWR_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 \end{cases}$$

$$TDBC_d = \begin{cases} UDTDBC_d & \text{if no } SGES_d \text{ or } SER_d = 0 \\ UDTDBC_d \times (1 - PCEd) - SGESWR_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 \end{cases}$$

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.

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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[10] Compare the footnote at section 2.4.10~~2.4.10~~

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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_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 of 2008-09 would be described by

$$
\begin{aligned}
D_l^{RF} &= 1st\ April\ 2008 \\
D_u^{RF} &= 1st\ April\ 2009
\end{aligned}
$$

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_l^A, D_u^A

where

$$
D_l^A = SPID\ Connection\ Date
$$

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

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

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

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 $AWA = 0$ 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 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 $AWA = 0$ 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 $D_{Kl}^A \leq d < D_{Ku}^A$. If the Related T17 Meter Chain has not been removed from the *RWSP* then set $D_{Ku}^A = D_u^{RF}$

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 [11] 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 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 NDA_{Td}. For all other days d for each DPID T set $NDA_{Td} = 0$.

Note there is a difference in interpretation between the usage of NDA for Settlement Runs covering periods before [12] 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 (SWWater or PrivateWater meters) associated with the Trade Effluent DPID.

---

[11] The subscript T indicates it's a DPID
[12] See Appendix A re cutover between the methods

3.3.9. Let the SFA be the Sewerage Allocated Tranche, and BS1 be the price for Sewerage Standard Volumes above the Allocated Tranche as defined in the Wholesale Charges Scheme. Thus:

Sewerage Standard Volume Charges	Price
Greater than zero and up to SFA	0
Greater than SFA	BS_1

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

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

where RTS_{Kd} is the Return to Sewer allowance [13] 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

$$TSMC_{Kd} = \sum_K SMC_{Kd}$$

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 $SCMS_{Kd}$

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

$$MSFA_{Kd} = \begin{cases} SFA \ \times SMC_{Kd} & if \ SCMS_{Kd} > 0 \\ 0 & otherwise \end{cases}$$

3.3.14. The Sewerage Proportional Free Allocation $SPFA$ is given by

$$SPFA = \sum_{Kd} \frac{(1 - VAC_d) \times MSFA_{Kd}}{DIY}$$

---

[13] Expressed as a percentage in Central Systems, but used here and elsewhere as a fraction

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_i), Upper Meter Size (UMS_i) and the Sewerage Capacity Volume Threshold ($SCVT_i$) for $i = 1 \dots n_T$, where

$$
\begin{aligned}
LMS_1 &= 1 \\
LMS_i &= UMS_{i-1} + 1 \ for \ i = 2 \dots n_T \\
UMS_{n_T} &= \infty \ (in \ practice, the \ largest \ integer \ representable \ in \ the \ CS)
\end{aligned}
$$

3.3.17. Thus each Sewerage Chargeable Meter Size $SCMS_{Kd} > 0$ falls uniquely within a single band $LMS_i \leq SCMS_{Kd} \leq UMS_i$, 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 ($MSCVT_{Kd}$) is then given by the table of Sewerage Capacity Volume Thresholds as

$$
MSCVT_{Kd} = \begin{cases}
0 & if \ SCMS_{Kd} = 0 \\
SCVT_i(LMS_i, UMS_i) \times SMC_{Kd} & if \ SCMS_{Kd} > 0 \\
0 & otherwise
\end{cases}
$$

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

3.3.19. The Sewerage Proportional Capacity Volume Threshold ($SPCVT$) applicable for the Sewerage SPID for the year is given by

$$
SPCVT = \sum_{Kd} \frac{(1 - VAC_d) \times MSCVT_{Kd}}{DIY}
$$

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

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$$SDDV_{Kd} = \begin{cases} \displaystyle\sum_T \frac{(1 - VAC_d) \times (1 - TDISC_d) \times SMC_{Kd} \times NDA_{Td}}{DIY \times TSMC_d} & \begin{array}{l} \text{for all days } d \text{ which} \\ \displaystyle\sum_T NDA_{Td} > 0, and \\ TSMC_d > 0 \end{array} \\ \\ DDV_{Kd} \times RTS_{Kd} & otherwise \end{cases}$$

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 [14] 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 ($NDASPLIT_{Td}$) as

$$NDASPLIT_{Td} = \sum_K MDASSOC_{KTd} \times SMC_{Kd}$$

Then,

$$SDDV_{Kd} = \begin{cases} \dfrac{(1 - VAC_d) \times (1 - TDISC_d) \times SMC_{Kd}}{DIY} \times \displaystyle\sum_{\substack{T \text{ where} \\ MDASSOC_{KTd}=1 \text{ and} \\ NDASPLIT_{Td}>0 \text{ and} \\ T \text{ is active}}} \dfrac{NDA_{Td}}{NDASPLIT_{Td}} \\ \\ when \displaystyle\sum_{\substack{T \text{ where} \\ MDASSOC_{KTd}=1 \text{ and} \\ NDASPLIT_{Td}>0 \text{ and} \\ T \text{ is active}}} \dfrac{NDA_{Td}}{NDASPLIT_{Td}} > 0 \\ \\ DDV_{Kd} \times RTS_{Kd} \; otherwise \end{cases}$$

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

$$ASYV = \sum_{Kd} SDDV_{Kd}$$

---

[14] Expressed as a percentage in Central Systems but used here as a fraction

3.3.25. 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 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

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

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

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

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

$$AWA = \begin{cases} 0 & if\ ASYV \leq 0 \\ \dfrac{SSVCHARGE + SCVCHARGE}{ASYV} & if\ ASYV > 0 \end{cases}$$

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 ($SGES_d\ and\ PCEd$).

