Market Code Schedule 18

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Charge Calculation, Allocation & Aggregation

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1. Purpose and Scope

The purpose of this document is to provide details of how the CMA will calculate Wholesale Charges, allocate them to the appropriate Licensed Provider, performed on a Settlement Day basis, and aggregate them for each Settlement Day in an Invoice Period. It also provides details of how the CMA will process volumetric charges for the Tariff Year Settlement Run which is performed after the last Invoice Period Settlement Run has been reported for a Year.

This document describes how the CMA will calculate Wholesale Charges in accordance with the Wholesale Charges Scheme. This document does not describe the calculation of Trade Effluent charges, which are detailed separately in CSD0206 (Trade Effluent Process).

Details for the provision of the transition arrangements and other non-standard calculation of Supply Points are provided in Appendix 1 and 2, respectively.

2. Charge Calculation, Allocation and Aggregation

This process details the allocation and aggregation of Wholesale Charges applicable to the following Services, Service Components and Service Elements:

Table one

Service	Service Component	Sub-service Component	Service Element
Water			
	Measured	Volumetric and Non-volumetric	Chargeable Meter Size Volumetric (Multi Meter)
	Miscellaneous Services	Non-volumetric	Field Troughs and Drinking Bowls Farm Field Troughs and Drinking Bowls Croft Outside Taps Farm Outside Taps Croft Caravan
Sewerage			
	Measured	Volumetric AND Non-volumetric	Chargeable Meter Size Volumetric (Multi Meter)
	Miscellaneous Services	Non-volumetric	Property Drainage Road Drainage Caravan

Table 1. Service breakdown to Service Component Sub-service Component and Service Element.

The process for the calculation of non-volumetric charges is different from that for volumetric charges. Section 2.1 sets out the process for the calculation of the non-volumetric charges that will be payable by Licensed Providers. Section 2.2 sets out the process for the calculation of the volumetric charges that will be payable by Licensed Providers.

Where the CMA uses Daily Volumes in volumetric charge calculations, such Daily Volumes will be calculated by the CMA in accordance with the processes set out in CSD0204 (Volume Processing and Estimation).

Scottish Water will provide the Scottish Water Data 20 Business Days (BD) prior to the first preliminary Settlement Run of any Year.

2.1 Non-Volumetric Charge Calculation

Non-Volumetric Charges apply to the Service Elements as outlined in Table 1. The CMA will calculate the total Non-Volumetric Charges payable by each Licensed Provider in relation to each Invoice Period in the following four stages:

1. Calculation of the Annual Non-Volumetric Charge for each Supply Point for which Surface Water Drainage Services are provided (which charges will be derived from the Rateable Value attributable to that Supply Point);
2. Calculation of the Daily Non-Volumetric Charge for each Service Element related to a Supply Point using either the Annual Non-Volumetric Charge calculated at step 1, and/or using the Scottish Water Data (where the Non-Volumetric Charge for the Supply Point is not dependent on the Rateable Value);
3. Allocation of the Daily Non-Volumetric Charge for each Service Element to the Licensed Provider to whom that the corresponding Supply Point was Registered on each Settlement Day and calculation of the sum of all the Daily Non-Volumetric Charges for which each Licensed Provider was liable on each Settlement Day; and
4. Aggregation of the Settlement Day Non-Volumetric Charges for each Invoice Period for each Service Element that each Licensed Provider provides.

CSD0201 (Settlement Timetable and Reporting) provides details about the timing and frequency with which the CMA will report the calculations, allocations and aggregations to Licensed Providers and Scottish Water.

2.1.1 Daily Charge Allocation and Aggregation

In order to calculate the Daily Non-Volumetric Charges for each Supply Point, the relevant annual figures will be identified and converted into daily figures as follows:

Step 1

To calculate the Annual Non-Volumetric Charge for Supply Points for which Surface Water Drainage Services are provided, the CMA will apply a conversion factor to the Rateable Value for each Supply Point as follows:

$$ANVC = RV * TR$$

Where:

RV is the Rateable Value for the Supply Point; and

TR is the non-volumetric rate for the Service Element (as set out in the Wholesale Charges Scheme).

Step 2

The CMA will convert both Annual Non-Volumetric Charges calculated under step 1 above and Annual Non-Volumetric Charges derived using the Scottish Water Data (i.e. where a related Annual Non-Volumetric Charge for a Supply Point does not depend its Rateable Value) into Daily Non-Volumetric Charges as follows:

$$DNVC = {ANVC}/{DIY}$$

Where:

DNVC is the Daily Non-Volumetric Charge for the Service Element;

ANVC is the Annual Non-Volumetric Charge for the Service Element; and

DIY is the number of days in the relevant Year.

Step 3

The CMA will then allocate the Daily Non-Volumetric Charge for each Service Element related to a Supply Point to the Licensed Provider to whom that Supply Point was Registered on each Settlement Day. That allocation will be performed in one of the two ways shown below, depending on whether the Supply Point's particular Service Element's Daily Non-Volumetric Charge was calculated on the basis of Rateable Value.

Rateable Value derived Non-Volumetric Charges

To calculate the Settlement Day Non-Volumetric Charge attributable for a Service Element to any particular Licensed Provider ($SDNVC_{LPRV}$), the CMA will sum the Daily Non-Volumetric Charge for each Service Element related to a Supply Point (for which Surface Water Drainage Services were provided) for the Settlement Day on which it was Registered to that Licensed Provider using the following formula:

$$SDNVC_{LPRV} = \sum DNVC_{RV}$$

Where:

$\sum DNVC_{RV}$ is sum of the Daily Non-Volumetric Charges for the Service Element applicable to the Supply Points Registered to the Licensed Provider for the Settlement Day.

Scottish Water Data derived Non-Volumetric Charges

The CMA will allocate the Daily Non-Volumetric Charges that it has calculated using the Scottish Water Data (rather than the Rateable Value of any Supply Point) to the relevant Licensed Provider for each of the Service Elements that the Licensed Provider provides, as follows:

$$SDNVC_{LPT} = DNVC_T * NSP_{LPT}$$

Where:

$SDNVC_{LPT}$ is the Settlement Day Non-Volumetric Charge payable by each Licensed Provider for the Service Element that they provide;

$DNVC_T$ is the Daily Non-Volumetric Charge applicable to the Service Element for the Settlement Day; and

NSP_{LPT} is the number of Supply Points (for miscellaneous Service Components) or meters (for Measured Service Components where charges depend on the Chargeable Meter Size) Registered to that Licensed Provider for the Service Element on the Settlement Day.

Note that where the Service Element is a meter whose chargeable size is 0mm, the Daily Non-Volumetric Charges is zero. Further details ar set out in Appendix 2, section 5.

2.1.2 Invoice Period Non-Volumetric Charge Aggregation

Step 4

The CMA will aggregate the Settlement Day Non-Volumetric Charges payable by each Licensed Provider for each of the Service Elements relating to services that it provides over an Invoice Period as follows:

$$IPNVC = \sum SDNVC$$

Where:

IPNVC is the Invoice Period Non-Volumetric Charge payable by each Licensed Provider for each Service Element that it provides over an Invoice Period; and

$\sum SDNVC$ is the sum of Settlement Day Non-Volumetric Charges for the Service Element that the Licensed Provider provides over the Invoice Period.

