Scottish Water

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SCOTTISH WATER

WIC ANNUAL RETURN

Commentary

June 2018

Resubmission 28th September 2018

A Tables Base Information

Table A1 Connected and Billed Properties

Data Sources and Confidence Grades

Property numbers are for the report year as at 30 September 2017.

A confidence grade of A2 has been applied to the figures reported in Table A1 for household properties in the report year, and B4 for non-household properties.

The confidence grade reflects the remaining number of properties from the gap sites project expected to be added at the Central Market Agency (CMA) at September 2017, and the net movement expected from de-registrations and further gap sites via the current SAA Project, in addition to the other known issues noted in this commentary. Following the conclusion of the gap sites project in March 2018 and the continuing positive progress in improving the completeness of market data, we expect the confidence grade for non-household properties to improve to B3 in next year's annual return.

The non-household figures have been sourced from settlement reports supplied by the CMA, which are loaded into Scottish Water's reconciliation datamart. The vacancy status, used to determine whether the property is 'Billed' or 'Void', has been sourced from the Market Data Set (MDS) files which are also published by the CMA along with the disaggregated settlement reports. This is consistent with previous Annual Returns.

The September 2017 2nd Reconciliation (R2), the latest available at the end of March 2018, along with the MDS file published at the same time were used to populate the A Tables.

The disaggregated settlement reports include all premises which are in settlement at the CMA. When new supply points are created, via either the New Connection or the Gap Site processes, there are a number of steps to be followed, starting with the supply point being requested by Scottish Water and finishing with it being accepted into charge by the Licensed Provider. Between these two points, the supply points have a status of 'New' or 'Partial' and are held in the Central Systems but are not in settlement and therefore not reflected in the A Tables.

As of 1 April 2018, there were 491 water and 977 sewerage 'New' and 'Partial' supply points registered at the CMA. The current balance of 'New' and 'Partial' supply points consists of an on-going run-rate of new connections and gap sites. This run-rate is higher than last year due to the increased activity being undertaken through the SAA Follow-on Project described below.

Data improvement programmes

Scottish Water has taken part in a number of market initiatives in recent years to improve the completeness of market data. The innovative approaches adopted mean that 99.77% of Supply Points are now matched to an SAA reference or have a valid absence code (meaning there is no SAA reference available). In addition a number of measures have been implemented to enable Scottish Water to pro-actively maintain the alignment of market data with external data sources. Feedback from Licensed Providers has highlighted that high quality market data is critical in enabling timely and accurate billing of end customers.
The 'gap sites' project; Gap Site Phase 3, which commenced during 2014 is now concluded. The CMA undertook a comparison between premises listed in the records of the Scottish

Assessors Association (SAA) and premises registered in the market which identified 55,000 potential gap sites for investigation by Scottish Water. In addition, a further 19,000 candidates were identified from ongoing additions to the SAA following the CMA's initial comparison in 2013. At the time of compiling this year's Annual Return, 24,915 gaps sites had been fully processed into the market and were tradable at the CMA. Almost 35,000 candidates were rejected following review by Scottish Water, typically because they did not have services from Scottish Water or were already in the market. There remain a number of low value candidates which will be subject to risk-based data profiling and progressed or closed as appropriate. In addition, there is a group of candidates where access issues have prevented the validation of services to enable processing into the market. It is expected that a proportion of these will result in further SPIDs being registered in the market but this will be dealt with under normal business process.

Following on from the gap sites project, a number of other market initiatives have been implemented to improve the overall completeness and quality of market data:

SAA Matching	A two phase project to complete the matching of CMA and SAA data. This often involved the reconfiguration of Supply Point data to enable one-to-one matching against business rated premises recorded by the SAA. This has involved over 37,000 Supply Points being matched along with corresponding updates to market data. 99.77% of Supply Points are now matched to an SAA reference or have a valid absence code (meaning there is no SAA reference available)
Non Eligible Premises Register (NER)	A Non Eligible Premises register has been developed and has been implemented. This lists properties which are assessed by the SAA but are not eligible premises which should be in charge for water or sewerage. This will facilitate full reconciliation of the CMA Market Data Set (MDS), the SAA and the Non Eligible Register
SAA Change Only Report	Scottish Water has developed a change only report in conjunction with the SAA in order to identify additions, removals and changes to SAA data so that the corresponding market changes can be pro-actively triggered. This has enabled circa one thousand updates to be processed each month.
Live RV	The gap sites and SAA matching projects have enabled the market to begin the transition to using current 'live' Rateable Value for water and sewerage charging purposes from April 2018. The Live RV data has been populated in the CMA systems and is being actively maintained.
X,Y co-ords and Service Request (SR) history co-ordination	Scottish Water has, within its CRM Programme enhanced its Licensed Provider Portal and delivered functionality which allows Licensed Providers to track SR status and view SR history. Further to this, Scottish Water has made several thousand X,Y updates throughout the duration of the project.

Market changes

The Scottish Government introduced water, sewerage and drainage charges for vacant premises from 1 April 2017. This has implications for the reported data in the A Tables as reported 'billed' properties have historically related to occupied properties with the entire base reported as 'connected' properties. In order to avoid any loss of visibility, only occupied properties have continued to be reported in the 'billed' properties lines and the line definitions will be updated accordingly ahead of the next Annual Return.

As expected, this market change has resulted in a reduction in the number of vacant properties. There are a number of reasons for this movement:

- Licensed Providers being made aware of a previously unidentified occupier when starting to bill a landlord for a vacant property, resulting in the Supply Point's status being corrected to occupied;
- Landlords choosing to permanently disconnect unwanted supplies due to the application of charges at vacant properties; and
- De-registration of incorrect Supply Points (e.g. a duplicate Supply Point relating to a property already registered and in charge on a separate Supply Point) which have been flagged as vacant and are identified as a result of the application of charges for the first time.

As of March 2018, 10.4% of tradable supply points were flagged as vacant; this is a 1.3% decrease from last year and a considerable reduction from 20.4% in 2012. The table below shows the net occupancy changes by year since 2012.

Occupancy status changes in 12 months prior to Annual Return data cut	Occupied to Vacant	Vacant to Occupied	Net change in occupied SPIDs
2012	33,938	27,896	-6,042
2013	23,334	30,722	7,388
2014	22,433	19,806	-2,627
2015	25,507	22,713	-2,794
2016	24,235	26,796	2,561
2017	21,855	25,241	3,386

In order to further support the development of these market charges, the Commission has published a revised disconnections regime allowing Licensed Providers to request the permanent disconnection of water supplies in cases of non-payment. The level of uptake is uncertain due to the costs involved but there may be some impact on next year's Annual Return. In addition, in cases of persistent non-payment Licensed Providers are now able to apply for vacant properties to be temporarily transferred to Scottish Water following the completion of certain legal recovery processes. The retail debt will be assigned to Scottish Water to recover and following payment of the debt or a change of circumstances the property will be transferred back to a Licensed Provider via the gap site process. Discussions with the Commission will be required to determine how these properties are reported in future Annual Returns.

Forecast data for 2018/19

The SR15 Business Plan assumes zero growth in non-household revenue but following the conclusion of the Gap Site Phase 3 and SAA Follow-on Projects we are forecasting limited growth for 2018/19.

Non-household connected properties

The number of connected non-household properties taking water services has decreased by 2,528 to 153,152. Non-household properties taking sewerage services have similarly decreased by 2,122 to 125,832.

Line ref.	Non-household connected properties	2016/17 Annual Return	2017/18 Annual Return	Variance
A1.8	Unmeasured non-household connected properties – water	27,754	25,913	-1,841
A1.9	Measured non-household connected properties - water	127,926	127,239	-687
A1.8 + A1.9	**Total connected non-household connected properties - water**	**155,680**	**153,152**	**-2,528**
A1.18	Unmeasured non-household connected properties – sewerage	24,537	22,813	-1,724
A1.19	Measured non-household connected properties - sewerage	103,417	103,019	-398
A1.18 + A1.19	**Total connected non-household connected properties – sewerage**	**127,954**	**125,832**	**-2,122**

These decreases are primarily due to properties being deregistered from the market as a result of the current project to match supply points to premises recorded by the SAA; SAA Follow-on project. Over the annual return period around 4,900 gap sites have been added to the market but this has been offset by the combination of BAU and project de-registrations.

The decrease is greater for unmeasured supply points due to meters being installed at unmeasured properties and the removal of unmeasured charges where they are being wrongly applied. This typically relates to multi-tenancy premises where it is identified that water and foul sewerage charges are already being applied to the entire premises on a metered basis.

Other factors affecting the totals include new connections to the network, changes to services recorded at properties and premises changing their status, namely from Council Tax to business rated and in the reverse direction, for example holiday chalets or houses for short term lettings, leading to some churn in this sector.

During 2017/18 it become apparent that around 1,000 properties which had been recorded as temporarily disconnected were physically reconnected and had retail billing initiated against a new occupier without Scottish Water's knowledge. The majority of these properties have now been reconnected at the CMA to restart full wholesale charges and we are working with the Licensed Provider involved to confirm the necessary details to reconnect the remainder.

Changes to Unmeasured Connected Properties

Removed

	Total	Dereg/ Pdisc	Remove Unm Service Element	Unmeasured to Measured
Water	**2,994**	2,325	2	667
Sewerage	**2,707**	1,609	469	629

Added

	Total	Gap Site/ New Conn	Unm Service Element Added	Measured to Unmeasured
Water	**1,153**	1,032	1	120
Sewerage	**983**	825	56	102

Changes to Measured Connected Properties

Removed

	Total	Dereg/ Pdisc	Remove Metered Service Element	Measured to Unmeasured
Water	**3,520**	3,400	0	120
Sewerage	**2,716**	2,445	169	102

Added

	Total	Gaps & New Connections	Metered Service Element Added	Unmeasured to Measured
Water	**2,833**	2,158	8	667
Sewerage	**2,318**	1,603	86	629

Non-household void properties

The number of void non-household properties taking water and foul sewerage services in the table below has been derived by subtracting the reported billed properties from the connected properties. The number of void properties taking water services has decreased by 2,613 in the report year and the number taking sewerage service has decreased by 2,158.

As set out above, the movements are mainly due to data cleansing related to the SAA Follow-on Project, properties' status being corrected to occupied and properties being de-registered from the market following the introduction of charging at vacant properties. De-registrations are generally skewed towards unmeasured, void properties; duplicate supply points have been found to be more prevalent for unmeasured properties and historically sites have often been flagged as vacant to stop charges prior to being deregistered.

The 12 months prior to the September 2017 R2 settlement report used to populate this year's Annual Return saw a net movement in supply points turning from vacant to occupied at the CMA. There continues to be issues with properties which are flagged as vacant at the CMA by the registered Licensed Provider but which Scottish Water is unable to agree are unoccupied or where the property should be de-registered or disconnected. However, the position is greatly improved compared with previous years and continues to improve as a result of the introduction of charging at vacant sites in April 2017.

Void properties	**2016/17 Annual Return**	**2017/18 Annual Return**	**Variance**

Unmeasured void properties – water	6,718	5,147	-1,571
Measured void properties – water	10,702	9,660	-1,042
Total void properties – water	**17,420**	**14,807**	**-2,613**
Unmeasured void properties – sewerage	6,084	4,726	-1,358
Measured void properties - sewerage	9,295	8,495	-800
Total void properties - sewerage	**15,379**	**13,221**	**-2,158**

Non-Household billed properties

As mentioned above, in the interests of continuity occupied properties have continued to be reported in the 'billed' properties table lines, despite vacant properties also being billed since April 2017. The table line definitions will be revised accordingly for next year.

As shown in the table below, there has been a very slight increase in occupied properties, since last year's Annual Return; 85 for water and 36 for sewerage. As set out above, this is the net effect of supply points being processed into settlement, the de-registration of properties found to be incorrectly in the market (for example duplicates, domestic and demolished properties), disconnection activity and changes in occupancy status.

Line ref.	Water services – billed	2016/17 Annual Return	2017/18 Annual Return	Variance
A1.3 + A1.4	Total billed Non-household properties – water	138,260	138,345	85
A1.13 + A1.14	Total billed Non-household properties - sewerage	112,575	112,611	36

Movement of Properties between Void and Billed

	Void to Billed	Billed to Void
Water	5,035	4,019
Sewerage	4,543	3,769

A1.1 & 1.6 Household properties (connected and billed)

The data for these lines has been sourced directly from the WIC4 reports of September 2017 for report year. Report year +1 household growth is obtained directly from the final determination forecast.

The growth in billed properties (including exempt) was 13,450. The growth in connected properties of 19,316 differs to the growth in billed properties as we are now billing properties which were, in the past, connected but not billed.

Line ref.		2016/17 Annual Return	2017/18 Annual Return	Variance

A1.1	Unmeasured household billed properties - potable water (including exempt)	2,441,856	2,455,306	13,450
	Number of void properties	53,933	59,799	5,866
A1.6	Unmeasured household connected properties	2,495,789	2,515,105	19,316

A1.1-5 Billed Properties – Water

A1.2 Measured household billed properties

The number of measured households has decreased by 7 customers compared with 5 customers in the previous year. This reduction is principally due to customers determining that Council Tax based charging is more economic. The confidence grade of A2 is consistent with previous year. The forecast of 434 measured households for 2018/19, a reduction of 6 is based on the average movement over the last 2 years.

A1.3-4 Unmeasured and Measured non-household billed properties – water

The recorded number of billed non-household properties has increased by 85 to 138,345 compared with the 2016/17 Annual Return. This movement was due to the combined effect of changes in occupancy status at supply points, meters being installed at unmeasured supply points, gap sites and new connections processed into settlement, and de-registrations and disconnections as set out above.

Line ref.	Water services - Billed Properties	2016/17 Annual Return	2017/18 Annual Return	Variance
A1.3	Unmeasured non-household billed properties – potable water (including exempt)	21,036	20,766	-270
A1.4	Measured non-household billed properties - potable water	117,224	117,579	355
	Total billed non-household properties	**138,260**	**138,345**	**85**

A1.6-10 Connected Properties – Water

A1.6 Unmeasured Household Connected Properties

The figure of 2,515,105 is the cumulative total of billed properties, exempt properties and void properties which is sourced directly from the WIC4 reports and therefore given a confidence grade of A2. For the current report year, the void property total is 59,799.

A1.7 Measured household connected properties

The number of measured household connected properties is described in the commentary to line A1.2.

A1.8-9 Unmeasured and Measured non-household connected properties

The recorded number of connected non-household properties receiving water services has decreased by 2,528 to 153,152 compared with the 2016/17 Annual Return. As set out earlier, this is primarily due to the de-registration of supply points as a result of the current SAA data project and those found to be incorrectly in the market (generally duplicates, domestic and demolished properties).

Line ref.	Water Services - Connected Properties	2016/17 Annual Return	2017/18 Annual Return	Variance
A1.8	Unmeasured non-household connected properties	27,754	25,913	-1,841
A1.9	Measured non-household connected properties	127,926	127,239	-687
	Total connected non-household properties	**155,680**	**153,152**	**-2,528**

A1.11-15 Billed Properties – Foul Sewerage

A1.11 Unmeasured household billed properties

There has been growth of 13,167 unmeasured household billed properties for sewerage in the report year. The confidence grade remains unchanged at A2

A1.12 Measured household billed properties

A decrease of 3 measured household properties is directly linked to the reduction in Measured Household properties having a measured water service. The confidence grade of A2 has not altered.

A1.13-14 Unmeasured and Measured non-household billed properties

The recorded number of billed non-household properties receiving sewerage services has increased by 36 to 112,611 compared with the 2016/17 Annual Return. This movement was due to the combined effect of changes in occupancy status at supply points, gap sites and new connections processed into settlement, and de-registrations and disconnections as set out above.

Line ref.	Billed Properties	2016/17 Annual Return	2017/18 Annual Return	Variance
A1.13	Unmeasured non-household billed properties – sewerage	18,453	18,087	-366
A1.14	Measured non-household billed properties – sewerage	94,122	94,524	402
	Total billed non-household properties	**112,575**	**112,611**	**36**

A1.16-20 Connected Properties – Foul Sewerage

A1.16 Unmeasured Household Connected Properties

Please refer to the commentary for line A1.6. For the current report year, the void property total is 57,600. The number of voids is calculated by subtracting A1.11 from line A1.16.

A1.17 Measured Household Connected Properties

Please refer to the commentary for line A1.12. The confidence grade of A2 has not altered.

A1.18-19 Unmeasured and Measured Non-household connected properties

The recorded number of connected non-household properties taking sewerage services has decreased by 2,122 to 125,832 compared with the 2016/17 Annual Return. As set out earlier, this is primarily due to the de-registration of supply points as a result of the current SAA data project, the introduction of charging at vacant premises and other business as usual activity. Those removals of properties found to be incorrectly in the market (generally duplicates, domestic and demolished properties) and foul sewerage services which have been wrongly applied to Supply Points at the CMA have been offset by gap sites and new connections being processed into the market.

Line ref.	Connected Properties	2016/17 Annual Return	2017/18 Annual Return	Variance
A1.18	Unmeasured non-household connected properties	24,537	22,813	-1,724
A1.19	Measured non-household connected properties	103,417	103,019	-398
	Total connected Non-household properties	**127,954**	**125,832**	**-2,122**

A1.21-27 Billed Properties – Surface Drainage

A1.21 Unmeasured Household Billed Properties (including exempts) not billed for Property Drainage

Due to our tariff structure, there are zero unmeasured billed properties not billed for property drainage.

A1.23-24 Measured and Unmeasured Billed Properties not billed for Property Drainage

The number of properties not billed for property drainage has increased by 362 to 4,410 since 2016/17. This is the result of gap sites entering the market which are not liable for property drainage, the removal of property drainage charges where properties are found not to drain to the public sewer following requests to verify the drainage services and properties moving from vacant to occupied. This is offset by de-registrations and property drainage charges being added where found to be missing.

Line ref.	Properties not billed for Property Drainage	2016/17 Annual Return	2017/18 Annual Return	Variance

A1.23	Unmeasured non-household billed properties not billed for property drainage	1,974	2,341	367
A1.24	Measured non-household billed properties not billed for property drainage	2,074	2,069	-5
	Total billed non-household properties	**4,048**	**4,410**	**362**

A1.25 Household Billed Properties billed for Surface Drainage only

Due to our tariff structure, there are zero unmeasured billed properties not billed for surface drainage.

A1.26 Non-household properties billed for surface drainage only

The number of non-household properties billed for surface drainage only has increased by 6,108 to 30,535 since 2016/17. This increase is mainly due to sites being processed into the market from the current gap site project and the SAA follow-on project. The largest proportion of these sites are charged for surface drainage only due to being multi-tenancy premises where water and foul sewerage charges are applied to the entire premises on a metered basis. Some data corrections have also been made which have resulted in changes to services on supply points; either at multi-tenancy premises where unmeasured water and foul sewerage charges on individual rated components are removed, leaving only surface drainage charges, or where drainage charges are added when found to be missing.

A1.28-32 Connected Properties – Surface Drainage

A1.30-31 Non-household Connected Properties – Surface Drainage

The recorded number of non-household properties connected for surface drainage has increased by 3,121 to 159,578 compared with the 2016/17 Annual Return. As set out earlier, this relates to gap sites and SAA project splits being processed into the market, offset by de-registrations. This number accounts for the increase in surface drainage only SPIDs and the decrease in water and sewerage SPIDs as these activities often relate to tenant units which are subject to surface drainage charges only within a larger metered multi-tenancy properties.

Line ref.	Properties connected for Surface Drainage	2016/17 Annual Return	2017/18 Annual Return	Variance
A1.30	Unmeasured non-household connected properties	57,818	62,075	4,257
A1.31	Measured non-household connected properties	98,639	97,503	-1,136
	Total connected non-household properties	**156,457**	**159,578**	**3,121**

A1.33 Number of Billed Properties

The number of billed properties has remained reasonably static at 1,325 from the 1,324 reported in 2017.

The forecast number of billed properties is reported as 1,309. This is the number of properties that existed at P6 that were also billed at P12.

The confidence grade for the report period and forecast is A2 and A3 respectively.

A1.34 Connected Properties

The number of billed and connected properties has increased from 3,203 to 3,268. This reflects the fact that Scottish Water continues to issue an increasing proportion of "Letters of Authorisation" to small dischargers, rather than full consents.

The forecast number of billed and connected properties is 3,289.

Note, these figures are not affected by the inappropriate disconnection of SPIDs as the number is sourced from Scottish Water's trade effluent system, which holds up to date information on all discharge points, regardless of whether they are billable or not.

The confidence grade for the current and forecast years remains at A2 and A3 respectively.

A1.35 Trade Effluent load receiving secondary treatment

The total BOD load receiving secondary treatment reported has decreased from 16,338T/yr to 15,567T/yr.
The forecast figure is almost the same at 15,542T/yr.

The confidence grade remains at B4 as it is reliant on Licensed Providers reading meters in order for the volume calculations to be correct.

A1.36 Trade Effluent load receiving secondary treatment

The reported total COD load receiving secondary treatment has decreased marginally from 32,826T/yr to 32,614T/yr.

The forecast is 32,572T/yr.

The confidence grade remains at B4 as it is reliant on Licensed Providers reading meters in order for the volume calculations to be correct.

Table A2 Population, Volumes and Loads (Water)

A2.1 Population Water & Wastewater – Winter

Population data is based on National Records of Scotland (NRS) Population Projections for this year. Populations are derived from the published NRS 2014 based Population Projections. The winter tourist population has been included in the winter population total for the first time this year using business classifications from Address Based Premium (ABP). The lowest winter visitor month (January) according to Visit Scotland statistics was used. A derived number for winter visitors of 66,103 was calculated. No change in the confidence grade is being reported, however this data improvement action will be considered for a confidence grade improvement next year.