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:

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 $i = 1 \dots n_T$, where

$$
\begin{aligned}
LMS_1 &= 1 \\
LMS_i &= UMS_{i-1} + 1 \; for \; i = 2 \dots n_T \\
UMS_{n_T} &= \infty \; (in \; practice, the \; largest \; integer \; representable \; in \; the \; CS)
\end{aligned}
$$

and n_T is the number of entries in the table.

3.4.6. Thus each Sewerage Chargeable Meter Size $SCMS_{Kd} > 0$ falls uniquely within a single band $LMS_i \leq SCMS_{Kd} \leq UMS_i$, 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 ($USMBC_{Kd}$) is then given by the table of Sewerage Meter Annual Non-Volumetric Charges as

$$
USMBC_{Kd} = \begin{cases} 0 & if \; SCMS_{Kd} = 0 \\ SMANVC_i(LMS_i, UMS_i) \times SMC_{Kd} \times (1 - VAC_d) & if \; SCMS_{Kd} > 0 \\ 0 & otherwise \end{cases}
$$

for days prior to 2017-04-01 and

$$
USMBC_{Kd} = \begin{cases} 0 & if \; SCMS_{Kd} = 0 \\ SMANVC_i(LMS_i, UMS_i) \times SMC_{Kd} & if \; SCMS_{Kd} > 0 \\ 0 & otherwise \end{cases}
$$

for days on or after 2017-04-01

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

$$
UDSMBC_{Kd} = USMBC_{Kd} \times (1 - SS3_d - S29e_d)
$$

3.4.9. Not Used.

3.4.10. The Sewerage Meter Based Charge [15] $SMBC_{Kd}$ is

$$SMBC_{Kd} = \begin{cases} UDSMBC_{Kd} & if\ no\ SGES_d\ or\ SER_d = 0 \\ UDSMBC_{Kd} \times (1 - PCEd) - SGESSR_Y/(DIY \times SER_d) & if\ SGES_d\ and\ SER_d > 0 \end{cases}$$

Where $SGESSR_Y$ is the SGES Sewer 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.

3.4.11. For each Settlement Day d there are:

- two Service Element Reports for each Related T17 Meter Chain [16] 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

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.

<mark>Sewerage Volumetric Charges</mark>

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

$$UDMC_{Kd} = AWA \times SDDV_{Kd} \times (1 - SS3_d - S29e_d)$$

3.4.14. Not Used.

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[15] Compare the footnote at section 2.4.10~~2.4.10~~

[16] 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

3.4.15.   The Daily Metered Cost [17] DMC_{Kd} is

$$DMC_{Kd} = \begin{cases} UDMC_{Kd} & \text{if no } SGES_d \text{ or } SER_d = 0 \\ UDMC_{Kd} \times (1 - PCEd) - SGESSR_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 \end{cases}$$

where $SGESSR_Y$ is the SGES Sewer 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.

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.

3.5. Unmeasured Sewerage Supply Points - Overview

- RV Based Charging
  - Water SPIDs which have been declared unmeasurable
- Re-assessed Charging
  - Water SPIDs which have been agreed are subject to Re-Assessed Charging

3.5.1.   The following Sewerage SPIDs are subject to Unmeasured charging:

- RV Based Charging
  - Sewerage SPIDs which have been declared unmeasurable.
- Re-assessed Charging
  - Sewerage SPIDs 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

RV Non-Volumetric Charges

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[17] Compare the footnote at section 2.4.102.4.10

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3.6.1. 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 the Scottish Government Exemption Scheme ($SGES_d \text{ and } PCEd$).

3.6.2. The SPID 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 SPID RV Unmeasurable Period is defined as the period of time for which the Sewerage SPID has been declared unmeasurable and is likewise given by a pair of days D_l^{RV}, D_u^{RV}.

3.6.4. The SPID RV Unmeasurable Chargeable Period Chargeable Period $D_l^C \leq d < D_u^C$ 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

$$
\begin{aligned}
D_l^C &= \max\left(D_l^{RV}, D_l^S\right) \\
D_u^C &= \min\left(D_u^{RV}, D_u^S\right)
\end{aligned}
$$

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, the Live Rateable Value LRVd and the RV Transition Flag RVTFd.