An example output from this calculation will be a monthly non-volumetric charge matrix, as illustrated in Table 2 below:

Table 2

LPID	Service Element (e.g. Chargeable Meter Size)	Number of Settlement Days Registered to Licensed Provider	Charge / £
SWBS	20	50	60.00
SWBS	40	48	48.00
SWBS	80	20	80.00

Table 2. Aggregated Settlement Day Non-Volumetric Charges for each Licensed Provider and the Service Elements that they provided over an Invoice Period

2.2 Volumetric Charge Calculation

The CMA will calculate volumetric charges using a combination of Declining Block Charges, the applicable Free Allocation and Capacity Volume Charges. The CMA will calculate volumetric charges in this way for the following Service Components:

- Measured Water Services; and
- Measured Sewerage Services.

The CMA will aggregate the Volume in relation to each of the meters that relate to a Multi Meter Supply Point before calculating the volumetric charges payable in respect of that Supply Point.

For each Settlement Run in the Year except the Tariff Year Settlement Run the CMA will recalculate the Estimated Weighted Average Unit Rate (EWA) for each Supply Point before the charges are calculated in the Settlement Run[1] as set out in section 2.2.1.

For each Settlement Run in the Year except the Tariff Year Settlement Run Daily Volumes will be used in charge calculations, in accordance with CSD0204 (Volume Processing and Estimation). To calculate volumetric charges at this early stage in the settlement process, CMA applies the EWA calculated above to Estimated Daily Volume(s) supplied to the Supply Point for metered Supply Points. As Meter Reads become available, Actual Daily Volume replaces Estimated Daily Volume in Settlement Runs (typically at R2 for monthly read meters and R3 for bi-annually read meters). The process adopted for all Settlement Runs in the Year except the Tariff Year Settlement Run is outlined in more detail at section 2.2.2. For details on the calculation of Daily Volume see CSD0204 (Volume Processing and Estimation).

As part of the Tariff Year Settlement Run, the CMA will, on the basis of the Meter Reads it has received during the Year, calculate the Actual Weighted Average Unit Rate that should have been applied to each Supply Point over the course of that Year. In the Tariff Year Settlement Run, the CMA will use this Actual Weighted Average Unit Rate to calculate the volumetric charges that should have been payable in relation to each Supply Point over the course of that Year (see section 2.2.3).

2.2.1 Calculation of the Estimated Weighted Average Unit Rate

The CMA will identify the meters associated with each Supply Point at the beginning of the relevant Invoice Period, and for each such meter the Estimated Yearly Volume (YV_E) to be

[1] For the avoidance of doubt no other EWA otherwise calculated or notified to a Licensed Provide at any time shall be used in a Settlement Run

supplied to each meter over the Year. There are various ways in which YV_E can be identified and the order of precedence for estimating YV_E is as follows:

1. The CMA will attempt to derive YV_E using Meter Reads which span a period of greater than or equal to 12 months. The CMA will take the most recent Meter Read for that meter ("the Last Meter Read"). The CMA will then look at the Meter Reads going back in time from the Last Meter Read and pick the first of these Meter Reads such that there is a time span of greater than or equal to 12 months between that read and the Last Meter Read. The CMA will convert those Meter Reads to an Average Daily Volume and then multiply that Average Daily Volume by the number of days in the relevant Year); or
2. Where Meter Read history is not sufficient to cover a period of greater than or equal to 12 months, the CMA will attempt to derive YV_E using Meter Reads which span a period of less than 12 months. The CMA will take the Last Meter Read for that meter and the earliest available Meter Read other than the Last Meter read. The CMA will convert those Meter Reads to an Average Daily Volume, then multiply that Average Daily Volume by the number of days in the relevant Year; or
3. Where a Licensed Provider to whom a Supply Point is Registered has provided the CMA with a forecast YV_E for a meter, the CMA will use that forecast of YV_E.
4. Where a meter relating to a Supply Point has not had a forecast YV_E provided, the CMA will use the Industry Estimate Table to derive YV_E.

The CMA will build the applicable Non-Return to Sewer Allowance for sewerage Supply Points into the YV_E for a meter related to a Supply Point prior to its use in the calculation of the Estimated Weighted Average Unit Rate as follows:

$$YV_{ESS} = YV_{EWS} * NRS$$

Where:

YV_{ESS} is the Estimated Yearly Volume of the sewerage to be supplied to the relevant meter related to a Supply Point based on a water meter;

YV_{EWS} is the Estimated Yearly Volume of the water to be supplied to the meter related to a Supply Point; and

NRS is the applicable Non-Return to Sewer Allowance expressed a percentage of the water Volume.

Single Meter Supply Points

The CMA will calculate the Estimated Weighted Average Unit Rate for Single Meter Supply Points using the single values associated to each of the relevant Free Allocation, Declining Block Charge, and Capacity Volume Charge as follows:

$$EWA = \frac{(C_C * (V_C - V_{FW})) + (B1 * (V1 - V_{FW})) + (B2 * (V2 - V1)) + (B3 * (V3 - V2))}{YV_E}$$

Where:

V_{FW} is the Volume Limit associated with the relevant meter's Free Allocation;

C_C is the relevant Capacity Volume Charge Unit Rate;

V_C is the Volume Limit associated with the relevant meter's Capacity Volume Charge;

B1 is the Unit Rate for Band one;

V1 is the Volume Limit associated with Band one;

B2 is the Unit Rate for Band two;

V2 is the Volume Limit associated with Band two;

B3 is the Unit Rate for Band three;

V3 is the Volume Limit associated with Band three; and

YV_E is the Estimated Yearly Volume to be supplied to the Supply Point over the forthcoming Year;

In cases where the value of the Estimated Yearly Volume is equal to or less than any Volume Limit the CMA will substitute YV_E into the calculation.

The CMA will calculate the Estimated Weighted Average Unit Rate for water and sewerage Supply Points separately.

Multi Meter Supply Points

As Declining Block Charges are applied at Supply Point level, meter based Volumes are also aggregated to Supply Point level for Multi Meter Supply Points.

When the CMA calculates the Estimated Weighted Average Unit Rate for Multi Meter Supply Points, the CMA will substitute V_{FW} and V_C in the foregoing equation with the sum of the Volume Limits applicable to the relevant Free Allocation and Capacity Volume Charge applicable to all the meters related to that Multi Meter Supply Point; using the following equation:

$$V_{MT} = \sum V_M$$

Where:

V_{MT} is the total Volume Limit for all the meters related to a Supply Point; and

$\sum V_M$ is the sum of Volume Limits for each the meter related to a Supply Point.

The CMA will build any applicable Non-Return to Sewer Allowance into its calculations of the Estimated Weighted Average Unit Rate for Multi Meter Supply Points in the same way as it will in relation to Single Meter Supply Points.

The total Estimated Yearly Volume for the Multi Meter Supply Point will be the sum of the Estimated Yearly Volume of each meter related to the Supply Point.

$$YV_{EMT} = \sum YV_{EM}$$

Where:

YV_{EMT} is the total Estimated Yearly Volume for all the meters related to a Supply Point; and

$\sum YV_{EM}$ is the sum of Estimated Yearly Volumes for each meter related to a Supply Point.

2.2.2 Calculation and allocation of charges for volume Settlement Runs

The CMA will calculate the Estimated Daily Volumetric Charge for each Supply Point using the Supply Point's Estimated Weighted Average Unit Rate for the relevant Invoice Period and its Daily Volume. The CMA will perform this calculation and allocate the Estimated Daily Volumetric Charges to the relevant Licensed Provider as part of Settlement Runs P1, R1, R2 and R3.

Estimated Daily Volumetric Charge calculation

The CMA will calculate the Estimated Daily Volumetric Charge for each Supply Point as follows:

$$EDVC = EWA * DV$$

Where:

EDVC is the Estimated Daily Volumetric Charge for the Supply Point;

EWA is the Estimate Weighted Average Unit Rate for the Supply Point for the relevant Invoice Period; and

DV is the Daily Volume for the Supply Point[2].

