A Tables – Base Information

Table A1 Properties and Population

Change in other relief of charges for 2004/05

In previous years a customer was able to apply for relief from full charges, this would give them a discount on the standard charges. However, in the past few years this relief has been phased out. 2004/05 is the first year that relief customers, other than charities, are subject to full charges. An example of such a customer would be a nursing home.

Therefore, as part of the changes in the scheme of charges for 2004/05, the total number of billed properties with other relief of charges will show a zero return.

Both the Annual Return and the WIC22 numbers are from the same data base. The WIC22 numbers were used as a method of deriving the numbers, as this data has the correct flags within the report as it stands.

Meter Right Sizing Carried out in 2004/05

The table shown below is the extent of meter right sizing that was carried out during 2004/05, and have affected the shape and profile of the number of meters that Scottish Water had at P6.

Count of Meter	Meter To												
Meter from	15	20	25	30	40	50	80	100	150	150/30	80/15	80/20	Grand Total
0		1											1
40	3	187	31	75		5				1		31	333
50	3	93	19	70	121			1				64	371
80		55	11	37	202	82					1	232	620
100		4		12	44	38	19				1	150	268
150		1	1		3	4	8	6			1	15	39
200								1					1
Grand Total	6	341	62	194	370	129	27	8	0	1	3	492	1633

Please note that SW has a number of combination meters for fire hydrants which will be picked up in the physical meter size, but not counted in the tariff meter size. This is because some customers require 80mm capability for fire protection but are only changed for a 20mm meter as this smaller size reflects their ordinary demand.

Forecast Meter Rightsizing.

The future meter profile is shown below. It reflects the meter right sizing that we expect to occur from customers who would benefit from a lower size meter. This number is a best estimate and may not occur during 2005/06 if customers do not wish to pursue the option.

The impact of data cleansing is also shown in the forecast. This assumes that a considerable amount of our outstanding debt is likely to be due to erroneous billing.

Water	2004/05	Unmetered to metered	Rightsizing	Data cleansing	2005/06 meter profile
<=20mm	68,623	2,000	3,839	-5,138	69,324
>20 <=25mm	9,967		-2,990	-688	6,289
>25 <= 40mm	1,168		-350	-81	737
>40 <= 50mm	1,040		-312	-72	656
> 50 <= 80mm	388		-116	-27	245
>80 <= 100mm	163		-49	-11	103
>100 <= 150mm	65		-20	-4	41
>150 <= 200mm	5		0	0	5
>200 <= 250mm	0		0	0	0
>250 <= 300mm	5		-2	0	3
>300 <= 400mm	0		0	0	0
> 400 <= 450mm	1		0	0	1
>450 <= 600mm	0		0	0	0
	81,425	2,000	0	-6,021	77,404

Waste Water	2004/05	Unmetered to metered	Rightsizing	Data cleansing	2005/06 meter profile
<=20mm	49,137	2,000	3,923	-6,948	48,112
>20 <=25mm	5,597		-3,055	-19	2,523
>25 <= 40mm	745		-394	-15	336
>40 <= 50mm	611		-329	-6	276
> 50 <= 80mm	196		-106	-2	88
>80 <= 100mm	59		-32	0	27
>100 <= 150mm	12		-7	0	5
>150 <= 200mm	1		0	0	1
>200 <= 250mm	0		0	0	0
>250 <= 300mm	1		0	0	1
>300 <= 400mm	0		0	0	0
> 400 <= 450mm	0		0	0	0
>450 <= 600mm	0		0	0	0
	56,359	2,000	0	-6,990	51,369

The figure reported in line A1.42 is the number of meters that generate revenue. The figure in line H3.8 is the meters in line A1.42 plus all the other meters that Scottish Water owns. These will include meters such as those at vacant properties, those where the customer is exempt from charges, meters at Scottish Water properties and combination meters.

A1.1-11 Unmeasured Domestic - Properties

Data for these lines has been sourced from WIC4 reports with all councils having a WIC4 reporting capability by September 2004.

Lines A1.1 to A1.9 require no extrapolation; figures have been summed directly from WIC4 and converted into a band D figure. As such, a higher confidence grade of A2 has been given.

Lines A1.10a and A1.11. WIC4 figures do not report exempt and void properties separately. These figures are reported together under the heading “No charge”. To derive these figures individually the proportions of void and exempts have been taken from the Council Tax base report and applied to the WIC4 “No charge” figure. The Council Tax base report is data from the Scottish Executive relating to the total number of domestic properties listed on the Council Tax Valuation List at the beginning of September 2003, which is compiled from individual local authority returns (CT1 forms). The number of voids and exempt properties, as a whole, in WIC4 and in the Council Tax Base is different by around 20% of each other. So coming from the most reliable source but with little accuracy gives this an A4 grade.

A1.12-13 Measured Domestic – Properties

The number of measured domestic properties has decreased from the previous year due to the data cleansing activity that was carried out in 2004/05.

A1.14-23 Measured Non-Domestic - Properties

All data has been derived from the Annual Return database as at September 2004, sourced from the HiAffinity billing system. The increase in measured non-domestic properties reflects the trend in customers moving away from unmeasured to measured and also as a result of new buildings being developed during the year. The number of properties with no charge has increased due to better visibility, these customers relate to those with relief. The increase in the number of void properties is due to data cleansing and increased visibility achieved through the integration of HiAffinity.

A1.27a-42 Measured Non-Domestic - Meter Sizes: Actual Installed Meters

Data has been derived from the ‘Meter’ report from the Annual Return database. The reduction in the number of meters is a result of the high level of data cleansing work that took place throughout 2004/05.

Overleaf is a breakdown of the electro-mechanical meters.

Meter Size	Number
15mm or smaller	1
20mm	4
25mm	3
40mm	0
50mm	1
80mm	12
100mm	13
150mm	10
200mm	11
250mm	0
300mm	5
400mm	0
450mm	1
600mm	1
Total	62

Part of the shift in the meter size profile also reflects the work carried out on meter rightsizing during 2004/05 which will continue to affect the profile into 2005/06.

A1.46a-61 Measured Non-Domestic - Meter sizes: "Tariff" Meters

Data has been derived from the 'Meter' report from the Annual Return database. The reduction in the number of meters is as a result of the high level of data cleansing work that took place throughout 2004/05.

Below is a breakdown of the electro-mechanical meters.

Meter Size	Number
15mm or smaller	0
20mm	4
25mm	4
40mm	1
50mm	8
80mm	9
100mm	11
150mm	9
200mm	3
250mm	0
300mm	2
400mm	0
450mm	1
600mm	0
Total	52

Part of the shift in the meter size profile also reflects the work carried out on meter rightsizing during 2004/05 which will continue to affect the profile into 2005/06.

A1.62-67 Unmeasured Non-Domestic - Properties

All data has been derived from the Annual Return database, as at September 2004, sourced from the HiAffinity Billing System. The increase in the number of unmeasured non-domestic properties is due to data cleansing throughout 2004/05. The result of this activity is also reflected in the decrease in the total number of voids which saw a reduction of 29% from last year.

For the reason for other relief of charges being zero, please refer to the note on other relief at the beginning of the commentary.

A1.68-70 Summary – Properties

A1.68 and A1.69 are calculated fields.

A1.70 - All figures are obtained from corporate Work and Asset Management Systems used across Scotland. This does not equate to the number of properties connected as one connection may serve one or more properties.

A1.71-72 Summary – Population

The population report is based on Scottish Water reporting of households in this Annual Return and the following external reports from the General Register for Scotland, Government Actuary Department and Scottish Executive:

- Projected population by council and health board;
- 2003 Total population projection
- 2002 16+ Population in households projection
- 2002 Household Projections - SE Table 5a
- 2002 Occupancy Rates - SE Table 7
- 2003 Population Mid-year estimate

The data supplied has been used in the following respect:

The 2002 Scottish Executive projections for occupied households are shown at a total level and then split by council for only those over 16 years of age. The 2002 Scottish Executive projections do however give an occupancy rate and a number of households. This gives us a derived projected total occupied household population. The under 16 population has been taken as the difference between the derived projected total occupied household population and the over 16 population. The over 16 and the derived under 16 population taken together gives a more accurate projection for the total occupied household population.

The percentage difference between the 2002 based total population projections for 2004 and the 2003 based total population projection for 2004 is applied to the 2002 based occupied household population 2004.

The occupied household population over the occupied households gives a 2003 projected estimate for the occupancy rate at council level.

The occupancy rates are applied to occupied households and unoccupied households with water and wastewater services to get a population figure for each.

A1.73-75 Domestic – Population

A1.73 The population supplied in *A1.71* has been reduced by the population in measured domestic properties and the non-household population.

The non-household population has been calculated as the difference between total population and occupied household population. Both figures are calculated in the process for line A1.71.

A1.74 The population of measured domestic properties has been calculated using the figure from *A1.12* (460 properties) and a multiplier of 2.19 (occupancy rate).

A1.76-79 Rateable Value Base

All data has been derived from the Annual Return database, as at 31/03/05, sourced from HiAffinity. The reduction in the total RV base is as a result of the data cleansing activities carried out through the year. As part of this data cleansing, a number of customers which were previously at standard tariff are now correctly identified as in receipt of charitable relief. Removal of other relief of charges in 2004/05 has resulted in line A1.77 being reported as zero.

Table A2 Water Volumes

A2.1-4 Unmeasured Domestic

A2.1: Water Delivered

The WIC definition specifies that Unmeasured Domestic Water Delivered includes supply pipe leakage. This conforms to Managing Leakage terminology[1], where Unmeasured Domestic Water Delivered (UDWD) is made up of three components: customer use (CU), plumbing losses (PL), and underground supply pipe leakage (USPL): use and plumbing losses make up consumption.

Customer Use vs. Consumption

[1] WRc Managing Leakage Report D, 1994, p. 1, 21, 22, 23, Fig. A2, A3, A4

The per capita consumption (PCC) value used to calculate UDWD this year and in previous Annual Returns (2001/02, 2002/03 and 2003/04) does not include plumbing losses. This PCC values was extracted from 'Domestic Water Consumption Study 1999' a report by the three former Scottish water authorities, Research Consultancy Services and RPS Water Services.

In the 1999 PCC Study: zonal consumption estimates were obtained by subtracting an estimate of non domestic consumption and leakage from measured flow into the zones (ref. section 5.7 p. 28). Leakage itself was estimated by subtracting an estimate of non domestic night use from 15-min minimum night flow values (ref. section 5.5 p. 27).

Based on this methodology, the zonal leakage estimates were therefore implicitly inclusive of any domestic consumption (inc. plumbing losses), which may have been occurring in the 15-min intervals corresponding to the periods of minimum night flow each night. Consequently, the domestic consumption estimates in the 1999 Study are exclusive of plumbing losses and, in strict Managing Leakage terminology, correspond to 'customer use' as opposed to consumption.

Estimation of Customer Use

An update to the 1999 PCC Study was carried out this year to improve the reliability of the unmeasured domestic water delivered estimate. The updated 2005 estimate is 142 l/hd/d compared to 139 l/hd/d in 1999.

This updated median value is not an annual average figure. Rather it is a snapshot made at a particular time of year (spring). As expected the median value in 1999 in the autumn is lower than the value determined this spring but this could be attributed to sampling and measurement error. Consistent monthly measurement would yield base seasonal weather related consumption. Until then, the 1999 value of 139 (139.1 to 4 sig. fig.) will remain the default assumption in Scottish Water's water balance calculations.

For information, the results of the 2005 study compared to the 1999 estimates by legacy authority are shown below:

Table A2.1 Median PCC for Scotland reported against 1999 result

Legacy Authority	1999 Mean PCC (l/head/day) (September/November 1999)	2005 Mean PCC (l/head/day) (March/April 2005)
East	144	152
West	136	141
North	149	148
Scotland	139	142

The current structure of Scottish Water, split into four areas, makes the legacy authorities' estimates unusable. Any attempt to estimate area-specific PCC values based on the data supporting the 1999 or 2005 Study would be undermined by the limited number of sample zones in each area leading to potential statistical bias. The 1999 PCC all-Scotland estimate was therefore used for all area calculations. As recommended in the 1999 Study (p. 33 and 42), the median value of 139.1 l/hd/day was used in preference to the mean value, as it is not distorted by extreme values.

Calculation of Unmeasured Domestic Water Delivered (UDWD)

In order to derive an estimate of UDWD for each of the four operational areas, the following formula was used:

UDWD (Ml/d) = CU + PL + UGSPL
= [(PCC*POP)+(PLav*PROP*PCF*ICF*HDF)+(USPLR* PROP)]*10^{-6}

where PCC = per capita consumption = 139.10 l/head/day (not area-specific)
POP = population (No), should be equal to value entered in A1.73
PLav = average plumbing losses = 0.5 (l/prop/hour, not area-specific)
PCF = Pressure Correction Factor (dimensionless, area-specific when available)
ICF = Infrastructure Condition factor (dimensionless, area-specific when available)
HDF = Hour-Day Factor (hours, area-specific when available)
USPLR = underground supply pipe leakage ratio (l/prop/day, not area-specific)
UDWD for Scotland, which is the value to be entered in row A2.1, consists of the sum of the 4-Area UDWDs.

Plumbing Losses
A UK-average value for plumbing losses (PLav) is provided in the Managing Leakage Report E p.15 (Table 4.1) based on research into night flow measurements:

PLav = 0.5 l/prop/hour (at period of minimum night flow, assuming AZNP = 50m and average infrastructure condition).

This estimate was used as follows to calculate plumbing losses in each operational area:

PL (Ml/d) = Plav * PROP * HDF * PCF * ICF * 10^-6

With Plav = 0.5 l/prop/hour
PROP = number of properties in the Area
HDF = Hour-Day factor in the Area
PCF = Pressure Correction Factor = $(AZNP/50)^{1.5}$
ICF = Infrastructure Condition Factor

It should be noted that ICF reflects the condition of the distribution system infrastructure, and is used here as a surrogate for the condition of the domestic plumbing systems in the area concerned. Following comments by the Reporter last year, Scottish Water considered the opportunity of using an ICF of 1 (i.e. 'England & Wales average condition at 1994') for all plumbing systems, in the absence of better information. However, this alternative assumption would not produce a more accurate estimate, and it was therefore decided to keep the original assumption until better information is obtained.