A2.2 Population Water – Summer

To determine the increment of the summer population (above the winter population), business classifications from Address Based Premium (ABP) were used to identify properties which offer accommodation to visitors and to which was applied the average bed space supplied by Visit Scotland. A derived number for summer visitors of 200,705 was reached. This figure has increased from AR17. This could be in part due to the more complete matching between Address Points and Address Based Premium and the more accurate accommodation classifications used in ABP. This more accurate identification of tourist accommodation has improved confidence in the overall population numbers. We have therefore brought the confidence grade of the summer population in line with the winter population at A2.

A2.3 Population of unmeasured household properties

The population of unmeasured household properties connected to our networks has increased by 14,790 for water, reflecting the NRS 2014 projection. The confidence grade remains the same at A2.

A2.4 Population of measured household properties

The population of measured household properties taking water services has decreased by 15, reflecting the decrease by 7 in the number of measured household properties reported in line A1.2. The confidence grade remains the same at A2.

Water Balance

A2.6 Net Distribution input treated water (water put into supply)

The net DI has increased from 1,784.8 Ml/d in AR17 to 1,796.0 Ml/d.

A2.7 Unmeasured household volume of water delivered (including losses)

The unmeasured household volume of water delivered has increased from 891.1 Ml/d to 903.8 Ml/d. The confidence grade for this line remains at B2, reflecting the continued confidence associated with the Scottish Water unmeasured household volume calculated using data reported from Scottish Water's Continuous Area Per Household Consumption (PHC) Monitor.

A2.8 Measured household volume of water delivered (including losses)

The measured household volume of water delivered is 0.2 Ml/d. The percentage of meter under-registration has remained at 4.1%, taken as a mean from the 2008/09, 2009/10 and 2010/11 supporting information documents for the OFWAT Service and Delivery report. The confidence grade reported for this line remains at B2.

A2.9 & 10 Unmeasured & Measured non-household volume of water delivered (including Losses)

The calculation of non-household consumption follows the same method as used for the 2016/17 Annual Return. Consumption data calculated by the Central Market Agency (CMA) has been used to populate lines A2.9 and A2.10.

For each settlement run, the CMA provides an aggregated settlement report which is used by Scottish Water for billing purposes, and a disaggregated settlement report to enable reconciliation of wholesale charges by market participants. The data reported in lines A2.9 and A2.10 has been derived from these disaggregated settlement reports.

Table A2 has been populated using the latest available data at the time of reporting. For April to July 2017 inclusive, the R3 report has been used; for August 2017 to January 2018 the R2 report has been used; and for February and March 2018, the R1 report has been used.

A2.11 Water taken unbilled – legally

The volume reported as water taken legally unbilled (WTLU) has increased from 59.1 Ml/d in 2016/17 to 62.1 Ml/d in this report year. The confidence grading remains at C4 due to the nature and estimation of the volume reported. The methodology has remained the same for the each of the components making up WTLU.

A summary of changes to the individual components which make up WTLU is provided below:

- Decrease in fire service use (from 8.6 Ml/d to 7.9 Ml/d).

- Increase in licensed standpipe use volumes from 18.4 Ml/d to 20.0 Ml/d.
- Increase in Waste Water Treatment Works (WWTW) and Waste Water Pumping Station (WWPS) potable water use from 15.0 Ml/d to 16.0 Ml/d.
- No significant change in Scottish Water Offices and Depot which remains at 0.2 Ml/d.
- Decrease in Scottish Water jetting volumes from 1.2 Ml/d to 0.8 Ml/d.
- No significant movement in unbilled field trough usage (from 11.0 Ml/d to 10.9 Ml/d).
- No significant movement in temporary building connections (from 2.2 Ml/d to 2.3 Ml/d).
- Unbilled water use by non-household users has increased from 2.6 M/ld to 3.9 M/ld.

A2.12 Water taken unbilled – illegally

The volume of water reported as water taken illegally unbilled (WTIU) has increased from 1.8 Ml/d to 2.3 Ml/d.

The confidence grade has remained at C4 due to the nature and estimation of the volume reported. The data sources and methodology used to calculate this component have remained the same:

- Void property use – the volume has increased from 0.8 Ml/d to 0.9 Ml/d.
- Hydrant misuse - the volume has remained at 0.2 Ml/d.
- Illegal standpipes - the volume has increased from 0.7 Ml/d to 1.1 Ml/d.

A2.13 Water take unbilled – Distribution System Operational Use (DSOU)

The volume of water reported as distribution system operational use (DSOU) has increased from 3.3 Ml/d in 2016/17 to 6.9 Ml/d in this reporting year. The confidence grade remains at C3 due to the nature and estimation of the volume reported. The changes in volumes can be explained as follows:

- Service Reservoir Cleaning – the volume has decreased from 1.2 Ml/d to 0.9 Ml/d.
- Proactive Flushing & Swabbing - the volume has increased from 1.4 Ml/d to 5.2 Ml/d in this reporting year. Much of this increase can be attributed to significant testing/flushing of a new strategic trunk main between Glasgow and Ayrshire which has recently gone into service.
- Burst Repairs / Other Network Interruptions –volume remains constant at 0.3 Ml/d.
- Reactive Water Quality Incidents – volume remains constant at 0.2 Ml/d.
- Planned Water Quality Sampling – the volume reported remains constant at 0.1 Ml/d.

A2.14 Net Consumption (including supply pipe losses)

Net consumption has increased from 1,350.1 Ml/d to 1,376.4 Ml/d. The confidence grade remains at B3.

A2.15 Distribution losses (including trunk mains and reservoirs)

Distribution losses have decreased from 434.7 Ml/d in AR17 to 419.6 Ml/d. The confidence grade for this line remains B3.

A2.16 Customer supply pipe losses

Customer supply pipe losses (SPL) have been calculated using the same method as in AR18. SPL losses have decreased slightly from 124.6 Ml/d to 123.2 Ml/d. The confidence grade remains the same at C3.

A2.17 Overall water balance

The confidence grade for the overall water balance remains at B3.

A2.18 Total Leakage (pre-MLE Adjustment)

The 'Total Leakage' by definition within the guidance documentation is considered by SW to include summing the DMA reported leakage, Service Reservoir leakage and Trunk Main leakage. The Total Leakage has increased slightly from 479.9 Ml/d to 480.4 Ml/d this year. A summary of each of the components making up these components is given below:

- DMA leakage has increased from 419.6 Ml/d in AR17 to 422.2 Ml/d in the current reporting year. The coverage of reportable DMAs has decreased slightly from 92.2% to 92.1%.
- Service Reservoir leakage has decreased from 12.0 Ml/d in AR17 to 9.1 Ml/d this year. This reduction can be attributed to an operational resolution at an asset in the early part of AR18.
- Trunk Main leakage has increased from 48.2 Ml/d in AR17 to 49.1 Ml/d this year.

A2.19 Water Balance Closing Error

The Water Balance Closing Error is the difference between the top down and bottom up leakage figures expressed as a percentage of net DI. The closing error has decreased from 4.4% for AR17 to 3.5% in AR18.

A2.20 MLE Adjustment

The MLE adjustment for AR18 is 11.6 Ml/d. The overall AR18 MLE calculation is associated with the appropriate MLE confidence grades (mid-point of WICS CGs), being assigned to water balance components in line with WICS own CGs. The confidence grade for this line is B3.

A2.21 Total Leakage (post-MLE Adjustment)

Where the water balance closing error (A2.23) between top down and bottom up leakage is less than 5% of DI, this is accepted as an indicator of a robust water balance. In such circumstances, a MLE statistical calculation is then undertaken to determine the leakage figure to be reported. If the closing error is > 5% of DI, then the top down leakage figure will be reported. In recent years the trend in leakage reduction is:

Report Year	Top Down Leakage (Ml/d)	Bottom Up Leakage (Ml/d)	MLE Leakage (Ml/d)
AR10	783	705	738
AR11	757	693	699
AR12	661	617	629
AR13	617	561	575
AR14	608	553	566
AR15	590	531	544
AR16	531	492	500
AR17	559	480	495
AR18	543	480	492

The AR18 Maximum Likelihood Estimation (MLE) leakage is 492.0 Ml/d and is reported with confidence grade B3. This is a reduction of 2.8 Ml/d from the AR17 MLE leakage figure of 494.8 Ml/d.

Water delivered – non-potable

A2.22 Volume of non-potable water delivered

Eleven non-household customers receive non-potable water supplies. In most cases there is also a separate potable supply to the premises. Several of these Supply Points are subject to Schedule 3 charging arrangements and all of the non-potable supplies are now metered.

The volume reported in line A2.26 reflects the consumption calculated by the CMA for the metered non-potable supplies in addition to a calculated consumption for one supply, Buckieburn Farm and Freshwater Research Unit. A battery powered logger was installed in April 2015 due to the difficulty of providing a power supply at the site and flow data is being collected periodically. The flow data received for 2017/18 was limited due to power outages so some data from 2016/17 was also used to extrapolate an annual consumption of 11.36 ML/day. Investigations are on-going into the feasibility of alternative power supplies which would require less intervention and allow data to be transmitted real time rather than collected from site. In the short term monthly visits are being scheduled to check the battery.

A2.23 Per Household consumption (unmeas'd h/hold–excl s/pipe leakage) PHC

The PHC figure for AR18 is 319.7 l/prop/day, compared with an AR17 reported figure of 315.8 l/prop/day. The confidence grade remains at B2.

A2.24 Per Household consumption (measured h/hold–excl s/pipe leakage) PHC

The PHC figure for AR18 is 529.8 l/prop/day, compared with an AR17 reported figure of 545.9 l/prop/day. The confidence grade remains at B3.

A2.25 Meter under-registration (measured households) (included in water delivered)

Scottish Water has derived meter under-registration from the mean value between 2007/08 and 2009/10 from the supporting information document for the OFWAT Service and Delivery Supporting Information Reports and remains at 4.1%. When applied to the domestic metered volume the total measured household meter under-registration is 0.010 Ml/d.

A2.26 Meter under-registration (measured non-households) (included in water delivered)

The 2007/8, 2008/09 and 2009/10 OFWAT 'Service and Delivery' supporting information documents have been used to derive a mean figure for non-household meter under-registration, which remains at 4.7%. When applied to the non-household metered volume total non-household meter under-registration is 17.1 Ml/d.

Table A3 Population, Volumes and Loads (Waste water)

A3.1-A3.4 Summary – Population

A3.1 Population Water & Waste – Winter

Population data is based on National Records of Scotland (NRS) Population Projections for this year. As with the water population, winter tourist population has been included in the winter population total for the first time this year, using the same method as used to derive the water tourist figures. A derived number for winter visitors of 53,427 was calculated. No change in the confidence grade has occurred in the year.

A3.2 Population Waste – Summer

To determine the increment of the summer population (above the winter population), business classifications from Address Based Premium (ABP) were used to identify properties which offer accommodation to visitors and to which was applied the average bed space supplied by Visit Scotland. A derived number for summer visitors of 126,240 was reached. This figure has increased from AR17. This could be in part due to the more complete matching between Address Points and Address Based Premium and the more accurate accommodation classifications used in ABP. No change in the confidence grade has occurred in the year.

A3.3 Household Population connected to the wastewater service

The population of unmeasured household properties connected to our networks has increased by 14,430 for waste water reflecting the NRS 2014 dataset and growth over the year in connected dwellings.

A3.4-A3.10 Sewage – Volumes

A3.4 Unmeasured household volume (including exempt)

The unmeasured household volume has reduced from 719.85 Ml/d to 700.05 Ml/d.

A3.5 Measured household volume

The measured household volume has decreased from 0.063 Ml/d to 0.054 Ml/d. The confidence grade remains at A2.

A3.6 Unmeasured non-household foul volume (including exempt)

The non-household foul volume has decreased from 14.36 Ml/day to 13.156 Ml/d. The confidence grade remains at B3 as volumes are based on an estimate derived from the use of actual data from the installed Full Bore meters (FBM).

A3.7 Measured non-household foul volume

The total volume of foul waste from measured non-households has increased from 144.65 Ml/d to 151.23 Ml/d. The confidence grade remains at B3.

A3.8 Trade Effluent Volume

The volume of trade effluent discharged has decreased from 66.158Ml/d to 64.285Ml/d. This figure is the volume associated with the DPIDs billed at P06. As noted, the CMA system now calculated the TE volume. In order to do this, it is necessary for the Licensed Provider to submit meter readings, when this doesn't happen, the CMA system defaults to an "industry standard" volume which is very low. This may account for the apparently significant reduction. Volumes reported this year are taken from the latest available reconciliation run from the CMA for the reporting period. For DPIDs which haven't been billed by the CMA we have used in order of preference, volumes submitted by the Licensed Provider for the DPID for the reporting period (the CMA system accepts these volumes even though the DPID doesn't appear on reconciliation runs), or the process for calculating the Annual volume estimate sent to the CMA when the DPID is initially set up, which is 200 times the Consented daily volume.

The forecast is for this to decrease to 64.260Ml/d. This is calculated by pro-rating of the current year's volume, based on the number of DPID still active in IP12.

The confidence grades remains at B2 and B4 for the reporting and forecast years respectively.

A3.9 Total Volume

The confidence grade remains at B3.

A3.10 Volume septic tank waste

The measured household volume is 32.17 Ml. As there has been no change to the methodology used, the A3 confidence grade is unchanged from last year.

A3.11- A3.25 Sewage Load (BOD/yr)

A3.11 Unmeasured household load

The household load reported is based on household occupancy multiplied by 60g BOD per head per day in line with E table guidance. The slight increase in unmeasured household load to 108,030 from 107,706 BOD t/yr is a result of an increase in household population.

A3.12 Measured household load

The measured household load has decreased to 8.48t from 8.85t. There has been no change in methodology therefore the confidence grade remains the same.

A3.13-A3.14 Unmeasured and measured non-household load

The non-household load is derived as 300g BOD/m3 as applied to the volumes of sewage reported in lines A3.6 – 'Unmeasured non-household foul volume (including exempt)' and A3.7– 'Measured non-household foul volume'. There has been no change in methodology therefore the confidence grade remains the same

A3.15 Trade effluent load

The total BOD load discharged to the network has decreased from 17,367T to 16,354T. This is in line with the noted drop in volume, but the proportion is bigger, probably reflecting lower overall effluent strengths. The forecast figure is virtually static at 16,329T. The confidence grades remains at B2 and B4 for the reporting and forecast years respectively.

A3.17-A3.18 Private / Public Septic Tank Load

The reported septic tank loads (lines A3.17 and A3.18) are derived by applying an assumed load of 6,543g/m^3 to the volumes removed from private and public septic tanks respectively.

A3.17 Private Septic Tank Load

The reported septic tank load has reduced from 124.58 to 113.56 tonnes.

A3.18 Public Septic Tank Load

The reported septic tank load has reduced from 128.89 to 96.93 tonnes.

A3.19 Other Tanker Loads

The other tanker loads has decreased this year from 1,172.63 to 346.38 tonnes. The reduction was due to a correction at Kinneil Kerse STW from AR17, as some of the tanker loads that were identified as going straight to sludge holding tanks, rather than for treatment through the STW, were included in error.

A3.21 Average COD concentration

The average settled COD concentration used to calculate Trade Effluent charges continues to be 350mg/l. No significant change has occurred and the confidence grade remains the same as the prior year.

A3.22 Average suspended solids concentration

The average suspended solids concentration used to calculate Trade Effluent charges continues to be 250mg/l. No significant change has occurred and the confidence grade remains the same as the prior year

A3.23 Equivalent population served (resident)

The figure reported in A3.23 is the total load divided by 60g/h/day. The equivalent population reported is 6,627,726 which is a small decrease from the 6,669,924 reported in the previous year. The confidence grade remains the same as prior years.

A3.24 Equivalent population served (resident) (numerical consents)

The figure reported in A3.24 is the total load divided by 60g/h/day, (for works that have a numerical consent). The equivalent population reported is 6,221,484 which is a decrease from the 6,613,577 reported in the previous year. The confidence grade remains the same as prior years.

A3.25 Total load receiving treatment through PPP treatment works

We are reporting an increase from 65,552t to 65,841t in this reporting year, mainly due to an increase in the population equivalents for trade effluent sites receiving treatment through PPP treatment works. There has been no change in methodology therefore the confidence grade remains the same.

A3.26-A3.28 Sewage Sludge Treatment and Disposal

The reported mass of waste water treatment sludge recycled was 120.04 ttds, of which the majority came from the PPP/PFI works 106.292 ttds and the Scottish Water figure of 13.748ttds. All the Scottish Water figures reported were taken direct from the Gemini system, recycling contractor's invoice tracker data sheets, and duty of care documentation. As in previous years we have retained the existing confidence grade.

For the Scottish Water sludge there was relatively little variance in the volume of enhanced treated sludge produced. A significant reliance was placed on the use of land restoration outlets due to non-compliant cakes at 4 sludge treatment centres being encountered during the reporting period. This equated to an increase of 0.72ttds during the reporting period.

Similar to enhanced treated sludge there was very little difference in the production of conventional sludge during the reporting period; however, 1.8ttds of the overall 4.65ttds produced was sent to land restoration outlets. This is mainly associated with pathogen quality issues of cake from sludge treatment centre facilities in the Forth Valley area. Any non-compliant material cannot be recycled to agricultural land as per the requirements of the ADAS Safe Sludge Matrix and also with the requirements of the Water UK Biosolids Assurance Scheme for which Scottish Water has attained full compliance.

0.37 ttds of untreated/raw sewage sludge cake continues to be landfilled in the Shetland Islands.

D Tables – Activities

Table D5 Activities – Water Service

D5.1-11 Mains – Asset Balance

Lines D5.1-D5.11 report the water mains asset balance at March 2018 and the number of communication pipes replaced in this reporting year.

The closing balance for water mains on line D5.8 is 56.19km higher than the opening value reported on line D5.1 (which is consistent with the 48,480.37km reported in line H3.4 in 2016/17). This is due to approximately 70% more new and renewed mains than abandoned mains this year.

D5.2 & D5.3 Mains renewed and mains relined

Lines D5.2 and D5.3 report mains replaced as part of our Mains Rehabilitation Programme in 2017/18, lengths replaced by reactive operations capital maintenance lines and lengths from named projects. 45.24km of water mains have been renewed and 2.51km of water mains have been relined in this reporting year.

D5.4 Mains cleaned (Total)

The 1,688.90km length reported has been derived from the length of flushing of 1,336.83km plus 352.07km through the capital programme.

D5.5 Distribution mains cleaned for quality

The length reported of 914.46km has been derived from the length of 562.39km reported against routine flushing and swabbing, as these works are carried out for water quality reasons, plus the 352.07km reported against capital programme work packages in D5.4 above.

D5.6 New mains

Line D5.6 is a combination of the length adopted for new developments and lengths delivered as part of our capital programme. The length for this reporting year is 29.09km.

D5.7 Mains abandoned

The length of mains abandoned equals the length of mains renewed taken from D5.2 above less reduction in total length reported from the mains rehabilitation programme. The length for this reporting year is 43.50km.

D5.7a Other Changes

The length reported is the balancing value to bring the total changes in the year in line with the closing balance reported in D5.8. The length in this reporting year is -25.36km.

D5.8 Total length of mains (closing balance)

The total length reported is consistent with line H3.4.

D5.9 Lead communication pipes replaced - quality

The total number of lead communication pipes replaced this year for quality purposes is reported as 1,158. This significant increase is the result of a change in the report used to source this data, and aligns with the other lead reduction actions being undertaken across the network.

D5.10 Lead communication pipes replaced – maintenance or other

The total number of lead communication pipes replaced this year for maintenance and other reasons is 11.

D5.11 Communication pipes replaced - other

The total number of other communication pipes replaced this year is 71.

Table D6 Activities – Waste water Service

D6.1-13 Critical/Non-Critical Sewers

The total reported length of critical sewers has decreased by 225km. The net length of all sewers recorded has increased by 1,800km when compared to the 2016/17 inventory.

The table below shows the change in length of critical and non-critical sewers from 2016/17 to 2017/18.

Line Ref.	Description	AR17 Length (km)	AR18 Length (km)	Change (km)
6.3	New critical sewers added during the year	40.87	15.20	-25.67
6.4	Critical sewers inspected by CCTV or man entry during the year	9.60	10.55	0.95
6.5	Critical sewers – renovated	0.32	0.00	-0.32
6.6	Critical sewers – replaced	0.00	0.00	0.00
6.7	Abandoned “critical” sewers	30.16	17.98	-12.18
6.7a	Other changes to “critical” sewers	37.33	222.38	185.05
6.9	New “non-critical” sewers	367.84	66.22	-301.62
6.10	“Non-critical” sewers – renovated	0.12	0.33	0.21
6.11	“Non-critical” sewers - replaced	0.00	0.00	0.00
6.12	Abandoned “non-critical” sewers	67.78	20.19	-47.59

D6.1 Total length of sewers – opening balance

The opening balance is taken from the Annual Return 2016/17 line D6.13. This is reported to be 49,881.49km.

D6.2 Total length of critical sewer – opening balance

The opening balance is taken directly from both Annual Return 2016/17 line E7.13 and line D6.8 which reflects the closing balance from the previous reporting year. This is reported to be 11,154.90km.

D6.3 New critical sewers added during the year

15.20km of critical sewers were included as new in this reporting year. The total length of new assets is based on the length of sewers identified, by year laid, as being laid in 2017/18 and updated to include the lengths from the remaining assets which belong to the AR18 data only (when compared to AR17).

D6.4 Critical sewers inspected by CCTV or man entry during the year

10.55km of critical sewers were inspected in this reporting year. These are made up from 6.11km of FMAP and PMAP surveys, and 4.43km from the sewer rehab programme.

D6.5 Critical sewers – renovated

No critical sewers were renovated as part of the sewer rehabilitation programme in this reporting year.

D6.6 Critical sewers – replaced

No critical sewers were replaced as part of the infrastructure programme in this reporting year.