For Sewerage Supply Points the Non-Return to Sewer Allowance will be built into the Daily Volume for each meter related to the Supply Point prior to its use in the calculation.

[2] For a Multi Meter Supply Point this will be the sum Daily Volumes for each of the meters related to the Supply Point.

This Estimated Daily Volumetric Charge value will then be stored, along with Daily Volume for use in Settlement Day based Settlement Runs as part of the Supply Point's Trading Data.

Daily Allocation and Aggregation

The CMA will allocate each Supply Point's Estimated Daily Volumetric Charge and Volume to the Licensed Provider to whom it was Registered in respect of each Settlement Day. It will aggregate those charges to show the Settlement Day Volumetric Charge and Settlement Day Volume supplied by a Licensed Provider for each Service Element (Chargeable Meter Size or in aggregate for Multi Meter Supply Points) in respect of Water or Sewerage Services.

The CMA will perform these aggregations using the following formula:

Charge Formula:

$$SDVC_{LPCMS} = \sum EDC_{CMS}$$

Where:

$SDVC_{LPCMS}$ is the Settlement Day Volumetric Charge payable by the relevant Licensed Provider for each Service Element (e.g. Chargeable Meter Size); and

$\sum EDC_{CMS}$ is the sum of the Estimated Daily Volumetric Charges payable by the Licensed Provider for each Service Element (e.g. Chargeable Meter Size).

Volume Formula

$$SDV_{LPCMS} = \sum DV_{CMS}$$

Where:

SDV_{LPCMS} is Settlement Day Volume for the Licensed Provider to each Service Element; and

$\sum DV_{CMS}$ is the sum of the Daily Volumes supplied by the Licensed Provider for each Service Element.

An example of the matrix produced by this allocation and aggregation is illustrated in Table 3 below:

Table 3

LPID	Service Element	Volume / m^3	Charge / £
SWBS	20mm	500	45.00
SWBS	40mm	480	43.00
SWBS	80mm	40	8.00

Table 3. Aggregated volume and charge data for each Licensed Provider and Chargeable Meter Size for any given Settlement Day

Invoice Period (Monthly) Aggregation

The CMA will aggregate the Settlement Day Volumetric Charges payable by each Licensed Provider for each Invoice Period as follows:

$$IPVC_{LPCMS} = \sum SDVC_{LPCMS}$$

Where:

$IPVC_{LPCMS}$ is the Invoice Period Volumetric Charge payable by the LP for each Service Element over the Invoice Period; and

$\sum SDVC_{LPCMS}$ is the sum of the Settlement Day Volumetric Charges payable by the Licensed Provider for each Service Element over the Invoice Period.

The volume formula will be as follows:

$$IPV_{LPCMS} = \sum SDV_{LPCMS}$$

Where:

IPV_{LPCMS} is the Volume supplied for the Licensed Provider to each Service Element over the Invoice Period; and

$\sum SDV_{LPCMS}$ is the sum of the Settlement Day Volumes for the Licensed Provider to each Service Element over the Invoice Period.

An example of the matrix produced by this aggregation process is illustrated in Table 4 below:

Table 4

LPID	Service Element	Volume / m^3	Charge / £
SWBS	20mm	20,000	42,667.00
SWBS	40mm	34,780	64,890.00
SWBS	80mm	4,000	8,752.00

Table 4. Aggregated volume and charge data at Licensed Provider and Chargeable Meter Size level for Invoice Period

The Invoice Period matrix will form part of the Settlement Reporting provided under Settlement Runs P1 to R3.

2.2.3 Tariff Year Settlement

The CMA will perform the Tariff Year Settlement Run to show any difference between charges based on the Estimated Weighted Average Unit Rate (derived for each early

Settlement Run) and the Actual Weighted Average Unit Rate for each Supply Point (derived at the end of the Settlement Timetable as part of this Settlement Run).

The Tariff Year Settlement Run is the final Settlement Run (RF) for any Year and has two key steps:

- Calculation of the Actual Weighted Average Unit Rate for each Supply Point; and
- Calculation of allocated Volume and volumetric charges for each Licensed Provider.

Calculation of the Actual Weighted Average Unit Rate

The CMA will use the Meter Reads provided to it for each meter related to a Supply Point in order to calculate the Volume supplied to each Supply Point within the Year to calculate the Actual Weighted Average Unit Rate for each Supply Point. This calculation will factor in any relevant changes to the SPID Data during the Year (e.g. a change of Chargeable Meter Size or a Disconnection).

To perform this calculation, the CMA will first sum the Actual Daily Volumes for each Supply Point, (which will produce the Actual Yearly Volume for each Supply Point): as follows:

$$YV_A = \sum (DV_{MA} * D_{MA})$$

Where:

YV_A is the Actual Yearly Volume[3];

DV_{MA} is the Actual Daily Volume over the relevant Meter Advance Period for a meter; and

D_{MA} is the number of days in the relevant Meter Advance Period for a meter.

Meter Reads commonly span Years, therefore by deriving Actual Yearly Volume from the Actual Daily Volumes for each Supply Point, the CMA will create the best possible representation of Actual Yearly Volume. In addition, by using the Actual Daily Volume figures used in previous Settlement Runs, the CMA will also ensures that the final Settlement Run (RF) is based on precisely the same Volume used in the R3 Settlement Runs. This will ensure that the Tariff Year Settlement Run takes account of changes to each Supply Point's Unit Rate only (i.e. changes between the Estimated Weighted Average Unit Rate to Actual Weighted Average Unit Rate) and not changes in Volume.

The CMA will build in any applicable Non-Return to Sewer Allowance to each meter related to a Supply Point's YV_A prior to its use in the calculation of the Actual Weighted Average Unit Rate as follows:

[3] For a Multi Meter Supply Point this will be the sum Actual Yearly Volumes for each of the meters related to the Supply Point.

$$YV_{ASS} = YV_{AWS} * NRS$$

Where:

YV_{ASS} is the Actual Yearly Volume of Sewage Services supplied to the meter related to a Supply Point, as identified from Meter Reads from the relevant water meter;

YV_{AWS} is the Actual Yearly Volume of Water Services supplied to the meter related to a Supply Point; and

NRS is the applicable Non-Return to Sewer Allowance, expressed as a percentage of the water meter Volume.

The CMA will then use this value when deriving the Actual Weighted Average Unit Rate for sewerage Supply Points.

The CMA will calculate the Actual Weighted Average Unit Cost for each Supply Point (using the same formula as that used to calculate the Estimated Weighted Average Unit Rate), as follows:

$$AWA = \frac{(C_C * (V_C - V_{FW})) + (B1 * (V1 - V_{FW})) + (B2 * (V2 - V1)) + (B3 * (V3 - V2))}{YV_A}$$

Where:

V_{FW} is the Volume Limit associated with the relevant Supply Point's Free Water Allocation;

C_C is the Unit Rate of the relevant Supply Point's Capacity Volume Charge;

V_C is the Volume Limit associated with the relevant Supply Point's Capacity Volume Charge;

B1 is the Unit Rate for Band one;

V1 is the Volume Limit associated with Band one;

B2 is the Unit Rate for Band two;

V2 is the Volume Limit associated with Band two;

B3 is the Unit Rate for Band three;

V3 is the Volume Limit associated with Band three; and

YV_A is the Actual Yearly Volume.

In cases where the value of YV_A is equal to or less than any Volume Limit, the CMA will substitute it into the calculation in place of that Volume Limit.