Using a default ICF of 1 for all plumbing systems would have produced an estimate of 11.6 l/p/d for plumbing losses across Scotland, against the current estimate of 12.8 l/p/d. This represents a difference of 9%. The impact of this change would have been a slightly lower value for unmeasured water delivered (from 851 down to 848 Ml/d, -0.4%) and a higher total leakage value (from 1139 up to 1142 Ml/d, +0.3%).

A2.2 Underground Supply Pipe Leakage

This section covers lines as detailed below:
A2.2 Unmeasured domestic UGSP – Billed
A2.3 Unmeasured domestic UGSP – Void
A2.6 Measured domestic UGSP – Void
A2.20 Measured non-domestic UGSP- voids
A2.29 Unmeasured non-domestic UGSP – Billed
A2.30 Unmeasured non-domestic UGSP – Void

Background

Supply pipe leakage estimates are required for different categories of properties, namely metered and unmetered, household and non-household, billed, voids and exempts. Recent pilot studies in different areas of Scottish Water allowed an estimate of average supply pipe leakage across Scotland to be derived. However, the studies do not provide the level of detail necessary to produce specific values for the different categories of properties shown in Table A2 (Water Balance).

In order to apportion the all-Scotland estimate of supply pipe leakage between categories, the proportions reported for each category by water and sewerage companies in the 2003-04 Annual Return to OFWAT were used. The extrapolation method is detailed in section 2 of the methodology statement below.

Methodology

1 – Estimation of Scotland average supply pipe leakage from pilot studies

A methodology review has been carried out this year to include both un-swept areas & reported supply pipe leaks in the estimated value. These changes to methodology have resulted in significantly higher supply pipe leakage estimates. However, data confidence in the resultant increased values is still very low. Consequently last year's estimate of 64.8 l/prop/day was used again in this year's balance calculation.

It should be noted that although 64.8 l/p/d appears high compared to England & Wales (44.8 l/p/d)[2], it is actually low if expressed as a proportion of total leakage: Scottish Water supply pipe leakage represents only 14% of total leakage, against 28% on average for E&W water & sewerage companies[2]. It is indeed conceivable that Scottish Water's high total leakage level is partly due to a higher supply pipe leakage (in l/p/d) than E&W. This should be taken into account when comparing SPL values between Scotland and E&W.

Comparison with individual E&W water and sewerage companies shows a wide spread of supply pipe leakage values, whether expressed in l/p/d or as a % of total leakage. A comparison table is shown below for information:
Table A2.2 Supply pipe leakage

Supply Pipe Leakage	l/p/d	% of Total Leakage
SCOTTISH WATER	64.8	14.0
Dwr Cymru	24.2	13.8
Northumbrian North	41.9	29.9
Severn Trent*	63.0	40.6
United Utilities	33.2	21.7
Yorkshire	31.4	22.6
E&W W&S Average	44.8	27.6

* Note that Severn Trent has adjusted their SP Leakage estimate from 35.4 in 02/03 to 64.2 l/p/d I 03/04 following an in-depth review of their water balance.

Summary of last year's methodology:

An overall estimate of supply pipe leakage for Scotland was carried out based on the burst and background (BABE) methodology, using data from sample studies in Glasgow, Fife,

[2] 2003/04 average for E&W Water & Sewerage companies, OFWAT Security of supply, leakage and the efficient use of water 2003-04 report

Greenock and Black Esk. The key assumptions and results of these studies are summarised below:

- Number of DMAs with data on number of SP bursts 419
- Number of properties covered 411,444
- Number supply pipe leaks detected 806
- Assumed burst duration 365 days/yr
- Estimated average burst flow rate 1.2 m^3/hr

Results

- Supply Pipe Burst Leakage 51.6 l/prop/d
- Supply Pipe Background Leakage 13.2 l/prop/d
- **Supply Pipe Total Leakage (UGSPL) 64.8 l/prop/d**

It should be noted that although the total UGSPL is unchanged from last year (in l/p/d), the values by category did change due to the updating of last year's analysis with new property count and supply pipe leakage values by category from the 2003/04 Annual Return. The total value in Ml/d is also different from last year due to the change in property count. The apportionment of the total UGSPL values into component values is explained in Section 2 below.

2 - Apportionment of all-Scotland average supply pipe leakage to different categories in Table A2

The property categorisation in the WIC Return differs slightly from that in the OFWAT Return. This is illustrated in the table overleaf:

Table A2.3 Categories of properties for which a specific estimate of supply pipe leakage is required:

OFWAT Return		**WIC Return**	
T10.16	Internally metered household	A2.2	Unmeasured domestic – Billed
T10.15	Externally metered household	A2.3	Unmeasured domestic – Void & Exempt
T10.14	Unmeasured household	A2.6	Measured domestic – Void
T10.17	Void properties	A2.20	Measured non domestic – Void
		A2.29	Unmeasured non-domestic – Billed
		A2.30	Unmeasured non-domestic – Void

Due to this discrepancy, a number of assumptions were made in order to relate OFWAT's apportionment of supply pipe leakage to the WIC categories. This is explained in the methodology below.

Both last year and this year, the following assumptions were made in order to apportion the total supply pipe leakage estimate between the required property categories based on values from E&W water and sewerage companies:

- The difference between supply pipe leakage in void properties and in billed properties is the same in relative terms for all property types and is equal to the difference reported between total void and total billed properties.
- The ratio of metered to unmetered void properties is the same as that of metered to unmetered billed (split not available in OFWAT Returns).

Two assumptions, however, differ from last year:

- The average supply pipe leakage value for household metered properties was derived this year from the E&W water and sewerage companies' average value for externally metered households. This is different from last year's approach where this value was derived from the OFWAT average value for metered households; including both internally and externally metered properties. The new assumption is taking into account

the fact that SW metered properties are all assumed to be externally metered. These results in a lower SP leakage for SW metered households, from 32.8 down to 24.3 l/p/d.

- Exempt unmeasured households are now assumed to have the same average supply pipe leakage (in l/p/d) as unmeasured billed households. This is different from last year's assumption that unmeasured exempts and voids have the same rate of supply pipe leakage. This new assumption accounts for the fact that exempt properties are occupied, not void, and should therefore be comparable to billed unmeasured properties in relation to supply pipe leakage. There is a single line for voids and exempts in the Annual Return (line A2.3). Hence, that line is calculated this year as a property-weighted average of exempt and void l/p/d estimates.

Based on the above assumptions, supply pipe leakage estimates were extrapolated for the categories not explicitly reported in the OFWAT Returns but needed to derive component values for the WIC Return. The result of this analysis is summarised in the table overleaf:

Table A2.4: Summary Results – Supply Pipe Leakage

Property Count			A1 Line Ref.	A2 Line Ref.	Property Count ('000)*	E&W W&S Average AR04 (l/p/d)	SW UGSP Leakage AR05 (l/p/d) **	SW UGSP Leakage AR05 (Ml/d)
Billed Properties	Domestic	Unmeasured	A1.1	A2.2	2189	52.9	66.28	145.1
		Measured	A1.12	N/A	0.4	25.7	24.31	0.0
	Non domestic	Unmeasured	A1.66	A2.29	53.79	47.2	59.12	3.2
		Measured	A1.22	N/A	83.2	22.9	28.68	2.4
Exempt Properties	Domestic	Unmeasured	A1.10a	A2.3	58.8	52.9	66.28	3.9
Void Properties	Domestic	Unmeasured	A1.11	A2.3	55.6	55.6	69.66	3.9
		Measured	A1.13	A2.6	0.0	27.0	33.80	0.0
	Non domestic	Unmeasured	A1.67	A2.30	21.2	49.6	62.14	1.3
		Measured	A1.23	A2.20	6.9	24.1	30.15	0.2
Total (A1.69)			**A1.69**	**N/A**	**2469.3**	**44.8**	**64.8**	**159.99**

Source: Table A1
** see note under section A2.32*
***from [Supply Pipe Leakage AR05 v2.xls]Summary Outputs'*

WIC Return Simplifying Assumptions

Until and including last year, simplifying assumptions were made by the WIC in Table A2 in calculating total supply pipe leakage from the component values. These assumptions were as follows:

- Billed measured domestic SP Leakage = Billed unmeasured domestic (in l/p/d)
- Billed measured non-domestic SP Leakage = Billed unmeasured non-domestic (in l/p/d)

These simplifying assumptions no longer apply as calculation cells in Table A2 have been replaced by input cells (notably A2.32 Water Delivered & A2.36 Distribution Losses).

Supply Pipe Leakage Confidence Grade

Reliability Band

Last year's estimate of total underground supply pipe leakage (UGSPL, in l/p/d), has been left unchanged this year. It is based on Scotland-specific data, but relies on limited sample

information and key parameters, such as average burst flow rate, burst duration, pressure or hour-day factor, still require improvement. Due to these limitations, SW considers that the reliability grade C applies (reliability C is defined as "extrapolation from limited sample for which Grade A or B data is available"). Based on this definition, the supply pipe leakage values (in l/p/d) extrapolated for the various property categories that are reported in Table A2 were also given a Reliability Grade C.

Accuracy Band

A sensitivity test was carried out last year by varying simultaneously and randomly the key inputs going into the estimation of total supply pipe leakage, using the @Risk statistical package. The accuracy range attributed to each of the key inputs was based on expert judgment and knowledge of the input values used by some companies in England & Wales (e.g. for supply pipe burst flow rates). The results of this test suggested an accuracy "to or within +/-25% but more than +/-10%", which corresponds to accuracy band 4. This means that the actual total supply pipe leakage is believed to lie somewhere between 57 and 72 l/p/d. Since the same value has been used in this year's Return, this accuracy band still applies. Note that this is only an estimated range, as some judgment had to be applied to determine the accuracy of the input values.

Recommendations for improving future estimates

As stated in the methodology section, Scottish Water carried out a review of last year's methodology, which resulted in a significantly higher supply pipe leakage estimate (87.9 l/p/d, compared to last year's value of 64.8 l/p/d, a 36% increase). The new value still relied on limited sample data and was not considered to be sufficiently robust to justify updating last year's estimate.

SW shall further review and where possible extend sample area coverage to provide updated supply pipe burst frequency and assumed flow rate data. Best practice methodology shall also be further developed in line with outputs of pending UKWIR 'supply pipe estimation' project.

A2.4 –Unmeasured Domestic Per Capita Consumption

This is a calculated field [Water Delivered – USPL (billed) – USPL(void)]. Unlike the value of PCC used in line A2.1, this figure includes plumbing losses (hence why it is a higher value than the 139.1 l/hd/d reported in the 1999 PCC study).

A2.1 –A2.4 Future Years

Future projections in line A2.1 are based on the predicted change in population and property count for future years. This change results in a slight increase in unmeasured domestic water delivered (1 Ml/d per year). The increase observed in the first year is due to an increase in both population and property count. In the second year, although population is forecast to decline, property count is forecast to continue to increase. The combined effect is an increase in water delivered.

Lines A2.2-A2.3 has been brought forward from this year as there is no trend available to predict changes to underground supply pipe leakage.

A2.5-8 Measured Domestic

The consumption of water has increased compared to the previous year. This is due to the data cleansing activity carried out in 2004/05.

A2.7 - Scottish Water does not undertake routine meter calibration of the domestic customers. However a meter under-registration figure of 3.1% is applied. This is the water

and sewerage companies' average for 2003-04 as stated in table 13a of the "Security of supply, leakage and the efficient use of water 2003-2004" report (p. 75). Last year's England & Wales value was 3.2%.

A2.9-21 Measured Non-Domestic

A2.9-16 - All data has been derived from the Annual Return database, as at 31/03/05, sourced from the HiAffinity billing system. The reduction in measured non-domestic volumes reflects adjustments that have been made for the previous year and also as a result of the trend in the reduction of water use from large users. The customer profile has moved slightly due to the increased quality of base data.

A2.17 - This year's Return has updated last year's submission, which only comprised data from the legacy East and West authorities, with properties from the legacy North area. There is still work required to identify all the measured volumes associated with these properties.

An additional two volumes of non-potable water have been included this year which has increased the volume reported by 2.1 Ml/d to 12.35 Ml/d. There is a possibility that due to the billing database not identifying potable and non-potable supply types, 0.32 Ml/d of the reported volume may have been double accounted in line A2.13. The confidence grade has remained at C3.

A2.19 – Scottish Water do not have a scheme of charges for non-potable water. 51% of the reported non-potable volume has been reported from key customer managers and is based on individually negotiated charge rates. The remaining 49% of the volume is estimated based on previously returned volumes but where charge rates are unknown. These charge rates could be from the potable water scheme of charges.

A2.21 - Scottish Water does not undertake routine meter calibration of the non-domestic customers. However a meter under-registration figure of 4.6% is applied. This is the water and sewerage companies' average for 2003-04 as stated in table 13a of the "Security of supply, leakage and the efficient use of water 2003-2004" report. Last year's average in England & Wales was 4.7%.

A2.22-31 Unmeasured Non-Domestic

All data has been derived from the Annual Return database, as at 31 March 2005, sourced from the HiAffinity billing system. The volume calculation used is 37.3 m^3 per £'000 of rateable value (37.3 = 1000 x 2.55p (per £RV) / 68.3p (per m^3). The decrease is as a result of the reduction of total RV in A1.76 – A1.78.

To calculate the volumes in A2.22-A2.25 a supply pipe leakage allowance of 3.18Ml/d was added.

A2.31
The reduction in the estimated water delivered per unmeasured non-domestic reflects the reduction of the RV value for unmeasured customers

A2.32-40 Water balance

A2.32 – Total water delivered to domestic and non-domestic properties

This year, the calculated field has been removed which allows an adjustment of supply pipe leakage assumptions to be made. (See WIC Simplifying Assumptions on Supply Pipe Leakage above.)

Note: Period 12 (Year End) property count has been used instead of Period 6 (September 2004) in the calculation of supply pipe leakage and plumbing losses, which in turn affects total water delivered. This is consistent with last year's methodology. However, this creates a slight discrepancy between the property count used to calculate water delivered and the property count reported in A1. The resulting difference is only 0.3 Ml/d (0.02% of water delivered), therefore considered immaterial.