D6.7 Abandoned "critical" sewers

17.98km of critical sewers were abandoned due to operational activities in this reporting year. The total length of abandoned assets is based on the length of sewers identified, by date abandoned, as being abandoned in 2017/18 and updated to include the lengths from the remaining assets which belong to the AR17 data only (when compared to AR18).

D6.7a Other changes to "critical" sewers

This line reports the balance between the changes reported through the lines above to bring the total in line with the closing balance reported in D6.8 and in line with E7.13.

D6.8 Total length of critical sewer (closing balance)

The total length of 10,929.74km is consistent with line H4.1.

D6.9 New "non-critical" sewers

66.22km of non-critical sewers were included as new in this reporting year. These are calculated in the same way as new critical sewers.

D6.10 "Non-critical" sewers - renovated

0.33km of non-critical sewers were renovated as part of our rehabilitation programme in this reporting year.

D6.11 "Non-critical" sewers – replaced

No non-critical sewers were replaced in this reporting year.

D6.12 Abandoned "non-critical" sewers

20.19km of non-critical sewers were abandoned in this reporting year. These are calculated in the same way as abandoned critical sewers.

D6.12a Other changes to "non-critical" sewers

This line reports the balance between the changes reported through the lines above with the closing balance reported in D6.13. The reported value of -1,979.04km is larger than usual. This is due to a change in the methodology for calculating sewer laterals. Actual digitised laterals have been used to supplement the methodology which has been used in previous years. This has increased the length of sewer laterals by 1,754km when compared to 2016/17.

D6.13 Total length of sewers – closing balance

The length of 51,681.39km is the total length of sewers in this reporting year.

Table D7 and D8 Capital Maintenance Expenditure

General comments

D7 reports capital maintenance investment on wastewater assets. In 2017/18, a total of £144.3m was invested in capital maintenance waste water assets. D8 reports capital maintenance investment on water assets in the Report Year. Total expenditure on capital maintenance of water assets equated to £254.9m. The combined figure of £399.2m equates to the total spend on capital maintenance in 2017/18.

The capital maintenance investment includes £49.4m of exceptional capital maintenance associated with the Ayrshire resilience scheme and the Strategic Mains Diversions. Excluding exceptional capital maintenance gives in-year capital maintenance spend of £349.8m. This cumulative total aligns with the values reported on line G1.06.

With the exception of Management and General, the investment is reported against operational regions.

Each project is assigned to one of the four operational regions. Where projects are flagged as Scottish Water Wide, they span more than one operational area and are split equally between the four operational areas.

The financial values reported in D7 and D8 are the percentage of the driver allocation of capital maintenance as allocated to relevant projects.

D7.21 and D8.16 – Wastewater/Water Management and General

These lines include all support services. The non-operational assets have been allocated to either water or wastewater. Wastewater Management and General equated to £32.8m while Water accounted for £29.3m investment in 2017/18.

E Tables - Operating Costs and Efficiency

General Comments

Methodology

Cost analysis in E Tables (E4, E6, E7, E8, E9 and E10) was prepared using reports from Scottish Water's Activity Based Management (ABM) systems on a historic cost basis excluding IFRS adjustments.

ABM provides analysis of the costs of key activities and processes and links these to the factors that cause or drive the level of cost. This allows us to develop an understanding of the full cost of providing services, either internally within Scottish Water, or to our external customers.

Cost Allocation

Consistent with prior years, costs are captured or allocated in line with Regulatory Accounting Rules including modifications, agreed with the Commission, to reflect the Scottish retail market.

A more detailed commentary on ABM methodology and cost allocation is provided in support of Regulatory Accounts Tables M18 and is not repeated in this document. ABM data (financial and non-financial) is captured in various corporate systems which are also described in the M18 methodology document.

Confidence Grades – Confidence grades of the operating cost lines on the E Tables remain consistent with 2016/17.

Direct costs are predominantly captured in the core corporate financial system, with labour costing feeds from the core corporate works management system. A high proportion of direct costs are captured by asset or zone, hence the A2 confidence grade. A smaller proportion of costs – mainly general and support costs – remains to be allocated to asset/zone by means other than direct capture.

Table E3 and E3a PPP Project Analysis

Table Overview

Table E3 provides details of the 21 PPP wastewater treatment works that are managed under 9 separate PPP Concession agreements.

The following works form part of each scheme:

PPP Scheme	Wastewater Treatment Works *
Highland	Fort William, Inverness
Tay	Hatton
Aberdeen	Nigg, Persley, Peterhead, Fraserburgh
Moray Coast	Lossiemouth, Buckie, Banff/Macduff
AVSE	Seafield, Newbridge, East Calder, Blackburn, Whitburn
Levenmouth	Levenmouth
Dalmuir	Dalmuir
Daldowie*	Daldowie sludge treatment centre
MSI (Ayrshire)	Meadowhead, Stevenston, Inverclyde

* Daldowie is a sludge treatment centre only.

TABLE E3

E3.0-3 Project data

E3.1 Annual average resident connected population

The annual average resident connected population increased by 9,143 to 2,212,386. This reflects the increase in the general population reported in Table E7.1. The confidence grade remains at B3.

E3.2 Annual average non-resident connected population

The annual average non-resident connected population remained largely unchanged with only a slight reduction of 193 to 26,876. The confidence grade remains at B3 which is unchanged from the Annual Return last year.

E3.3 Population equivalent of total load received

The population equivalent of total load received increased by 13,123 to 3,006,343. This increase is mainly due to an increase in the load received from commercial (non-domestic) premises.

The population equivalent of total load received consists of the following constituents:

- Population
- Non-domestic load
- Tourist
- Trade effluent
- Imported public septic tanks

- Imported private septic tanks
- Imported WTW sludge
- Imported WWTW sludge
- Imported other loads
- Sludge return liquors

	Population	Non-domestic load	Tourist	Trade effluent	Imported public septic tanks
AR18	2,212,386	424,751	26,876	333,365	272
% of Total	73.59%	14.13%	0.89%	11.09%	0.01%
AR17	2,203,243	407,843	27,069	345,485	129
% of Total	73.61%	13.63%	0.90%	11.54%	0.00%
Difference	9,143	16,908	-193	-12,120	143

	Imported private septic tanks	Imported WTW sludge	Imported WWTW sludge	Imported other loads	Sludge return liquors	Total
AR18	390	0	6,584	0	1,720	3,006,344
% of Total	0.01%	0.00%	0.22%	0.00%	0.06%	
AR17	440	0	7,293	0	1,720	2,993,221
% of Total	0.01%	0.00%	0.24%	0.00%	0.06%	
Difference	-50	0	-709	0	0	13,123

E3.4-8 Scope of works

E3.4 Sewerage

Fort William	Includes 4 pumping stations and associated pumping mains.
Inverness	Includes 14 pumping stations and associated pumping mains/gravity sewers.
Hatton	Includes 16 pumping stations and associated pumping mains/gravity sewers.
Nigg	Includes 14 pumping stations and associated pumping mains/gravity sewers.
Persley	Includes a short section of gravity sewer.
Peterhead	Includes a short section of gravity sewer.
Fraserburgh	Includes 1 pumping station and a section of gravity sewer.
Lossiemouth	Includes 7 pumping stations and extensive pumping mains.
Buckie	Includes 12 pumping stations and extensive pumping mains.
Banff/Macduff	Includes 10 pumping stations and extensive pumping mains.
Seafield	Includes 7 pumping stations, the Esk valley trunk sewerage network with associated pumping and a number of storm water works with overflows.
Newbridge	Includes 2 pumping stations, a section of gravity sewer and a storm water works with overflow.
Whitburn	Includes 1 pumping station located within the site boundary.
Levenmouth	Includes 8 pumping stations and associated pumping mains and gravity sewers.
Daldowie	Includes 1 pumping station and a pumping main.
Inverclyde	Includes a short section of gravity sewer.

E3.5 Sewage Treatment

Only Daldowie does not include sewage treatment as it is exclusively a sludge treatment centre.

E3.6 Sludge Treatment

Permanent sludge treatment facilities

Inverness	Indigenous sludge, imports from Fort William, plus Scottish Water imports.
Hatton	Indigenous sludge plus Scottish Water imports.
Nigg	Indigenous sludge, imports from Persley, Peterhead and Fraserburgh plus Scottish Water imports.
Lossiemouth	Indigenous sludge, imports from Buckie and Banff/Macduff plus Scottish Water imports.
Seafield	Indigenous sludge, occasional imports from Newbridge, East Calder, Blackburn and Whitburn, plus Scottish Water imports.
Newbridge	Indigenous sludge, imports from East Calder, Blackburn and Whitburn, plus Scottish Water imports.
Levenmouth	Indigenous sludge plus Scottish Water imports.
Dalmuir	A new permanent sludge treatment facility has been commissioned, which centrifuges indigenous sludge in order to limit the pass forward of Dalmuir sludge to Daldowie STC to a maximum ferric content of 2 tonnes/day.
Daldowie	Receives sludge from Dalmuir and Scottish Water wastewater treatment works (Daldowie, Shieldhall, Paisley, Dalmarnock and Erskine) by sludge pipeline and from Scottish Water tankered imports.
Meadowhead	Indigenous sludge plus imports from Stevenston and Inverclyde.

Some raw cake using thickening was disposed of from Persley, Peterhead and Fraserburgh but there is no sludge treatment on these sites. Shieldhall centrifuge operations is operated and managed by Scottish Water CSD.

E3.7 Terminal Pumping Station –

This means a pumping station that is the final point on the forward flow path from a sewerage network into a waste water treatment works and may include both pumping of all/partial 'FFT' flows or stormwater flows to storm tanks and/or storm outfalls. The Terminal Pumping Station may form part of the sewerage network (i.e. be remote from the WwTW) or may be associated with a waste water treatment works depending on actual location and power supply source. It is not a Combined Pumping Station or a Stormwater Pumping Station.

The following works include incoming terminal pumping stations as part of the PPP scheme. Maximum capacity (l/s) of these terminal pumping stations, excluding standby capacity, is given in brackets.

Fort William	Caol Transfer (118 l/s), Fort William WwTW (590 l/s).
Inverness	Allanfearn WwTW (50 l/s) This pumping station receives flows from a small part of the catchment.
Hatton	South Balmossie (1,563 l/s), West Haven (110 l/s), Inchcape Park (241 l/s).
Fraserburgh	Fraserburgh Inlet (195 l/s).
Lossiemouth	Duffus Junction (33 l/s), Moycroft (300 l/s).
Buckie	Nook (84 l/s), Shipyard (70l/s), Buckie WwTW (13 l/s).
Banff/Macduff	Craigfauld (552l/s), Banff/Macduff WwTW (222 l/s).
Seafield	A proportion of total flow is delivered via Marine Esplanade Terminal PS (1420 l/s).
Newbridge	A proportion of total flow is delivered via the Ratho Sewer Terminal PS (196 l/s).
Whitburn	A proportion of total flow is delivered via the Harrison Sewer Terminal PS (45 l/s).
Levenmouth	All flow delivered via terminal pumping stations; Methil M2 (125 l/s), Leven (212 l/s), Buckhaven (133 l/s), Levenmouth WwTW inlet FFT flows (1,650 l/s), Levenmouth WwTW inlet storm flows (2,347 l/s).

E3.8 Other - No plants in this category.

E3.9-14 Sewage treatment - effluent consent standard

E3.9-13 Effluent consent standards - Data obtained from the current SEPA consents.

Where an effluent consent standard includes both Controlled Activities Regulations (CAR) and Urban Waste Water Treatment Directive (UWWTD) elements the stricter standard is given in the Annual Return.

E3.9 Suspended solids consent – All CAR**.**

E3.10 BOD consent

All UWWTD except Newbridge, East Calder, Blackburn and Whitburn which are CAR parameters.

E3.11 COD consent – All UWWTD.

E3.12 Ammonia consent – All CAR.

E3.13 Phosphate consent – All CAR.

At Newbridge, East Calder, Blackburn and Whitburn the consent is expressed as; 'Mean concentration of total phosphorous of any series of composite samples taken at regular but randomised intervals in any period of 12 months'.

E3.14 Compliance with effluent consent standards

Compliance for BOD, COD, SS, Ammonia, and Phosphate is reported for each works, based on the total number of sample results and exceedances (upper and lower tier) for sanitary determinands (to the exclusion of other parameters that may be included in the SEPA consent). Where effluent consent standard includes both CAR and UWWTD standards both sets of samples are used for the calculation of compliance.

Percentage compliance is calculated as:

(1-(total number of failures/total number of samples)) x 100

The SEPA Annual Compliance Report for the period ending 31 December 2017 has been taken as the definitive data source, provided by SEPA, and as such it has been assigned a Confidence Grade of A1.

Compliance calculated under this methodology may cause conflicts with Table C4 (C4.19) "Number of discharges confirmed as failing", which considers all SEPA consent parameters.

Failures

Site		Parameter	Exceedance (E) / Failure (F)	
Nigg	UWWTD	BOD	E	07/06/17
Nigg	UWWTD	COD	E	21/09/17
Nigg	UWWTD	BOD/COD	E	04/12/17
Persley	CAR	Ammonia	E	31/05/17
East Calder	CAR	Ammonia	E	18/05/17

E3.15-21 Treatment works category

Information contained in these lines is extracted from the project agreements and is given a confidence grade of A1.

E3.15 Primary – All plants.

E3.16 Secondary activated sludge - Includes all plants except Blackburn.

E3.17 Secondary biological - Blackburn**.**

E3.18 Tertiary A1 (activated sludge process)

East Calder	Nitrifying filters.
Whitburn	Nitrifying filters.
Dalmuir	Nitrifying filters.

E3.19 Tertiary A2 (activated sludge process)

Persley	UV disinfection.
Fraserburgh	UV disinfection.
Banff/Macduff	UV disinfection.
Levenmouth	Densadeg lamella settlement tanks followed by UV disinfection.
Newbridge	Low head loss sand filters.
East Calder	Disc filters.
Whitburn	Low head loss sand filters.
Meadowhead	Biofors tertiary filter.

UV disinfection at Inverness was discontinued in 2017 albeit that this service was never a SEPA licence requirement.

E3.20 Tertiary B1 - No plants sit in this category.

E3.21 Tertiary B2 (biological sludge process).

Blackburn	Disc filters.

E3.22-32 Sewerage Data

Includes all sewerage (sewers, pumping stations, rising mains, outfalls and long sea outfalls).

Data sources: Concession Agreements, Operator O&M manuals, Operator asset inventories, Scottish Water's GIS system, as-built drawings and SEPA consents.

Pump capacity (kW) has been obtained from motor drive rating, not the pump duty point.

E3.22 Total length of sewer

Length of outfalls included in data unless noted otherwise in commentary. Where terminal pumping stations are located remote from a wastewater treatment works, the length of rising main connecting the terminal pumping station and wastewater treatment works is included

E3.23 Total length of critical sewer

All PPP sewers (including relief sewers, rising mains and CSO outfalls) are deemed to be critical.

E3.24 Number of pumping stations

Includes stormwater, combined and terminal pumping stations. Inter-stage and final effluent pumping stations forming part of a wastewater treatment plant are not included.

E3.25 Capacity of pumping stations (m^3/d)

Includes stormwater, combined and terminal pumping stations. Maximum flow pumped forward per day. This excludes capacity of standby pumps.

E3.26 Capacity of pumping stations (kw)

Includes stormwater and combined pumping stations, but not terminal pumping stations. Includes capacity of standby pumps.

E3.27 Number of combined pumping stations

Combined pumping station means a network wastewater pumping station containing a pump or pumps transferring wastewater and surface drainage within the downstream sewerage network. The transferred wastewater flow rate from the combined pumping station is the "FFT" rate, the generally accepted term used in design and SEPA consents. For the sake of clarity, where storm water storage tank returns are pumped back into the sewerage system for onward flow, this shall be classed as a combined pumping station (as such flows become part of 'FFT'). Terminal pumping stations are not included.

The following combined pumping stations are included:

Fort William	Blar Mhor, Caol No1
Inverness	Longman
Hatton	Riverside, KGV, Stannergate, West Ferry, Broughty Castle, Fort Street, Gray Street
Nigg	Downies, Portlethen Village, Newtonhill Clifftop, Portlethen South, Backies, Cowie (3), Slughead, Bridge of Muchalls, Cammachmore, Portlethen North
Lossiemouth	Burghead, Cummingston, Hopeman, Moycroft
Buckie	Portgordon West, Portgordon East, Seatown, Cluny, Cullen East, Portknockie, Findochty, Portessie
Banff/Macduff	Whitehills, Whitehills Harbour, Inverboyndie, Scotstown, Castlehill Park, Union Road, Bankhead
Seafield	Wallyford Transfer, Wallyford SWW, Portobello SWW, Harelaw SWW, Dalkeith SWW, Mayshade SWW*
Newbridge	Broxburn SWW
Levenmouth	Methil M1

*Mayshade SWW: pumping station comprises a separate duty/standby pump set in two separate storm tanks. As only one duty pump operates at any one time (i.e. storm tank 1 emptied before commencing emptying of storm tank 2) these four pumps have been entered as a single combined pumping station on a 1 duty/3 standby basis.

E3.28 Capacity of combined pumping stations (m^3/d) –

Maximum flow pumped forward per day. This excludes capacity of standby pumps.

E3.29 Number of stormwater pumping stations –

Stormwater pumping station means a network wastewater pumping station containing a pump or pumps transferring wastewater, containing stormwater, to a stormwater storage tank or storm overflow. The stormwater pumping station transfers wastewater in excess of “FFT”, the generally accepted term used in design and SEPA consents. For the sake of clarity, the function of the stormwater pumping station is to prevent and/or limit surcharging of the upstream sewerage system.

The following stormwater pumping stations are included:

Inverness	Longman (2)
Hatton	Riverside, KGV, Stannergate, Westhaven, Broughty Castle, Inchcape Park
Nigg	Backies (2)
Lossiemouth	Moycroft
Buckie	Portessie
Banff/Macduff	Bankhead
Levenmouth	Leven, Roundall

E3.30 Capacity of stormwater pumping stations (m^3/d)

Maximum flow pumped forward per day. This excludes capacity of standby pumps.

E3.31 Number of combined sewer overflows &
E3.32 Number of combined sewer overflows (screened)

CSOs that overflow within the sewerage system rather than to an outfall discharging direct to the environment are not included.

The following CSOs are included:

Fort William	Caol No1, Caol Transfer
Inverness	Longman
Hatton	Riverside, KGV, Stannergate, South Balmossie, Westhaven, Broughty Castle, Inchcape Park, Panmurefield/Balmossie Mill (2)
Nigg	Downies, Portlethen Village, Newtonhill Clifftop, Backies (2), Cowie, Portlethen North, Nigg
Fraserburgh	Fraserburgh Inlet (Watermill)
Lossiemouth	Burghead, Cummingston, Hopeman, Moycroft
Buckie	Portgordon West, Portgordon East, Seatown, Cluny, Nook, Cullen East, Portknockie, Findochty, Portessie, Shipyard
Banff/Macduff	Whitehills, Whitehills Harbour, Inverboyndie, Scotstown, Castlehill Park, Union Road, Bankhead, Craigfauld
Seafield	Wallyford, Dalkeith*, Hardengreen, Harelaw, Haveral Wood, Middlemills, Newbattle, Newtongrange, Suttieslea*
Newbridge	Broxburn
Levenmouth	Buckhaven, Methil M2 CSO2**, Methil CSO1**, Leven, Roundall

*Seafield - Dalkeith SWW consists of two separate screen overflows on two separate legs of the sewer which combine at the SWW. As each screened overflow is located on the same site and feeds one common storm water tank and outfall, this overflow has been recorded as a single CSO. Suttieslea: 'Copa Sac', (equivalent to 6 mm screen), provided on outfall from storm tank.

**Levenmouth - Methil CSO1 and Methil M2 CSO2 discharge into a common outfall.

E3.33-40 Sludge Treatment and Disposal Data

The quantities reported are the total sludge tonnages prior to the sludge treatment process. This is in accordance with the methodology used in England & Wales.

The information is based on PPP Company records of sludge disposed to the appropriate route.

Allanfearn sludge quantities disposed of by Scottish Water are included in Table E3 and the corresponding costs are included in Table E3a to be consistent with the rest of the PPP works.

From 2016/17 sludge disposed from Shieldhall is included with the Scottish Water data (Table E10) as this facility is now operated and managed by Scottish Water CSD.

TABLE E3a

Table E3a provides operating costs for each scheme. As actual data is not available, all costs have been extracted from the relevant contractual financial models. Where the financial models do not split costs into specific categories the following has been assumed:

- Works with a Sludge Centre: 72 % Ww Treatment Costs, 28% Sludge Costs
- All other works: 80% Ww Treatment Costs, 20% Sludge Costs. These sludge costs have been allocated to the appropriate sludge treatment centre where the sludge is treated, e.g. Fort William sludge costs appear against Inverness sludge centre.

The cost split was reviewed in detail and agreed with WICS in May 2007 and has not been subject to further discussion since that date.

E3a.1, 8, 16 Estimated Direct Operating Cost

Estimated annual direct operating costs are based on the Concessionaire's financial model adjusted for actual inflation.

Where the model specifically identified sums for Rates and SEPA charges these have been deducted from that figure otherwise the actual amount charged was deducted.

No adjustments were made at AVSE (for Rates), Daldowie (for Rates), and MSI (SEPA and Rates) as charges are paid by Scottish Water and are not included in the financial model. At Dalmuir, Scottish Water pays these charges but amounts are also included in the financial model, therefore an adjustment to the model costs is made (Rates and SEPA charges included in the model are refunded to Scottish Water).