3.6.7. For days d, prior to 2017-04-01, 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 $SMANVC_i = SMANVC_i(SCMS_d)$. For days on or after 2017-04-01 and prior to 2018-04-01, in accordance with the Wholesale Scheme of Charges, for days when the SPID is not vacant, define the Sewerage Chargeable Meter Size (SCMSd) which corresponds to RV_d, and each $SCMS_i$ corresponds to a unique Sewerage Meter Annual Non-Volumetric Charge ($SMANVC_i = SMANVC_i(SCMS_d)$). For days on or after 2018-04-01, in accordance with the Wholesale Scheme of Charges, when the SPID is not vacant, define LRVSCMSd, corresponding to LRVd to create either an LRVSMANVCi or an SMANVCi and define RVSCMSd, corresponding to RVd to create an RVSMANVCi. For days when the SPID is vacant (on or after 2017-04-01), SCMSd, RVSCMSd and LRVSCMSd shall be 20mm.

3.6.8. The Unadjusted Sewerage Meter Based Charge ($USMBC_{Kd}$) is given by the table of Sewerage Meter Annual Non-Volumetric Charges as

$$USMBC_{Kd} = \frac{SMANVC_i(SCMS_i) \times (1 - VAC_d)}{DIY}$$

for days prior to 2017-04-01 and

$$USMBC_{Kd} = \frac{SMANVC_i(SCMS_i)}{DIY}$$

for days on or after 2017-04-01 and prior to 2018-04-01 and

$$USMBC_d = \begin{cases} RVF \times RVUSMBCd + (1 - RVF) \times LRVUSMBCd & if\ RVTF = 1 \\ RLRVUSMBCd & if\ RVTF = 0 \end{cases}$$

where

$$RVUSMBC_d = \frac{RVSMANVC_i(RVSCMS_i)}{DIY}$$

and

$$LRVUSMBC_d = \frac{LRVSMANVCi(LRVSCMSi)}{DIY}$$

and

$$LRVUSMBC_d = \frac{SMANVCi(LRVSCMSi)}{DIY}$$

for days on or after 2018-04-01.

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

$$UDSMBC_{Kd} = USMBC_{Kd} \times (1 - SS3_d - S29e_d)$$

3.6.10. Not Used.

3.6.11. The Sewerage Meter Based Charge [18] $SMBC_{Kd}$

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[18] Compare the footnote at section 2.4.10~~2.4.10~~

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$$SMBC_{Kd} = \begin{cases} UDSMBC_{Kd} & \text{if no } SGES_d \text{ or } SER_d = 0 \\ UDSMBC_{Kd} \times (1 - PCEd) - SGESSR_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 \end{cases}$$

where $SGESSR_Y$ is the SGES Sewer 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.

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, the Live Rateable Value LRVd and the RV Transition Flag RVTFd.

3.6.14. The equivalent Actual Sewerage Yearly Volume $ASYV_d$ given by

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

for days prior to 2018-04-01.

The equivalent RV based Actual Sewerage Yearly Volume RVASYVd is given by

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

And the equivalent Live RV based Actual Yearly Sewerage Volume LRVASYVd is given by

$$LRVASYV_d = \begin{cases} 0.95 \times [(0.0248 \times LRV_d - 24)] \times (1 - VAC_d) & \text{if } LRV_d \geq 960 \\ 0 & \text{otherwise} \end{cases}$$

for days on or after 2018-04-01, where RVF is a transition factor established in accordance with the Wholesale Scheme of Charges.

and the equivalent Sewerage Derived Daily Volume $SDDV_d$ is given by

$$SDDV_d = \frac{ASYV_d}{DIY}$$

for days prior to 2018-04-01.

The equivalent RV based Sewerage Daily Derived Volume RVSDDVd is given by

$$RVSDDV_d = \frac{RVASYV_d}{DIY}$$

for days on or after 2018-04-01 and

the equivalent Live RV based Sewerage Daily Derived Volume LRVSDDVd is given by

$$LRVSDDV_d = \frac{LRVASYV_d}{DIY}$$

for days on or after 2018-04-01.

3.6.15. The same calculation used to derive AWA in section 3.3.28 can be used to derive an Equivalent AWA_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 $SCMS_d$ for days prior to 2018-04-01. For days on or after 2018-04-01, an equivalent RVAWAd and LRVAWAd should be calculated, where the same calculation used to derive AWA in section 3.3 can be used to derive the RVAWAd and the LRVAWAd, based upon an equivalent whole year calculation, using;

- For the RVAWAd. The equivalent RV Actual Yearly Volume RVASYVd and meter size RVSCMSd and specific volumetric prices; RVSB$_1$ and RVCSVP.

- For the LRVAWA. The equivalent LRV Actual Yearly Volume LRVASYVd and meter size LRVSCMSd for the LRVAWA and specific volumetric prices; LRVSB$_1$ and LRVCSVP.

- For the RLRVAWA. The equivalent LRV Actual Yearly Volume LRVASYVd and meter size LRVSCMSd for the LRVAWA and volumetric prices as used for metered Supply Points; SB$_1$ and CSVP.

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

$$UDMC_d = AWA_d \times SDDV_d \times (1 - SS3_d - S29e_d)$$

for days prior to 2018-04-01.

$$UDMC_d = \begin{cases} RVF \times RVUDMCd + (1 - RVF) \times LRVUDMCd & if\ RVTF = 1 \\ RLRVUDMCd & if\ RVTF = 0 \end{cases}$$

where

$$RVUDMC_d = RVAWA_d \times RVSDDV_d \times (1 - WS3_d - S29e_d)$$

and

$$LRVUDMC_d = LRVAWA_d \times LRVSDDV_d \times (1 - WS3_d - S29e_d)$$

and

$$RLRVUDMC_d = RLRVAWA_d \times LRVSDDV_d \times (1 - WS3_d - S29e_d)$$

for days on or after 2018-04-01.