Scottish Water is considering using Period 6 property count data from next year onwards to remove this discrepancy. The difference between Period 6 and Period 12 property count and the minor impact of that difference on water delivered is shown in the table overleaf:

Comparison between Period 6 and Period 12 Property Count and Resulting Water Balances

Table A2.5 Property Count:

AR Line No.	Property Category	Unit	Period 12	**Period 6***	Difference	% Difference
A1.12	Measured domestic billed properties	Nr	418	**460**	+42	+9.1%
A1.22	Measured Non-domestic billed properties	Nr	83179	**82556**	-623	-0.8%
A1.66	Unmeasured Non-Domestic billed properties	Nr	53793	**59417**	+5,624	+9.5%

* Property Count reported in Table A1 are Period 6

Table A2.6 Water Balance:

AR Line No.	Property Category	Unit	**Based on Period 12 Properties***	Based on Period 6 Properties	Difference	% Difference
A2.32	Total water delivered to domestic & non-domestic properties	Ml/d	1362.18	**1362.51**	+0.33	+0.024%
A2.33	Distribution system operational use	Ml/d	8.67	**8.67**	0.00	0.000%
A2.34	Water taken legally unbilled	Ml/d	24.93	**24.93**	0.00	0.000%
A2.35	Water taken illegally unbilled	Ml/d	2.82	**2.82**	0.00	0.000%
A2.36	Distribution losses	Ml/d	979.31	**978.99**	-0.33	-0.033%
A2.37	Total leakage	Ml/d	1139.30	**1138.97**	-0.33	-0.029%
A2.38	Distribution input	Ml/d	2377.92	**2377.92**	+0.01	+0.000%

* Volumes reported in Table A2 are based on Period 12 property count

A2.33 Distribution system operational use (DSOU)

Estimates were based on a detailed analysis of the different components of DSOU for the whole of Scotland, using as much area-specific data as possible.

As last year, Operational Use methodology was made up of the following components with similar methodology unless otherwise stated:

1. Total volume from reservoir cleaning and remedial works. .
2. New mains commissioning and disinfection and mains rehabilitation.
3. Water Quality (Customer Complaints).
4. Water Quality (Regulation).
   Additional samples included for chemical and crypto sampling.
5. Planned flushing and swabbing (Again, reported as zero).
6. Mains shutdowns (repair of bursts and events).
   Interruptions to supply were used to calculate mains shutdown non-burst events (excluding mains bursts and rehab activities already estimated in other components of DSOU) Last year, non burst events were based on the ratio of burst to non-burst events.

The result is an estimated operational use of 8.67 Ml/d or 0.185 m^3/km/day (compared with 7.41 Ml/d in 2003-04 and 6.3 Ml/day in 2002-03). This is 36% lower than average England & Wales re-estimate of 0.289 m^3/km/day (refer to table below). This difference may be explained by different operational practices but may also be due to incorrect assumptions being used in deriving certain components of operational use in Scotland. Comparison with individual companies shows that SW DSOU is higher than some companies (e.g. Severn Trent and UU (Refer to second table below). More work would be required to refine these assumptions, notably through field trials, in order to produce a more robust estimate next year. In the meantime, 8.67Ml/day remains the best available Scotland-specific estimate for operational use.

For comparison, OFWAT estimates for operational use from 1996/97 to 2003/04 are shown below:

Table A2.7: Ofwat estimates for operational use

Operational Use, OFWAT all-industry averages	**96/97**	**97/98**	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**
m^3/km/day	0.190	0.205	0.226	0.262	0.257	0.303	0.303	0.289
% of DI	0.36	0.42	0.49	0.57	0.57	0.65	0.65	0.61

For comparison, OFWAT estimates in l/prop/d are shown below:

Table A2.8: Comparisons of operational use

	Volume, Ml/d	**Properties 000's**	**l/prop/d**
Scottish Water	13	2,469	3.51
Welsh Water	7.2	1,251	5.75
Northumbrian	10.6	1,091	9.71
Severn Trent	8.0	3,224	2.48
UU	10.0	2,946	3.39
UK Water and Sewerage average	87.5	18779.3	4.66

Table A2.7 shows a steady upward trend from 1996/97 to 2001/02 (60% increase in m^3/km/day), but some stabilisation in more recent years. This may be due to the fact that some effort has been made by companies in recent years to obtain better quality data for these components so as to justify the submitted figures.

A2.34 Water taken legally unbilled (WTLU)

Last year, in the absence of a consistent analysis of WTLU across Scottish Water, the OFWAT 2002-03 average value of 7.4 l/prop/day was used for all four areas of Scottish Water. This year, a start has been made on identifying several components that can contribute to the WTLU and estimates made of the water used by these activities. The following components were included:

1. Water Used at SW Wastewater Treatment Works
   A list of all SW wastewater treatment facilities was obtained, along with details of treatment capacity (as population equivalent) and process type (activated sludge etc). The median value from metered PPP treatment works was used to estimate, on a population equivalent basis, the water used by all SW primary, secondary and tertiary treatment works.

2. Water Used at SW Depots
   A list of all SW offices, laboratories and depots was obtained, along with numbers of staff working at each location. Consumption was assigned to each location on a PCC basis

with uplifts to allow for increased consumption at laboratories and depots due to operational activities.

3. Wheelie Bin Washing
   Estimated weekly consumption was obtained from a commercial operator and the annual consumption from wheelie bin operations estimated using the number of standpipe licenses issues by SW.

4. Street Cleaning Operations
   An estimate of the volumes of water used by street cleaning operations was obtained from Aberdeen city council and a pro-rata estimate made on a population basis.

5. Fire Service
   Scottish Executive statistics on numbers and categories of fires in Scotland were used along with information from Lothian and Borders Fire Service to estimate the volume of water taken. An allowance was also included for the water used during training sessions at the 36 Scottish stations.

6. Building Work
   SW issue standpipe licenses to building contractors for use at construction sites, although it is believed that many unlicensed standpipes are also used for this purpose. A conservative estimate of the volume used daily at a site was made and combined with the number of standpipe licenses issued to give an estimate. A comparison was made between this derived figure and another estimate based on a Severn Trent estimate of $80m^3$/new property. Reasonable agreement was obtained between the two, which gave some confidence in the estimate based on issued licenses.

7. Sewer Jetting/Clearing
   The estimated consumption by SW activities was based on an assumed volume of water used per operation and the number of jetting jobs recorded on SW corporate systems. Commercial sewer jetting was based on the same assumed volume per operation, the number of issued licenses and an estimate of the number of weekly call-outs.

8. Other standpipe licenses
   These are 190 licenses granted by Scottish Water in 2004/05 but for which no specific volume could be estimated. These licenses cover the following activities: Civil Engineering, Gardening, Shows/Markets, Building Maintenance, Graffiti Removal, Street & Road Cleaning, Road Maintenance, Vehicle Washing, Crop Spraying, Geotechnical Investigation, Sewer/Gully Cleaning and Quarrying. An overall estimate of 3.54 Ml/d was derived for those, based on the average volumetric rate of the 350 licenses for which specific information had been obtained (namely: Power/Jet Washing (Wheelie bins), Street & Road Cleaning, Sewer/Gully Cleaning, Building Work).

The sum of the above components gives an estimate of 24.93 Ml/d for WTLU. The Table below shows a comparison with England and Wales:

Table A2.9: Comparison of WTLU

Comparison with England and Wales	Volume, Ml/d	Properties 000's	l/prop/d
Scottish Water	25	2,469	10.10
Welsh Water	8	1,251	6.15
Northumbrian	5	1,091	4.86
Severn Trent	13	3,224	4.06
UU	28	2,946	9.44
UK Water and Sewerage average	144	18,779	7.66

A2.35 Water taken illegally unbilled (WTIU)

The WIC definitions state that

"Illegally taken water should only be reported here and included in the water delivered total if it is based on actual occurrences using sound and auditable identification and recording procedures. If it is not based on these it should be classified as distribution losses (A2.36)."

In previous years, this component was assumed to be zero in the absence of any firm evidence to the contrary. This year, however, an estimate was made for three components of WTIU as follows:

1. Occupied Voids
   A figure of 5% occupancy was used as a reasonable estimate after consideration of studies by Welsh Water and Southern Water that indicated occupancy rates of 5% and 37% respectively. The lower value from Welsh Water (5%) was chosen as the number of occupied properties in Scotland is obtained from local council returns, and local councils keep a close eye on void properties for taxation purposes. The number of occupied voids was multiplied by the average household occupancy rate and PCC to give an estimate of this component of the WTIU.

2. Building Work
   An estimate of water taken illegally at building sites from unlicensed standpipes was calculated as for the WTLU component on the assumption that 25% of such standpipes are illegal.

3. Fire Hydrant Misuse
   The number of reported incidents of misuse was taken from SW corporate records and an assessment made of the water used before repair, using information on work-practices obtained from SW operations staff.

The sum of the above components gives an estimate of 2.82 Ml/d for WTIU. The Table below shows a comparison with England and Wales:

Table A2.10: Comparison of WTIU

Comparison with England and Wales	Volume, Ml/d	Properties 000's	l/prop/d
Scottish Water	3	2,469	1.14
Welsh Water	2	1,251	1.36
Northumbrian	4	1,091	3.48
Severn Trent	11	3,224	3.44
UU	10	2,946	3.53
UK Water and Sewerage average			3.63

A2.36 Distribution losses

Total Leakage minus Unmeasured Domestic supply pipe losses = Distribution Losses. Refer to section A2.2 WIC Return Simplifying Assumptions above.

A2.37 Total Leakage

Method 1 Night Flow Measurement: The independent ('bottom-up') estimate of total leakage this year is 964 Ml/d. This is 4% higher than last year's value of 928 Ml/d. This should not however be interpreted as an actual increase in leakage since the flow data coverage is different from last year's.

This year's estimate is based on a night flow monitoring coverage of about 35% of total properties in Scotland. This is a slight improvement from last year: this year's 35% coverage is split into 34% of DMA night flow coverage and 1% of Water Supply Zone night flow coverage, against last year's values of 28% and 3% respectively. The increased DMA coverage is the result of the on-going DMA implementation programmes in Glasgow, Forth Valley, Fife, Inverness, Badentinan, Dalmacoulter, Dundee and Edinburgh.

A more significant increase in coverage was originally expected but did not materialise due to operability issues with existing DMAs and slippage within current implementation programmes. Resolution of operating issues and full completion of current DMA establishment programme are targeted for 1st Quarter of 2005-06. This will lead to improved night flow coverage for future years, in line with Scottish Water's 60 % target DMA coverage. Full implementation of Perform Spatial Plus has coincided with current DMA establishment activities, hence related process and procedures are still at the initial 'bedding-in' stage. Automated corporate reporting of DMA status commenced in February 05 and will contribute to improve the management of DMAs throughout the coming year.

As a result of this limited coverage, the 'bottom-up' and the 'top-down' estimates of leakage remain relatively large. This can partly be explained by the fact that the areas for which night flow data are available are also the areas where leakage detection and subsequent burst repairs have taken place. Thus, the current night flow monitoring coverage cannot be assumed to be representative of the whole of Scotland. Finally, other elements of the water balance are still uncertain, not least the estimated unmeasured domestic consumption, which makes up a significant proportion of total distribution input.

Table A2.11: Water Balance Comparison – 2001-02 / 2002-03 / 2003/04 / 2004-05 – Integrated Flow Method (IFM) and Night Flow Method (All-Scotland):

Scottish Water	2001-02 Return (Ml/d)	2002-03 Return (Ml/d)	2003-04 Return (Ml/d)	**2004-05 Return Ml/d**	Difference AR05 vs. AR04 (Ml/d)	Difference AR05 vs. AR04 (%)
Distribution Input						
A2.38 Distribution Input (Ml/d)	2,390.90	2,377.90	2,386.51	**2,377.92**	- 8.59	-0.4%
Water Delivered - Billed						
A2.1 Unmeasured domestic	827.70	837.70	854.15	**851.34**	- 2.81	-0.3%
A2.5 Measured domestic	0.49	0.33	0.25	0.21	- 0.04	-16.1%
A2.9-16 Measured non-domestic	529.70	443.30	467.68	**457.73**	- 9.38	-2.0%
A2.22-25 Unmeasured non-domestic	40.09	93.00	56.34	**51.77***	- 11.22	-19.9%
Water Used - Unbilled						
A2.33 Dist. Sys. Operational Use	17.72	5.63	7.41	**8.67**	1.26	17.0%
A2.34 Water taken legally unbilled	40.09	11.95	18.33	**24.93**	6.60	36.0%
A2.35 Water taken illegally unbilled	-	-	-	**2.82**	-	N/R
* Based on Period 6 property count						
Leakage						
Bottom Up Total leakage (DMA/ WSZ)	1,020.30	885.80	928.44	**964.32**	35.88	3.9%
% of Distribution Input	43%	37%	39%	41%		
Top Down Total Leakage (Reported in A2.37)	1,065.42	1,132.10	1,145.53	**1,139.30**	- 6.23	-0.5%
% of Distribution Input	45%	48%	48%	48%		
l/p/d				461		

Difference in Water Balance (Ml/d)	45.12	246.30	217.09	174.98
Difference in Water Balance (%)	1.9%	10.4%	9.1%	7.4%

Note: For line A2.37, the top-down estimate of leakage was used, as the independent 'bottom-up' estimate was still considered unreliable this year. Only when sufficient DMA coverage is achieved and the two estimates approximately reconcile will Scottish Water start using the DMA or 'bottom-up' estimate to populate this line (see further explanations in commentary on Line A2.39 overleaf).

Method 2 Integrated Flow Method: For reporting and comparison purposes, the most reliable leakage estimate remains that based on the Integrated Flow Method (Total Leakage = Distribution Input minus all demand components other than leakage), i.e. 1020 Ml/d in 2001/02, 1132 Ml/day in 2002/03, 1146 in 2003/04 and 1139 Ml/d this year.