The CMA will adjust the Volume Limits used in its calculation of a Supply Point's Actual Weighted Average Unit Rate in cases where a Supply Point has been Registered in the Supply Point Register as a New Connection, Disconnected or a change to the Chargeable Meter Size applicable to a meter has been notified to it during the relevant Year. The CMA will calculate that adjustment as follows:

$$V_A = V\left(DR / DIY\right)$$

Where:

V_A is the proportionate Volume Limit for each Band engaged during the Year;

V is the normal Volume Limit for each charge Band engaged during the Year;

DR is the number of days that the Supply Point was Registered with the CMA during the relevant Year; and

DIY is the number of days in the relevant Year.

The CMA will sum the Capacity Volume Charges and Free Allocations for each meter relative to a Multi Meter Supply Points using the following formula:

$$V_{MT} = \sum V_M$$

Where:

V_{MT} is the total Volume Limit applicable to all the meters related to a Multi Meter Supply Point; and

$\sum V_M$ is the sum of the Volume Limits applicable to for each the meter related to a Multi Meter Supply Point.

The CMA will then use these alternative values of V_{FW} and V_C in its calculation of the Actual Weighted Average Unit Rate for affected Supply Points.

Calculation of Allocated Volumes and Charges

The CMA will calculate and report on the volumetric charges payable by each Licensed Provider in respect of each Year in a way which shows the aggregate Volume supplied by each Licensed Provider (as well as the aggregate volumetric charges payable by each Licensed Provider) for each Service Element.

The CMA will follow these sub-processes when allocating Volume and volumetric charges to each Licensed Provider:

1 – Derive Actual Yearly Volume supplied to each Supply Point Registered to each Licensed Provider (using the dates in that Year between which the Supply Point was Registered to the Licensed Provider);

2 – Derive the volumetric charges associated with that Actual Yearly Volume;

3 – Aggregate the Actual Yearly Volume and Volumetric Charges attributable to each Licensed Provider in relation to each Service Element, this will produce Actual Yearly Volumes and volumetric charges attributable to each Licensed Provider; and

4 – Aggregate each Invoice Period Settlement Report generated following an R3 Settlement Run, which will allow Licensed Providers and Scottish Water to identify any difference between the volumetric charges paid or payable by each Licensed Provider calculated on the basis of the Estimated Weighted Average Unit Rate for each Supply Point and the Actual Weighted Average Unit Rate for each Supply Point.

Step 1

The CMA will derive the proportion of the Actual Yearly Volume supplied to each Supply Point for which each Licensed Provider is responsible as follows:

$$YV_{LPA} = \sum (DV_{LPMA} * D_{LPMA})$$

Where:

YV_{LPA} is the Volume supplied to the Supply Point whilst it was Registered to the Licensed Provider in the course of the relevant Year[4];

DV_{LPMA} is the Actual Daily Volume supplied to the meter related to a Supply Point during the relevant Meter Advance Period whilst the Supply Point was Registered to the Licensed Provider; and

D_{LPMA} is the number of days in the relevant Meter Advance Period for which the meter related to a Supply Point was Registered to the Licensed Provider.

Step 2

The CMA will then calculate the volumetric charges payable by the Licensed Provider in respect of the Actual Yearly Volume supplied to each Supply Point using the following formula:

$$AVC_{LPA} = AWA * YV_{LPA}$$

Where:

AVC_{LPA} is the Actual Volumetric Charge payable in respect of the Supply Point whilst that Supply Point was Registered to the Licensed Provider in the relevant Year;

YV_{LPA} is the Volume supplied to the Supply Point whilst that Supply Point was Registered to the Licensed Provider in the relevant Year; and

AWA is the Actual Weighted Average Unit Rate for the relevant Year for the Supply Point.

The CMA will also apply Non-Return to Sewage Allowance to the value of YV_{LPA} in this calculation where the calculation relates to a sewerage Supply Point.

[4] For a Multi Meter Supply Point this will be the sum Actual Yearly Volumes for each of the meters related to the Supply Point.

Step 3

The CMA will then aggregate each of these Volumes and volumetric charges using the following formulae:

$$AVC_{LPMS} = \sum AVC_{LPA}$$

Where:

AVC_{LPMS} is the Actual Volumetric Charge payable by a Licensed Provider in respect of each of its relevant Supply Points for the relevant Year, expressed in relation to each Service Element; and

$\sum AVC_{LPA}$ is the sum of Actual Volumetric Charges payable in respect of the Supply Points for the period which the Supply Points were Registered to Licensed Provider in that Year for the Service Element being aggregated.

The CMA will aggregate the Volumes supplied by each Licensed Provider in respect of each Service Element using the following formula:

$$AV_{LPMS} = \sum AV_{LPA}$$

Where:

AV_{LPMS} is the Actual Yearly Volume supplied to all Supply Points that were Registered to the Licensed Provider during the relevant Year, expressed in relation to a Service Element; and

$\sum AV_{LPA}$ is the Sum of Volumes for the Supply Points over the period the LP was Registered in that Year for the Service Element being aggregated.

The following Table 5 matrix is an example of the matrix that the CMA will produce following these calculations. It is identical in structure to the Daily and Invoice Period matrices above, save that the data shown in this matrix is derived using each Supply Point's Actual Weighted Average Unit Rate rather than its Estimated Weighted Average Unit Rate.

Table 5

LPID	Service Element	Volume / m^3	$Charge_{AWA}$ / £
SWBS	20mm	200,000	450,000.00
SWBS	40mm	342,780	647,890.00
SWBS	80mm	40,000	81,752.00

Table 5. Aggregated volume and Actual Volumetric Charge data at LP and Chargeable Meter Sise level for a Year.

Step 4

The CMA will aggregate the Volume and volumetric charges expressed in each Invoice Period Settlement Report produced during the relevant Year following the R3 Settlement Runs using the following formula for volumetric charges:

$$TYVC_{LPCMS} = \sum IPVC_{LPCMS}$$

Where:

$TYVC_{LPCMS}$ is the Total Year Volumetric Charge payable by the Licensed Provider in respect of a Service Element; and

$\sum IPVC_{LPCMS}$ is the sum of Invoice Period Volumetric Charges for the Licensed Provider in respect of a Service Element in the Year.

The CMA will aggregate the relevant Volume using the following formula:

$$TYV_{LPCMS} = \sum IPV_{LPCMS}$$

Where:

TYV_{LPCMS} is the Total Year Volume for the Licensed Provider during the relevant Year, for a particular Service Element; and

$\sum IPV_{LPCMS}$ is the sum of Invoice Period Volume for the LP at Service Element level in the Tariff year.