An adjustment has been made to include the direct operational expenditure of the Dalmuir NTF and sludge treatment costs. 76% of the total fee is considered direct operational expenditure. This is further broken down to account for the ammonia treatment which is 84% of the ammonia fee and is allocated to Waste Water Treatment (E3a.8). The remainder is allocated to Sludge Treatment (E3a.16).

Additional cost for the operation of the Seafield Odour Project is also included from 2017/18 with Waste Water Treatment (E3a.8).

Actual costs are not known and could, in reality, vary considerably from the contractual financial model. A confidence grade of D6 has therefore been used. A confidence grade of A3 was allocated to the Dalmuir sludge treatment costs as there is some visibility of these costs.

E3a.2, 9, 17 Rates paid by the PPP Contractor

These are based on the rateable value and poundage published on the government website (www.saa.gov.uk). Rates paid by Scottish Water are also included and are based on actual charges for the year (Dalmuir, Daldowie, MSI, AVSE).

Confidence grade for total rates paid for each site is A2, but because rates have to be split to take account of the sewerage, treatment and sludge elements a lower confidence grade has been applied.

	E3a.2	E3a.9	E3a.17	
Site	**Sewerage**	**Sewage Treatment**	**Sludge Treatment**	**Comment on confidence grade**
Fort William	N	B3	N	No sludge centre at works, sludge cost moved to Inverness
Inverness	N	B3	B3	Cost distribution is estimated
Hatton	N	B3	B3	Cost distribution is estimated, based on the Financial Model
Nigg	N	B3	B3	Cost distribution is estimated, based on the Financial Model
Persley	N	B3	N	No sludge centre at works, sludge cost moved to Nigg
Peterhead	N	B3	N	No sludge centre at works, sludge cost moved to Nigg
Fraserburgh	N	B3	N	No sludge centre at works, sludge cost moved to Nigg
Lossiemouth	N	B3	B3	Cost distribution is estimated, based on the Financial Model
Buckie	N	B3	N	No sludge centre at works, sludge cost moved to Lossiemouth
Banff/Macduff	N	B3	N	No sludge centre at works, sludge cost moved to Lossiemouth
Seafield	N	B3	B3	Cost distribution is estimated, based on the Financial Model
Newbridge	N	B3	B3	Cost distribution is estimated, based on the Financial Model
East Calder	N	B3	N	No sewerage and no sludge centre at works, sludge cost moved to Newbridge
Blackburn	N	B3	N	No sewerage and no sludge centre at works, sludge cost moved to Newbridge
Whitburn	N	B3	N	No sludge centre at works, sludge cost moved to Newbridge
Levenmouth	N	B3	B3	Cost distribution is estimated
Dalmuir	N	B3	N	No sewerage and no permanent sludge centre at works
Daldowie	N	N	A2	No sewage treatment at works
Meadowhead	N	B3	B3	Cost distribution is estimated
Stevenston	N	B3	N	No sewerage and no sludge centre at works, sludge cost moved to Meadowhead
Inverclyde	N	B3	N	No sludge centre at works, sludge cost moved to Meadowhead

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E3a.3, 10, 18 SEPA charges paid by the PPP Contractor

Cost allocation is as per the relevant SEPA invoices for 2017/18.

The following confidence grades have been assigned:

	E3a.3	E3a.10	E3a.18	
Site	**Sewerage**	**Sewage Treatment**	**Sludge Treatment**	**Comment on confidence grade**
Fort William	A2	A2	N	No sludge centre at works
Inverness	N	A2	A2	No separate cost for sewerage
Hatton	A2	A2	A2	
Nigg	A2	A2	A2	Includes the cost recharged to Scottish Water for the additional SEPA charges associated with 2 parameters as detailed in the contract.
Persley	N	A2	N	No separate cost for sewerage, no sludge centre at works
Peterhead	N	A2	N	No separate cost for sewerage, no sludge centre at works
Fraserburgh	N	A2	N	No separate cost for sewerage, no sludge centre at works
Lossiemouth	A2	A2	N	No subsistence charge included in invoices
Buckie	A2	A2	N	No sludge centre at works
Banff/Macduff	A2	A2	N	No sludge centre at works
Seafield	A2	A2	A2	
Newbridge	A2	A2	N	No WML charge included in invoice
East Calder	N	A2	N	No sewerage and no sludge centre at works
Blackburn	N	A2	N	No sewerage and no sludge centre at works
Whitburn	N	A2	N	No sewerage and no sludge centre at works
Levenmouth	A2	A2	A2	
Dalmuir	N	N	N	SEPA fees paid by Scottish Water
Daldowie	N	N	A2	Sludge treatment only
Meadowhead	N	N	A2	Only PPC fees (or WML from 31/10/17) paid by the PFI Co
Stevenston	N	N	N	SEPA fees paid by Scottish Water
Inverclyde	N	N	N	SEPA fees paid by Scottish Water

E3a.4, 11, 19, 23 Total Direct Cost

Total of E3a.1-3, 8-11 and 16-18. Confidence grade for Total direct cost is D6 as per E3a.1, 8 and 16 (Estimated direct operating cost) as this is the most significant element of Total direct cost. A confidence grade of A3 was allocated to the Dalmuir sludge treatment costs as these costs are available.

E3a.5, 12, 20 Scottish Water General and Support Expenditure

This includes costs such as advisors and legal costs, power, rent and insurance and the cost of the Scottish Water PPP department that administers the PPP projects which have been allocated to projects relative to the operational costs at each site. Costs are as per the P&L.

In addition, Scottish Water costs of sludge disposal from Inverness, inter-site sludge tankering and terminal pumping costs (where tankering or pumping has taken place between a Scottish Water works and a PFI site) and additional support costs have been included

Confidence grade for total charges is A1, but because Scottish Water PPP department costs have to be split across all sites and all charges have to be split to take account of the sewerage, treatment and sludge elements the following confidence grades have been assigned:

A confidence grade of A3 was allocated to the Dalmuir sludge treatment costs as there is some visibility of these costs.

	E3a.5	E3a.12	E3a.20	Comment
Site	**Sewerage**	**Sewage Treatment**	**Sludge Treatment**	**Comment on confidence grade**
Fort William	CX	C4	N	Network cost very small, no sludge centre at works
Inverness	C4	C4	C4	
Hatton	C4	C4	C4	
Nigg	C4	C4	C4	
Persley	CX	C4	N	Network cost very small, no sludge centre at works
Peterhead	CX	C4	N	Network cost very small, no sludge centre at works
Fraserburgh	CX	C4	N	Network cost very small, no sludge centre at works
Lossiemouth	C4	C4	C4	
Buckie	C4	C4	N	No sludge centre at works
Banff/Macduff	C4	C4	N	No sludge centre at works
Seafield	C4	C4	C4	
Newbridge	CX	C4	C4	Network cost very small
East Calder	N	C4	N	No sewerage and no sludge centre at works
Blackburn	N	C4	N	No sewerage and no sludge centre at works
Whitburn	CX	C4	N	Network cost very small, no sludge centre at works
Levenmouth	C4	C4	C4	
Dalmuir	N	C4	A3	No sewerage
Daldowie	C4	N	C4	No sewage treatment at works
Meadowhead	N	C4	C4	No sewerage
Stevenston	N	C4	N	No sewerage and no sludge centre at works
Inverclyde	CX	C4	N	Network cost very small, no sludge centre at works

E3a.6, 13, 21 Scottish Water SEPA Charges

With the exception of Dalmuir and MSI, all standard SEPA charges are paid for by the PFI Company and are included in the tariff rates. At Nigg, Scottish Water meet the additional SEPA charges associated with 2 parameters as detailed in the contract. Costs are as per the P&L and reflect charges as invoiced by SEPA.

	E3a.6	E3a.13	E3a.21	
Site	**Sewerage**	**Sewage Treatment**	**Sludge Treatment**	**Comment on confidence grade**
Fort William	N	N	N	SEPA charges paid by PFI Co
Inverness	N	N	N	SEPA charges paid by PFI Co
Hatton	N	N	N	SEPA charges paid by PFI Co
Nigg	N	N	N	Treatment cost only (exotics), costs are included with E3a.26
Persley	N	N	N	SEPA charges paid by PFI Co
Peterhead	N	N	N	SEPA charges paid by PFI Co
Fraserburgh	N	N	N	SEPA charges paid by PFI Co
Lossiemouth	N	N	N	SEPA charges paid by PFI Co
Buckie	N	N	N	SEPA charges paid by PFI Co
Banff/Macduff	N	N	N	SEPA charges paid by PFI Co
Seafield	N	N	N	SEPA charges paid by PFI Co
Newbridge	N	N	N	SEPA charges paid by PFI Co
East Calder	N	N	N	SEPA charges paid by PFI Co
Blackburn	N	N	N	SEPA charges paid by PFI Co
Whitburn	N	N	N	SEPA charges paid by PFI Co
Levenmouth	N	N	N	SEPA charges paid by PFI Co
Dalmuir	N	A2	N	No sewerage, no charge for temporary sludge centre at works
Daldowie	N	N	N	SEPA charges paid by PFI Co
Meadowhead	N	A2	N	Treatment cost only, sludge costs are paid by the PFI Co
Stevenston	N	A2	N	No sewerage and no sludge centre at works
Inverclyde	BX	A2	N	No sludge centre at works

E3a.7, 14, 22 Total sewerage cost, total sewage treatment cost, total sludge treatment costs and disposal cost

Confidence grade is D6 as per E3a.1, 8 and 16 (estimated direct operating Cost) as this is the most significant element of the cost.

A confidence grade of A3 was allocated to the Dalmuir sludge treatment and disposal costs as these costs are available.

E3a.15 Estimated terminal pumping cost

Reported costs are as per the costs incurred for the Scottish Water operated terminal pumping stations.

Where the terminal pumping station is part of the PPP scheme the costs are met by the Concessionaire and are included in the tariff rates and not reported as part of E3a.15.

E3a.24 Total Scottish Water cost

Total of Scottish Water General and Support Expenditure, and Scottish Water SEPA Charges (E3a.5-6, 12-13 and 20-21).

Confidence grade for total charges is A1, but because Scottish Water PPP department costs and internal recharges have to be split across all sites a confidence grade of C4 has been allocated.

Site	17/18 £m	16/17 £m	Variance £m	Costs lower than previous year	Costs higher than previous year
Ft William	0.021	0.018	+0.003		17/18 includes higher ABM support costs £0.003m
Inverness	0.606	0.524	+0.082	17/18 includes lower terminal pumping costs £0.002m	17/18 includes higher legal/ consultants fees £0.007m, higher other Scottish Water operating costs £0.009m and higher sludge tankering and disposal costs £0.047m, and higher ABM support costs £0.021m
Hatton	0.321	0.279	+0.042	17/18 includes lower other Scottish Water operating costs £0.011m	17/18 includes higher legal/consultants fees £0.002m, higher sludge tankering costs £0.011m, higher terminal pumping costs £0.013m, and higher ABM support costs £0.027m
Nigg	0.829	0.709	+0.120	17/18 includes lower other Scottish Water operating costs £0.006m,	17/18 includes higher legal/consultants fees £0.019m, higher sludge tankering costs £0.034m, and higher ABM support costs £0.073m
Persley	0.024	0.023	+0.001	17/18 includes lower other Scottish Water operating costs £0.003m	17/18 includes higher ABM support costs £0.004m
Peterhead	0.028	0.026	+0.002	17/18 includes lower other Scottish Water operating costs £0.001m, lower terminal pumping costs £0.001m	17/18 includes higher ABM support costs £0.004m
Fraserburgh	0.027	0.025	+0.002	17/18 includes lower other Scottish Water operating costs £0.002m,	17/18 includes higher ABM support costs £0.004m
Lossiemouth	0.185	0.145	+0.040		17/18 includes higher legal/consultants fees £0.015m, higher sludge tankering costs £0.009m, higher terminal pumping costs £0.002m, and higher ABM support costs £0.014m
Buckie	0.031	0.027	+0.004	17/18 includes lower other Scottish Water operating costs £0.001m	17/18 includes higher ABM support costs £0.005m
Banff/Macduff	0.029	0.024	+0.005		17/18 includes higher other Scottish Water operating costs £0.001m, and higher ABM support costs £0.004m
Seafield	0.225	0.158	+0.067		17/18 includes higher legal/consultants fees £0.021m, and higher other Scottish Water operating costs £0.010m, and higher ABM support costs £0.036m
Newbridge	0.041	0.035	+0.006		17/18 includes higher ABM support costs £0.006m
East Calder	0.022	0.020	+0.002	17/18 includes lower other Scottish Water operating costs £0.001m	17/18 includes higher ABM support costs £0.003m

Site	17/18 £m	16/17 £m	Variance £m	Costs lower than previous year	Costs higher than previous year
Blackburn	0.018	0.015	+0.003		17/18 includes higher ABM support costs £0.003m
Whitburn	0.019	0.016	+0.003		17/18 includes higher ABM support costs £0.003m
Levenmouth	0.136	0.250	-0.114	17/18 includes lower other Scottish Water operating costs £0.151m	17/18 includes higher legal/consultants costs £0.016m, and higher ABM support costs £0.021m
Dalmuir	1.523	1.008	+0.515	17/18 includes lower other Scottish Water operating costs £0.052m	17/18 includes higher legal/consultants costs £0.001m, higher Scottish Water sludge disposal costs £0.385m, and higher ABM support costs £0.181m
Daldowie	1.809	1.325	+0.484	17/18 includes lower other Scottish Water operating costs £0.016,	17/18 includes higher legal/consultants costs £0.012m, higher Shieldhall centrifuging costs £0.284m, higher sludge tankering costs £0.120m, and higher ABM support costs £0.084m
Meadowhead	1.086	0.958	+0.128	17/18 includes lower Scottish Water sludge disposal costs £0.068m,	17/18 includes higher legal/consultants costs £0.051m, higher terminal pumping costs £0.122m, and higher ABM support costs £0.023m
Stevenston	0.424	0.401	+0.023	17/18 includes lower other Scottish Water operating costs £0.021m	17/18 includes higher terminal pumping costs £0.039m, and higher ABM support costs £0.005m
Inverclyde	0.469	0.418	+0.051		17/18 includes higher other Scottish Water operating costs £0.009m,higher terminal pumping costs £0.038m, and higher ABM support costs £0.004m
TOTAL	**7.873**	**6.404**	**+1.469**		

E3a.25 Total operating cost

Confidence grade for Total operating cost is D6 as per E3a.23 Total direct cost, as this is the most significant element of Total operating cost.

E3a.26 Annual charge

The Annual charge is based on the service fees for the year, provisions and business rates (including rebates). Expenditure is taken from the P&L.

Confidence grades for each of the schemes is A1 other than the AVSE scheme which is B3 as the charges are based on the total AVSE flows as there is no separate tariff for each scheme.

Site	17/18 £m	16/17 £m	Variance £m	Costs lower than previous year	Costs higher than previous year
Ft William	3.621	3.595	+0.026	17/18 lower flows/loads £0.118m, higher penalties £0.005m	17/18 inflation £0.107m, Operator Self-Monitoring from Jan 18 £0.004m, lower release of accruals £0.038m
Inverness	6.738	7.029	-0.291	17/18 lower flows/loads £0.600m, UV rebate from Aug 2017 £0.128m, higher release of accruals £0.012m	17/18 inflation £0.207m, lower penalties £0.238m, Operator Self-Monitoring from Jan 18 £0.004m
Hatton	22.169	21.920	+0.249	17/18 lower flows £0.135m, higher release of accrual £0.009m	17/18 inflation £0.389m, Operator Self-Monitoring from Jan 18 £0.004m
Nigg	13.140	14.199	-1.059	17/18 higher penalties £1.730m, higher business rates rebate £0.115m, lower SEPA recharge from KWS £0.070m, higher release of accruals £0.026m	17/18 higher flows/loads £0.533m, inflation £0.340m, higher electricity recharge from KWS £0.001m, Operator Self-Monitoring from Jan 18 £0.004m, higher Carbon Reduction Commitment £0.004m
Persley	2.671	2.450	+0.221	17/18 higher penalties £0.035m, higher business rates rebate £0.036m	17/18 higher flows/loads £0.223m, inflation £0.061m, Operator Self-Monitoring from Jan 18 £0.004m, lower release of accruals £0.004m
Peterhead	2.347	2.071	+0.276	17/18 higher business rates rebate £0.022m	17/18 higher flows/loads £0.214m, lower penalties £0.021m, inflation £0.052m, Operator Self-Monitoring from Jan 18 £0.004m, lower release of accruals £0.007m
Fraserburgh	2.055	1.928	+0.127	17/18 higher penalties £0.005m, higher business rates rebate £0.021m, higher release of accruals £0.002m	17/18 inflation £0.046m, higher flows/loads £0.105m, Operator Self-Monitoring from Jan 18 £0.004m
Lossiemouth	4.427	4.321	+0.106	17/18 higher penalties £0.193m,lower damage to equipment for £0.027m, higher release of accruals £0.046m	17/18 higher flows/fees £0.278m, inflation £0.090m, Operator Self-Monitoring from Jan 18 £0.004m
Buckie	3.063	2.783	+0.280	17/18 higher penalties £0.016m,higher release of accruals £0.006m	17/18 higher flows/fees £0.242m, inflation £0.056m, Operator Self-Monitoring from Jan 18 £0.004m
Banff/Macduff	3.434	3.295	+0.139	17/18 higher penalties £0.020m,higher release of accruals £0.015m	17/18 higher flows/fees £0.106m, inflation £0.064m, Operator Self-Monitoring from Jan 18 £0.004m
Seafield	22.301	21.387	+0.914	17/18 lower business rates £0.301m, higher release of accruals £0.143m	17/18 based on 100% compliance with the contract plus inflation £0.591m, higher flows £0.369m, lower sludge rebate £0.055m, higher Seafield Odour Improvement project costs £0.123m, Operator Self-Monitoring from Jan 18 £0.020m
Newbridge	3.004	3.095	-0.091		
East Calder	1.638	1.688	-0.050		
Blackburn	0.819	0.844	-0.025		
Whitburn	1.092	1.126	-0.034		

Site	17/18 £m	16/17 £m	Variance £m	Costs lower than previous year	Costs higher than previous year
Levenmouth	12.521	11.123	+1.398		17/18 higher flows £0.663m, inflation £0.625m, higher Odour Project costs £0.007m, Operator Self-Monitoring from Jan 18 £0.008m, lower release of accruals £0.095m
Dalmuir	14.105	13.802	+0.303	17/18 lower centrifuge project £0.684m, lower business rates £0.077m, 16/17 includes Compensation Event Provision £1.25m,	17/18 higher flows £0.072m,inflation £0.134m, higher Capital Project opex £0.844m, Capital Project Operator Forecast and Project Manager Interim Agreement Costs £0.905m, higher Annual Operations Compensation £0.128m, Operator Self-Monitoring from Jan 18 £0.008m, lower release of accruals £0.223m
Daldowie	20.735	20.290	+0.445	17/18 lower sludge volumes £0.107m, lower business rates £0.060m, lower excess ragging £0.170m,	17/18 inflation £0.639m, higher necessary change costs £0.041m, lower release of accruals £0.102m
Meadowhead	7.342	8.024	-0.682	17/18 lower business rates £0.120m, lower Landfill Tax & Gas cost £0.020m, 16/17 includes PADR2 £0.300m, higher release of accruals £0.373m	17/18 inflation £0.123m, Operator Self-Monitoring from Jan 18 £0.008m
Stevenston	3.743	3.530	+0.213	17/18 lower business rates £0.026m,	17/18 higher flows £0.064, inflation £0.055m, higher Trader Necessary Change costs £0.049m, Operator Self-Monitoring from Jan 18 £0.026m, lower release of accruals £0.045m
Inverclyde	3.730	3.799	-0.069	17/18 lower business rates £0.003m, 16/17 includes Overton WTW increased sludge costs £0.150m, higher release of accruals £0.032m	17/18 higher flows £0.049, inflation £0.059m, Operator Self-Monitoring from Jan 18 £0.008m
TOTAL	**154.695**	**152.299**	**+2.396**		

E3a.27 Public sector capital equivalent values

Values were derived from the base model incorporated in a report to the Transport and Environment Committee on 21 June 2001 adjusted for inflation. At Daldowie the PPP cost was used in the absence of a PSCE value, similarly for Levenmouth and AVSE the values have been taken from the 2001/02 WIC return.

E3a.28 Contract period

The period quoted is the Contract Period as defined in the Contract.

E3a.29 Contract end date

Contract end date is as defined in the Contract.

Table E4 Water Explanatory Factors - Resources and Treatment

E4.1 – E4.5 Source Types

The number of sources has decreased by 1 to 282 due to the closure of Lochenkit WTW. Details are provided in the table below:

	2016/17 No. of sources	**283**
Reductions	Closed sources	1
Additions	None	0
	2017/18 No. of sources	**282**

Distribution input (DI) has increased by 11.12 Ml/d to 1795.95 Ml/d.

Changes to DI this year are detailed in the table below:

Source Type	**2016/17**	**2017/18**	**Net Change**
	Ml/d		
Impounding reservoirs	1,324.029	1,343.020	18.991
Lochs	19.465	20.268	0.803
River and burn abstractions	376.292	365.776	-10.516
Boreholes	65.046	66.889	1.842
Total	1,784.832	1,795.953	11.120

As in previous years, we have completed columns 110–140 by assuming that, where multiple sources feed a WTW, the total average daily output comes only from the primary source. The primary source is therefore allocated 100% of the DI and all other sources are allocated 0%.

The confidence grade for the number of sources remains at B2 (as per previous year). The overall reliability band remains as B. Although the asset information now held in Ellipse is sufficient to enable the number of sources to be reliably determined, we recognise that there is still work to be done in establishing a robust process for this data being maintained as business as usual. Currently it is reliant on annual checks and bulk updates. The confidence grade for columns 110-140 (the average daily output of these sources) remains at B2 (in line with reported confidence for table A2).