3.6.17. Not Used.

3.6.18. The Daily Metered Cost DMC_d [19] is

$$DMC_d = \begin{cases} UDMC_d & if\ no\ SGES_d\ or\ SER_d = 0 \\ UDMC_d \times (1 - PCEd) - SGESSR_Y/(DIY \times SER_d) & if\ SGES_d\ and\ SER_d > 0 \end{cases}$$

where $SGESSR_Y$ is the SGES Sewerage 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.

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.

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[19] Compare the footnote at section 2.4.10~~2.4.10~~

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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 and 3.4. 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.

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 ($SS3_d$), Schedule 29e ($S29e_d$) and whether the SPID is eligible for Scottish Government Exemption Scheme ($SGES_d$ and $PCEd$).

3.8.3. The SPID Settlement Chargeable Period has already been defined as the period time given by the days D_l^S, D_u^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 the Live Rateable Value LRVd, the RV Transition Flag RVTFd and whether Property Drainage (PD_d) is chargeable:

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

3.8.5. As per the Wholesale Charges Scheme define the Annual Price for Property Drainage per pound Rateable value for the RVd ($RVPDP$), for the LRVd (LRVPDP) and for the LRVd for Supply Points not in transition for the purposes of property drainage charges (PDP).

3.8.6. Then define the Unadjusted Property Drainage Charge $UPDC_d$ as

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

for days prior to 2017-04-01.

$$UPDC_d = PDP \times PD_d \times RV_d \quad /DIY$$

for days on or after 2017-04-01 and prior to 2018-04-01 and

$$UPDC_d = \begin{cases} RVF \times RVUPDCd + (1 - RVF) \times LRVUPDCd & if \ RVTF = 1 \\ RLRVUPDCd & if \ RVTF = 0 \end{cases}$$

where

$$RVUPDC_d = [RVPDP \times PD_d \times RV_d]/DIY$$

and

$$LRVUPDC_d = [LRVPDP \times PD_d \times LRV_d]/DIY$$

and

$$RLRVUPDC_d = [PDP \times PD_d \times LRV_d]/DIY$$

for days on or after 2018-04-01, where RVF is a transition factor established in accordance with the Wholesale Scheme of Charges.

3.8.7.   The Unadjusted Discounted Property Drainage Charge $UDPDC_d$ is given by

$$UDPDC_d = UPDC_d \times (1 - SS3_d - S29e_d)$$

3.8.8.   The Property Drainage Charge PDC_d [20] is given by

$$PDC_d = \begin{cases} UDPDC_d & \text{if no } SGES_d \text{ or } SER_d = 0 \\ UDPDC_d \times (1 - PCEd) - SGESSR_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 \end{cases}$$

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

3.8.9.   The CMA will allocate the Property 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.

3.8.10.   *Note:* There are a small number of SPIDs 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 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 $PCEd$).

3.9.3.   The SPID Settlement Chargeable Period has already been defined as the period time given by the days D_l^S, D_u^S . As above define the relevant Chargeable Period for Roads Drainage.

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[20] Compare the footnote at section 2.4.10~~2.4.10~~

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3.9.4. For each Settlement Day d in the relevant Chargeable Period define the Rateable Value RV_d, the Live Rateable Value LRVd, the RV Transition Flag RVTF and whether Roads Drainage (RD_d) is chargeable:

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

3.9.5. As per the Wholesale Charges Scheme define the Annual price for Roads Drainage per pound Rateable value for the RVd ($RVRDP$), for the LRVd (LRVRDP) and for the LRVd for Supply Points not in transition for the purposes of Roads Drainage Charges (RDP).

3.9.6. The Unadjusted Roads Drainage Charge $URDC_d$ is

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

for days prior to 2017-04-01.

$$URDC_d = RDP \times RD_d \times RV_d \quad /DIY$$

for days on or after 2017-04-01 and prior to 2018-04-01.

$$URDC_d = \begin{cases} RVF.RVURDCd + (1 - RVF).LRVURDCd & if\ RVTF = 1 \\ RLRVURDCd & if\ RVTF = 0 \end{cases}$$

where

$$RVURDC_d = [RVRDP \times RD_d \times RV_d]/DIY$$

and

$$LRVURDC_d = [LRVRDP \times RD_d \times LRV_d]/DIY$$

and

$$RLRVURDC_d = [RDP \times RD_d \times LRV_d]/DIY$$

for days on or after 2018-04-01, where RVF is a transition factor established in accordance with the Wholesale Scheme of Charges.