Taking into account the uncertainty around those estimates, it must be noted that the apparent decrease observed between 2003/04 and 2004/05 does not mean that total leakage has truly decreased (the new value lies well within the accuracy band of the AR04 value). The top-down estimate of leakage relies on the accuracy of the other key components of the water balance, notably of the estimated domestic per capita consumption (PCC). An update of the PCC study carried out this year suggests that domestic PCC has remained fairly stable since 1999. However, in the absence of a continuous domestic consumption monitor, the estimation of PCC remains uncertain. Subject to funding, there are plans to establish and continuously monitor 60 PCC areas (which is an additional 9 areas to the 2005 update).

It is therefore difficult to draw any firm conclusion from the last four years' leakage trend other than the fact that the limited detection activity carried out as part of the DMA implementation programme is as yet insufficient in scale to produce a significant reduction in leakage for Scotland overall. Only when further DMA coverage and a systematic policy of active leakage control is implemented across a large proportion of Scottish Water's areas will a significant and sustained decrease in leakage be observed. Scottish Water remains committed to achieve 60% DMA property coverage by the end of Q&S2 and 96% coverage by 2008.

A2.38 Distribution Input

This value is calculated from works output meter readings and has an accompanying confidence grade of C4. The reliability grade is based on the distribution input reconciling to 7% of the sum of the separately estimated water balance components. Work has been done to identify and prioritise DI meters for replacement as part of a meter improvement programme, which will improve the accuracy band in future Returns.

A Distribution Input document has been written to clearly specify the business end user needs and the system functionality that is required to deliver these needs. It also touches upon more pure IT related issues such as performance and software dependencies. The report covers:

- Distribution input from water treatment works
- Net flows into Water Operational Areas
- Net flows into Water Resource Zones

A2.39 Difference in water balance

As stated in Line A2.37 (Total Leakage), the most reliable leakage estimate remains that based on the Integrated Flow Method (Total Leakage = Distribution Input minus all demand components other than leakage), i.e. 1139 Ml/d this year. This is the estimate that should be used for reporting and comparison purposes.

The water balance relies on an accurate coverage of night flow measurement as described in section A2.37 but also on customer billing records. Using the Integrated Flow Method, any error in reporting measured and non-measured water delivered will be reflected in the leakage figure, instead of appearing as the difference in water balance (A2.39). The reported difference in water balance will therefore be zero. However, Scottish Water will still report the independent estimate of leakage in the commentary together with the actual difference in water balance.

When the difference in water balance resulting from using the independent estimate of total leakage becomes less than 5%, it is suggested that the water balance should be reconciled using the MLE methodology, as recommended in OFWAT reporting requirements. Scottish Water will, however, keep reporting the pre-MLE water balance in the commentary.

For future years, the forecast change in distribution input was calculated to reflect exactly the change in its components. This ensures consistency in the calculations. As a result, the difference in the water balance remains constant over the next two years.

A2.40 – Assessment of overall water balance

This year's water balance has been given a confidence grade of C4 as per last year. Following definitions and guidelines, the reliability band for the overall water balance has been awarded a C as the water balance components reconcile with measured distribution input to within 10% (to achieve band B, the water balance components must reconcile with measured distribution input to within 5%). The accuracy band of 4 was based on the individual components of the water balance.

A2.41-43 Bulk Supplies

A2.41 – Bulk supply imports

Scottish Water has no bulk supply imports or exports.

A2.42 – Bulk supply exports

As A2.41

A2.43 – % of distribution input through PPP treatment works

Scottish Water does not have any water treatment PPP works.

Figure A2.1 Water Balance Components

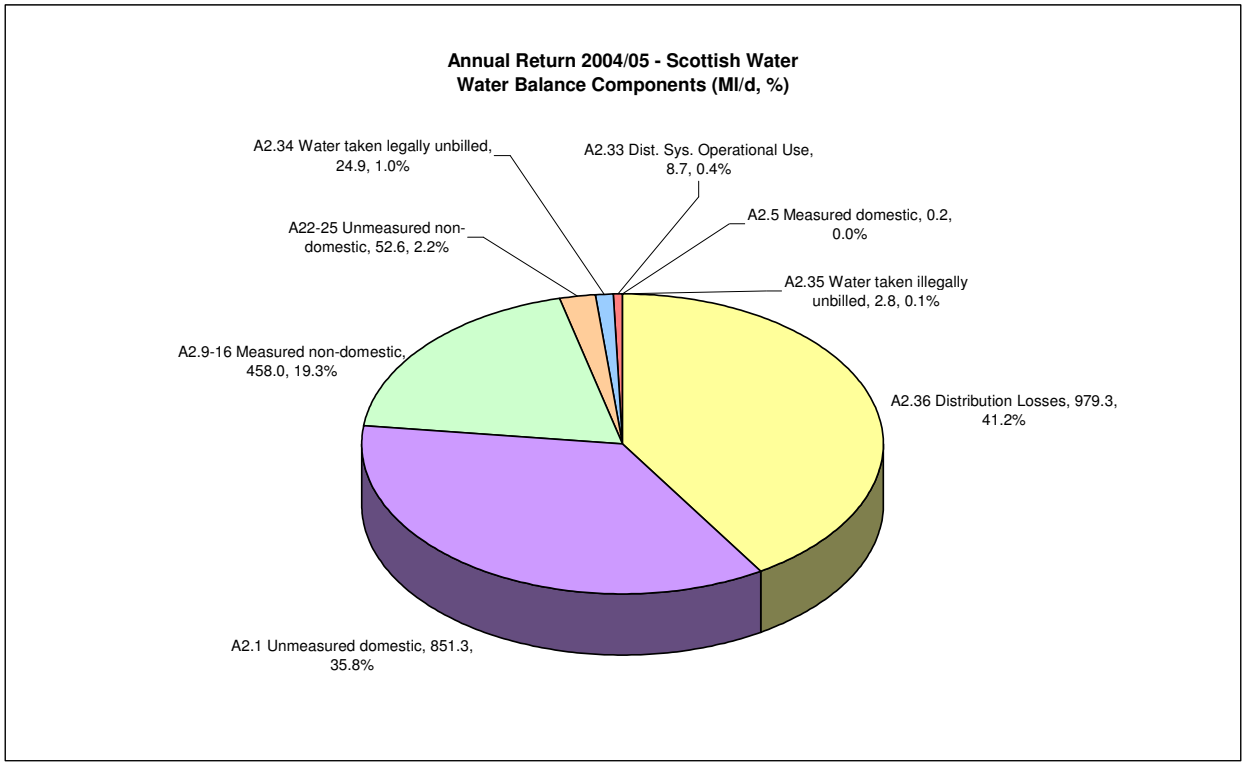


Figure A2.2 Water Use and Leakage Components

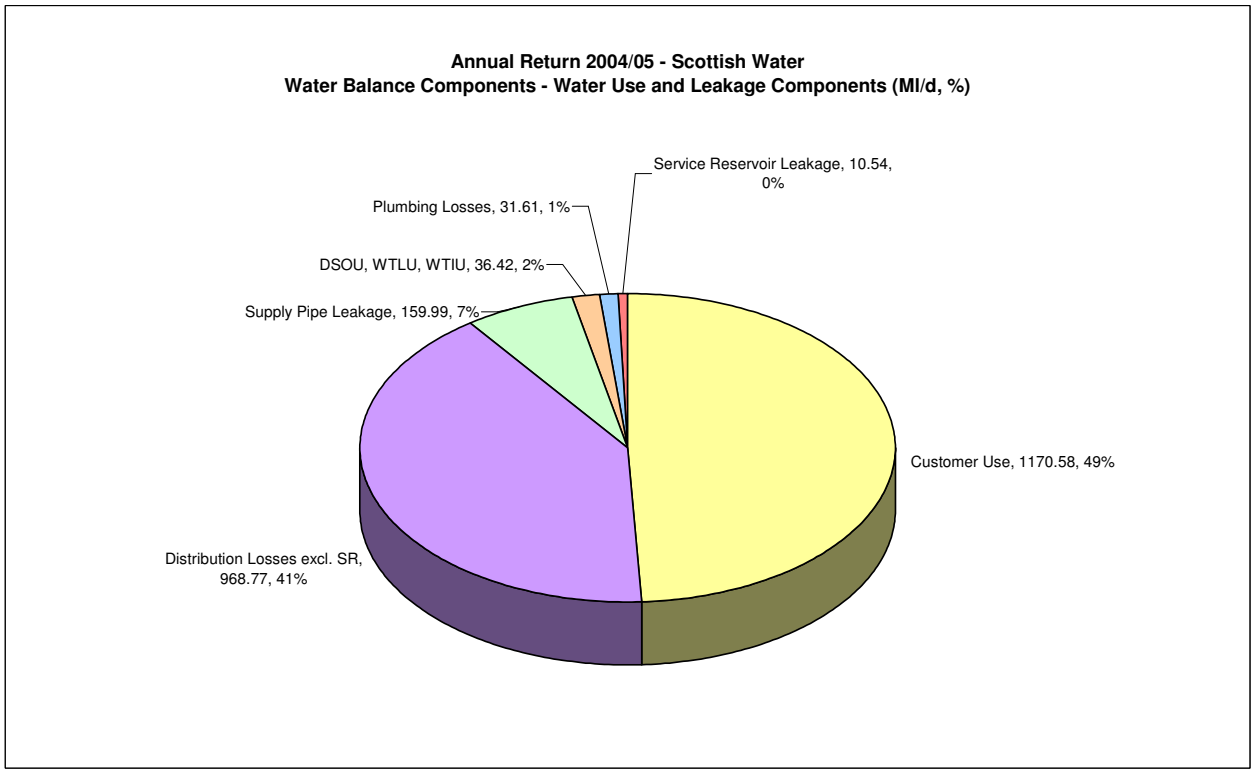


Figure A2.3

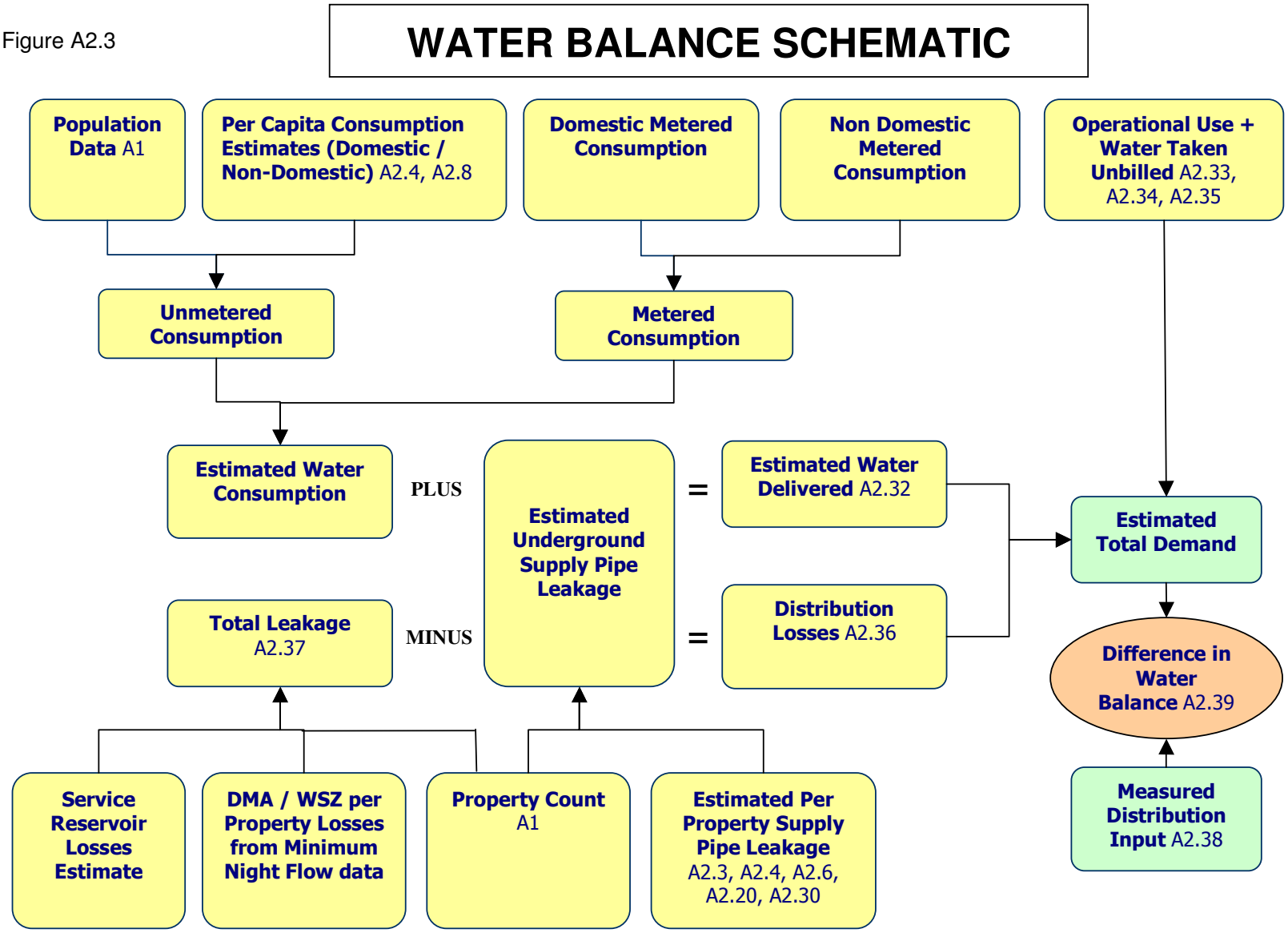

WATER BALANCE SCHEMATIC
Population Data A1
Per Capita Consumption Estimates (Domestic / Non-Domestic) A2.4, A2.8
Domestic Metered Consumption
Non Domestic Metered Consumption
Operational Use + Water Taken Unbilled A2.33, A2.34, A2.35
Unmetered Consumption
Metered Consumption
Estimated Water Consumption
PLUS
Estimated Underground Supply Pipe Leakage
=
Estimated Water Delivered A2.32
Total Leakage A2.37
MINUS
=
Distribution Losses A2.36
Estimated Total Demand
Difference in Water Balance A2.39
Measured Distribution Input A2.38
Service Reservoir Losses Estimate
DMA / WSZ per Property Losses from Minimum Night Flow data
Property Count A1
Estimated Per Property Supply Pipe Leakage A2.3, A2.4, A2.6, A2.20, A2.30

Table A3 Properties and population – wastewater

A3.1-13 Unmeasured Domestic - Properties

See lines A1.1 to A1.11

A3.14-17 Measured Domestic - Properties

The number of measured domestic properties has decreased from the previous year due to the data cleansing activity that was carried out in 2004/05.