The following Table 6 matrix is an example of the matrix that the CMA will produce following these calculations:

Table 6

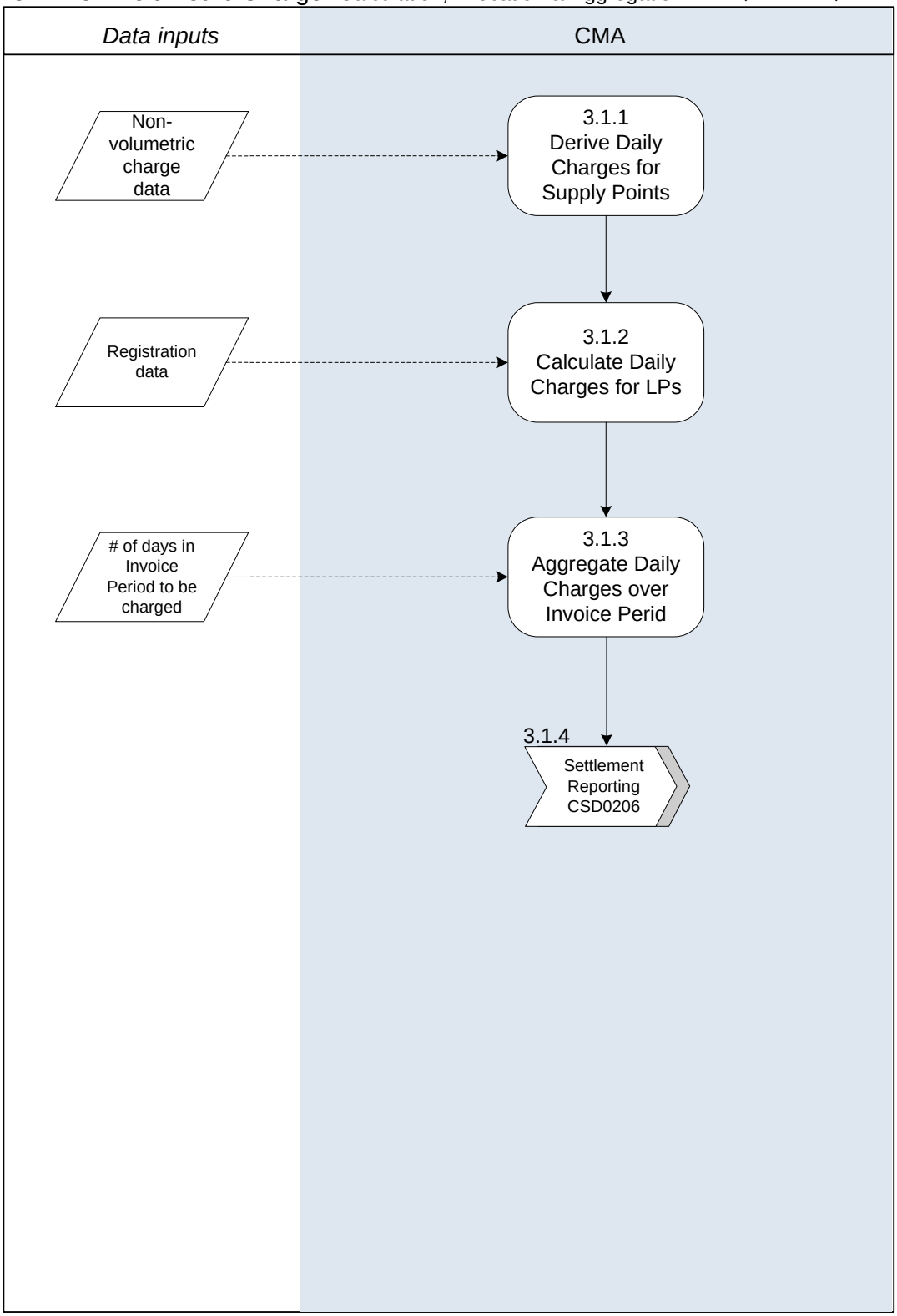
LPID	Service Element	Volume / m^3	$Charge_{EWA}$ / £
SWBS	20mm	200,000	400,000.00
SWBS	40mm	342,780	624,630.00
SWBS	80mm	40,000	90,888.00

Table 6. Aggregated volume and Total Year Volumetric Charge data for R3 at Licensed Provider & Chargeable Meter Size level for a Year.

Please note that the CMA will not identify any difference between the volumetric charges payable by each Licensed Provider in respect of a Year derived on the basis of each relevant Supply Point's Estimated Weighted Average Unit Rate and on the basis of each relevant Supply Point's Actual Weighted Average Unit Rate. Licensed Providers and Scottish Water may be required to perform such calculations independently on the basis of the information provided by the CMA.