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

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

3.9.8. The Roads Drainage Charge [21] RDC_d is then given by

$$RDC_d = \begin{cases} UDRDC_d & \text{if no } SGES_d \text{ or } SER_d = 0 \\ UDRDC_d \times (1 - PCEd) - SGESSR_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 \end{cases}$$

Where, as above, $SGESSR_Y$ is the SGES Sewerage refund applicable for the Financial Year *Y*, PCEd 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" $D_{Tl}^A \leq d < D_{Tu}^A$. If the DPID has been discontinued, then set $D_{Tl}^A = D_{Tu}^A$

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

$$D_{Tl}^C = \max(D_{Tl}^A, D_l^S)$$
$$D_{Tu}^C = \min(D_{Tu}^A, D_u^S)$$

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

3.10.4. The CMA shall use the following procedure for calculating the Daily Actual Volume Discharged ($DAVD_d$)

3.10.5. For each T17 Meter Chain K define the variable TEM_K as

$$TEM_K = \begin{cases} 1 & \text{if the T17 Meter Chain ie either } PrivateEffluent \text{ or } TankeredEffluent \\ 0 & \text{if the T17 Meter Chain K is either } SWWater \text{ or } PrivateWater \end{cases}$$

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

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[21] Compare the footnote at section 2.4.10~~2.4.10~~

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3.10.6. Then define the term NDA Included in Sewerage Calculations $NDAINC_{Td}$ as

$$NDAINC_{Td} = \begin{cases} 1 & if \displaystyle\sum_K MDVOL_{KTd} \times (1 - TEM_K) > 0 \\ 0 & if \displaystyle\sum_K MDVOL_{KTd} \times (1 - TEM_K) = 0 \end{cases}$$

3.10.7. Then the Daily Actual Volume Discharged $DAVD_{Td}$ is

$$DAVD_d = \sum_K (DDV_{Kd} \times (1 - PA_{Td}) \times MDVOL_{KTd})$$
$$- \frac{(NDA_{Td} \times NDAINC_{Td} + FA_{Td})}{DIY} \times (1 - VAC_d) \times (1 - TDISC_d)$$

where PA_{Td} is the Percentage Allowance [22], and FA_{Td} is the Fixed Allowance

3.10.8. 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.

Treatment Types			
	PTI	SSI	BTI
Sub-primary	0	0	0
Primary	1	$\frac{2}{3}$	0
Secondary	1	1	1

3.10.9. Then the Unadjusted Daily Availability Charge UAC_{C_d} can be calculated as [23]

$$UAC_{C_d} = \left[\left(CDV_d \times (Ra + PTI \times Va)\right) + (BTI \times Ba \times sBODl_d) + (SSI \times Sa \times TSSl_d)\right] \times SF \times (1 - VAC_d)$$

for days prior to 2017-04-01 and

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[22] Expressed as a percentage in Central Systems, but used here as a fraction
[23] for the avoidance of doubt, this equation will apply unchanged before and after 1st April 2013

$$UAC_{C_d} = \left[\left(CDV_d \times (Ra + PTI \times Va)\right) + (BTI \times Ba \times sBODl_d) + (SSI \times Sa \times TSSl_d)\right] \times SF$$

for days on or after 2017-04-01

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

$$UOP_{C_d} = DAVD_d \times \left(Ro + PTI \times Vo + \left(BTI \times Bo \times (Ot_d/O_s)\right) + \left(SSI \times So \times (St_d/S_s)\right)\right)$$

where the following parameters are derived from the Trade Effluent DPID

CDV_d $\quad=\quad$ *Chargeable Daily Volume of the Trade Effluent in m^3*
$sBODl_d$ $\quad=\quad$ *Settled Biochemical Oxygen Demand load of the Trade Effluent*
$TSSl_d$ $\quad=\quad$ *Total Suspended Solids load of the Trade Effluent*
SF $\quad=\quad$ *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 $\quad=\quad$ *the fixed strength (settled Chemical Oxygen Demand) of the Trade Effluent*
St_d $\quad=\quad$ *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/m3 per Day
Va = Volumetric/Primary charging component in pence/m3 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/m3
Vo = Volumetric/Primary charging component in pence/m3
Bo = Secondary Treatment charging component in pence/m3
So = Sludge Treatment charging component in pence/m3
0s = The standard strength of settled chemical oxygen Demand of the Foul Sewerage
Ss = The standard strength of settleable solids in the foul sewage.

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

$$UDAC_{C_d} = UAC_{C_d} \times (1 - TES3_d)$$
$$UDOP_{C_d} = UOP_{C_d} \times (1 - TES3_d)$$

where $TES3_d$ is any applicable Trade Effluent Schedule 3 discount.

3.10.11. The Daily Availability Charge AC_{C_d} and the Daily Operating Charge (OP_{C_d}) are given by [24]

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[24] Compare the footnote at section 2.4.10~~2.4.10~~

$$AC_{C_d} = \begin{cases} UDAC_{C_d} & \text{if no } SGES_d \text{ or } SER_d = 0 \\ UDAC_{C_d} \times (1 - PCEd) - SGESSR_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 \end{cases}$$

$$OP_{C_d} = \begin{cases} UDOP_{C_d} & \text{if no } SGES_d \text{ or } SER_d = 0 \\ UDOP_{C_d} \times (1 - PCEd) - SGESSR_Y/(DIY \times SER_d) & \text{if } SGES_d \text{ and } SER_d > 0 \end{cases}$$

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

3.10.12. 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:

$$DTEC_d = AC_{C_d} + OP_{C_d}$$

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 $DTEC_d$

3.10.14. 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.