E4.6-7 Bulk water exports and imports

We do not have any raw water exports or imports. Accordingly, a confidence grade of AX has been entered for these lines.

E4.8-12 Proportion of own source output

There were only minor changes to the source type proportions of total distribution input (DI) this year.

E4.13 Peak demand - peak to average ratio

This line reports the ratio A: B where –

> A = the average daily volume into supply in the peak seven day period in the peak year of the preceding year.

In 2017/18, Average daily volume was 1,795.95 Ml/d and the peak to average ratio was 1.046.

No changes were made to the process or methodology used to report this line. As the figure is based on weekly reported distribution input (DI), the confidence grade assigned to it is based on the confidence grade of the DI in the peak year. The confidence grade is therefore B3, the same as that used for the DI data in AR18.

E4.14 Average pumping head – resources and treatment

The reported Average Pumping head this year is 28.3, a decrease of 0.1m from the previous year.

As limited flow and pressure data is available, the methodology used was to update last year's figures by calculating the change to the "Work Done" (m^4) at regional level based on the proportional (regional) change to DI. This figure was then divided by the Regional DI to obtain the Regional Pumping Head, which was then aggregated.

Although the definitions include a requirement to report on inter-stage pumping for this line, we have again not included any such information due to insufficient data in this area.

Pumping head data

We note that due to data limitations our confidence grade has remained at C4. We currently have a limited dataset from which we extrapolate an overall pumping head value across the whole of Scottish Water. We acknowledge that further work is required to improve the quality of this data.

E4.20-26 Water Treatment Works by Process Type

The number of water treatment works (WTW) decreased by 3 to 242; the total distribution input (DI) increased by 11.12 Ml/d to 1,795.95 Ml/d.

The process for completing Table E4 is the same as for previous years. Changes to the numbers of WTW by process type have arisen as a result of operational changes this year.

Note: Table E4 reports all WTWs that provided water into supply at any time during the year.

The confidence grade for the number of WTW has changed from B2 to A2. The confidence grade for total DI remains at B3.

E4.28-38 Water Treatment Works by Size Band

Changes to the number of water treatment works (WTW) in use and proportions (%) of total distribution input (DI) this year are broken down by WTW size band in the table below:

Size Band	2016/17		2017/18		Net Change	
	No.	*%*	*No.*	*%*	*No.*	*%*
<= 1 Ml/d	132	1.15	132	1.16	0	0.01
>1, <= 2.5 Ml/d	25	1.3	24	1.27	-1	-0.03
>2.5, <= 5 Ml/d	23	2.66	22	2.73	-1	0.07
>5, <= 10 Ml/d	19	4.87	19	4.93	0	0.06
>10, <= 25 Ml/d	19	10.44	18	10.58	-1	0.14
>25, <= 50 Ml/d	12	15.29	12	15.50	0	0.21
>50, <= 100 Ml/d	9	22.76	9	22.90	0	0.14
>100, <= 175 Ml/d	4	21.46	4	21.78	0	0.32
>175 Ml/d	2	20.07	2	19.16	0	-0.91
Total	**245**		**242**		**-3**	

The confidence grade for the number of WTW has changed from B2 to A2. The confidence grade for proportion of total DI remains at C3.

E4.15-39 Functional costs by operational area, process and size band

Water Resources & Treatment E4.19

	Total
Functional expenditure:	£m
2017/18	61.508
2016/17	57.856
Variance	**(3.652)**

Water resources and treatment costs increased by £3.7m (6.3%) from 2016/17. The increase is analysed as follows:

- £1.1m (9.1%) increase in materials and consumables costs mainly due to higher chemicals costs (£0.7m) as a result of poor raw water quality and a higher level of electrical and mechanical work in the year (£0.3m);
- £1.0m (26.4%) increase in hire and contracted costs due to additional maintenance requirements at treatment works, increased maintenance of abstraction equipment to maintain CAR compliance as a result of changes to SEPA standards, and operating costs of new assets;
- £1.1m (7.2%) increase in employment costs due to pay progression and new EU regulations regarding holiday pay (£0.4m); and an increase in FTE and overtime recorded against operating and maintaining ageing water treatment works; and
- Other direct costs have increased by £0.6m mainly due to increased transport costs of £0.3m to tanker water in response to asset failures. There were also costs incurred to clear access roads during the severe weather.

Water resources and treatment costs analysed by region:

Functional expenditure:	North £m	East £m	South £m	West £m	Direct £m	General and Support £m	Total £m
2017/18	11.291	13.284	9.981	17.178	**51.734**	9.774	**61.508**
2016/17	10.636	12.636	9.368	15.331	**47.971**	9.885	**57.856**
Variance	**(0.655)**	**(0.648)**	**(0.613)**	**(1.847)**	**(3.763)**	**+0.111**	**(3.652)**

Changes to the numbers of WTW by process type and size band have arisen as a result of operational changes and process re-classifications in WTWs during 2017/18. Re-stating 2016/17 figures on like-for-like basis shows the following variations:

Analysis of water resources and treatment costs by process type:

Process Type	2017/18 £m	2016/17 £m	Variance £m
SD : Simple Disinfection	1.330	1.275	(0.055)
W1 : SD plus simple physical or chemical treatment	0.115	0.124	+0.009
W2 : Single stage complex physical or chemical treatment	11.153	9.998	(1.155)
W3 : Multiple stage complex treatment, excluding W4	33.894	31.427	(2.467)
W4 : Very high cost treatment Process	5.242	5.147	(0.095)
Direct	**51.734**	**47.971**	**(3.763)**
General and Support	9.774	9.885	+0.111
Total	**61.508**	**57.856**	**(3.652)**

Direct costs by process type have moved in line with overall cost increases explained above with the exception of:

- Process type W1 reflecting a reduction in employee hours and power costs recorded at Durness WTW and Kilmuir WTW.

Analysis of water resources and treatment costs by size band:

Size band	2017/18 £m	2016/17 £m	Variance £m
<=1 Ml/d	6.951	6.617	(0.334)
>1 to <=2.5 Ml/d	3.126	2.898	(0.228)
>2.5 to <=5 Ml/d	3.821	3.666	(0.155)
>5 to <=10 Ml/d	4.702	4.465	(0.237)
>10 to <=25 Ml/d	8.782	8.025	(0.757)
>25 to <=50 Ml/d	8.323	7.598	(0.725)
>50 to <=100 Ml/d	6.414	6.172	(0.242)
>100 to <=175 Ml/d	5.361	4.836	(0.525)
>175 Ml/d	4.254	3.694	(0.560)
Direct	**51.734**	**47.971**	**(3.763)**
General and Support	9.774	9.885	+0.111
Total	**61.508**	**57.856**	**(3.652)**

The allocation of costs by size band remained broadly consistent with 2016/17.

Costs which are directly attributable to abstraction and treatment are charged to the specific asset cost code in the General Ledger, either via direct charging, Ellipse timesheets or work orders. Of the £51.7m total direct resource and treatment costs, £46.2m of costs or 89.3% have been directly charged to assets in our corporate costing system.

Other costs have been allocated to Water Resources and Treatment through ABM support activity allocation, e.g. stores based on number of issues, IT applications based on number of users, etc. Therefore, support costs are allocated on a resource consumed basis. However, many of these costs are not specific to an asset; they are generally attributable to an employee. It follows that the majority of these support costs should be allocated to the activities the employees have been completing.

Confidence Grades – Confidence grades on Table E4 are consistent with grades in the general E table commentary and remain consistent with 2016/17.

Table E6 Water Distribution

The methodology used to allocate properties and population to the 4 operational regions remains unchanged from the previous year across this table.

The figure reported on Line E6.1 reports the annual average resident connected population and is consistent with the figure reported in A2.1.

The total number of connected properties reported on line E6.2 is consistent with the figure reported in A1.10.

The value reported on line E6.3 reflects the volume of water delivered to households. This figure is consistent with the sum of the figures reported in A2.7 and A2.8.

The volume was calculated by operational region using the property figures calculated for line E6.2, multiplied by the regional specific Per Household Consumption figure.

The volume of water reported as delivered to non-households as shown on line E6.4 is consistent with the sum of the figures reported in A2.9 and A2.10.

Measured and unmeasured non-household volumes are allocated to water operational areas and summed to regional level; the method remains unchanged from last year.

There has been no change to the operational regions in the last year and the area reported on line E6.5 has remained the same at 79,799km^2. The confidence grade at A1 reflects the fact that the operational region boundaries are taken directly from the corporate GIS.

The number of supply zones reported on line E6.6 was calculated using the same methodology as last year and matches the number reported to the Drinking Water Quality Regulator. Changes in zones topology are tracked and recorded by the Water Quality Regulation Zone procedure and a full audit trail is available.

There were no significant changes in the figures of Bands 1-4 or the reported total length of mains shown on lines E6.12 to E6.16.

The inventory is reported from our new corporate GIS, where 89% of mains are populated with diameter. Of the remaining 11%, 80% are infilled using the GIS Infill method and the remaining items are allocated with the default infill value (the median diameter for their respective material type). This data improvement will potentially be reflected in the confidence grades going forward.

Line E6.17 reports the total length of unlined iron mains held in our corporate GIS.

The total length of unlined iron mains has increased by 2,601.1km (21%) to 14,874.3km, in this reporting year.

The report relies on population of the material and lining attributes in the inventory. 8% of GIS potable main was populated by the Infill material model and the remaining 3% were left blank so that the diameter infill was not affected by an infilled material.

The information available for pipe lining is not fully complete, with 39.6% of the lined ferrous inventory having null or unknown lining attribute.

Line E6.18 is a calculated cell that reports a subset of the total water main inventory to reflect those mains with a diameter greater than 320mm.

The reported number of water mains bursts on line E6.19 is derived from both the number of customer and non-customer reported bursts for the reporting year. An overall increasing trend in the number of bursts was evident throughout the last 5 months of the report year. March experienced an increase of 67% on last year, where Scotland was subject to widespread snow, and daytime temperatures remained below freezing in many parts of the country.

The reported top-down leakage level shown on line E6.20 is aligned with the figures on tables A2 and G3, where we report leakage in terms of Maximum Likelihood Estimation (MLE) leakage.

Line E6.21 reports the overall number of properties subject to low pressure. Targeted investment and operational changes have improved water pressure to one property during the report year. One property has been added to the register due to asset deterioration, with one property removed due to operational changes.

E6.22-25 Pumping Stations

Lines E6.22 to E6.24 report the numbers and capacity of water pumping stations recorded in the asset inventory for the report year. Changes in the reported numbers are caused by additions and removals across the network to reflect operational interventions, and data improvements in the corporate systems involved.

The changes reported in the total capacity of pumping stations on lines E6.23 and E6.24 this year are attributed to the decrease in asset numbers and improved data quality. The data available has resulted in an overall decrease in the capacity reported.

Our methodology for determining the design capacity (in kW) of these pumping stations remains unchanged.

E6.25 Average pumping head

Due to limited new flow and pressure data becoming available, the previous methodology was retained to update last year's figures using the "Work Done" (m^4) at regional level based on the proportional change to DI.

We currently have a limited dataset from which we extrapolate an overall pumping head value across the whole of Scottish Water.

E6.26-27 Service Reservoirs

The changes reported for the total number of service reservoirs are generally the result of operational revisions across the network.

The changes reported for the total reported capacity of service reservoirs are mainly due to improvement in data quality and the result of operational revisions across the network.

E6.28-29 Water Towers

The total number of water towers has remained at 18, with a corresponding retention of the total volume at 29.3 Ml, reflecting the position held in our corporate asset inventory.

E6.7-11 Functional Cost

Water Distribution E6.11

	Total
Functional expenditure:	£m
2017/18	68.310
2016/17	63.687
Variance	**(4.623)**

Water distribution costs have increased by £4.6m (7.3%), from 2016/17. The cost increase is analysed as follows:

- £2.5m (11.5%) increase in employment costs due to pay progression and new EU regulations regarding holiday pay (£0.7m), additional overtime to maintain supplies during severe weather (£0.3m) and overtime associated with burst incidents (£0.8m), putting in place a strategic valve maintenance team (£0.3m), and an increased amount of time spent performing investigations and inspections on the network (£0.4m); and

- £2.1m (21.4%) increase in hire and contracted costs, mostly due to the severe weather response in February/March (£1.1m), repairing other significant bursts earlier in the year (£0.5m) and tackling visible leakage (£0.7m).

Water distribution costs are analysed by region:

	North	East	South	West	Total	General and Support	Total
Functional expenditure:	£m	£m	£m	£m	£m	£m	£m
2017/18	6.533	13.399	13.818	17.891	**51.641**	16.669	**68.310**
2016/17	5.847	12.554	13.049	14.781	**46.231**	17.456	**63.687**
Variance	**(0.686)**	**(0.845)**	**(0.769)**	**(3.110)**	**(5.410)**	**+0.787**	**(4.623)**

Confidence Grades – Confidence grades on Table E6 are consistent with grades in the general E table commentary and remain consistent with 2016/17.

Scottish Water has slightly lower confidence levels on Network cost analysis than treatment cost analysis. This is due to lower levels of direct labour capture on Networks.

Table E7 Wastewater Explanatory Factors - Sewerage & Sewage treatment

Lines E7.1 to E7.2 report the annual average resident, and non-resident, connected populations, which reflect the increases in the general population and more accurate address information.

As with previous years, tourist population has been determined on the basis of average bed spaces multiplied by an average occupancy factor. Average occupancy rates are taken from Visit Scotland's latest available Tourism in Scotland report.

The daily average volume of sewage collected is reported on line E7.3.

The average daily volume collected has been calculated as the flow which arrives in a public sewer (of any type) from any source e.g. rainfall, infiltration, domestic use, industrial use, tidal flows and connected watercourses. The approach used is the same as that in previous years and has been applied consistently across the country. It uses data sets for rainfall, connected properties and sewered areas consistent with the wastewater elements of the Annual Return.

The flow has been calculated in two parts; the dry weather flow and the storm flow.

Dry Weather Flow: A factor has been established that relates the number of connected properties to the amount of sewer flow in periods without rainfall. To establish this figure a number of recordings of flows with a known connected population were analysed to establish a range of flow per connected population. These factors were averaged and applied to all sewered areas to establish a total dry weather flow contribution per sewered area.

Storm Flow: The storm flow element was calculated by using existing sewer models to establish a relationship between rainfall depth, area of the sewered area and the amount of run-off generated. A selection of models was used and an average value of run-off per millimetre rainfall per hectare of sewered area was established. This was then applied to each sewered area to establish a total storm flow contribution per sewered area.

The total sewage collected was calculated (dry weather plus storm flows) for each sewered area and a total for each operational region calculated.

This figure includes all flows that are collected by the wastewater network but does not necessarily relate to the flows that arrive at treatment sites as a proportion of flows will be discharged via overflows and other flows collected by storm sewers will be discharged without treatment.

The total number of connected properties reported on line E7.4 reflects the number of properties connected to the wastewater network as reported in A1.20.

The reported value of the drained area reported on line E7.6 is a result of on-going verification of the sewered areas in our corporate GIS.

Line E7.7 reports the annual precipitation recorded over the report year. This reflects data obtained from the Met office across the report year.

The total length of sewer reported on line E7.8 reflects values held in our corporate GIS and a statistical calculation of lateral sewer length using unit length connections by dwelling type.

The statistical calculation of the length of lateral sewers is then used to populate line E7.9. The calculation also uses the number of properties connected to the waste water network (connected properties). Similar to previous years, a statistical calculation was used however 15% of the lateral sewer length is now calculated using data from the GIS inventory.

The length of combined sewer held in our corporate GIS is reported on line E7.10.

As modern sewerage systems are constructed with separate foul and storm sewers for new builds, the length of combined sewer is generally reducing with any net impact being the result of legacy record data being added to the corporate system, and any new outfall pipe construction.

The length of separate storm sewer reported in line E7.11 reflects the construction of separate storm sewers for new build developments.

Line E7.12 reports the length of sewer greater than 1000mm diameter. The length of sewer greater than 1000mm diameter has decreased by 45km to 799km. This decrease is attributable to a more complete diameter infill approach.

The length of critical sewer reported on line E7.13 is derived from analysis of a recorded inventory with known gaps in asset stock.

The classification of critical sewers uses the WRc methodology for asset size, material, depth and proximity to particular features.

We continue to utilise an improved infill methodology which results in less default diameters (225mm), materials & depths being used. This has meant greater accuracy and an overall increase in sewers assessed correctly for criticality.

Line E7.14 reports the number of sewer collapses over the report year. Due to the application of an updated methodology over the last few reporting years, we are now reporting a more robust number of sewer collapses.

E7.15-19 Sewerage Costs

Sewerage E7.19

	Total
Functional expenditure:	£m
2017/18	43.148
2016/17	42.416
Variance	**(0.732)**

Sewerage costs have increase by £0.7m (1.7%) from 2016/17. The increase is analysed as follows:

- £0.6m (3.9%) increase in employment costs due primarily to pay progression and new EU regulations regarding holiday pay (£0.4m) and an increase in the time recorded against clearing chokes (£0.2m) ;
- £0.3m (7.5%) increase in hire and contracted costs largely due to an increase in sewer main repairs;
- Materials and consumable have increased by £0.2m from last year due to the increased purchase of small plant and tools;
- Other direct costs have increased by £0.2m which relate to higher insurance claims during the year; and
- General and support costs have decreased by £0.6m due to a reduction in IT and telecom costs of £0.4m and a decrease in property costs of £0.2m primarily due to a rates revaluation.

Sewerage costs are analysed by region:

	North	East	South	West	Direct	General and Support	Total
Functional expenditure:	£m	£m	£m	£m	£m	£m	£m
2017/18	3.964	7.585	9.941	10.629	**32.119**	11.029	**43.148**
2016/17	3.398	8.600	7.951	10.822	**30.771**	11.645	**42.416**
Variance	**(0.566)**	**+1.015**	**(1.990)**	**+0.193**	**(1.348)**	**+0.616**	**(0.732)**

E7.20 – E7.27 Wastewater Pumping Stations

Lines E7.20 to E7.27 reflect the numbers and capacities of our wastewater pumping stations.

A pumping station is defined as an individual site (i.e. not an individual pump). It includes foul, combined and stormwater pumping stations situated at treatment works but excludes inter-stage pumping. Changes since the last submission are reflective of asset data improvement, changes to pump units, and additions and removals of asset locations to reflect operational revisions.

The reported m3/d capacity figure on line E7.21 is based on extrapolated corporate data as not all stations have a design capacity recorded in the corporate asset inventory. The confidence grade remains at C4, reflecting the level of extrapolation used to derive the figure. The total capacity (Kw) of pumping stations reported on line E7.22 utilises the same methodology as in previous years. The changes reported are therefore indicative of asset stock revisions over the year.

The average pumping head reported on line E7.23 has been calculated by additions, deletions and corrections to the pumping data contained in the historic annual return spreadsheets. Due to data limitations our confidence grade has remained at C5. We currently have a limited dataset from which we extrapolate an overall pumping head value across the whole of Scottish Water. We acknowledge that further work is required to improve the quality of this data.

The total number and capacities of combined pumping stations reported on lines E7.24 and E7.25 continue to utilise the same methodology as in previous years.

There has been an overall reduction in the number of combined pumping stations but an increase in volume. The volume increased due to a large combined pumping station being added to the AR18 inventory as the result of a general data improvement.

The confidence grade has remained at C4, reflecting the level of extrapolation used to derive the reported figures.

The total number and capacities reported on lines E7.26 and E7.27 of stormwater pumping stations reflect data from our corporate asset inventory. The number of pumping stations has remained the same and there has been a slight increase in the capacity at existing pumping stations.

E7.28 & E7.29 Number of combined sewer overflows

The number of combined sewer overflows (CSOs) has been confirmed using selected desktop and site surveys. Continual improvement has been undertaken to identify abandoned CSO and duplicate records. Additionally we continue to identify and record the presence and type of screens (powered/ non-powered) to report on line E7.29.

The changes reported this year are mainly due to better recording of the presence of screens at CSOs and increased numbers of powered screens.

Line E7.30 reports the number of sewage treatment works (WWTW) using our corporate asset inventory.

The decrease in the total load reported on line E7.31 reflects the net change in the constituent components of the works loads. Due to rounding the individual differences may not add up to the total difference.

The load consists of the following constituents:

- Population
- Tourist
- Non-domestic load
- Trade effluent
- Imported private septic tanks
- Imported public septic tanks
- Imported other loads
- Imported WWTW sludge
- Imported WTW sludge
- Sludge return liquors

Population (73% of total load): The population load has increased by 338kg BOD/day. The increase in population load is a reflection of the increase in population reported in line E7.1.

Tourist (1.7% of total load): The tourist load has increased by 20 kg BOD/day. This increase is due to a greater occupancy rate being reported at tourist accommodation.

Non-domestic load (10.6% of total load): The non-domestic load increased by 597kg BOD/day in line with the increase in the metered non-domestic volumes recorded

Trade effluent (12% of total load): The trade effluent load has increased by 1,332kg BOD/day.

Imported private septic tanks (0.1% of total load): The imported private septic tanks load has decreased by 27kg BOD/day.

Imported public septic tanks (0.1% of total load): The imported public septic tanks load has decreased by 96kg BOD/day.

Imported other loads (0.1% of total load): The imported other loads decreased by 3,102kg BOD/day. The reduction is due to an ongoing correction at Kinneil Kerse WWTW from previous years to reflect the fact that some of the tanker loads were included in error.

Imported WWTW sludge (2.0% of total load): The imported WWTW sludge load has decreased by 2,235kg BOD/day.

Imported WTW sludge (0.3% of total load): The imported WTW sludge load has decreased by 62kg BOD/day.

Sludge return liquors (0.2% of total load): The sludge return liquor load has decreased by 82kg BOD/day.

The confidence grade remains at B3.