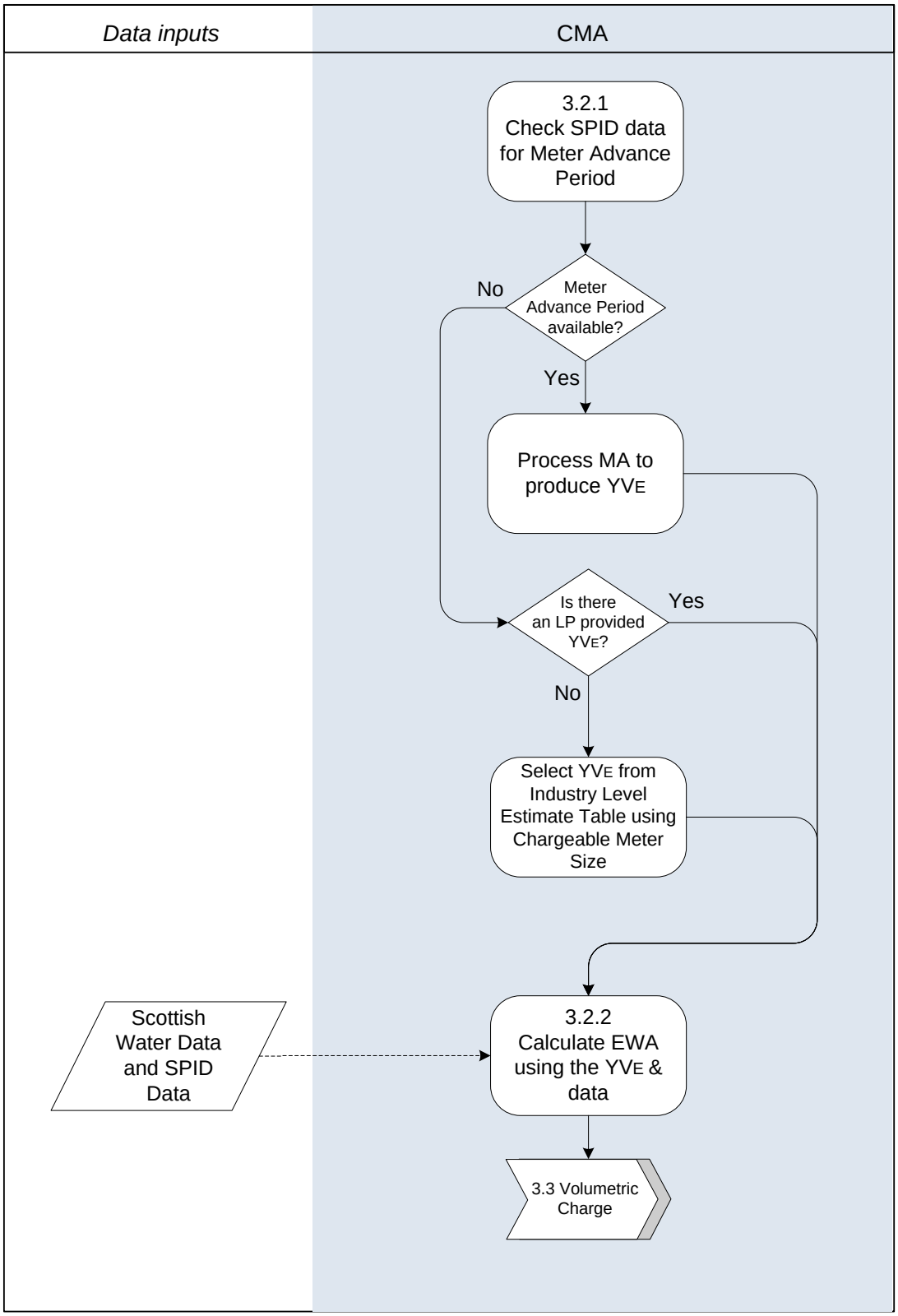
3. Process Diagrams

3.1. Non-Volumetric Charge -Calculation, Allocation & Aggregation Updated 12 Apr 2007



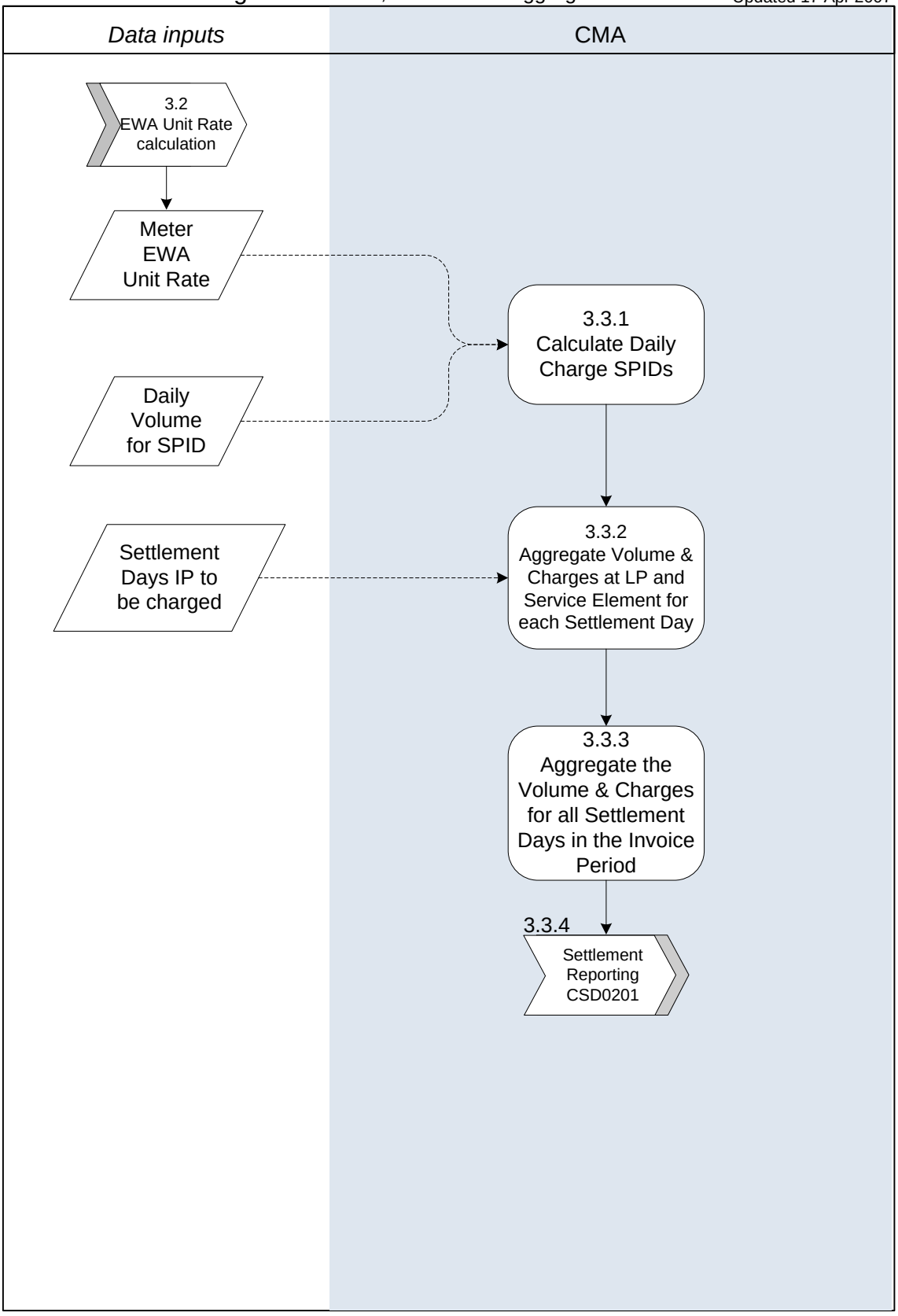
3.2 Calculation of EWA unit cost

Updated 12 Apr 2007



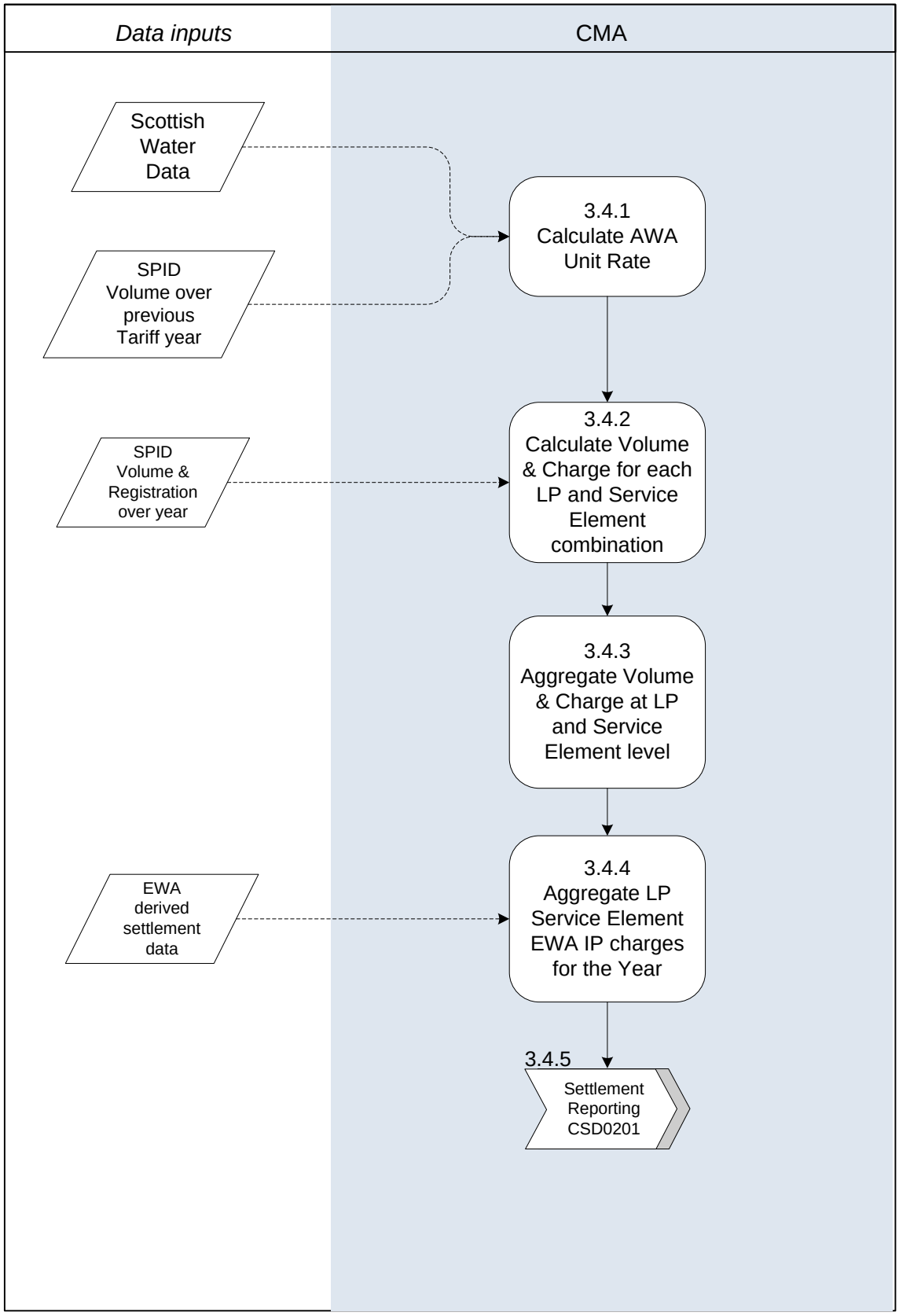
3.3 Volumetric Charge -Calculation, Allocation & Aggregation