3.10.15. Where either

- a Sewerage Service Supply Point (with a related Discharge Point) has been vacant for part of the Year (applicable for periods prior to 2017-04-01);
- 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,

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:

$$MC_A = MC \times DIY_{DP}/DIY$$

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;
DIY_{DP} is the number of days in the relevant Year (for Years prior to $2017 - 04 - 01$)
  within the DPID Chargeable Period that the SPID was neither vacant nor exempt
  under the Scottish Government Exemption Scheme;
DIY_{DP} is the number of days in the relevant Year (for Years after $2017 - 04 - 01$) within the
  DPID Chargeable Period that the SPID was not exempt under the
  Scottish Government Exemption Scheme; and
DIY is the number of days in the relevant Year.

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.

3.10.17. 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:

$$MC_{LP} = MC_A \times NRD_{LP} / DIY_{DP}$$

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;
NRD_{LP} is the number of days in the relevant Year (for Years prior to $2017 - 04 - 01$) that the
  relevant Supply Point was Registered to the Licensed Provider and the Discharge Point
  is neither not exempt under the Scottish Government Exemption Scheme nor vacant;
NRD_{LP} is the number of days in the relevant Year (for Years after $2017 - 04 - 01$) that the
  relevant Supply Point was Registered to the Licensed Provider and the Discharge Point is
  exempt under the Scottish Government Exemption Scheme ; and
DIY_{DP} is the number of days in the relevant Year from the date that the Discharge
  Point was commenced in the Central Systems.

3.10.18. 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 the implementing the various Whole- sale 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. *SGES* 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.1.6. *RTS* 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.1.7. *Re-assessed Charges* The Central Systems have the functionality in respect of the Re-assessed Charges which were introduced in 2009-10. There is no functionality which prevents data being submitted for a SPID which charge a SPID in 2008-09 with this method. It is a requirement on Market Participants not to submit data that would utilise this method in 2008-09.

A.1.8. *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. There are no methods for updating the relevant areas for these properties. However, the charges while being correctly calculated are labelled by the system as being "the Property Drainage RV" as opposed to the Area Based Property Drainage charges.

A.1.9. *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.1.10. *Multiple Discounts* Where both a Schedule 29e discount and a 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.1.11. *Proportionality* 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 charges bands are proportioned taking account of (i) the length of time a Supply Point (i) 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 has meter(s) to which the Phasing Premium applies.

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.1.13. *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.1.14. *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.1.15. *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.1.16.   *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.1.17.   *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.1.18.   *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.

Actual Daily Volume	ADV_{Kd}
Actual Sewerage Yearly Volume	$ASYV$
Actual Yearly Volume	AYV
Allocated Tranche	VFA
Annual Price Croft Outside Tap	$COTP$
Annual Price Croft Troughs and Drinking Bowls	$CTDBP$
Annual Price Farm Outside Tap	$FOTP$
Annual Price Farm Troughs and Drinking Bowls	$FTDBP$
Annual Price Property Drainage	PDP
Annual Price Roads Drainage	RDP

Annual Volumes (per charge band)	VA_1, VA_2, VA_3
Annual Weighted Average	AWA
Availability Charge	AC_{Cd}
Biological Capacity charging component in pence/kg per Day	Ba
Biological Treatment Indicator	BTI
Capacity Volume Charge	$CVCHARGE$
Capacity Volume Price	CVP
Capacity Volume Threshold	CVT_i
Chargeable Daily Volume of the Trade Effluent in m^3	CDV_d
Connected	$CONN_d$
Consumption Indicator	CI_d
Croft	$CROFT_d$
Daily Actual Volume Discharged	$DAVD_d, DAVD_{Td}$
Daily Availability Charge	AC_{Cd}
Daily Metered Cost	DMC_d, DMC_{Kd}
Daily Operating Charge	OP_{Cd}
Daily Trade Effluent Charge	$DTEC_d$
Daily Volume	DV_{Ld}, DV_{Kd}
Days	D_1, D_2
Days in Year	DIY
Days in Year within DPID Chargeable Period DPID neither vacant nor in SGES	DIY_DP
DPID	T
Derived Daily Volume	DDV_{Kd}
DPID Active Period	D_{Tl}^A, D_{Tu}^A

DPID Chargeable Period	D_{Tl}^C, D_{Tu}^C
DPID Minimum Charge (and LP's share	MC_A, MC_{LP}
Equivalent AWA	AWA_d
Equivalent Actual Sewerage Yearly Volume	$ASYV_d$
Equivalent Actual Yearly Volume	AYV_d
Estimated Daily Volume	EDV_{Kd}
Farm	$FARM_d$
Fixed Allowance	FA_{Td}
Fixed strength (settled Chemical Oxygen Demand) of the Trade Effluent	Ot
Fixed strength (settleable solids) of the Trade Effluent	St
Industry Level Estimates	ILE
Live Rateable Value	LRVd
Lower Meter Size	LMS, LMS_i
LUVA Adjustment	$LACHARGE$
LUVA Annual Volume	LAV
LUVA Annual Volume(per charge band)	LVA_1, LVA_2, LVA_3
LUVA Charge Bands	LV_1, LV_2, LV_3
LUVA Chargeable	LC_d
LUVA Phasing	LPP_1, LPP_2, LPP_3
LUVA Proportion	$LUVAP$
LUVA Volume Limits	VLL, V_1, V_2
Meter Active	MA_{Kd}
Meter Advance Chargeable Days	$MACD$
Meter Advance Period	MAP