E7.32-36 Sewage Treatment Costs

Sewage Treatment E7.36

	Total
Functional expenditure:	£m
2017/18	58.731
2016/17	56.622
Variance	**(2.109)**

Sewage treatment costs have increased by £2.1m (3.7%) from 2016/17. The main movements are as follows:

- £1.4m (10.7%) increase in employment costs due to pay progression and new EU regulations regarding holiday pay (£0.8m) and an increase in asset operating costs of £0.7m to maintain WWTW compliance;
- £0.4m (2.3%) increase in power costs mainly due to increased energy consumption associated with higher rainfall (average rainfall seen a 12% increase on 2016/17);
- £0.2m (5.6%) increase in hired and contracted costs mainly due to additional tankering of higher sludge volumes driven by maintaining compliance;
- £0.5m (13.5%) increase in materials and consumables costs mainly due to increased chemicals usage of £0.6m to maintain compliance;
- £0.3m (26.8%) increase in other direct costs, mostly as a result of an increase in grass cutting costs (£0.2m) and repairs to on site facilities (£0.1m);
- £0.7m (5.9%) decrease in general and support costs mainly due to rates revaluations (£0.6m).

Sewage treatment costs are analysed by region:

	North	East	South	West	Direct	General and Support	Total
Functional expenditure:	£m	£m	£m	£m	£m	£m	£m
2017/18	7.052	11.427	16.008	13.281	**47.768**	10.963	**58.731**
2016/17	6.651	10.631	14.438	13.363	**45.083**	11.539	**56.622**
Variance	**(0.401)**	**(0.796)**	**(1.570)**	**+0.082**	**(2.685)**	**+0.576**	**(2.109)**

Confidence Grades – Confidence grades on Table E7 are consistent with grades in the general E table commentary and remain consistent with 2016/17.

Scottish Water has slightly lower confidence levels on Network cost analysis than treatment cost analysis. This is due to lower levels of direct labour capture on Networks.

Table E8 Waste water Explanatory Factors - Sewage Treatment Works

E8.1 – E8.7 Sewage treatment works size bands

Lines E8.1 to E8.7 report the numbers of our wastewater treatment works, split by the size bands required, across the asset inventory. Changes to the number of WWTW reflect additions and removals from our asset inventory, and the impact of capital investment activities.

The total number of sewage treatment works (WWTW) decreased by 5 to 1,843. Changes to the number of WWTW this year are broken down by size band and treatment category in the tables below:

Size Band	2016/17	2017/18	Net Change
0	1,116	1,119	3
1	221	211	-10
2	145	148	3
3	185	181	-4
4	120	124	4
5	40	39	-1
6	21	21	0
Total	1,848	**1,843**	**-5**

Treatment Category	2016/17	2017/18	Net Change
Septic Tanks	1,175	1,177	2
Primary	41	40	-1
Sec Activated Sludge	180	177	-3
Sec Biological	296	296	0
Tertiary A1	35	36	1
Tertiary A2	17	19	2
Tertiary B1	60	59	-1
Tertiary B2	14	14	0
Sea Preliminary	8	8	0
Sea Screened	3	3	0
Sea Unscreened	19	14	-5
Total	**1,848**	**1,843**	**-5**

The confidence grade remains at B3.

E8.9 & E8.10 Small sewage treatment works with ammonia consent 5-10 mg/l and <= 5 mg/l

These lines report on the number of small sewage treatment works with specific ammonia consents. The numbers are sourced from our compliance database and are as agreed with SEPA under the relevant discharge consents.

E8.11 - E8.18 Average Daily Loads

These lines report on the total average daily load, excluding septic tanks, for each treatment works type noted, utilising the numbers of works reported on lines E8.1 to E8.7. The confidence grades for each line reflect the degree of calculation required to derive the reported figures.

E8.19 & E8.20 Small sewage treatment works with ammonia consent 5-10 mg/l and <= 5 mg/l

These lines report on the loads received at our small sewage treatment works with specific ammonia consents. The numbers are sourced from our compliance database and are aligned with lines E8.9 and E8.10

E8.21-30 Compliance

The percentage compliance reported on these lines has been calculated on the basis of SEPA results. Our methodology for calculating compliance remains the same as previous years and, in the case of two-tier consents, all failures have been counted, not just upper-tier failures. WWTW that are not sampled are not included in the averaging process for individual treatment categories and size bands. The sampling period is the financial year 2017/18.

There are no failing waste water treatment works being reported for 2017/18 under either CAS or an OPA basis. [See line E9.7]

Where the cells in this section are listed as 0 and AX confidence grade, this means that there was no WWTW in that treatment category and size band thus there has been no sampling.

The average compliance has been maintained or improved at all WWTW treatment categories.

E8.29 & E8.30 Small sewage treatment works with ammonia consent 5-10 mg/l and <= 5mg/l

The above lines report the compliance at small sewage treatment works with specific ammonia consents (5-10 mg/l and <=5mg/l). Compliance has been maintained at all treatment categories.

E8.31-42 Costs

Overall movements are explained in table Sewage Treatment E7.36 earlier in this commentary. The costs of treating and disposing of sludge are contained within Table E10 Sludge Treatment and Disposal.

Analysis of sewage treatment costs by process type:

Changes to the numbers of STW by process type have arisen as a result of operational changes and process re-classifications in STW during 2017/18. Re-stating 2016/17 figures on like-for-like basis shows the following variations:

	Septic tanks	Primary	Secondary	Tertiary	Sea Outfalls	Direct	General and Support	Total
Total treatment works	£m	£m	£m	£m	£m	£m	£m	£m
2017/18	2.670	1.187	33.569	10.102	0.240	**47.768**	10.963	**58.731**
2016/17	2.605	1.243	31.834	9.111	0.290	**45.083**	11.539	**56.622**
Variance	**(0.065)**	**+0.056**	**(1.735)**	**(0.991)**	**+0.050**	**(2.685)**	**+0.576**	**(2.109)**

Costs which are directly attributable to treatment are charged to the specific asset cost code in PeopleSoft, either via direct charging, Ellipse timesheets or work orders. Of the £47.8m total direct wastewater treatment costs, £41.2m of costs or 86.3% have been directly charged to assets in our corporate costing system.

Other costs have been allocated to Wastewater Treatment through ABM support activity allocation, e.g. stores based on number of issues, IT applications based on number of users, etc. Therefore, support costs are allocated on a resource consumed basis. However, many of these costs are not specific to an asset; they are generally attributable to an employee. It follows that the majority of these support costs should be allocated to the activities the employees have been doing.

Confidence Grades – Confidence grades on Table E8 are consistent with grades in the general E table commentary and remain consistent with 2016/17.

Table E9 Large Sewage Treatment Works Information Database

E9.0 & E9.0a Name and Operational Area

These lines report the specific large non-PPP waste water treatment works for this reporting year with their operational area noted. Changes in the reported list of assets reflect the variation in both domestic, tanker, and trade effluent loads received at these works. The number of assets reported in aligned with Line E8.7.

Large waste water treatment works are defined as those that receive an average loading in excess of 1,500 kg BOD/day which is approximately equivalent to a population of 25,000.

E9.1 Population equivalent of total load received

This line reports the overall population equivalent of the total load received.

Changes to the population equivalent of each large waste water treatment works are detailed in the below table (due to rounding the total may not equal the sum of the individual values):

WWTW	2016/17	2017/18	Net Change	% Change
Allers	44,870	42,632	-2,238	-4.99%
Alloa	42,664	43,511	847	1.99%
Ardoch	57,806	58,726	920	1.59%
Carbarns	49,335	48,751	-584	-1.18%
Dalderse	96,381	91,933	-4,448	-4.62%
Daldowie	272,164	291,977	19,813	7.28%
Dalmarnock	243,244	268,607	25,363	10.43%
Dunbar	27,072	28,124	1,052	3.89%
Dunfermline	81,267	81,873	606	0.75%
Dunnswood	30,493	30,203	-290	-0.95%
Erskine	78,496	81,014	2,518	3.21%
Galashiels	32,221	28,983	-3,238	-10.05%
Hamilton	63,352	61,322	-2,030	-3.21%
Kinneil Kerse	88,837	45,019	-43,818	-49.32%
Kirkcaldy	62,921	62,057	-864	-1.37%
Laighpark (Paisley)	119,687	124,451	4,764	3.98%
Perth	112,339	100,110	-12,229	-10.89%
Philipshill	63,687	61,244	-2,443	-3.84%
Shieldhall	555,185	541,426	-13,759	-2.48%
Stirling	74,532	70,481	-4,051	-5.43%
Troqueer	48,499	44,119	-4,380	-9.03%
Total	**2,245,052**	**2,206,563**	**-38,487**	**-1.71%**

E9.2 – E9.6 Compliance

These lines report on regulatory compliance using consent data as taken from our corporate consents database. The most onerous of CAR or UWWT parameter was used to report.

Confidence grades remain at A1, reflecting the fact that the data is obtained directly from our corporate consents database.

E9.7 Compliance with effluent consent standard

This is the first full year we have operated under the UKAS accredited operator self-monitoring process. Within this, Scottish Water has appointed its Scientific Services function to undertake the activity. Sample reports are issued to SEPA who retain the responsibility to determine if the sample is compliant. We have used SEPA compliance reports arising from operator self-monitoring data collected under the Measurement, Assurance and Certification Scotland (MACS) scheme, submitted to SEPA from April 2017 to the end of March 2018 to complete this line. In previous years the report was produced by SEPA directly. The percentage compliance reported for the works listed has been determined by calculating the number of failing samples against the total number of samples taken, expressed as a percentage. The parameters used for the calculation are: Ammonia, Biochemical Oxygen Demand, Chemical Oxygen Demand, Suspended Solids and Phosphorus. For waste water treatment works with two tier consent we have taken an exceedance of the lower tier to be a non-compliant sample.

E9.8-14 Treatment Works Category

These lines report the information held in the corporate asset inventory in relation to treatment type.

E9.15-21 Works cost

Analysis of functional costs for large sewage treatment works:

	2017/18	2016/17	Variance
	£m	£m	£m
Daldowie	1.007	1.100	+0.093
Dunbar	0.350	0.337	(0.013)
Galashiels	0.133	0.069	(0.064)
Tertiary treatment	**1.490**	**1.506**	**+0.016**
Allers	0.296	0.286	(0.010)
Alloa	0.446	0.528	+0.082
Ardoch	0.354	0.430	+0.076
Carbarns	0.390	0.325	(0.065)
Dalderse	0.547	0.268	(0.279)
Dalmarnock	1.307	1.507	+0.200
Dunfermline	0.308	0.204	(0.104)
Dunnswood	0.296	0.288	(0.008)
Erskine	0.489	0.573	+0.084
Hamilton	0.592	0.557	(0.035)
Kinneil Kerse	0.448	0.445	(0.003)
Kirkcaldy	0.631	0.643	+0.012
Laighpark (Paisley)	0.838	0.931	+0.093
Perth	0.558	0.491	(0.067)
Philipshill	0.779	0.866	+0.087
Shieldhall	1.803	2.084	+0.281
Stirling	0.757	0.729	(0.028)
Troqueer	0.347	0.320	(0.027)
Secondary treatment	**11.186**	**11.475**	**+0.289**
Direct large treatment works	**12.676**	**12.981**	**+0.305**
General and Support	1.508	2.035	+0.527
Total large treatment works	**14.184**	**15.016**	**+0.832**

The decrease across our large sites is explained by:

- Shieldhall STW has seen a reduction in power costs due to the installation of a Real Time Control which ensures improved optimisation;
- Dalmarnock STW has seen a reduction in employment costs due to an improved E&M and treatment process; and
- Dalderse STW has seen an increase due to aerator hire to ensure compliance.

Confidence Grades – Confidence grades on Table E9 are consistent with grades in the general E table commentary and remain consistent with 2016/17.

Estimated terminal pumping station costs are graded slightly lower in confidence than treatment costs, as terminal pumps (as defined) sit in networks or are costed as part of the treatment works.

Table E10 Wastewater Explanatory Factors - Sludge Treatment and Disposal

E10.1 Resident population served

The resident population served by each sludge disposal route is reported on line E10.1. This change is consistent with the rise in population reported elsewhere in this submission.

We again report the population treated at Scottish Water operated WWTW that have their sludge treated at PPP sludge treatment centres. This accounts for the anomaly in aligning a population reported against the 'incineration' and 'other' routes but no Scottish Water sludge volumes being recycled through these routes.

E10.2 Amount of sewage sludge

Line 10.2 reports the mass of sewage sludge across the noted disposal routes. All Scottish Water figures reported were taken direct from our Gemini system.

There was relatively little variance in the volume of enhanced treated sludge produced. A significant reliance was placed on the use of land restoration outlets due to non-compliant cakes at 4 sludge treatment centres. This equated to an increase of 0.71ttds during the reporting period

Similarly conventional sludge production showed a small decrease from the previous year. This is mainly associated with pathogen quality issues with cake from sludge treatment centre facilities in the central belt, which in turn required disposal to land restoration facilities as per the requirements of the Safe Sludge Matrix and also commensurate with the requirements of the newly introduced voluntary Biosolids Assurance Scheme.

0.37 ttds of untreated cake continues to be landfilled in the Shetland Islands.

The confidence grade remains the same as the prior reporting year.

E10.3-9 Sludge Treatment and Disposal Costs

Sludge Treatment E10.9

	Total
Functional expenditure:	£m
2017/18	14.953
2016/17	15.082
Variance	**+0.129**

Sludge treatment costs have decreased by £0.1m (0.9%) from 2016/17. This is analysed as follows:

- £0.4m (16.7%) decrease in power costs, mostly due to process optimisation at Shieldhall STW (£0.2m) and a unit price reduction (£0.2m);
- £0.1m (2.0%) decrease in general and support costs mainly due to a reduction in IT and telecoms costs;

- £0.2m (4.4%) increase in employment costs due mainly to pay progression (£0.1m) and a reduction in time recharged to capital in relation to energy optimisation projects (£0.1m); and
- £0.2m (27.2%) increase in materials and consumables costs largely due to field sampling costs linked to disposal of sludge and an increase in chemicals to ensure compliance.

Scottish Water incurs costs associated with the transportation of sludge from its own sewage treatment works to PPP sludge treatment centres (£4.4m). These costs have been reported within E3a.20 with the corresponding sludge loads reported in E3.

The allocation of sludge treatment and disposal costs by disposal route relies on robust sludge movement data linked to financial data. Scottish Water links sludge movement data from the Gemini waste management system to ABM costs to produce E10 cost analysis.

Analysis of sludge treatment costs by disposal route:

	2017/18	2016/17	Variance
	£m	£m	£m
Farmland:			
Untreated	0.000	0.000	+0.000
Conventional	3.395	2.852	(0.543)
Advanced	4.594	5.322	+0.728
Incineration	0.000	0.000	+0.000
Landfill	0.936	0.984	+0.048
Composted	0.000	0.000	+0.000
Land reclamation	6.028	5.924	(0.104)
Other	0.000	0.000	+0.000
Total	**14.953**	**15.082**	**+0.129**

The change in costs by disposal route has been affected by the following main factors:

- Disposal to Farmland Advanced has decreased in the year (£0.7m). This has been offset with an increase in Farmland conventional (£0.5m) due to the proactive identification of local fields suitable for sludge disposal. Land reclamation has increased (£0.1m) from last year due to process issues at certain sites producing non-compliant sludge and as a result additional disposal costs have been incurred.

Confidence Grades – Confidence grades on Table E10 are consistent with grades in the general E table commentary and remain consistent with 2016/17.

Sludge cost analysis by ultimate disposal route requires analysis of all sludge treatment, tankering and disposal costs by works, linked to intermediate works (where applicable) and ultimate disposal route. Certain costs are clearly captured by works with identified disposal route. However, certain costs are not fully captured directly against sludge. The main areas of difficulty are inter-site sludge tankering and sludge treatment / conditioning at dual function works (sludge / wastewater treatment). Table E10 is completed on the basis of a combination of: ABM analysis, direct cost capture by asset, and Scottish Water sludge model analysis. Confidence grades on Table E10 are lower (B2) than other E Table cost analysis due to these reasons.

G Tables

Tables G1 – G2 present a summary of Scottish Water's investment programmes for Q&S4, Q&S3a & 3b (completion programme). The investment costs and outputs reported in these tables reflect the position at the end of March 2018. Elements reported include investment within the report year, 2017/18, and our forecasts to 2020/21.

Exceptional Capital Maintenance is included within line G1.01 and is forecast at £157.2m. This is split as follows: £24.0m for Strategic Mains Diversions and £133.2m for Ayrshire Resilience.

Total forecast gross investment shown on G1 is £4,164.4m comprising £345.1m for the completion programme (Q&S3a & Q&S3b), £3,239.5m for Q&S4 and £579.7m (£414.4m 2015-21 and £165.3m post 2020-21) for the IR18 allowances. Programme risk, rebates, and contingencies have been allocated to programme areas as appropriate.

Scottish Water successfully delivered £646.7m of investment in 2017/18. Table G1 reports the total investment in the report year of £587.9m on Q&S4 and IR18 projects and £58.8m on completion (Q&S3a and Q&S3b).

The Q&S3b Unplanned Completion programme has 3 projects remaining as at March 2018. Of the 37 remaining at 31 March 2015, 24 have been delivered.

Capital maintenance investment accounts for 61.7% of the investment in 2017/18.

The table below reflects the inflation assumptions used within the G Tables. Inflation assumptions have been updated to reflect our 2017/18 Delivery Plan and actual RPI at the end of March 2018.

Inflation Assumptions

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Overall RPI Assumption 2012/13 = 100%	106.0%	108.3%	112.3%	116.3%	120.0%	123.6%

Post 2020-21 Investment

The forecast post 2020-21 is £175.6m. This is the combination of £165.3m for IR18 and £10.4m SR15 planned completion. The forecast for planned completion is £3.6m less than previously reported due to changes in project costs. There are no late projects in the forecast although we have identified a number of risk areas which may lead to investment being carried over from the current investment period. These include: confirmation of the appropriate solution at Portobello and Rockcliffe to address bathing water compliance; time taken to re-assess the appropriate solution on projects in the water quality programme, for example Fair Isle where the original solution was proven not to deliver the required quality improvement and a more complex treatment solution has had to be developed; and confirmation of the environmental improvement required on the river Kelvin extending the feasibility stage on the associated UID projects.

Table G1 Summary - Investment

The total gross capital investment shown on table G1 is £4,164.4m. This is the forecast cost to complete the SR15 programme and the remaining outputs from the SR10 programme. This includes a programme forecast cost of £3,938.3m; £14.0m of SR15 Programme to be financed post 2020-21; £165.3m to be financed post 2020-21 based on our current understanding of IR18 outputs; and £46.8m Q&S4 Start Early. The table below provides reconciliation with our Delivery Plan 2018 update.

	£m
Total in Delivery Plan 2017 update	**3,982.4**
Actual 2017-18 Indexation Update	-5.8
Potential risk release	-38.3
Revised Programme Forecast	**3,938.3**
Early Start Expenditure	46.8
IR18 Financed Post 2020-21	165.3
SR15 Financed Post 2020-21	14.0
Table G Total Gross Capital Investment (G1.54)	**4,164.4**

As part of our investment planning and delivery arrangements for the 2015-21 period a strengthened risk management regime has been implemented. Under this regime sub-programme and programme risk allowances are removed from project allocations and are held and governed centrally. As projects mature, the central risk allocation can be drawn down to projects or increased as appropriate. For the purposes of Table G1, the inflation risk allowances removed from project costs have been re-instated and programme risk has been proportioned across the programme.

Line G1.24 includes investment for the PFI project at Dalmuir. This has been included within the cost of the non OMG180 completion programme. The expected total cost of Dalmuir is £24.8m with £7.0m forecast in the 2015-21 period.

IR18 Table K

We have included table K in the Annual Return 2018 in respect of the IR18 outputs in our Delivery Plan 2018 update, approved by Ministers in March 2018. The table K for IR18 is consistent with that made for the SR15 programme and included in the Annual Return 2016; it comprises:

- K1: IR18 investment summary
- K2: Summary of outcomes and outputs
- K6: IR18 investment programme

G1.1- G1.6 Q&S4 Capital Maintenance

Projects containing Capital Maintenance drivers are captured in these lines. In 2017/18 expenditure of £399.2m was made on Capital Maintenance; the total expenditure for the capital maintenance programme is forecast at £2,079.1m. This includes £157.2m of Exceptional Capital Maintenance for Ayrshire Resilience and Strategic Mains Diversions. The Ayrshire Resilience project is progressing well and the planning is currently underway to confirm the final phase of the scheme linking the Gorbals PS to the supply from Milngavie WTW. This involves a review of the existing and proposed new infrastructure to identify the most robust and cost effective solution. The programme for completion of this scheme is under review and although delivery is planned for this investment period there is a significant risk that final completion will not be achieved until post March 2021. The table below shows the Capital Maintenance (CM) components:

CM Components (£m)	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Total
CM Indexation Risk	0.0	0.0	0.0	0.0	0.0	46.9	46.9
Forecast CM Profile	256.7	304.8	349.8	360.0	325.0	278.7	1,875.0
Total Capital Maintenance	**256.7**	**304.8**	**349.8**	**360.0**	**325.0**	**325.6**	**1,921.9**
Exceptional CM	5.2	37.0	49.4	13.4	18.6	33.5	157.2
Total Capital Maintenance (G1.06)	**261.9**	**341.9**	**399.2**	**373.4**	**343.6**	**359.0**	**2,079.1**

G1.7– G1.13 Q&S3b Growth Investment

Projects containing Supporting Economic Development drivers are captured in these lines. In 2017/18 expenditure of £49.3m was made against Q&S4 Growth; the total forecast to complete the growth element of the programme is shown in the tables to be £224.4m in the 2015-21 period.