Updated 17 Apr 2007



3.4 Tariff Year Settlement

Updated 17 Apr 2007



4. Interface and Timetable Requirements

4.1 Non-Volumetric charge Processing

Step Ref:	When	Requirement	From	To	Information	Method
3.1.1	As received or updated	Calculate the Daily Non-Volumetric Charges	CMA		Rateable Value Rate	CMA internal
3.1.2		Daily Non-Volumetric Charge production, aggregation and allocation for Settlement Day (SD)	CMA		Applicable Daily Non-Volumetric Charges Number of Supply Points and meters attributable to each Service Element [Licensed Provider registration] Settlement Day (SD)	CMA internal
3.1.3		Aggregate charges for each Supply Point in the Invoice Period	CMA		Supply Point's Daily Non-Volumetric Charges Settlement Days in Invoice Period	CMA internal
3.1.4	As required for Settlement Runs P1, R1, R2 and R3	Provide data to the Settlement Report function	CMA	CMA	As above in 3.1.3.	CMA internal

4.2 Estimate Yearly Volume calculation Process

Step Ref:	When	Requirement	From	To	Information	Method
3.2.1	20 BD prior 1st P1 for Tariff year or as required from 3.2.2b	Obtain Estimated Yearly Volume	LP, SW or CMA	CMA	Derived from Meter Advance Period Licensed Provider forecast Estimated Yearly Volume Default Estimated Yearly Volume based on chargeable Meter Size	
3.2.2a	5 BD after 3.2.1	Calculate Estimated Weighted Average Unit Rate	CMA		Applicable Scottish Water Data Estimated Yearly Volume	CMA internal
3.2.2b	As required	Calculate Estimated Weighted Average Unit Rate	CMA		When a New Connection or a change of Chargeable Meter Size is notified to the CMA Scottish Water Data Estimated Yearly Volume	CMA internal

4.3 Volumetric Charge calculation, allocation and aggregation process

Step Ref:	When	Requirement	From	To	Information	Method
3.3.1	As new Daily Volumes are derived	Calculate Estimated Daily Volumetric Charge (Service Element level)	CMA		Estimated Weighted Average Unit Rate Daily Volume for Supply Point	CMA internal
3.3.2		Aggregate Daily Volumes and Estimated Daily Volumetric Charges for each Licensed Provider and Service Element for each Settlement Day				CMA internal
3.3.3		Aggregate all Settlement Day Volumes and Volumetric Charges, for each Settlement Day within an Invoice Period				CMA internal
3.3.4	As required for Settlement Runs P1, R1, R2 and R3	Provide data to the Settlement Report function	CMA	CMA		CMA internal

4.4 Tariff Year Settlement Process

Step Ref:	When	Requirement	From	To	Information	Method
3.4.1		Calculate the Actual Weighted Average Unit Rate for each Supply Point	CMA		Scottish Water Data Meter advance based Volume for the SPID	CMA internal
3.4.2		Actual Volume and Volumetric Charge for each Supply Point			Actual Weighted Average Unit Rate Total Volume supplied by a Licensed Provider for the Year LP registration data	CMA internal
3.4.3		Aggregate Licensed Provider Actual Volume and Actual Volumetric Charge for each Service Element				CMA internal
3.4.4		Aggregate Licensed Provider Invoice Period Volume and Volumetric Charges from each Invoice Period in the Year, based on Estimated Weighted Average Unit Rate			Settlement Reports containing EWA charge data.	CMA internal
3.4.5	5 Business Days after R3 for last Invoice Period in the Year	Provide data to the Settlement Report function.	CMA	CMA		CMA internal

Appendix 1 –Transition Arrangements

The CMA shall apply the following transition arrangements when calculating Wholesale Charges.. Scottish Water shall notify the CMA that each of the transition arrangements is in place (as appropriate), unless otherwise stated.

Moving from Rateable Value derived to meter derived charges

Supply Points at premises affected by Scottish Water's meter installation programme will have Wholesale Charges phased from values derived from the Rateable Value to meter derived Volumes for Water and Sewerage Services. This will be achieved by transitioning the non-volumetric charges and volumetric charges derived from the Rateable Value to amounts based on Chargeable Meter Size and the Volume recorded on the meter(s) at a Supply Point for the Year.

The transition will involve Licensed Providers paying a decreasing proportion of the Rateable Value derived charges for their Supply Points at affected premises in each Year and an increasing proportion of meter derived charges. The proportions are set out in the Wholesale Charges Scheme.

In order to phase changes in Wholesale Charges, Supply Points that form part of these arrangements will be notified to the CMA by Scottish Water or Scottish Water Business Stream, as appropriate, as part of the dataset provided under the under the Transitional Duties under Schedule 5 of the Market Code. Thereafter, New Supply Points arising from an Entry Change of Use or Gap Site which are affected by Scottish Water's meter installation programme shall be notified in accordance with CSD0101 (Registration: New Connections and New Supply Points).

The CMA will apply the percentage when a meter(s) is installed at the Supply Point, and this will relate to both the Water and Sewerage Services Supply Points in the case of a Related Water Supply Meter, unless Scottish Water notify that the Supply Point is Unmeasurable (see CSD0104 Maintain SPID Data)

The application of these percentages will be performed on the following Service Elements:

the RV derived volumetric charge;

the RV derived non-volumetric charge (for the assessed meter size);

the metered volumetric charge; and

Chargeable Meter Size non-volumetric charge.

These charges are then multiplied by the corresponding percentage proportion for the Year. These will then be allocated and aggregated at the Service Element level they relate to for Settlement Reporting.

The following formula will be used for each of the above Service Elements:

$$C_T = C * P_T$$

Where:

C_T is the charge (volumetric or non-volumetric) associated to the relevant percentage;

C is the normal charge (volumetric or non-volumetric) calculated for the Service Element; and

P_T is the percentage applicable to the normal charge (Rateable Value or meter derived).

Where Supply Points are notified to the CMA by Scottish Water as affected by their meter installation programme these Supply Points will be included in the arrangements set out in this CSD until the phasing comes to an end, as set out in the Wholesale Charge Scheme, unless the Supply Point is Permanently Disconnected prior to that date.

Supply Points with 20mm meters

Supply Points containing 20mm meter(s) are subject to a phasing premium on their Water Services volume greater than the allocated tranche and less than the capacity volume threshold. This charge applies to both Rateable Value assessed and metered Supply Points.

This applies for both the Capacity Volume Charge and the Standard Volume Charge associated to Volume at a Supply Point. The percentage premium is set out in the Wholesale Charges Scheme.

The allocation of this percentage will be performed by adding the following component for each 20mm meter at a Supply Point to the normal EWA and AWA Unit Rates:

$$P_{20mm} = \frac{PP_{20mm} * (B1 + C_C) * (V_C - V_{FW})}{YV}$$

Where:

P_{20mm} is the premium Unit Rate for the 20mm meter relating to a Supply Point;

PP_{20mm} is the percentage premium for the Year;

B1 is the Unit Rate for Band one;

C_C is the Capacity Volume Charge Unit Rate;

V_C is the Volume Limit associated with the Capacity Volume Charge for a 20mm meter;

V_{FW} is the Volume Limit associated with the meter's Free Allocation; and

YV is the Yearly Volume (Estimated or Actual) supplied to the Supply Point over the Year.