Meter Advance Volume	MAV
Meter DPID Association	$MDASSOC_{KTd}$
Meter DPID Volume	$MDVOL_{KTd}$
Meter Capacity Volume Threshold	$MCVT_{KTd}$
Meter Free Allocation	MFA, MFA_{Kd}
Meter Readings	R_1, R_2
Meter Sewerage Capacity Volume Threshold	$MSCVT_{Kd}$
Meter Sewerage Free Allocation	$MSFA, MSFA_{Kd}$
Meter Size	MS_i
NDA Included	$NDAINC$
NDA Split	$NDASPLIT$
Non Domestic Allowance	NDA_{Td}
Number of Days DPID registered to an LP and neither vacant nor SGES	NRD_{LP}
Number of table items	nT
Outside Taps	OT_d
Outside Taps Charge	OTC_d
Percentage Allowance	PA_{Td}
Percentage Exemption for the day	PCEd
Phasing Premium for the Year	PP_Y
Phasing Premium Charge	$PPCHARGE$
Preliminary Treatment Indicator	PTI
Premium Chargeable	PC_{Kd}
Premium Phasing	PP
Premium Volume	PVA

Private	PVT_K
Property Drainage	PD_d
Property Drainage Charge	PDC_d
Proportional Capacity Volume Threshold	$PCVT$
Proportional Free Allocation	PFA
Proportional LUVA Volume limits	$PLVLL, PLV_1, PLV_2$
Proportional Phasing Premium Free Allocation	$PPPFA$
Proportional Premium Volume Limit	$PPVL$
Proportional Volume Limits	PV_1, PV_2
Return to Sewerage	RTS_{Kd}
Roads Drainage	RD_d
Roads Drainage Charge	RDC_d
Rateable Value Factor	RVF
Rateable Value	RV_d
Reception charging component in pence/m^3	Ro
Reception charging component in pence/m^3 per Day	Ra
RV Unmeasurable Period	D_l^{RV}, D_u^{RV}
RV Unmeasurable Chargeable Period	D_l^C, D_u^C
Schedule 29e Discount	$S29e_d$
Seasonal Factor	SF
Settlement Day	d
Secondary Treatment charging component in pence/m^3	Bo
Service Element Reports	SER_d
Sewage Sludge Indicator	SSI

Sewerage Allocated Tranche	SFA
Sewerage Capacity Volume Charge	$SCVCHARGE$
Sewerage Capacity Volume Price	$SCVP$
Sewerage Capacity Volume Thresholds	$SCVT_i$
Sewerage Chargeable Meter Size	$SCMS_{Kd}$
Sewerage Derived Daily Volume	$SDDV_{Kd}$
Sewerage Meter Chargeable	SMC_{Kd}
Sewerage Meter Annual Non-Volumetric Charge	$SMANVC_i$
Sewerage Meter Based Charge	$SMBC_{Kd}$
Sewerage Proportional Capacity Volume Threshold	$SPCVT$
Sewerage Proportional Free Allocation	$SPFA$
Sewerage Schedule 3	$SS3$
Sewerage Standard Volume Charge	$SSVCHARGE$
Sewerage Standard Volume Price	$BS1$
Sludge Treatment charging component in pence/m^3	So
Sludge Capacity charging component in pence/kg per Day	Sa
SPID Chargeable Period	D_l^A, D_u^A
SPID Settlement Chargeable Period	D_l^S, D_u^S
SPID SWWater Meter Active	$SSWMA_d$
SPID Water Meter Chargeable	$SWMC_d$
Sewerage Schedule 3 Discount	$SS3_d$
SGES Refund Applicable	$SGES_d$
SGES Water Refund	$SGESWR$
SGES Sewerage Refund	$SGESSR$

Standard strength of Settled Chemical Oxygen Demand of the foul sewage	Os
Standard strength of settleable solids in the foul sewage	Ss
Standard Volume Charge	$SVCHARGE$
Trade Effluent Meter	TEM_K
Trade Effluent Schedule 3	$TES3_d$
Trade Effluent Yearly Estimate Volume	$TEYVE$
T17 Meter Chain	K
T17 Meter Chain "Active Period"	$D_{Kl}^A,\ D_{Ku}^A$
T17 Meter Chain Chargeable Period	$D_{Kl}^C,\ D_{Ku}^C$
Tabular Meter Size	TMS_{Kd}
Temporarily Disconnected	$TDISC_d$
Total LUVA Days	TLD
Total Premium Days	TPD
Total Sewerage Meter Chargeable	$TSMC_d$
Total SWWater Meter Active Days	$TSWMAD$
Troughs and Drinking Bowls	TBD_d
Troughs and Drinking Bowls Charge	$TBDC_d$
Unadjusted Daily Availability Charge	UAC_{Cd}
Unadjusted Daily Operating Charge	UOP_{Cd}
Unadjusted Actual Daily Volume	$UADV_{Kd}$
Unadjusted Daily Metered Cost	$UDMC_{Kd}$
Unadjusted Discounted Daily Availability Charge	$UDAC_{Cd}$
Unadjusted Discounted Daily Operating Charge	$UDOC_{Cd}$
Unadjusted Discounted Outside Taps Charge	$UDOTC_d$