A3.18-30 Measured Non-Domestic - Properties

A3.18-23 See lines A1.14 to A1.23.

A3.27 A number of customers who were previously identified as trade effluent customers have increased due to the data cleansing activities carried out through the year.

A3.29 Through data cleansing, a number of customers have now been correctly identified as billed properties with no surface water drainage charge.

A3.30 The increase in the number of void properties is due to data cleansing and increased visibility achieved through integration of HiAffinity.

A3.34a-49 Measured Non-Domestic - Meter Sizes: Actual Installed Meters

Data has been derived from the 'Meter' report from the Annual Return database. The reduction in the number of meters is as a result of the high level of data cleansing work that took place throughout 2004/05.

Below is a breakdown of the electro-mechanical meters.

Meter Size	Number
15mm or smaller	0
20mm	2
25mm	1
40mm	0
50mm	1
80mm	5
100mm	8
150mm	2
200mm	0
250mm	0
300mm	0
400mm	0
450mm	0
600mm	0
Total	19

Part of the shift in the meter size profile also reflects the work carried out on meter rightsizing during 2004/05 which will continue to affect the profile into 2005/06.

A3.53a-68 Measured Non-Domestic - Meter Sizes: "Tariff" Meters

Data has been derived from the 'Meter' report from the Annual Return database. The reduction in the number of meters is as a result of the high level of data cleansing work that

took place throughout 2004/05. Part of the shift in the meter size profile also reflects the work carried out on meter rightsizing during 2004/05 which will continue to affect the profile into 2005/06.

Below is a breakdown of the electro-mechanical meters.

Meter Size	Number
15mm or smaller	0
20mm	0
25mm	0
40mm	1
50mm	5
80mm	4
100mm	6
150mm	2
200mm	0
250mm	0
300mm	0
400mm	0
450mm	0
600mm	0
Total	18

A3.69-76 Unmeasured Non-Domestic - Properties

All data has been derived from the Annual Return database, as at September 2004, sourced from the HiAffinity billing system. The increase in the number of unmeasured non-domestic properties is due to the drive to maximize the customer base through data cleansing. The result of this activity is also reflected in the decrease in the total number of voids which saw a reduction of 18% from last year.

Reason for other relief charges being zero, please refer to the note on other relief.

Through data cleansing, a number of customers have now been correctly identified as billed properties with no surface water drainage charge.

A3.77-80 Surface Water

There has been no change to the area that is currently subject to an area based charge from last year.

A3.81-84 Summary – Population

A3.81 – A3.83 See lines A1.71 to A1.72

A3.84 – Scottish Water employs an assumption of a 5% non-return to sewer allowance, which is also the assumption commonly used in England & Wales.

A3.85-112 Rateable Value Base (for metered business properties)

All data has been derived from the Annual Return database, as at 31 March 2005, sourced from HiAffinity. The reduction in the total RV base reflects the data cleansing activities carried out through the year.

The total RV for foul water has reduced by 11.5% from last year due to data cleansing. A similar reduction in the roads and property drainage has seen a reduction in RV of 13.3% and 14.7% respectively.

The RV for properties with foul water service only has risen to £460m compared to zero reported last year and the RV for properties with surface water service only has increased by £245m. The RV for billed measured properties with no surface water drainage charges has risen to £164m. All these increases are as a result of better identification of RV properties achieved this year compared to previous years.

A3.113–119 Rateable Value Base (for unmetered business properties)

There has been a reduction in the total RV base which reflects the move from unmeasured to measured, coupled with the data cleansing activity that has been carried out during 2004/05. The RV in unmeasured properties in receipt of charitable relief (foul water) has increased due to better identification of customers who receive relief.

For the reason for other relief of charges being zero, please refer to the note on other relief at the beginning of the commentary.

Table A4 Sewage volumes and loading

A4.1-19 Sewage – Volumes

A4.1 This figure relates to 95% of the total household water volume. It is based on 95% of the per capita water consumption for the household population connected to wastewater as follows:

139.1 / 1000000 * 0.95 * 4649217 = 614.371 Ml/d

A4.2-5 All data has been derived from the Annual Return database as at 31/03/05, sourced from the HiAffinity billing system. The volume calculation used is (36.4m^3 = 1000 x 4.08p (per £RV) / 112.2p (per m^3).

A reduction in the volume of unmeasured non-domestic sewage at standard tariff reflects the reduction in the total RV for unmeasured customers.

The reduction in volume of unmeasured non-domestic sewage with other relief of charges reflects the change in the relief in 2004/05.

A4.16 - The annual volume of trade effluent is taken from the volume of trade effluent that appears on a customer's bill, an average rate is calculated and prorated across the year. The confidence grade is B2.

A4.19, A4.21-45 In line with the revised guidance notes, these lines report loads received at Scottish Water treatment works only, i.e. PPP works are excluded. These are shown in the table at the end of this section.

A4.19 - The volume of public and private septic tank emptyings is recorded at area offices. Where only the number of septic tank emptyings is known, volumes have been estimated on the following basis:

Private domestic tanks	4.5m^3
Public tanks	54m^3

Commercial volumes are recorded centrally. An estimate has been made on a works-by-works basis of the proportion of commercial volumes that arises from septic tanks.

In line with a comment by the Reporter on last year's submission, the volume reported here is restricted to sludge loads delivered to wastewater treatment works, i.e. sludges delivered to sludge treatment centres are excluded. This is the reason for the very large decrease in the reported figure compared with last year. This applies to lines A4.27-30 also.

The volume is not expected to change significantly.

A4.20-39 Sewage – Loads

The methodology used in this section is broadly the same as last year, and so no changes to confidence grades have been reported. In this section the year to year comparison has been carried out on the basis of recalculating last year's figures, including PPP.

A4.20 This figure is a brought forward figure from Line A3.83 Population Connected to the Wastewater Service (winter) population. This figure has been derived by using 2001 General Register Office for Scotland (GRO) 2001 Census extrapolated to the mid Report year.

These figures were provided by Unitary Authority boundary, which were used to provide an occupancy rate for each Unitary Authority which was then applied to a connected address point count and hence provide a connected population figure for each operational area. As an improvement on last year's assessment the Scottish Water corporate database (Hi-Affinity) of non domestic billed properties was used to identify the number of non domestic properties in each area and hence the remainder of the total being identified as the number of domestic properties in each area. This resulted in the population distribution being more accurate.

The figures were adjusted to align with those provided by the Unitary Authorities for billed addresses, an adjustment which is required to take account of the backlog of updates to the sewered area boundaries which would capture more properties than at present. Some of the sewered area boundaries were improved this year however a large amount of small adjustments are necessary to have full consistency across Scotland. The populations within the sewered areas were summed according to which operational area they are within and summed for Scotland as a whole.

In comparison with the 2003 – 2004 Annual Return the figures have decreased slightly, by 0.84%, consistent with the GRO projections of a general population decline in Scotland. The change is attributable to changes in the Unitary Authority provided data on connected properties.

As the population and address point databases have been utilised it has been possible to assign connected populations to individual sewered areas and therefore to individual wastewater treatment plants. This has been used in this year's Return to assist with the assessment of sewage loading to treatment plants. A benefit of utilising the Scottish Water non domestic billing data has been that the number and nature of the non domestic properties can be allocated to a particular WWTW and therefore a more representative allowance for these properties can be made for WWTW non domestic loading.

A4.21 - A4.23 - Resident populations have been allocated to individual wastewater treatment works as described in the introduction to Table E8. The level of treatment at each works is recorded corporately, so the total population receiving a certain level of treatment is readily determined.

The population with effluent receiving primary treatment or better has decreased approximately in line with the general decrease. However, the decrease in the population with effluent receiving secondary treatment or better has been smaller proportionally than the general decrease, because of a number of upgrades to this level of treatment.

Population expected to remain almost static over the next two years, but the population receiving primary or secondary treatment or better will increase as outfalls and treatment works are upgraded.

A4.24 - The method for determining the non-domestic load at individual treatment works is described in the introduction to Table E8. As above, the level of treatment at each works is recorded corporately, so the total load receiving a secondary treatment is readily determined.

The non-domestic load across all works is not significantly different from last year. However, the more accurate allocation of loads to sewered areas has resulted in a decrease at Scottish Water works, and a corresponding increase at PPP works.

The load is expected to decline over the next year and then level off, in line with the reduction in volume referred to above.

A4.25 - A4.26 - BOD and COD are taken from measured data, used in trade effluent charging. Unsettled values have been used to ensure that the figures reported here are consistent with Table E8.

The increase in load is due mainly to more efficient extraction of data from the recording system.

The load is expected to decline over the next two years, in line with the reduction in volume referred to above.

A4.27 - A4.30 - The method for determining these loads at individual treatment works is described in the introduction to Table E8. The total receiving secondary treatment has been assessed from the category of treatment recorded in the corporate system.

Commercial septic tank loads are now included under “other tankered load” rather than “private septic tanks”. The figures for last year have been adjusted to reflect this and give a clearer comparison. As noted under A4.19 above, loads received at sludge treatment centres are now excluded, and this accounts for the large decrease in lines A4.27 and A4.28 compared with last year. Lines A4.29 and A4.30 were incorrectly reported last year and should have been 190 and 27 t/yr respectively[3]. Including commercial septic tanks would have increased the figures to 311 and 62 t/yr respectively. These are slightly higher than the figures now being shown, which exclude PPP works. There is no decrease in the COD loading compared with last year, despite the exclusion of sludges taken directly to treatment works, and this due to a large increase in the reported load at Galashiels WWTW. The reduction in BOD is not as marked as for private and public septic tanks: this is a result of significant increases in load at Galashiels and Shieldhall WWTWs.

No significant changes in these loads are anticipated.

A4.31 - The corresponding figure in E8.18 is 78,139 tonnes. The small discrepancy is due to the fact that certain other loads, including some WWTW sludges are not tankered to the works, so are included in Table E8 but not in line A4.30, which contributes to this total. They have, however, been included in the total reported in A4.34, which corresponds to the total in Table E8.

The increase since last year is mainly due to upgrading of works to comply with legislative requirements, but is also due to corrections made to the category of some works, resulting in a small number of works being re-categorised as secondary.

[3] This explanation refers to last year’s figures including PPP.

A decline is expected in the first as a result of the overall decline in load, but thereafter this is likely to be offset by the increase in the proportion of load receiving secondary treatment.

A4.32 - The figure reported here is taken from Table E8, and is based on the estimated load received at the works. The decrease of approximately 900 t/yr is due mainly to the change of category of a number of works to secondary, as noted above.

The load will continue to decline as works are upgraded to provide secondary treatment.

A4.33 - The figure reported here is taken from Table E8, and includes the load receiving preliminary treatment but not screened discharges. The decrease of approximately 400 t/yr (if the data is analysed as PPP), is due mainly to the change of category of a number of works to secondary, as noted above.

The load will decline sharply as works are upgraded to provide primary or secondary treatment.

A4.34 - This figure is taken from E8.18 and is the estimated load received at treatment works and sea outfalls. It corresponds exactly to the totals reported in E8.18, but it should be noted that the column defined as “Total” in E8.18 specifically excludes septic tanks, which has not been done here.

The load due to resident population has decreased by 1500 t/yr, although approximately two-thirds of this is the result of a reporting error last year, and the non-domestic load by 800 t/yr. The load arising from sludges imported to sludge treatment centres has been excluded, except for their contribution to return liquors, resulting in a net decrease of 1300 t/yr. These falls have been offset to some extent by an increase of 3200 t/yr in the trade effluent load, but the net change has been a slight decrease in reported load.

The load is expected to decline slightly in line with the reductions in non-domestic and trade effluent loads.

A4.35 - The figure given is the settled COD figure used in the charging scheme.

A4.36 - The figure given is the pH-corrected suspended solids of “average sewage” used in the charging scheme.

No change is anticipated in the average figures used in the charging scheme.

A4.37 - The equivalent population served has been calculated from the total load received at the works (line E8.18) assuming the average load to be 60g BOD/head/day. The component due to non-resident population had been omitted from this total.

The change since last year reflects the changes discussed under A4.34 above.

A4.38 - This figure has been determined on the same basis as line A4.37, but restricted to works where a known numerical consent is in place. The information on consent conditions is held in a corporate database.

The number of numerical consents has increased from 1192 to 1213, and this is reflected in the slight increase in population equivalent.

The loads reported under A4.37 and A4.38 is expected to decline in line with the general decrease in load.

A4.39 - The load received at PPP works has been calculated on the same basis as the load on Scottish Water works reported in Line A4.34.

The changes are broadly in line with those for Scottish Water, except that the non-domestic load has increased by a similar amount to the decrease in the Scottish Water load, and the net result is an overall slight increase in load.

This load is expected to decrease in line with the general decrease in load.

A4.40-45 Sewage – Facilities

A4.40 - This is the number of treatment works reported in Table E8. The figure includes septic tanks, but does not include preliminary works, which are included as sea outfalls in Line A4.41.

The reduction of 9 works since last year is due to the fact that more works are decommissioned as new works come on stream. It is anticipated that the number of works will continue to decline gradually, as the building of new works will be offset by a reduction in numbers elsewhere through rationalisation.

A4.41 - This is the number of sea outfalls reported in Table E8, including preliminary treatment works.

The number of outfalls has fallen by 14 as a result of the installation of new septic tanks and treatment works. This number will continue to decline as outfalls are replaced by treatment to comply with legislative requirements.

A4.42 - The available capacity has been taken as the design capacity of works, where known. Preliminary works and sea outfalls are not included in this total. For a number of smaller works, where the design capacity is not known, the available capacity has been taken to equal the load received at the works.

The reduction in capacity form last year reflects the approximation in estimating noted above. The increase in headroom from approximately 1.3% to 2.7% is not significant, given the uncertainty in the figures.

The capacity will rise slightly as new treatment works are brought on line.

A4.43 - This is the figure reported against sea outfalls (including preliminary works) in Table E8, assuming a load of 60 gBOD/head/day. The component of the load arising from non-resident population has been excluded from the total.