G1.14- G1.21 Q&S4 Enhancement Expenditure

Projects containing enhancement drivers are captured in these lines. In 2017/18 expenditure of £135.2m was made against Q&S4 enhancements; the total forecast to complete the enhancements is shown in the tables to be £936.1m. This has decreased by £116.5m since last year due primarily to the transfer of £100m of Daldowie and Dalmarnock WWTW risk which has been used to support IR18 enhancements, a decrease in the expected cost of the Sewer Flooding Programme of £21.3m together with other changes that have materialised as the programme matures.

G1.22: IR18 Enhancements

£4.2m of investment has been made in 2017/18 relating to IR18 outputs. The total forecast allowance for outputs to be confirmed in the rolling investment review 2018 (IR18) is £579.7m as shown in the table below.

	£m
IR18 allowances 2015-21 @ 2012/13 Prices	**335.5**
IR18 allowances 2015-21(Table G Reported)	**414.4**
IR18 allowances post 2021 @ 2012/13 Prices	**128.8**
IR18 allowances post 2021 @ outturn Prices	**165.3**
Total IR18 at current prices	**579.7**

G1.23 – G1.25 Q&S3a & 3b Completion Expenditure

Projects from the completion programme are captured in these lines. In 2017/18 a total expenditure of £58.8m was made against this programme.

G1.26: Q&S5 Early Start

No investment is forecast for the Q&S5 early start programme.

G1.27 – G1.40: Total Additional Operating Expenditure

Additional operating expenditure is calculated through the analysis of the proportion of capital spend allocated to quality, enhanced level of service or growth for future years. The value in the report year is based on the actual opex released as a consequence of the capital programme.

G1.41 – G1.48: Grants and Capital Contributions

Contributions received to the end of March 2018 have all related to Service Relocations and Infrastructure Charges. A forecast has been made based on investment run-rate.

G1.49 – G1.57: Expenditure Totals

These lines sum the figures provided in G1.1 to G1.48 and are automatically populated.

Table G2 Summary – Outputs

The following is a summary of all the output programmes included in the G2 table, the number of outputs delivered in 2017/18 and the total number of outputs being delivered in the regulatory period.

G2.1 – G2.4 Growth

G2.1 Strategic Capacity Water Treatment

No further WTW Capacity projects were completed during the report year.

G2.2 Strategic Capacity Wastewater Treatment

We increased the strategic capacity of our waste water treatment sites during 2017/18 to the equivalent of 3,182 customers. We are forecasting that this will increase to 64,488 customers by the end of 2020/21.

G2.3 Strategic Capacity Water Network Capacity

This line reflects outputs delivered through the Infrastructure Charge Programme for Part 3 assets. 10,705 outputs were delivered during 2017/18. We are forecasting to provide additional network capacity to 41,669 customers by the end of 2020/21.

G2.4 Strategic Capacity Wastewater Network Capacity

This line reflects outputs delivered through the Infrastructure Charge Programme for Part 3 assets. No outputs were delivered during 2017/18. We are forecasting to deliver 682 outputs by the end of 2020/21.

G2.5 – G2.26 Q&S4 Enhancements

Outputs delivered in this section reflect the forecast position on the milestone graphs provided to the Output Monitoring Group Working Group (OMGWG) in May 2018. Explanation of movement in forecasts, projects or programme specific issues are detailed within the quarterly monitoring report and graph commentary to the OMGWG.

G2.27 – 2.43 Drinking Water Quality Indicators (Annual Measure)

G2.27 Number of lead communication pipes replaced

In 2017/18 we completed 1,169 lead communication pipe replacements. These were made up of 1,158 customer requested jobs and 11 reactive jobs; where we replaced lead pipes when these were found as a result of a failed sample at a customer's tap. Additionally we have reported the previous year's figures as shown to reflect the improvements in our reporting processes as recommended by the Assurance team during audits in April 2017.

G2.28 Assessment of levels of pressure for all customers and number of improvements if low levels of service are found

We are reporting 1 against line G2.28 for 2017/18. A study was carried out and signed off in February 2018 to assess the risk of low pressure to all customers.

G2.29 Improve response times to reduce average duration of short term interruptions to supply

We report ITS response through lines G3.17, G3.17a and G3.18. In addition bursts are reported through G3.19.

G2.30 Number of water efficiency advice and water saving packs provided (to 2% of customer base)

We are reporting 6,684 water packs delivered to customers in 2017/18.

G2.31 Number of internal flooding improvements

We are reporting 54 internal properties removed from the at risk register for 2017/18, an increase of 15 from the 39 reported for 2016/17.

G2.32 Number of internal flooding improvements – completion programme

There are no completion programme outputs to be delivered.

G2.33 Number of external flooding investigations and improvements

We are reporting a total of 49 external properties removed from the at risk register.

G2.34 % of customers covered by flood resilience assessments

66.4% of customers are covered by flood resilience assessments, the same figure as was reported for 2016/17. We are currently re-assessing the catchments using more up to date models; the latest rainfall data; and climate change updates which is increasing the confidence in the data.

G2.35 Number of surface water management investigations

There is only 1 Surface Water Management Investigation taking place in the 2015-21 regulatory period. This has been delivered in 2016/17.

G2.36 Number of connections for new households and businesses

There were 23,914 Water Connections carried out in 2017/18 compared with 21,993 connections in 2016/17.

G2.37 New waste water capacity for 58,000 people

We have committed in our Delivery Plan 2015-21 to increase waste water capacity to 58,000 people. We are currently forecasting to increase the waste water capacity by 65,170 by the end of the regulatory period.

G2.38 Number of developer constructed assets (Part 2&3) adopted

We are reporting 838 assets adopted during 2017/18.

G2.39 Number of first time non domestic meters installed

We are reporting 2,586 first time non-domestic meters installed in 2017/18. These are made up of 1,227 proactive installs and 1,359 reactive installs. The cumulative total taken across the 3 years to date on this line is 20 less than reported to OMGWG in May 2018 due to the timing of that report.

G2.40 Number of statutory requirements to relocate services for transport infrastructure projects

We are reporting 60 services relocated. The data is based on Transportation Schemes completed in year and takes into account activity for both NRSWA (New Road & Streetworks Act) and AWPR (Aberdeen Western Peripheral Route).

G2.41 Improved contact management and proactive communication

There is one project in the 2015-21 period which is intended to improve Scottish Water's customer contact system, 'Promise'. This is forecast to be delivered in 2018/19.

G2.42 Number of wholesale meter accuracy improvements

We are reporting 13,868 wholesale meter accuracy improvements for 2017/18. These are made up of 11,388 exchanges and 2,480 reactive exchanges. The cumulative total taken across the 3 years to date on this line is 13 less than reported to OMGWG in May 2018 due to the timing of that report.

G2.43 Number of strategic mains diversions

During the course of the 2015-21 investment period, Scottish Water will be undertaking a total of 5 large scale strategic mains diversion projects. 4 of these are forecast to be delivered in 2018/19, with the remaining 1 being delivered in 2020/21.

G2.44 – G2.46 Q&SIIIa & Q&SIIIb Delivery Projects

This section summarises the projects remaining in the 'Unplanned' completion programme.

G2.44 Q&SIIIa Projects Remaining

Killylour was the last remaining Q&S3a project to be delivered. This achieved regulatory sign-off in 2016/17.

G2.45 Q&SIIIb Projects Remaining

During 2017/18 5 projects have been completed within this programme leaving 3 Q&S3b projects remaining. Our forecast profile for the combined Q&S3a and 3b completion projects is presented below:

	March 2015	March 2016	March 2017	March 2018	March 2019	March 2020	March 2021
Projects due to have completed by March 2015	36	14	8	3	2	0	0

G2.46 Q&SIIIb Km of Mains Rehabilitated Remaining

The projects for this line are already counted in line G2.14 Drinking Water Quality '2010-15 outputs planned to complete in the 2015-21 period' and it was agreed at the OMGWG that, to avoid confusion, we would no longer report these outputs separately.

Table G3 Monitoring Serviceability

G3.1 – G3.5 Drinking Water Quality Indicators (Calendar Measure)

G3.1 – G3.2 % of compliant zones for Iron & Manganese

The number of zones failing the standard for iron in drinking water increased by 7 to 25 for calendar year 2017 from the 18 reported in calendar year 2016.

The number of zones failing the Manganese standard for drinking water also increased by 2, from the 7 reported in calendar year 2016, to 9 failing zones in calendar year 2017.

G3.3 Number of microbiological failures at water treatment works

The number of microbiological failures at water treatment works has fallen by 11 from 33 in calendar year 2016 to 22 in calendar year 2017.

G3.4 Number of Customer Contacts relating to Taste

The total number of contacts relating to taste for calendar year 2017 was 2,503 decreasing from the 2,526 reported in calendar year 2016.

G3.5 Number of Customer Contacts relating to Discolouration

The total number of contacts relating to discolouration for calendar year 2017 was 4,744 decreasing from 5,973 in calendar year 2016.

G3.6 – G3.15 Environment Serviceability Indicators

G3.6 Number of Failing Waste water treatment works

The number of failing waste water treatment works is reported as 0 for 2017/18, a decrease of the 4 reported in 2016/17.

G3.7 Number of sludge treatment facilities improved to comply with safe sludge matrix

This measure was delivered in 2015/16 but there was an extra sludge treatment facility improved in 2017/18 at Orbiston WWTW taking the total to 9.

G3.8 The maximum number of UIDs

This indicator is dependent on the outcome of the seven-stage process and studies which may reduce or increase the number of outputs to be delivered and the number of known unsatisfactory discharges. At March 2018 there were 720 UIDs compared to a position of 738 UIDs in March 2017. Studies continue to be undertaken during the 2018/19 period.

We no longer include a target for this measure in our Delivery Plan 2015-21 commitments. We will continue to report of the maximum number of UIDs but we would request removing this line from the G tables to align with our Delivery Plan commitments.

G3.9 Number of Pollution Incidents

Environmental Pollution Incidents occur where there is a failure at a water or waste water asset that impacts on the environment, as agreed with SEPA. These are classified by SEPA as water or waste water category 1, 2 or 3 incidents. We recorded a total of 193 water and waste water incidents in 2017/18. The number of agreed Cat 1, 2 & 3 incidents are listed below.

Water Cat 1&2	0 incidents agreed
Water Cat 3	2 incidents agreed
Sewerage Cat 1&2	5 incidents agreed
Sewerage Cat 3	186 incidents agreed

G3.10 Pollution incidents (sewerage)

There were 191 pollution incidents (sewerage) during 2017/18.

G3.11 Serious pollution incidents (sewerage)

There were 5 serious pollution incidents (sewerage) during 2017/18.

G3.12 Serious pollution incidents (water)

There were no serious pollution incidents (water) during 2017/18.

G3.13 Discharge permit compliance

Discharge permit compliance has increased by 0.68% from 99.32% in 2016/17 to 100% in 2017/18.

G3.14 Satisfactory sludge disposal

Satisfactory sludge disposal has remained at 100% during 2017/18.

G3.15 Greenhouse Gas (GHG) Emissions (ktCO2e).

The Greenhouse gas emissions (ktC02e) position for 2017/18 was 315, a decrease of 37 ktC02e from 2016/17.

G3.16 – G3.36 Customer Service Serviceability Indicators

G3.16 Properties on the Low Pressure Register

The number of properties on the Low Pressure Register is reported as 45 excluding allowable exclusions, the same as was reported in 2016/17.

G3.17 Properties with Unplanned Interruptions to Supply > 12 hours

The overall figure for 2017/18 for properties affected for more than 12 hours was 552 properties, a decrease of 96 properties from 2016/17.

G3.17a Properties with Unplanned Interruptions to Supply > 6 hours

The overall figure for 2017/18 for properties affected more than 6 hours was 6,393.

G3.18 Number of hours lost due to water supply interruptions for three hours or longer

There were 0.386 hours per property lost due to water supply interruptions for 3 hours or longer, an increase of 0.12 from the 2016/17 position of 0.2607 hours.

G3.19 Number of Bursts per 1,000km of mains

There were 157 mains bursts per 1,000km during 2017/18. This was an increase of 20 from 2016/17.

G3.20 Properties at Risk of Internal Flooding

The number of properties at risk of internal flooding at March 2018 was 373.

In 2016/17, we reported a dual position of 315/381 for properties at risk of internal sewer flooding to reflect a shopping centre with 3 owners in Greenock (Oak Mall) which encapsulates 69 individual shops. A project to remove these properties from the register was started in 2017/18 and this has been partially completed, delivered 23 properties in the reporting year.

G3.21 Properties internally flooded due to other causes

The figures reported here relate to flooding caused by blockages or failure of main and lateral sewers. The number of properties internally flooded in 2017/18 was 346, an increase of 18 on the previous year.

G3.22 Properties internally flooded due to overloaded sewers

The number of properties internally flooded due to overloaded sewers in 2017/18 was 63, a decrease of 58 properties from 2016/17.

G3.23 Incidents of internal sewer flooding for properties that have flooded within the last ten years

There were 202 incidents of internal sewer flooding during 2017/18 at properties that have flooded within the last ten years, a decrease of 39 incidents on the 2016/17 position.

G3.24 Properties at risk of external sewer flooding

The number of properties at risk of external sewer flooding at March 2018 was 3,701. This is based on the following categories of event: 1:10; 2:10; 1:10 default; 2:10 default; and holding.

G3.25 Incidents of external sewer flooding due to other causes

The number of incidents of external sewer flooding due to other causes at March 2018 was 7,498.

G3.26 Incidents of external sewer flooding due to overloaded sewers

The number of incidents of external sewer flooding due to overloaded sewers in 2017/18 was 120.

G3.27 The Overall Satisfaction level (from the customer service questionnaire)

The Overall Satisfaction level at March 2018 was 91.5%. This was an increase of 0.8% compared to the reported March 2017 position of 90.7%.

G3.28 The maximum number of 'second tier' complaints referred to Scottish Public Services Ombudsman (Regulator Upheld Complaints)

The overall number Regulator Upheld Complaints in 2017/18 was 3 which is an increase of 1 on the previous year.

Following discussion with the B&V Assurance Team it was suggested that this measure should change to Regulator Upheld Complaints in the report year.

G3.29 The number of telephone contacts relating to drinking water quality

Total number of telephone contacts which related to drinking water quality in calendar year 2017 was 9,309, a decrease of 1,254 from calendar year 2016.

G3.30 The Overall Performance Assessment (OPA) Score (In Year Value)

The March 2018 OPA score was 406; an increase of 8 points compared to our reported March 2017 position.

G3.31 The Overall Performance Assessment (OPA) Score (Period Average)

The period average OPA score was 399.

G3.32 The average annual level of leakage

The 2017/18 Maximum Likelihood Estimation (MLE) leakage is 491.979 Ml/d. This is a reduction of 2.77 Ml/d from the 2016/17 MLE leakage figure of 494.758 Ml/d.

G3.33 Household Customer Experience Measure (hCEM)

The 2017/18 hCEM score was 86.36 compared to the 2016/17 score of 85.88.

G3.34 Non-Household Customer Experience Measure (nhCEM)

The 2017/18 nhCEM score is reported as 77.50. A re-basing exercise took place in 2017/18 and the equivalent 2016/17 score was 77.2 compared to the reported 2016/17 score of 83.92.

G3.35 High Esteem Test

The 2017/18 high esteem test score was 76.40%.

G3.36 Wholesale Key Performance Indicator (KPI's)

The 2017/18 Wholesale KPI score is reported as 97.6%; a 5.7% improvement on the reported score of 91.92% for 2016/17.

G3.37 to 3.38 Resilience of Supply

G3.37 Water Available for Supply Index (covered by 1:40 level of service)
G3.38 Water Available for Supply Index (covered by 1:100 level of service)

The reported AR18 WASI data for Table G3 lines 32-32a is provided in the below. This provides a comparison against the equivalent figures for the previous years back to AR14.

	1 in 40	1 in 100
AR14	96.5%	77.6%
AR15	88.9%	71.5%
AR16	87.3%	77.3%
AR17	86.8%	82.2%
AR18	**86.7%**	**70.1%**
% Change	**-0.1%**	**-12.1%**

The table above shows that there has been a marginal drop in the % population in surplus at the 1 in 40 level of service since AR17 (-0.1%). There has been a more significant drop in the % population in surplus at the 1 in 100 level of service (-12.1%).

A total population of 0.58% in 11 WRZs has gone into deficit at the 1 in 40 level of service, with a slightly smaller proportion (0.49%) of population in 16 WRZs coming out of 1 in 40 deficit. This gives a net reduction in population in surplus of -0.09% compared to AR17.

These changes at the 1 in 40 level of service are mostly made up of small WRZs with populations less than 0.05% of the total Scotland population. The largest WRZs which have gone into 1 in 40 deficit are Fort William (0.26%) and Aviemore (0.24%). Aviemore is constrained by WTW capacity and Fort William by yield. The largest WRZ coming out of 1 in 40 deficit is Loch Eck (0.23%).

The majority of the decrease in population receiving a 1 in 100 level of service is accounted for by 2 large zones.

- Clatto, Lintrathen & Whitehillocks WRZ has a population of 5.73% of total Scotland population. Its level of service has dropped below 1 in 100 due to a 3% increase in demand compared to AR17. This is despite a minor increase in its estimated yield.
- Lanarkshire WRZ (8.00% population) has also dropped below the 1 in 100 level of service. This is due to the inclusion of a temporary Water Balance zonal export of 14 Ml/d into the Glasgow WRZ which has been operating throughout the reporting year.

G3.39 to 3.49 Asset Health Index

The asset health indices use Scottish Water's Residual Life Expectancy Index (RLEI). Currently this Index is being used over a trial period as the approach to asset health indices remains under review.

The RLEI calculates the current age of each asset and divides it by an estimate of the expected life of the asset. This score is subtracted from 1 to give a score of between 1 and 0, where 1 represents a brand new asset and 0 represents an asset at the end of its expected life span.

The current ages for infrastructure and non-infrastructure assets are sourced from Scottish Water information systems. The expected lives are estimates from models. Reservoirs are an exception as they are not covered by models.

We note that:

- Sea outfalls and sewer structures are excluded as they are not recognised as specific sites in Ellipse;
- For water resources (G3.39), the value of civil works is sourced from an internal review (2013);
- For water mains (G3.40), ARM assumes retained service standards.

Summary and comparison of indicators from WIC2017 to WIC2018

In the table below, a value of 1 as an indicator represents a brand new asset and zero represents an asset at the end of its expected life.

The values largely remain unchanged from last year. However the indicator for water mains has decreased by 19.9% which suggests that this asset type has a lesser expected life.

Line Ref.	Asset Serviceability Indicators	AR17 indicators	AR18 indicators	Change	Change (%)
G3.39	Water resources	0.617	0.617	0.000	0
G3.40	Water mains	0.755	0.605	-0.150	-19.9
G3.41	Water treatment works	0.786	0.720	-0.066	-8.4
G3.42	Water storage	0.754	0.716	-0.038	-5.0
G3.43	Water pumping stations	0.755	0.718	-0.037	-4.9
G3.44	Wastewater sewers	0.813	0.821	0.008	1.0
G3.45	Wastewater sewer structures	n/a	n/a	n/a	n/a
G3.46	Wastewater sea outfalls	n/a	n/a	n/a	n/a
G3.47	Wastewater sewage pumping stations	0.541	0.532	-0.009	-1.7
G3.48	Wastewater sewage treatment works	0.551	0.541	-0.010	-1.8
G3.49	Wastewater sludge treatment facilities	0.586	0.579	-0.007	-1.2

Table G4 OMD Inputs including Q&S3a and Q&S3b completion project sign-off

G4.1 - G4.22 show the enhancements under the Q&S4 programme by OMD grouping. The number of outputs recorded is split by the following 5 delivery milestones by quarter:

- Milestone 1: Feasibility
- Milestone 2: Approval of Financial Budget
- Milestone 3: Start on site
- Milestone 4: Scottish Water's internal acceptance of beneficial use to customers
- Milestone 5: Regulatory sign-off

The data reflects the cumulative actual and forecast position by year over the 2015-21 period. The data also reflects the position recorded in the milestone outputs graphs presented to the OMG working group on 10 May 2018.

Table G5 Growth

Lines G5.1 to G5.14 show the expenditure Scottish Water has incurred or is forecast to incur on growth for the SR15 programme. The report has been produced using the same methodology as G1 with the projects actual expenditure taken from Scottish Water's financial systems and the forecast expenditure taken from Primavera. The % allocation assigned to each project has been taken from the systems which hold Scottish Water's CAPEX gateway approval forms. Most projects are assigned 100% to growth but there is significant growth investment delivered as part of large quality schemes.

The total Growth expenditure shown on table G5 aligns with the total Growth on table G1. Table G1 shows the split between Part 3 and Part 4 assets and also the split between household and non-household for Reasonable Cost Contributions (RCC).

At the start of the SR15 period, projects were set up for each unitary authority, water/wastewater and household/non household. This allows G1.9, G1.10 and lines G5.1, G5.2, G5.4 and G5.5 to be populated from the resultant outputs.

Total Net Growth Expenditure is £22.7m in the reporting year and is forecast to be a net £68.8m in the 2015-21 period. The last two years are reported as negative values, as they do not contain any allowance for RCC or Strategic capacity, which are included in the unallocated IR18 funding allowances which will increase the reported total figure.

G5.15 to G5.19 - Total Service Relocations costs in 2017/18 were £12.9m and customer contributions released against these projects was £11.1m giving a net spend of £1.8m in the period. The overall forecast for SR15 is a net spend after contributions of £7.5m

G5.20 & G5.26 - Water household infrastructure charge income for the period to March 2018 are £8.1m, which relates to 23,756 new properties being connected, or applying to be connected, to the water network.

G5.21 & G5.27 – Water non-household infrastructure charge income for the period to March 2018 are £54k, which relates to 158 new non-household properties being connected, or applying to be connected, to the water network.