Where the YV is equal or less than any Volume Limit the CMA will substitute YV into the calculation.

For a Multi Meter Supply Point containing more than one 20mm meter the Volume limits for V_C and V_{FW} will be multiplied by the number of 20mm meters.

$$V_{MT} = n * V_M$$

Where:

V_{MT} is the aggregate Volume Limt for the Supply Point;

V_M is the 20mm Volume Limit for the meter (V_C or V_{FW}); and

n is the number of 20mm meters contained in the Supply Point.

The 20mm premium is not applicable to any 20mm meter at a Supply Point that was formerly under a large-user volume agreement.

Formerly large-user volume agreements (LUVA)

In order to phase changes in Wholesale Charges, Supply Points at premises that were formerly under a large user volume agreement from Scottish Water will receive an adjustment on their Standard Volume Charge for Water Service volumes greater than 100,000m^3.

The percentage changes for the phasing adjustments are shown in the Wholesale Charges Scheme.

Supply Points that were formerly under large-user volume agreements will be notified to the CMA by Scottish Water.

The allocation of this percentage will be performed by subtracting the following component from the normal EWA and AWA Unit Rates:

$$P_{LUVA} = \frac{(PA1 * B1 * (V1 - V_{LUVA})) + (PA2 * B2 * (V2 - V1)) + (PA3 * B3 * (V3 - V2))}{YV}$$

Where:

P_{LUVA} is the LUVA price adjustment component for the Supply Point;

PA is the percentage change for the Year of the band (PA1, PA2 and PA3)[5];

V_{LUVA} is the Volume Limit associated with the LUVA (i.e. 100,000m^3);

B1 is the Unit Rate for Band one;

V1 is the Volume Limit associated with Band one;

B2 is the Unit Rate for Band two;

V2 is the Volume Limit associated with Band two;

B3 is the Unit Rate for Band three; and

V3 is the Volume Limit associated with Band three; and

YV is the Yearly Volume (Estimated or Actual) supplied to the Supply Point over the Year.

Where the YV is equal or less than any Volume Limit the CMA will substitute YV into the calculation.

The Commission will arrange notification of the termination of these arrangements to the CMA in a format to be agreed with the CMA.

[5] Where a percentage change is expressed as a negative in the Wholesale Charges Scheme it will be express as a positive value in the formula above and vice versa.

Appendix 2 –Non-Standard Calculations for Supply Points

The CMA shall apply the following non-standard arrangements when calculating Wholesale Charges.. Scottish Water shall notify the CMA in each case where a non-standard arrangement applies unless otherwise stated. The non-standard arrangements apply to both Water and Sewerage Services unless otherwise stated.

APP 2.1: The Water and Sewerage Services Charges (Exemption) (Scotland) Regulations 2002 as amended

Supply Points relating to premises that qualify for exemption under these regulations are exempt from Wholesale Charges for Water and Sewerage Services until 31 March 2010. The CMA will to be notified of the status, and any subsequent changes of that status, at any Supply Point at premises that are under this status by Scottish Water or Scottish Water Business Stream (as appropriate) as part of the dataset provided under the Transitional Duties under Schedule 5 of the Market Code.

The CMA will disapply all Wholesale Charges for Supply Points at premises that are affected by this exemption until April 2010 unless otherwise notified. Where any affected Supply Point(s) ceases to qualify for the exemption prior to 31 March 2010, the Registered Licensed Provider shall notify the CMA of this in accordance with CSD0104 (Maintain SPID Data).

Supply Points relating to premises that qualify for exemption will each be credited as specified in the Wholesale Charges Scheme until 31 March 2010 unless otherwise notified. This credit will be applied on a monthly basis against the Wholesale Charges for the Licensed Provider(s) Registered at the relevant Supply Point(s) for that month or part-month. Where a Supply Point Transfers to another Licensed Provider mid month, this credit will be applied on a pro-rata basis to each Licensed Provider.

APP 2.2: Services used for Fire-Fighting purposes

Scottish Water shall notify the CMA of any allowance agreed with the Licensed Provider under the Operational Code in respect of a reduction in the Volume of Water and/or Sewerage Services at a premises used for fire-fighting purposes. This shall be notified in the format requested by the CMA no later than 10 Business Days after the End of Tariff Year Settlement Run (RF) to be used in an ad hoc Settlement Run performed for these purposes. The notification will contain the volume reduction to be applied to the metered volume and the date range for which such reduction is to be applied, for each of the affected Water and Sewerage Services Supply Points.

The reduced Yearly Volume will be used to derive the AWA Unit Rate and the volume reduction will be applied in the Meter Advance Period in which it occurred in order to establish the Wholesale Charges that should have been applied excluding that Volume.

APP 2.3: Schedule 3 Agreements

The CMA will be notified of all Supply Points affected by a Schedule 3 Agreement by Scottish Water or Scottish Water Business Stream, as appropriate as part of the dataset provided under the Transitional Duties (Schedule 5 of the Market Code). The Commission will arrange for the percentage discount to be applied to the calculation of Wholesale Charges for each Supply Point and an effective from date (EFD), which will be notified to the CMA in a format to be agreed with the CMA.

The date of termination of the Schedule 3 Agreement shall be notified by Scottish Water in accordance with CSD0104. (Maintain SPID Data). Where any initial notification was in error, notification of revision will be provided in accordance with CSD0105 (Error Rectification and Retrospective Amendments).

As a result the following formula will be used:

$$C_{S3} = C * (1 - P_{S3})$$

Where:

C_{S3} is the charge associated with the Schedule 3 percentage discount for the Service Element;

C is the charge as calculated for the Service Element being discounted; and

P_{S3} is the percentage discount to be applied following the Commission's determination under paragraph 2 of schedule 3 to the Act in relation to that Schedule 3 Agreement.

APP 2.4: Departures granted under section 29E of the 2002 Act

Following notification by Scottish Water under CSD 0101 (Registration New Connections), or CSD0104 (Maintain SPID Data) of any consent granted by the Commission to Scottish Water to depart from the Wholesale Charges Scheme under section 29E of the 2002 Act for a Supply Point, the CMA will apply the percentage discount] for the Year, or part Year, as relevant.

The date of termination of the arrangements or the percentage so notified shall be notified by Scottish Water in accordance with CSD0104. (Maintain SPID Data). Where the initial notification contained any error, notification of revision will be provided in accordance with CSD0105 (Error Rectification and Retrospective Amendments).

The following formula will be used:

$$C_{29e} = C * (1 - P_{29e})$$

Where:

C_{29e} is the charge associated for the 29E percentage discount for the Service Element;

C is the charge as calculated for the Service Element being discounted; and

P_{29e} is the percentage discount to be applied following the consent granted by the Commission to Scottish Water to depart from the Wholesale Charges Scheme under section 29E of the 2002 Act.

APP 2.5 Meters with a chargeable size of 0mm

A combination meter contains two separate dials which are represented as separate meters in the Central Systems but is installed on a single supply and should therefore be charged as a single meter. In this scenario, meter based annual charges are applicable to the larger meter dial, based on its chargeable size, but are suppressed at the smaller dial by applying a chargeable size of 0mm.

Volumetric charges apply to all consumption recorded on both meter dials.

APP 2.5.1 Non-Volumetric Charges

No non-volumetric charges for either water or sewerage are applied to a meter with a chargeable size of 0mm.