The decrease from last year's figure is due to the reduction in the number of outfalls noted above. The load treated by outfalls will continue to decrease as new treatment works are commissioned.

A4.44 - Unsatisfactory outfalls are deemed to be those that are currently failing specific SEPA conditions, or that discharge to bathing waters or shellfish waters that are at risk. Discharges where an upgrade is required by 2005 under the Urban Wastewater Treatment Regulations are not considered unsatisfactory at the present time.

One outfall has been removed from the unsatisfactory list, as improvement works are now complete, reducing the number from 4 to 3. The remaining outfalls should be addressed by the end of 2005.

A4.45 - This figure has been derived from the load reported in Table E8 against those outfalls identified as unsatisfactory in line A4.44, assuming a load of 60 gBOD/head/day.

The reduction in population equivalent results from the removal of one outfall from the unsatisfactory list noted above. It is anticipated that the remaining unsatisfactory outfalls will be addressed by 2005/06.

A4.46-53 Sewage Sludge Disposal

The table below illustrates the base data from which the percentage sewage sludge disposal is calculated.

Table A4.1: Sewage sludge disposal routes

	TDS (as in E10.2)	%
A4.46 Percentage sewage sludge to farmland - raw.	0	**0.00**
A4.47 Percentage sewage sludge to farmland – conventional.	9,296	**31.85**
A4.48 Percentage sewage sludge to farmland - advanced.	766	**2.62**
A4.49 Percentage sewage sludge to incineration.	0	**0**
A4.50 Percentage sewage sludge to landfill.	729	**2.50**
A4.50a Percentage sewage sludge composted	0	**0**
A4.50b Percentage sewage sludge to land reclamation	17,223	**59.02**
A4.51 Percentage other sewage sludge disposal.	1,169	**4.01**
A4.52 Total sewage sludge disposed	29,183	100.00

In previous years the sludge quantities reported have been the sludge quantities recycled to each route. This year the quantities reported are the total sludge treated at the sludge treatment facilities including the sludge destroyed through the treatment process. This is in accordance with the methodology used in England & Wales and agreed with the Reporter at a technical meeting with Scottish Water.

A4.46 – A4.52 Figures reproduced from Scottish Water Sludge model and Scottish Water Sludge Management System "Gemini". The amount of sludge disposed to each disposal route was totalled and presented as a percentage of the total Scottish Water sludge production detailed in **A4.52**.

A4.46 - "Percentage of sewage sludge to farmland- raw"- Scottish Water does not process sludge by this method.

A4.47 - "Percentage of sewage sludge to farmland- conventional" has increased due to the removal of PPP sludges.

A4.48 - "Percentage of sewage sludge to farmland- advanced" has reduced as most Scottish Water sludges are processed at PPP sites.

A4.49 - "Percentage of sewage sludge to incineration" has stopped as Lerwick is now landfill and all other Scottish Water sludges are processed at a PPP site.

A4.50 - "Percentage of sewage sludge to landfill" has increased as Lerwick and Lochgilphead are now landfill.

A4.50a – "Percentage of sewage sludge composted" has stopped. All composted sludges have been transferred to land reclamation.

A4.50b – "Percentage of sewage to land reclamation" has increased with the addition of last year's composted sludges.

A4.51 – "Percentage other sewage sludge disposal" has increased due to reporting pre and not post digestion.

A4.53 - Is reported as 0% as all Scottish Water sludges have met the criteria of the proposed recycling outlet.

Forecasts have been provided for A4.46 to A4.51. In 2005/06, there is an increase in total sludge produced through the construction of a new wastewater treatment works to meet tightening consent standards within Q & S II. There is a change in farmland advanced due to the loss of land reclamation recycling route due to SEPA's alteration of application rates.

Confidence grades are low due to difficulties projecting figures and actual disposal routes with available information.

Table A4.2 Sewage Loads Data 2003/04 (restated to exclude PPP)

	Line Description	Units	Value
A4.21	Population with effluent receiving primary treatment	000	2,500.812
A4.22	Population with effluent receiving secondary treatment	000	2,409.117
A4.23	Domestic load receiving secondary treatment (BOD/yr)	tonnes	52,759.662
A4.24	Non-domestic load receiving secondary treatment (BOD/yr)	tonnes	8,892.553
A4.25	Trade effluent load receiving secondary treatment (BOD/yr)	tonnes	12,389.285
A4.26	Trade effluent load receiving secondary treatment (COD/yr)	tonnes	26,006.808
A4.27	Private septic tank load receiving secondary treatment (BOD/yr)	tonnes	179
A4.28	Public septic tank load receiving secondary treatment (BOD/yr)	tonnes	742
A4.29	Other tanker load receiving secondary treatment (COD/yr)	tonnes	287
A4.30	Other tanker load receiving secondary treatment (BOD/yr)	tonnes	57
A4.31	Total load receiving secondary treatment (BOD/yr)	tonnes	75,019.268
A4.32	Total load receiving primary treatment only (BOD/yr)	tonnes	2,673.855
A4.33	Total load receiving preliminary treatment only (BOD/yr)	tonnes	2,034.676
A4.34	Total load entering sewerage system (BOD/yr)	tonnes	86,469.866
A4.35	Average COD concentration	mg/l	350.000
A4.36	Average suspended solids concentration	mg/l	250.000
A4.37	Equivalent population served (resident)	000	3,862.94
A4.38	Equivalent population served (resident)(numerical consents)	000	3,604.53
A4.39	Total load receiving treatment through PPP treatment works	tonnes	73,626
	Treatment Works		
A4.40	Number of sewage treatment works	Nr	1816
A4.41	Number of sea outfalls	Nr	208
A4.42	Treatment capacity available (BOD_5/day)	tonnes	234.3
A4.43	Equivalent population served by sea outfalls	000	179
A4.44	Number of unsatisfactory sea outfalls	Nr	4
A4.45	Equivalent population served by unsatisfactory sea outfalls	0	27

Customer Base Commentary for Report Year plus 1 & Report Year Plus 2

The 2004/05 customer base data in both Tables A & Tables P is based on the Annual Return definitions. As such the data relates to two dates. Customer numbers and meter numbers are based on the situation at the end of September 2004. The volumes and rateable values reflect the position at 31 March 2005.

When these 2004/05 details are transferred onto tables P the revenue generated for each sector is different from that submitted in Tables B8 of the Draft Business Plan because the basis of the customer base is different.

The explanation reconciling the 2004/05 and 2005/06 customer bases within tables B8 of the Draft Business Plan, re-submitted on 23 May 2005, is provided below. This explains in terms of the principles rather than line by line detail, why there is an inconsistency between the customer base reported for 2004/05 (actual report) compared with the 2005/06 figures which reflect the current assessment (as included in the draft business plan) of the anticipated underlying customer base.

The customer base figures for 2005/06 and 2006/07 that have been incorporated within the Draft Business Plan 2006-2014 have been used in Annual Return Tables P and are reflected in Annual Return Tables A.

For unmetered households the data used in Annual Return tables A & P is identical to that used in the Draft Business Plan. As explained in the DBP household growth has been aligned with Scottish Executive projections for household growth. However in 2006/07 the blend of households has been adjusted to reflect the revenue impact of the Scottish Executive's household reduction scheme that is due to take effect from 1 April 2006.

The figures for 2005/06 do not reflect the potential one year benefit to Scottish Water due to councils using their discretionary powers to reduce second home discounts to a minimum of 10%. Although some of the councils are understood to be taking advantage of this opportunity and others are currently undecided, it appears that many of the bigger urban councils appear not to be implementing the changes.

Response to letter of 16 May 2005, Ref ; JS/160505/NA/BP

Overview

In response to the main issues in the above referenced document, Scottish Water has resubmitted the B8 tables. The opportunity to resubmit the tables has allowed the utilisation of the WIC 22 data for 2004/05, which is the best available information for 2004/05 and in line with the 17 May 2005 e-mail from WIC. This response should allow a full understanding of the volume of data cleansing that Scottish Water have undertaken in the final quarter of 2004/05 in the business customer base.

2004/05 customer base

The 2004/05 customer data included in the business plan reflected Scottish Water's best estimate, from period 9 data, of the likely net customer demand that would be consistent with the forecast net revenue for 2004/05. Scottish Water now realise that this was not was required so B8 tables have been repopulated for 2004/05 with the best assessment of the underlying customer base for 2004/05, excluding the impact of one-off adjustments. In the preparation of the 2nd draft business plan (SDBP), Scottish Water did not use the 2004/05 customer base forecast included in the business plan as the basis for determining the forecast for 2005/06 and subsequent years, because:

- The 2004/05 forecast included the impact of prior year adjustments; and
- Did not reflect the full extent of necessary customer base cleansing as this activity will not be completed until March 2006.

2005/06 forecast

The forecast for 2005/06, included in the SDBP, was based on data from P9 (04/05) reports together with assessments of the further changes that would require to be made to the customer base through the data cleansing process. This was further supplemented by forecast changes to underlying customer demand using the forecasts from Experian and Scottish Water's key customer managers, as described in section B8 of the SDBP, and the historic trends in volume reduction and movement of customers from unmeasured to measured charges. The Experian analysis is explained in Appendix 18 of SDBP.

In representing the B8 tables for 2004/05, with the benefit of final WIC22 data for 2004/05, Scottish Water has been able to reassess the forecast for 2005/06. It is clear that some of the previous forecasts for 2005/06 were too pessimistic and others were too optimistic. Overall, however, the forecast for 2005/06, which relates to the underlying sustainable customer revenue, remains unaltered. The B8 tables for 2005/06 have been updated accordingly.

Table B1 Water Availability

General comments

As recommended by WIC's reporters[4], the 2004/05 submission does not include an allowance for Target Headroom. This means that the numbers reported in table B1 cannot be directly compared with the values reported in AR04. To enable a comparison between the AR04 and AR05, SW has estimated lines B1.1 – B1.8 with an allowance for target headroom (Table B1.1).

The major changes to the 2004/05 B1 submission are:

- Collation of all water order details to ensure that all yields are net water order constraints;
- Improved yield estimates for resources covered by the Four Firths Area Water Strategy (Inverness and surrounding area) and Dumfries and Galloway Area Water Strategy;
- Removal of an allowance for target headroom as recommended by WIC's reporters;
- Use of a variable Level of Service across the business.

Methodology

The estimation of headroom requires standard supply/demand balance calculations for each water resource area (WRA). The calculation for % headroom in each WRA, with % headroom defined by the WIC as:

% Headroom Definition: *The difference between water available for use and the annual average demand (distribution input (DI)) as a % of the annual average demand.*

Headroom is calculated as follows:

% Headroom per WRA = [WAFU – (DI)] / (DI)

The following steps were taken to determine % headroom in each WRA and are detailed below:

- Calculation of average annual distribution input (DI)
  DI data is the average daily volume of water supplied by each WTW into each WRA as reported in Line A2.38 and Table E4.
- Determination of the deployable output (DO)
  DO is generally taken as the minimum of (a) the reliable source yield (once all water order requirements have been met) minus WTW loss or, (b) the Treatment Works output capacity, or (c) the raw water conveyance capacity. The deployable output has been assessed against a target Level of Service. Scottish Water has used variable LOS across the business. SW has adopted a 1 in 30 LOS for the smaller demand centres areas where droughts can be managed easiest. For larger demand centres SW have adopted a 1 in 50 LOS. SW expects to agree LOS requirements with SEPA as part of the Water Resource Plan which will be developed over the next year.
- Calculation of Water Available For Use
  DO adjusted for outage allowance
- Determination of headroom bands by population.

4Extract from WICS reporting services report CIR 2003_04 Q3 Audit Plan, 'Scottish Water has not followed the guidelines fully this year. In particular it reports available headroom against target headroom rather than directly against DI. This will tend to report more resource areas as being in WICS bands than would otherwise be the case.'

Identification of Water Resource Areas

The Water Resource Area (WRA) is the fundamental planning unit for water resource management and it is important that these are properly defined. Much effort has been taken to improve the understanding of discrete WRA in Scotland, and the areas were defined by aggregating water supply zones (WSZ) into the correct WRA.

SW currently operates 255 WRA. This is a reduction from 278 WRA reported by Scottish Water in the 2003/04 submission. This change is due to:

26 WRA removed from list:

- 20 WRA removed as WTW have been replaced by a mains extension from a neighbouring WRA amalgamated
- 2 WTW mothballed and network supplied by neighbouring WRA
- 4 WRA wrongly identified and have been redefined as part of a larger WRA

3 WRA added to list

- 1 new WRA created for Fort William Wellfield
- 2 WRA missed from AR04

Determination of the Deployable Output (DO)

Water Resource Yield

Reliable yield is the maximum continuous output that can be met from a water resource without failure, where failure is defined as the inability to meet the expected demand without the imposition of management restrictions out with normal operational limits, at a stated frequency.

Recent yield assessments for all major water resource areas have been done using the methodology and software (AQUATOR-HYSIM) that was developed for Scottish Water under the SNIFFER Surface Water yield and Operational Reliability project[5].

The yields for minor catchments (predominantly in the North West) and for areas where there is not sufficient data to allow an AQUATOR-HYSIM model to be built, have been assessed using the Low Flow Studies methodology (LFS) developed by the Institute of Hydrology[6]. This is an empirical method and has lower confidence than the SNIFFER approach.

The water resource yield is net of any water order constraints or capacity constraints in the raw water assets and infrastructure, for example, capacity of raw water pump station.

Water Treatment Works Loss

An allowance for WTW loss is not mentioned in the WIC definitions. However, it is an important component of the supply demand balance and Scottish Water must ensure that it has sufficient water available to meet the full demand placed on its raw water resources i.e. DI + WTW loss.

[5] Scotland and Northern Ireland Forum For Environmental Research; Surface Water Yield Project (a joint venture including the three Scottish Water Authorities, SEPA and the Water Service in Northern Ireland); Water Resource Associates (WRA), report in press.
[6] now Centre for Ecology and Hydrology

There are two components to WTW loss[7]:

- Structural water loss and both continuous and intermittent over flows
- Treatment process water - i.e. net loss that excludes water returned to source water

Where possible, WTW loss was evaluated using actual meter data i.e. difference between WTW inlet and outlet meters. However, for the majority of sites WTW loss was estimated based on operator knowledge and/or an assessment based on the type of treatment process used at each site. The estimates of WTW loss are held in the water resources database.