Unadjusted Discounted Property Drainage Charge	$UDPDC_d$
Unadjusted Discounted Roads Drainage Charge	$UDRDC_d$
Unadjusted Discounted Troughs and Drinking Bowls Charge	$UDTDBC_d$
Unadjusted Discounted Sewerage Meter Based Charge	$UDSMBC_{Kd}$
Unadjusted Discounted Water Meter Based Charge	$UDWMBC_{Kd}$
Unadjusted Estimated Daily Volume	$UEDV_{Kd}$
Unadjusted Outside Taps Charge	$UOTC_d$
Unadjusted Property Drainage Charge	$UPDC_d$
Unadjusted Roads Drainage Charge	$URDC_d$
Unadjusted Sewerage Meter Based Charge	$USMBC_{Kd}$
Unadjusted Troughs and Drinking Bowls Charge	$UTDBC_d$
Unadjusted Water Meter Based Charge	$UWMBC_{Kd}$
Uncapped Premium Annual Volume	$UPAV$
Upper Meter Size	UMS
Vacancy Adjusted SPID SWWater Meter Active	$VASSWMA_d$
Vacant	VAC_d
Volumetric/Primary charging component in pence/m^3	Vo
Volumetric/Primary charging component in pence/m^3 per Day	Va
Water Chargeable Meter Size	$WCMS_{Kd}$
Water Schedule 3 Discount	$WS3_d$
Water knots	V_1, V_2
Water Meter Annual Non-Volumetric Charge	$WMANVC_i$
Water Meter Based Charge	$WMBC_{Kd}, WMBC_d$
Water Standard Volume Prices	B_1, B_2, B_3

Yearly Proportion	YP
Year	Y
YVE	YVE

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.
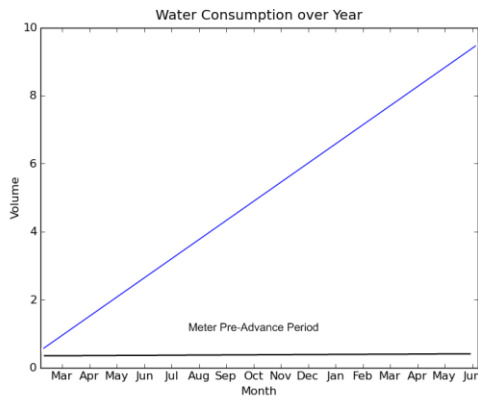

Figure 1: A Single Meter which is Active in Central Systems (from cutover). No reads. Whole period is a "Meter Pre-Advance Period" Volumes estimated from either: *YVE* if submitted, else Industry Level Estimates (*ILE*).

Note *– as per definition; changes to meter Water or Chargeable Sewerage Size would force multiple Meter Pre-Advance Periods in all the examples.*
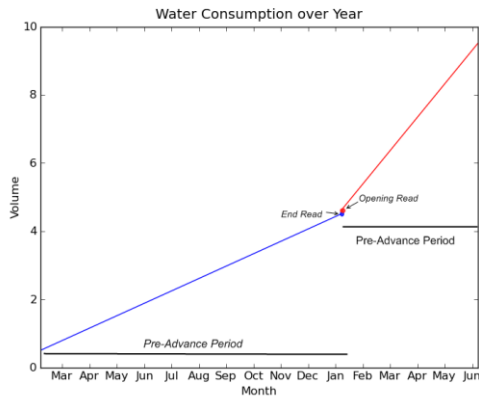
Figure 2: A T17 Meter Chain which is Active in the Central Systems (from cutover). Two Meter Pre-Advance Periods First meter has a single "End" Read. Volumes estimated from appropriate YVE or ILE. Second meter has a single "Opening" Read. Volumes estimated from appropriate YVE or ILE. *Note 1* - YVE is set separately for each meter. *Note 2* - a change in meter size for either meter would force a new Meter Pre-Advance Period
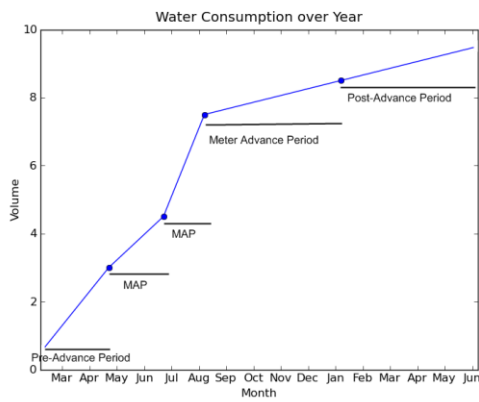

Figure 3: A single meter which is Active in the Central Systems (from cutover) with several reads. The diagram shows (i) A Meter Pre-Advance Period; (ii) Several Meter Advance Periods; and (iii) A Meter Post Advance Period