G5.22 & G5.29 – Wastewater household infrastructure charges for the period to March 2018 are £7.3m, which relates to 21,459 new properties being connected, or applying to be connected, to the water network

G5.23 & G5.30 – Wastewater non-household infrastructure charge income for the period to March 2016 is £28k, which relates to 81 new non-household properties being connected, or applying to be connected, to the wastewater network.

G5.24 – Total infrastructure charge income across all activities in the period to March 2018 is £15.5m and is forecast to be £94m in SR15 from a combined 276,440 connections to the water and waste networks in SR15.

G5.25 – Total Net Growth Expenditure after all contributions is £22.73m in the period and is forecast to be £68.77m in SR15 but there is currently a significant unallocated amount within IR18 funding which will increase that figure and this is why years 4, 5 and 6 show a sharp decrease in forecasted activity including negative totals when forecast income and contributions are taken into account.

G5.32 – For the period to March 2018 we paid RCC to developers for 13,807 household properties that are connected to our water assets (Part 2 & 3).

G5.33 – For the period to March 2018 we paid RCC to developers for 150 non-household properties that are connected to our water assets (Part 2 & 3).

G5.35 – For the period to March 2018 we paid RCC to developers for 7,469 household properties that are connected to our wastewater assets (Part 2 & 3).

G5.36 – For the period to March 2018 we paid RCC to developers for 15 non-household properties that are connected to our wastewater assets (Part 2 & 3).

G5.38 – For each new household property connected to the water network an Infrastructure charge is applicable. Therefore, for the period to March 2018, the number of household properties paying an infrastructure charge to Scottish Water for additional water strategic capacity is 23,756 (as line G5.26).

G5.39 – For each new non-household property connected to the water an Infrastructure charge is applicable. Therefore, for the period to March 2018, the number of non-household properties paying an infrastructure charge to Scottish Water for additional water strategic capacity is 158 (as line G5.27).

G5.41 – For each new household property connected to the wastewater network an Infrastructure charge is applicable. Therefore, for the period to March 2018, the number of household properties paying an infrastructure charge to Scottish Water for additional wastewater strategic capacity is 21,459 (as line G5.29).

G5.42 - For each new non-household property connected to the wastewater network an Infrastructure charge is applicable. Therefore, for the period to March 2018, the number of non-household properties paying an infrastructure charge to Scottish Water for additional wastewater strategic capacity is 81 (as line G5.30).

G5.44 and G5.45 - The data reported in these two lines represents the increase in strategic capacity delivered, or forecast to be delivered, by all relevant projects with the exception of any "Infra Charge increase" projects. In these completed tables the reported data has been intentionally matched to lines G2.1 and G2.2.

Table G6 Project Analysis – Actuals & Forecast – Water & Waste water

General Comments

The datasets used to create tables G1, G2 and G4 are taken from our corporate systems and are then also used to complete this table. The data in this table is consistent with Scottish Water's end of year reporting to our Board. The table analyses the 2015-21 programme by individual Project (by Row), detailing out Investment, Outputs and Dates (by Column).

Column 1 - Contains the unique project auto code number.

Column 2 - Contains the Project Title.

Column 3 - Contains the Q&S Period for each project. This is a project level assessment – some projects may have split funding.

Column 4 - Contains the group each project belongs to and is used by Scottish Water to allocate project ownership and project type.

Column 5 - Contains a more detailed view of programme groupings.

Column 6 - Shows the split project ID to allow projects with multiple outputs to be shown

Column 7 – Shows the output group for the split projects

Column 8 – Shows the split between water, waste water and general

Column 9 - Contains the Technical Expression sign-off owner (if required).

Column 10 - Contains the internal delivery vehicle assignment.

Column 11 - Contains a sub set of Programme Grouping.

Column 12 – Shows the current milestone stage.

Column 13 - 17 Show the forecast Milestone dates.

Column 18 – Contains the Local Authority area each project falls into if it has one location.

Column 19 to 25 –Contain the project expenditure analysed by financial year.

Column 26 – Contains the total actual or forecast project expenditure to March 2021.

Column 27 - Post 2021 project expenditure

Column 28 - Grand total project expenditure.

Column 29 – Contains the Table K budget allocation. This is in outturn prices and reflects Table K with additional budget for contributions and allocations from elsewhere in Scottish Water. In many cases, projects that were originally identified in Table K have been split into multiple projects or aggregated to form larger projects. Although Scottish Water does assess the programme cost compared with the Table K allocation, this is generally done at sub-programme and programme level.

Column 30 & 31 – Contain the infrastructure & non-infrastructure grants received.

Column 32 & 33 – Contain the infrastructure & non-infrastructure contributions received.

Column 34 – Contains the impact of projects on operating expenditure.

Column 35 – This has not been populated as any project with a regulatory output will require regulatory signoff or equivalent.

Column 36-55 – Contain the project's drivers and allocations as confirmed through the CAPEX approvals process.

Column 56 – 105 – Contain the low level output groups and show the project level allocation of outputs.

H Tables – ASSET INVENTORY

Table H1

Summary of Gross MEAV

Scottish Water's reported Annual Return 2017/18 gross asset inventory valuation is £70.54 billion. The gross valuation is dominated by the infrastructure valuation of £59.27 billion (including £41.77 billion of Wastewater infrastructure), comprising 84.02% of the total. The non-infrastructure total valuation is £11.11 billion, which is 15.75% of the total valuation. Support services valuation is approximately £161.11 million representing 0.23% of the gross asset inventory valuation.

Asset Type	AR17 Gross MEAV (£m)	% of total	AR18 Gross MEAV (£m)	% of total
Water Infrastructure	16,700.54	25.11%	17,499.12	24.81%
Water Non - Infrastructure	5,121.47	7.70%	5,401.86	7.66%
Wastewater Infrastructure	39,050.23	58.70%	41,768.23	59.21%
Wastewater Non-Infrastructure	5,492.83	8.26%	5,708.93	8.09%
Support Services	157.16	0.24%	161.11	0.23%
Total	**66,522.24**	**100%**	**70,539.24**	**100%**

The combined gross valuation of water and wastewater infrastructure assets has increased by £3.52 billion and there has been an increase in the gross valuation for non-infrastructure assets of £0.5 billion.

The MEAV is calculated by applying cost curves at the unit or function level in our asset inventory. Our discussions with WICS over the last year on forecasting our long term asset replacement levels have prompted the need to review and consider how to develop robust asset replacement costs rather than new build costs. As a consequence we have continued to utilise the cost curves from AR17 to estimate the MEAV in AR18. Therefore differences between the MEAV for AR17 and AR18 are due to RPI at 3.7%, changes to the asset stock and the identification of pricing gaps in the completeness of our detailed asset data.

Detailed summary of gross MEAV

Line Ref.	Asset Type	AR17 Gross MEAV (£m)	% of total	AR18 Gross MEAV (£m)	% of total	Change (£m)	% change
H1.1	Water treatment works	3,018.34	4.54%	3,183.66	4.51%	165.31	5.48%
H1.2	Water storage	1,789.28	2.69%	1,889.47	2.68%	100.19	5.60%
H1.3	Water pumping stations	313.84	0.47%	328.73	0.47%	14.89	4.74%
H1.4	Water resources	3,206.41	4.82%	3,293.26	4.67%	86.85	2.71%
H1.5	Water mains	13,494.13	20.29%	14,205.86	20.14%	711.73	5.27%
H1.6	Sewers	38,008.27	57.14%	40,691.26	57.69%	2682.99	7.06%
H1.7	Sewer structures	609.21	0.92%	627.58	0.89%	18.37	3.02%
H1.8	Sea outfalls	432.76	0.65%	449.39	0.64%	16.63	3.84%
H1.9	Sewage pumping stations	962.33	1.45%	1,014.53	1.44%	52.20	5.42%
H1.10	Sewage treatment works	4,322.77	6.50%	4,472.02	6.34%	149.26	3.45%
H1.11	Sludge treatment facilities	207.73	0.31%	222.38	0.32%	14.65	7.05%
H1.12	Support services	157.16	0.34%	161.11	0.23%	3.95	2.51%
	Total	**66,522.24**	**100%**	**70,539.24**	**100%**	**4,017.00**	

The table above shows the change in the total gross asset valuation of Scottish Water's assets from 2016/17 to 2017/18 by asset category.

Summary and comparison of net valuations from AR17 to AR18

The total net depreciated value of Scottish Water's non-infrastructure asset inventory (including support services depreciable assets) is £3.86 billion.

Line Ref.	Asset Type	AR17 Net MEAV (£m)	% of total	AR18 Net MEAV (£m)	% of total	Change (£m)	% change
H1.1	Water treatment works [101]	1,054.01	27.46%	1,058.46	27.43%	4.45	0.42%
H1.2	Water storage [102]	757.04	19.72%	767.14	19.88%	10.10	1.33%
H1.3	Water pumping stations [103]	132.44	3.45%	132.35	3.43%	-0.08	-0.06%
H1.9	Sewage pumping stations [109]	397.07	10.35%	398.04	10.31%	0.97	0.24%
H1.10	Sewage treatment works [110]	1,331.20	34.68%	1,322.78	34.28%	-8.42	-0.63%
H1.11	Sludge treatment facilities by disposal type [111]	61.87	1.61%	64.40	1.67%	2.53	4.09%
H1.12	Support services [112]	104.52	2.72%	115.96	3.00%	11.44	10.94%
	Total	**3,838.15**	**100%**	**3,859.14**	**100%**	**20.99**	

The table above shows the changes to the net valuation by asset category.

Summary of Confidence grades (MEAV)

There has been no movement in the confidence grade for MEAV from 2016/17 to 2017/18. The MEAV confidence grade is dominated by the absence of data at certain levels within the asset inventories resulting in C4 grades for non-infrastructure assets and B4 or C4 for infrastructure.

Summary of Confidence grades (Asset Stock)

The confidence grades for water treatment works asset stock have increased from B2 in 2016/17 to A2 in 2017/18 due to data improvements. The confidence grades applied to the asset stock is a reflection of the asset inventories.

Table H2: Water Non Infrastructure

H2.1-2.8: Water Treatment Works

Asset Stock: The total net number of Water Treatment Works in this reporting year is unchanged at 238. The confidence grades have increased from B2 to A2.

WTW Sites	Number
AR17 Sites Reported	238
Sites Non-Operational AR18	4
Sites Non-SW Owned AR18	0
Newly Reported AR18	4
AR18 Sites Reported	**238**

Asset Valuation: The asset valuation for water treatment works for the reporting year has increased from £3.02 to £3.18 billion. The valuation has increased due to better asset information and RPI increase.

H2.9-2.10: Water Storage

Asset Stock: The total number of Water Storage Assets in this reporting year is 1,319. This is a reduction of 8 from the 1,327 reported in the Annual Return 2016/17. The net change in the number of reported Water Storage sites is summarised in the tables below.

WS Sites	Number
AR17 Sites Reported	1,327
Sites Non-Operational AR18	12
Sites Non-SW Owned AR18	0
Newly Reported AR18	4
AR18 Sites Reported	**1,319**

Asset Valuation: The asset valuation for water storage assets for the reporting year has increased from £1.79 to £1.89 billion. The valuation has increased mainly due to the RPI increase.

H2.11-2.13: Water Pumping Station

Asset Stock: The total number of Water Pumping Stations (WPS) in this reporting year is 775. This is an increase of 7 from the 768 reported in the Annual Return 2016/17.

WPS Sites	Number
AR17 Sites Reported	768
Sites Non-Operational AR18	1
Sites Non-SW Owned AR18	0
Newly Reported AR18	8
AR18 Sites Reported	**775**

Asset Valuation: The asset valuation for water pumping stations for the reporting year has increased from £313.84 to £328.73 million. The valuation has increased mainly due to an increase in the number of assets and the RPI increase.

Table H3: Water Infrastructure

H3.1: Water Resources – Dams & Impounding Reservoirs

Asset Stock: The total number of Dams & Impounding Reservoirs in this reporting year is 212. This is an increase of 1 from 2016/17.

Asset Valuation: The asset valuation for dams and impounding reservoirs for the reporting year has decreased to £1.36 from £1.37 billion. The valuation has decreased mainly due to improved asset capacity information.

H3.2: Water Resources – Raw Water Intakes

Asset Stock: The total number of raw water intakes in this reporting year is 300. This is a reduction of 4 from 2016/17.

Asset Valuation: The asset valuation for raw water intakes for the reporting year has increased from £32.94 to £33.17 million. The valuation has increased mainly due to an increase in RPI.

For the MEAV methodology for Dams and Impounding Reservoirs and Raw Water Intakes, costs have been determined for a representative set of modern equivalent assets. The costs were developed by Berkeley Consultants in 2008 who estimated the structure cost on the basis of labour, plant and materials only. Included in the cost of the intake are concrete costs of the weir and the intake chamber, as well as all screens, valves and contractor preliminaries.

H3.3: Water Resources – Raw Water Aqueducts

Asset Stock: The total length of Raw Water Aqueducts in this reporting year is 1,733.6km. This is an increase of 9.2km from 2016/17.

Asset Valuation: The asset valuation for this reporting year has increased from £1.80 billion to £1.90 billion. The valuation has increased mainly due to an increase in the length of assets and the RPI increase.

H3.4: Water Mains – Mains Potable

Asset Stock: The total length of Potable Mains in this reporting year is 48,536.6km. This is an increase of 56.2km from 2016/17; however the largest diameter size band has increased by 4%. The movement to larger diameter band is due to improved infill methods which is part of our general data improvement actions. Diameters are infilled based on connected pipes' values where available, or based on an average diameter for the pipe based on its material.

Asset Valuation: The asset valuation for this reporting year has increased from £12.41 billion to £13.08 billion. The valuation has increased mainly due to a larger length of large diameter pipes, an increase in the total length of potable mains, and an increase in RPI.

H3.5: Mains Other

Asset Stock: The total length of Mains Other in this reporting year is 140.29km. There has been a 24% and 16% reduction in the length of pipes in size band 0 and 1 respectively and a corresponding increase in the other bands, predominantly size band 2. The movement to larger diameter bands is due to improved infill methods which is part of our general data improvement actions. Diameters are infilled based on connected pipes' values where available, or based on an average diameter for the pipe based on its material.

Asset Valuation: The asset valuation for this reporting year has increased to £30.80 million (13.7%), 3.74% of which is due to RPI and the remainder due to the higher value generated from the larger infilled mains.

H3.6: Communication Pipes (Lead)

Asset Stock: The total number of Communication Pipes (Lead) in this reporting year is 60,106. This is a decrease of 3,889 from 2016/17. The reduction remains the result of ongoing data improvements into pipe material identification and a general increase in customer requests for replacement.

Asset Valuation: The asset valuation for this reporting year has decreased to £32.67 million from £33.52 million. The valuation has decreased due to the reduction in the number of pipes.

H3.7: Communication Pipes (Other)

Asset Stock: The total number of Communication Pipes (Other) in this reporting year is 1,849,068. This is an increase of 15,894 from 2016/17.

Asset Valuation: The asset valuation for this reporting year has increased from £0.96 billion to £1.00 billion. The valuation has increased due to a greater number of pipes being reported and an increase in the RPI.

H3.8: Water Meters

Asset Stock: The total number of Water Meters in this reporting year is 130,625. This is a decrease of 5,028 from 2016/17.

Asset Valuation: The asset valuation for this reporting year has decreased to £60.12 million from £66.94 million due to fewer meters being reported.

Table H.4: Wastewater Infrastructure

H4.1: Sewers – Critical Sewers

Asset Stock: The total length of Critical Sewers in this reporting year is 10,929.7km. This is a decrease of 225.2km from 2016/17.

Asset Valuation: The asset valuation for this reporting year has increased to £14.30 billion from £14.00 billion. The 2.1% valuation increase is due to the 3.7% increase in RPI, but has been offset by the reduction in the total length of sewers being reported as critical this year.

H4.2: Sewers – Non Critical Sewers

Asset Stock: The total length of Non-Critical Sewers in this reporting year is 40,751.6km. This is an increase of 2,025.1 km from 2016/17, 1,754 km of which is due to re-calculation of the length of lateral sewers. Lateral sewers are included in size band 1.

Asset Valuation: The asset valuation for this reporting year has increased from £23.54 billion to £25.89 billion. The valuation has increased mostly due to an increase in the length of non-critical sewers being reported. The value of the additional laterals is approximately £0.96 billion. The change in the total length of sewers in the critical and non-critical categories has been affected by the improved infill method assigning more accurate diameter and material values to pipes.

H4.3: Sewers – Sewage and Sludge Pumping Mains

Asset Stock: The total length of Sewage and Sludge Pumping Mains in this reporting year is 1,330.2km. This is an increase of 12.4km from 2016/17.

Asset Valuation: The asset valuation for this reporting year has increased from £465.43 to £496.08 million. The valuation has increased mainly due to a change in the RPI.

H4.4 and H4.5: Sewer Structures: CSOs and Other Sewer Structures

Asset Stock: The number of combined sewer and emergency overflows in the report year is 3,705 a decrease of 72 from the Annual Return 2016/17. The number of Other Sewer Structures is 312, the same as reported in 2016/17. The overall decrease is due to the abandonment of unsatisfactory CSOs and improvements to our CSO records.

Asset Valuation: The asset valuation for this reporting year has increased from £609.21 million to £627.58 million. The valuation has increased mainly due to better recording of the presence of screens at CSOs and increased numbers of powered screens.

H4.6 and H4.7: Sea Outfalls: Short and Long Sea Outfalls

Asset Stock: The total number of Sea Outfalls in this reporting year is 1,423. 5 Outfalls were abandoned and 4 new ones built, which resulted in an overall decrease of 1 short sea outfall from 2016/17. The number of long sea outfalls remains at 28.

Asset Valuation: The asset valuation for this reporting year has increased from £432.76 million to £449.39 million. The valuation has increased mainly as a result of the RPI change.

Table H5: Waste Water Non-Infrastructure

H5.1 and H5.2: Sewage Pumping Stations

Asset Stock: The total number of Sewage Pumping Stations (SPS) in this reporting year is 2,236. This is an increase of 29 from the 2,207 reported in the Annual Return 2016/17. The confidence grade for sewage pumping stations (terminal) has increased from B4 to B2.

SPS Sites	Number
AR17 Sites Reported	2,207
Sites Non-Operational AR18	8
Sites Non-SW Owned AR18	0
Newly Reported AR18	37
AR18 Sites Reported	**2,236**

Asset Valuation: The asset valuation for the reporting year has increased from £0.96 billion to £1.01 billion. The valuation has increased mainly due to an increased number of sewage pumping stations being reported.

H5.3 to H5.7: Sewage Treatment Works

Asset Stock: The total number of Sewage Treatment Works in this reporting year is 1,834. This is the same as the number reported in the Annual Return 2016/17. However there was movement within the different treatment type categories. The confidence grade for preliminary treatment only has increased from B4 to B2.

STW Sites	Number
AR17 Sites Reported	1,834
Sites Non-Operational AR18	2
Sites Non-SW Owned AR18	2
Newly Reported AR18	4
AR18 Sites Reported	**1,834**

The net change in the number of reported STW Sites is summarised in the table above.

Asset Valuation: The asset valuation for the reporting year has increased from £4.32 billion to £4.47 billion. The valuation has increased mainly due to an increase in the RPI.

H5.8 and H5.9: Sludge Treatment Facilities

Asset Stock: The total number of sludge treatment facilities in this reporting year is 19. This is a reduction of 1 from the 20 reported in the Annual Return 2016/17.

STC Sites	Number
AR17 Sites Reported	20
Sites Non-Operational AR18	1
Sites Non-SW Owned AR18	0
Newly Reported AR18	0
AR18 Sites Reported	**19**

Asset Valuation: The asset valuation for the reporting year has increased from £207.73 million to £222.38 million. The valuation has mainly increased due to more detailed asset information allowing more accurate valuations and an increase in RPI.

Table H6: Support Services

H6.1 – H6.3: Offices & laboratories, Depots & Workshops, Control centres

Asset Stock: There was no change to the numbers of any of these building types.

Asset Valuation: The asset valuation for this report year has increased to £80.8 million from £77.9 million. As previously, existing condition grades have been used to calculate the remaining life of non-operational buildings, which all have an asset design life of 60 years.

H6.4: Vehicle & Plant

Asset Stock: We currently have 1,599 vehicles listed on the Goods Vehicle Operator Licence. The operator licence is granted by the Traffic Commissioner for Scotland with all admin through the Office of The Traffic Commissioner (OTC) Leeds. The regulatory authority is the Driver & Vehicle Standards Agency (DVSA). DVSA investigate issues relating to the operator licence undertakings and report their findings to the Traffic Commissioner.

Asset Valuation: The gross valuation has increase to £37.67 million from £35.71 million. Net values were calculated based on the age and design life of each vehicle or plant using the same methods as in previous Annual Returns.

H6.5: Telemetry Systems

Asset Stock: The number of Telemetry sites in this reporting year is 4,809. This is a decrease of 274 from 5,083 reported in 2016/17.

Asset Valuation: The asset valuation for this reporting year has decreased to £21.2 million from £22.7 million. The process in unchanged from that explained in AR09 Commentary, Annex 1. All telemetry outstations were assigned a short (6-15 year) design life, as recommended in the WIC guidance notes.

H6.6: Information Systems

Asset Stock: Laptops numbers have decreased to 3,902, desktops have decreased to 695 and servers have decreased to 284.

Asset Valuation: The asset valuation for this reporting year has decreased to £4.96 million

H6.7: Other Non-Operational Assets

Asset Stock: There are 35 properties/land reported as being owned by Scottish Water in this reporting year which is 1 more than in 2016/17 due to the addition of land at Loch Katrine.

Asset Valuation: The asset valuation for this reporting year has increased to £16.6 million from £15.3 million. Farm and grazing land values are based on valuations carried out in 2008/09.