WTW Capacity

WTW capacity is the design capacity of the WTW and is taken from the corporate data set (Ellipse data).

Calculation of Water Available for Use (WAFU)

Outage Allowance

Data for outage is based on regional assessments using the methodology recommended in the EA Water Resource Planning Guidelines, namely the approach set out in the "Operating methodology" of the UKWIR report "Outage allowances for water resource planning", published in March 1995 (Ref: 95/WR/01/3). Where data was not available or the methodology used was not comparable with procedures used in the rest of Scotland, default outage figures have been adopted. These default figures range from 5% for medium and larger water resource zones to 10% for small isolated zones.

Determination of target headroom allowance

This has not been included in the reported calculation of available headroom. However, the target headroom value has been included in Table 1 of this commentary to allow the B1 values to be compared with the data submitted in AR04.

Target headroom is defined as:

'the threshold of minimum acceptable headroom, which would trigger the need for total water management, options to increase water available for use or decrease demand'

The concept behind the UKWIR report is that there are clearly a number of uncertainties in the figures used to determine the supply / demand balance, and that a rational and prudent approach to this is to allow some additional headroom to cover these uncertainties. It is standard practice to include an allowance for target headroom when determining water resource availability in each WRA (refer to EA guidelines) and this is an essential component of the supply / demand calculations used by Scottish Water to prioritise investment in headroom.

A source by source estimate for target headroom allowance has been applied in the comparison calculations and the following formula has been used:

% Headroom = [WAFU – (DI + target headroom allowance)] / (DI + target headroom allowance)

[7] UKWIR/NRA (1995) Demand Forecasting Methodology - Main Report

B1.2-4 Resource Areas

Confidence grades have remained the same as last year. It is anticipated that these WRAs will be adopted into a corporate data set and held on the Scottish Water GIS within the next report year. Confidence grades will then be reviewed together with the key components of the headroom calculation, including distribution input.

B1.5-8 Headroom

Confidence Grades have improved this year from B3 to B2 due to population estimates being calculated for each WRA by Water Operational Area (WOA).

B1.5*:* The population figure is brought forward from Table A1.71 and is made up of the following components:

- Unmeasured water population
- Measured water population
- Population not in households

Further details can be found in Table A1 Commentary.

B1.6 to B1.8*:* The population count of a WRA was calculated using the water operational area (WOA) within each area, identified from the hydraulic asset structure.

Details of the methodology can be found in the Technical Approach S12: Populations and Properties and is summarised below:

- WOA and Unitary Authority polygons were taken from the corporate GIS
- The Ordnance Survey Address Point Reference (OSAPR) data, January 2005 was used to determine the total number of properties by WOA and Unitary Authority.
- Spatially referenced billing data from Hi-Affinity allowed the number of billed properties to be calculated by WOA. In this case the number of billed properties from High Affinity refers to metered domestic, metered non-domestic and unmetered non-domestic properties.
- The number of billed properties was deducted from each WOA to determine the number of unmetered domestic properties.
- Occupancy rates per Unitary Authority per domestic address point were applied to estimate population in each WOA. These estimates were then adjusted to give the stated unitary total population in unmetered properties.
- Populations not in households are reported by Unitary Authority. The population has been assigned to the largest WRA in each Unitary Authority.

There is a slight difference (137 people out of 4.9M) between total population (B1.5) brought forward from Line A1.71 and the sum of the B1.6-B1.8 population reported in the three headroom bands. Period 12 data has been used to calculate the population by Water Operational Area. This results in a slight difference of 92 people. The additional difference of 45 people is due slight rounding errors.

As discussed in previous submissions, the band sizes are rather narrow, thus for instance the mid-band of >2% and $\leq$ 5% has low counts and adds little information, whilst the lower and upper bands have high counts.

The table does not show that in a number of cases the supply to demand position has negative headroom as these are included in the $\leq$ 2% count.

The rational for specifying 2% and 5% as break-points for Table B1 is not clear as in the field of water resources these magnitudes are below reliably detectable thresholds for most of the variables, such as metered consumption. More meaningful information would be gained by

altering the band sizes and including negative ranges. Scottish Water would welcome the opportunity to discuss these band widths and relating them to their application.

Suggestion for more appropriate headroom bands are:

Less than -10%
Between -10 & 2%
Between 2 & 10%
Greater than 10%

Comparison with AR04

SW has run the headroom analysis with an allowance for target headroom so that the data in table B1 AR05 can be compared with AR04 (Table 1). The comparison shows that there has been some migration of WRZ between headroom bands.

WRZ in surplus (> 2% headroom) ARO4 listed as deficit in AR05 (<2%) headroom

24 WRZ (population = 504,216) in AR04 which showed headroom greater than 2% would be listed as having headroom of less than 2% in AR05 if an allowance for target headroom had been included in the analysis.

Reasons for this:

- Level of service for the Lanarkshire Water Resource zone (population = 391,842) changed from 1 in 30 to 1 in 50;
- Dunbartonshire WRZ (Burncrooks, Finlas, Overton and Belmore, population = 70,746) incorrectly banded in AR04;
- Yield reviewed for the Dumfries WRZ (Killylour, Larchfield and Terregles, population = 32,342) as part of the Dumfries area water strategy;
- The remaining 21 WRZ are small and the change in headroom bands is a result of either an improved understanding of deployable output, particularly water order constraints, or changes in distribution input.

WRZ in deficit (< 2% headroom) ARO4 listed as surplus in AR05 (>2%) headroom

22 WRZ (population = 9,591) in AR04 which showed headroom less than 2% would be listed as having headroom of greater than 2% in AR05 if an allowance for target headroom had been included in the analysis.

All these WRZ are small and the change in headroom bands is a result of either an improved understanding of deployable output, particularly water order constraints or changes in distribution input.

B1.9-11 Restrictions on Water Use

There have been no restrictions on water use during the Report Year.

Table B1.1: Water Availability

Line Ref.	Description	AR04 as reported (includes an allowance for target headroom)	AR05 as reported - (no allowance for Target Headroom)	AR05 not reported (includes an allowance for target headroom to enable a comparison with AR04)
	Resource Areas			
B1.1	Number of water resource areas	278	255	255
B1.2	Number where headroom ≤ 2%	140	116	131
B1.3	Number where headroom > 2 ≤ 5%	4	6	3
B1.4	Number where headroom > 5%	134	133	121
	Headroom			
B1.5	Total population (000s)	4,934.36	4,912.53	4,912.53
B1.6	Population in areas where headroom ≤2% (000s)	2,436.48	2,085.17	2582.28
B1.7	Population in areas where headroom > 2 ≤ 5% (000s)	64.23	228.70	1.73
B1.8	Population in areas where headroom > 5% (000s)	2,433.66	2,598.67	2328.52

Table B2 Pressure and Interruptions

General comments

Updated Information:

Data from last year's WIC return has been updated based on the following information:

- Information from Level 1 DMA reports being produced as part of the Capital Investment Programme.
- Information from the Glasgow pressure management database
- Operations information
- Capex 5 submissions

Definition of the standard:

In accordance with the WIC guidance, Scottish Water reports against a standard of 15m in the adjacent main as a surrogate for the WIC standard. This will take into account the position of the water tank in the property. At present, no allowance has been made for properties on common or shared services, as these are currently being identified in the GIS.

Exclusions from the Standard:

Pressures below the standard will be acceptable in the following specified circumstances:

- Essential maintenance which has been pre-notified by a minimum of 24 hours;
- One-off incidents such as third party action / disturbance where these are not recurring incidents;
- Periods of less than one hour; and
- A period of abnormal peaks in demand, not more than 5 days per annum or 25 days in a rolling 5-year period. This exclusion will not be taken to cover daily, weekly or seasonal peaks, which could normally be expected.

It should be noted that there are approximately 1600 properties on the register estimated to be within 15m of the bottom water level of the service reservoir supplying them. Investigations into these properties will be completed over the next year.

Level of Service Register:

Currently there is no active corporate Scottish Water Level of Service Register. Information is gathered from various sources across each of the areas; however, recording of low-pressure complaints now operates consistently across Scottish Water.

A corporate Level of Service Register has been developed by Strategy and Planning and Information Technology. The application is currently undergoing user acceptance testing and will be rolled out following pilot testing in one operational area.

The use of inferred pressures from level 1 DMA reports will lead to a less reliable estimate of the number of properties subject to low pressure, as the reduction in pressure due to head loss in the pipes cannot be taken into account. The actual minimum pressure of these properties in the field will vary dependent upon local head losses, the layout of properties relative to critical monitoring points and the network layout. In some instances, estimates will be over stated, and in others under stated. The only reliable method of measuring the problem is to install continuous critical point monitoring.

Customer complaints about low pressure, received by telephone, e-mail and letter, are recorded and consideration will be given towards logging the zone or DMA appropriately if loggers are not already in place.

B2.1-10 Properties receiving pressure/flow below reference level

B2.1 – Refer to Line A1.69

B2.2 - Data is taken from the 2003-2004 WIC Return.

B2.3 – Additional properties have been added based on figures contained in Level 1 DMA reports April 2004 to March 2005 developed as part of the Capital Investment Programme. Data was added from the Glasgow pressure management database and from operational activities. Data was taken from the Level 1 DMA reports that inferred properties subject to low pressure from logged pressures at the highest point in the system. This would tend to over-estimate the number of properties subject to low pressure due to an over-estimation of the head losses in the system.

B2.4 – At present no feedback loop/procedure exists following investigation of low pressure complaints to corporately document that asset deterioration of the network has caused the low pressure.

The system and processes required to populate lines B2.4 and B2.5 are currently being trialled and the lines will be populated for the 2005-06 Annual Return.

B2.5 – At present no feedback loop/procedure exists following investigation of low pressure complaints to corporately document that operational change to the network has caused the low pressure.

The system and processes required to populate lines B2.4 and B2.5 are currently being trialled and the lines will be populated for the 2005-06 Annual Return.

B2.6 – Properties removed based on figures generated from review of available Level 1 DMA reports and from detailed logging carried out in a number of water supply zones as part of SWS Capital Programme.

B2.7 – Properties removed based on completion of Capital Works.

B2.8 – Properties removed through re-zoning of DMA boundaries.

B2.9 – Calculated field. This has been given a confidence grade of C4 as it is calculated from data with poor confidence grades.

B2.10 – At present no feedback loop/procedure exists to corporately document exclusions.

B2.11-40 Properties affected by planned / unplanned interruptions and restoration times

The numerical data for supply interruptions was gathered in accordance with Scottish Water's interruptions to water supply procedure. Data for this section are similar to the WIC5 quarterly returns. However as data in the systems was updated after the submission of the quarterly returns, due to housekeeping of returned interruption to supply sheets, the data may differ slightly from the aggregate of WIC5 returns for 2004/05.

Interruption to supply sheets are included in work packs prepared for and completed for each job where an interruption to supply occurs, as well as from data collected by contractors carrying out infrastructure renewal work. The data from the completed sheets is input to the Interruptions Database. This facilitates the reporting requirements of the business, the quarterly (WIC 5) submission and Annual Returns. The data entered in the 2004/05 Annual Return has been extracted from the Interruptions Database and information collated from our contractors.

It should be noted that an interruption to supply should only relate to actual interruptions from a customer's perspective i.e. if the main is repaired under pressure or if a back feed is put in place, there is no interruption to supply. It should also be noted that each interruption can affect differing numbers of properties e.g. a meter installation can affect one property whilst a valve replacement can affect 1,000 properties. Failure to restore supply by the notified time can occur for a number of reasons and, if the event has affected a large number of properties, the number of properties reported will be high.

The number of unplanned interruptions has continued to be reported as reducing and this is due to two reasons.
1. Scottish Water continues to carry out better planning and scheduling of work and repair interruptions more efficiently.
2. Scottish Water has now rehabilitated over 2,300 km of water mains during the Q&S II period and this is reducing the number of unplanned interruptions from poor condition pipes.

The improvement is due to forward planning by Scottish Water and Scottish Water Solutions to minimise the disruption to customers when planned operational and capital works are required. This includes informing customers in advance ,bringing in alternative supplies and more efficient working by employees when carrying out the work.

B2.41-46 Unplanned interruptions – Restoration Time

The following figures are the breakdown of restoration times for unplanned interruptions affecting trunk and non-trunk mains

	Non Trunk	Trunk
Total number of properties restored in >6 hours	23,399	10,121
Total number of properties restored in >12 hours	2,832	6,271
Total number of properties restored in >24 hours	825	90
Total number of properties restored in >48 hours	416	90

It should be noted that for this year's Return the bandings are explicit, i.e., the 33,520 reported as restored in greater than 6 hours includes the properties restored in greater than 12, 24 and 48 hours. This is in line with how interruption figures are reported in England and Wales. In last year's Return the figures were reported differently. Greater than 6 hours included all properties restored in greater than 6 hours but less than 12 hours; greater than 12 hours included those restored in greater than 12 hours but less than 24 hours and so forth.

The confidence grading of the data submitted in the 2004/05 annual return is regarded as B3.

The restated figures for 2003-04 are:

B2.42a	Total number of properties restored > 6 hours	63,599
B2.43	Total number of properties restored > 12 hours	19,036
B2.43a	Total number of properties restored > 24 hours	2,948
B2.46	Total number of properties restored > 48 hours	682

It should be noted that the above figures are for interruptions to trunk and non-trunk mains. The breakdown of restoration times for unplanned interruptions affecting trunk and non-trunk mains is as follows:

	Non-trunk	Trunk
Total number of properties restored > 6 hours	42,141	21,458
Total number of properties restored > 12 hours	6,202	12,834
Total number of properties restored > 24 hours	2,555	393
Total number of properties restored > 48 hours	291	391

Table B3 Sewage Flooding

General Comments

The Lines within Table B3 are arranged in four distinct groupings reflecting four areas where Scottish Water is required to report the measure of flooding of properties from the public sewerage system. These four areas are;

- Annual flooding due to overloaded sewers,
- Annual flooding due to other causes,
- Clean-up response times, and,
- Properties at risk of flooding.

The information used to report these figures is collated from the following main corporate sources, namely the Promise system (the Scottish Water customer contact management system), the Sewer Flooding Incident Database (SFID) and the "At Risk" Register.

Promise & Sewer Flooding Incident Database

The Promise system was introduced in April 2003 as Scottish Water's corporate system for recording customer contacts. Promise was improved this year to enable the capture of more flooding specific site activity information and the recording of that information through the use of a debrief record using on-site laptop computers. The capture of this improved information

began during August 2004. For the preceding part of the report year the Sewer Flooding Incident Database (SFID) was used to record flooding incident information. The SFID was the predecessor tool to Promise and was used to collate and report sewer flooding information.

Both Promise and the SFID captured all wastewater flooding incidents across the country and record property location information, impact details (e.g. internal or external flooding), cause of flooding, attendance times and measures taken. Sewer flooding incident records were completed by the staff during attendance on site and these records are used to populate the SFID. These site records have been superseded by the debrief record used in Promise.

Where appropriate these records (both the Promise debriefs and the SFID records) were followed up with investigations to confirm incident details, allowing them to be categorised to a higher degree of confidence. The categorisation of these records allows the production of the figures reported in Table B3 and also allows improvement of the records contained in the Flooding Register.

Incident Data Capture

Currently Scottish Water is in the early stages of a change in the way that information is gathered from site activities via corporate processes and systems. These changes are aimed at improving the reliability and accuracy of the records collected and the way in which these records are processed and reported. Typically when changes of this type and extent (the records handled are in excess of 120,000 over the year) are made (at all levels of the reporting process) a degree of uncertainty is introduced. These uncertainties are being experienced currently and are reflected in the assigned confidence grades. As the processes become established and well practised the confidence in the information and reporting will increase.

"At Risk" Register

The "At Risk" Flooding Register is Scottish Water's corporate database used to manage the properties at risk of flooding. The register forms an important part of Scottish Water's overall flooding strategy. The register is managed with information gathered from historical sources, local knowledge, Drainage Area Studies, customer contact records, Met. Office reports, asset data improvement projects and from the Investment Programme.

The register is the source of the data used to populate the properties at risk of flooding section of Table B3.

Flooding Register Improvements

Throughout the report year a number of activities have been ongoing to improve the information currently held in the Flooding Register, including the removal of properties at risk, and the addition of properties after investigation of additional knowledge or actual incidents.

These activities include;

- an Asset Data Improvement Project (ADIP) assessing the current data entries for accuracy and completeness,
- additional knowledge gathered from Drainage Area Studies which identify and/or confirm hydraulic deficiencies in the sewerage networks,
- investigations following incidents,
- application of geo-referencing (location) data,

Further improvement of the register is planned through additional investigations. The transfer of the register to a new software platform is imminent. This will provide improved functionality and robustness in conjunction with new supporting processes.

Flooding Register Change Management

In the report year, updates to the Flooding Register were made primarily sourced from the Quality & Standards II (Q&SII) Flooding Programme, investigation of incidents, customer contact records and the Asset Data Improvement Project (ADIP).

The Q&SII Flooding Programme investigated and audited the priority flooding clusters identified for the current investment period. This resulted in the addition of 238 properties to the register. The majority of these additions were made through examination of Drainage Area Study reports, the remainder were added following site survey and customer interview confirmation.

During May and August 2004 two periods of intense rainfall resulted in widespread flooding across the areas of Greater Glasgow and Dundee. Subsequent analysis of the large volume of customer contact (Promise) records identified 65 properties that flooded due to overloaded sewers. Forty one of these were attributed to severe weather.

Currently improvement efforts are directed at internal flooding of properties. A considerable amount of effort will be required to address improvements to other flooding categories records, namely external flooding, highways flooding and other flooded areas.

Sewer Flooding At Risk Properties

At the end of the report year the Flooding Register recorded the following unresolved flooding (a property is only recorded in one category):

Table B3.1 Properties at risk of flooding

Register Status (Nr. of Properties)	**03 / 04**	**04 / 05**
At Risk 2 in 10 years	620	778
At Risk 1 in 10 years	485	565

The figures in the above table have increased on the previous year as a result of the various investigations and data improvements described earlier.

A comparison with the Scottish Water figure for this Return and the England & Wales figures for 2003/2004 places Scottish Water below the median. Scottish Water therefore require to make significant investment in flooding resolution to maintain or improve that benchmark position particularly given the significant flooding investment planned by the England & Wales water companies which will generally eradicate their DG5 “overloaded sewers” registers. Confidence in the Flooding Register data is B4. The following table demonstrates Scottish Water’s position.

Table B3.2: DG5 – Properties at Risk of Flooding from Sewers due to Overloaded Sewers

Water Company* 2003/ 2004	**Connected Properties per 100,000****
Yorkshire	15
Welsh	19
Northumbrian	22
Severn Trent	25
Southern	27
South West	32
United Utilities	38
Anglian	40
Scottish Water	**57**
Wessex	73
Thames	81

Source :
Levels of Service for the Water Industry in England and Wales 2003-04 report; Table 14 Properties at risk of flooding from sewers – performance analysis 2001-02 to 2003-04.
Notes :
*2004 Return except Scottish Water
** the increase in connected properties has been reflected in the SW figures
The differing responsibility for lateral sewers in Scotland and in England and Wales has not been accounted for in these figures. Scottish Water's figure will therefore be high in comparison.

Table B3.3 Flooding from Sewers – Performance Analysis 2003/04

Connected Properties per 100,000 Other Causes**	**Water Company* 2003/ 2004**	**Connected Properties per 100,000** Overloaded Sewers**
4.3	Anglian	0.5
7.1	Wessex	1.1
7.8	Thames	0.9
9.7	Welsh	6.1
9.7	Northumbrian	23.5
11.2	Southern	1.5
11.7	South West	3.5
12.9	Yorkshire	5.6
13.9	**Scottish Water**	**7.6**
14.9	Severn Trent	2.3
15.6	United Utilities	7.4

Source :
Levels of Service for the Water Industry in England and Wales 2003-04 report; Table 13 Flooding from sewers – performance analysis 2001-02 to 2003-04.
Notes :
* (2004 Return except Scottish Water)
** (the increase in connected properties has been reflected in the SW figures)
The differing responsibility for lateral sewers in Scotland and in England and Wales has not been accounted for in these figures. Scottish Water's figure will therefore be high in comparison.

B3.1-6 Annual Flooding – Overloaded Sewers

The submission is based on figures sourced from the Sewer Flood Incident Database for the first part of the report year and the Promise system for the remainder.

The number of properties flooded in the year is reported as 181, an increase on last year's total of 40. This increase can be attributed more to the introduction of improved information capture and investigations rather than to any substantial increase in the frequency and size of customer flooding incidents. The confidence grade for these lines however has been set to a lower accuracy than last year, reflecting both an over confident assessment last year and an improved understanding of the current problems with the flooding data capture.

There were two recognised severe events last year occurring on May 10th and August 11th 2004 which affected areas of Glasgow, Motherwell, Falkirk and Dundee. These were classified as severe using Met. Office data. During these events Scottish Water attended a number of incidents on an emergency response basis, using both Scottish Water and Framework Contractors sewer squads.

The numbers for garden and highway flooding have been extracted from the Sewer Flooding Incident Database and the Promise system records. The figures reported have been assigned a low accuracy grading reflecting the fact that Scottish Water accept that these figures may be under-estimated due to issues with data collection from site in the early part of the year.

Reporting of sewer flooding will always be under-reported as Scottish Water relies on customers making contact to advise us of a problem. It is recognised across the industry that there are occasions and circumstances where customers do not (inadvertently or intentionally) report sewer flooding incidents.

B3.7-13 Annual Flooding – Other Causes

The information for lines B3.7 to B3.13 is reported from the same source as B3.1 to B3.6 and the commentary is as the previous commentary.

B3.14-22 Clean Up Response Times

The reported figures for Lines B3.14 to B3.22 are derived from the Promise system from the records which are created by sewer squads as they complete on site activity.

B3.23-36 Properties on the "At Risk" Register

The figures reported in these Lines are based derived from the totals of those properties which are reported as flooded, had the flooding confirmed using historical information, and been investigated as part of the continuous data improvement of the Flooding Register.

Future additions to the Flooding Register are anticipated through the addition of properties yet to be identified through data improvement. An example of this type of increase can be witnessed at Hogarth Gardens, Glasgow where after investigation (during the Q&SII Delivery Project) the number of properties in the flooding cluster increased from 18 to 31. Additional properties can also be added through new flood locations not previously reported.

The following table compares the figures submitted in last year's return to those submitted this year.

Table B3.4: Properties at risk of sewer flooding

Line Ref	Description	03/04	04/05
B3.23	2 in 10 at end of year	620	778
B3.24	1 in 10 at end of year	485	565
B3.25	Total at risk	1,105	1,343
B3.26	Total props. At risk but not flooded in last 10 years (exc. exceptional weather)	23	0

The increased number of properties on the Register is mainly due to newly recorded properties from investigations, audits and the Asset Data Improvement Project, the majority of which came from Drainage Area Study reports.

The total number of properties on the "At Risk" Register is 1343 within 552 flooding clusters. These numbers are expected to continue to increase due to on going Register improvement activity.

The 2 in 10 and 1 in 10 category figures were produced by assessing the return period of flooding from Drainage Area Studies in conjunction with historical events.

B3.23-26 "At Risk" Summary

Line B3.26 is reported as zero. Currently Scottish Water do not have 10 years of historical data therefore are not in a position to report this line. The change in the figure reported last year is as a result of the data improvement activity carried out this year.

B3.27-28 Problem status of properties on register

Scottish Water has continued to address a number of internally flooded properties by utilising temporary improvement solutions and flood contingency plans. These interim solutions prevent or reduce the risk of occurrence of internal flooding of property by installing devices such as periscope vents, non-return valves, flood guards and sandbags. Work is ongoing to deliver temporary solutions where possible and in the past year 33 properties have received such protection. Currently there are 90 properties on the Flooding Register with interim solutions, requiring permanent solutions. Scottish Water aims to deliver a further 100 interim solutions next year.

It should be noted that these measures do not affect the need, nor priority of a permanent solution to the flooding problem but are targeting an improved customer service where economically possible to do so.

It should be noted that not all problems can be alleviated using such measures due to site conditions and/or reasonable cost.

B3.29-32 Annual changes to register

Line B3.29 reports 268 properties having been removed through Scottish Water action. Significant efforts in the last year to audit the priority flooding clusters to confirm these numbers have allowed these properties to be removed efficiently.

No properties have been added due to increased demand. Current processes and the introduction of Development Impact Studies together with a wider availability of Drainage Area Studies have reduced the risk of properties being added due to an increase in demand. Scottish Water requires a Development Impact Study to be carried out on all new

developments and where necessary changes to the network are made to mitigate any detriment to the existing system.

B3.33-36 Problem solving costs

The figure for line B3.33 this year were supplied using the total cost of all the Capital Projects completed during 2004/05 obtained from Scottish Water's Capital Investment Management System (CIMS) and information relating to the number of properties removed from the Flooding Register for each project.

Eleven investment projects were completed last year at an average cost per property of £43,170. These projects were solved using straightforward solutions that presented no engineering complexity and/or difficulties. However the future projects, which are being assessed currently, are more problematic and complex and are likely to lead to higher costs per property. The cost per property for 05/06 is expected to be in excess of this year's cost due to larger projects with more complex solutions being constructed after a longer period of design and planning.

The average temporary problem solving cost (capex) (line B3.35) was derived from the total cost of temporary solutions divided by the number of properties with a temporary solution (line B3.27) which produced the average cost of £1,281 per property.

The interpretation of the costs to be reported for permanent solutions opex costs (line B3.34) is those costs which are the operating costs of permanent capital investment solutions (e.g. pump running costs). Currently there are no opex costs associated with permanent flooding solutions investment. This is due to the simplicity of the solutions constructed, for example, pipe upsizing rather than offline storage with a pump return. There are no opex costs incurred by temporary solutions.

Table B4 Customer Care – enquiries

General comments

The numerical data for enquiries is taken from the corporate billing system, *Hi-Affinity*, and the customer management system, *Promise*.

B4.1-13 Billing/Charging/Metering enquiries

B4.1-7 A decrease of 8% in the number of billing, charging and metering enquiries received during the year is due to a significant reduction in enquiries dealt with in greater than 10 working days. Procedures that have been put in place to encourage the 'first time resolution' of enquiries, coupled with the prompt response times of enquiries, have driven down the number of repeat calls, decreasing the number of billing contacts received.

B4.8-13 2004/05 has seen an increase in replies within 2 working days to 82%, which is up 4% on the previous year. The number of replies within 10 working days has also increased, up from 94% previously to over 96% in the current reporting year. These improvements can be attributed to an increased efficiency in working procedures, coupled with the advantages gained from operating from one contact centre.

B4.14-26 Change of Payment Method Enquiries

B4.14-4.20 A 36% reduction in the number of change of payment method enquiries this year can be attributed to the business contact advisers attempting to solve every enquiry at the first point of contact, which reduces the number of repeat enquiries from customers. There has also been an increased efficiency in dealing with enquiries within 10 working days over the last year.

B4.21-26 Responses to change of payment method requests within 5 days, has increased to 99%, up on last years figure of 97%. As the contact centre has been centralised, working procedures have become more efficient, which has been reflected in the reported performance.

B4.27-39 Other Enquiries

B4.27 Scottish Water's method for calculating this line is:

Number of calls answered on customer contact lines – (number of telephone complaints + number of all billing, charging and metering contacts including change of payment) + other written enquiries.

This method assumes that all telephone contacts that are not a complaint or a billing enquiry are an enquiry. This assumption is reflected in the lower confidence grade for this section compared to the billing enquiries.

B4.28-39 There have been 2,159 fewer enquiries this year when compared with 2003/04. The performance when responding to enquiries within 10 days has shown an increase on 2003/04, up to 99.86%, showing a 0.04% rise. All other enquiries have now been actioned within a 15 day period, eliminating the 336 from last year that took longer than 20 working days.

B4.40-52 New Customer Set up

As part of the data-cleansing exercises carried out over the previous year, a significant number of existing customers have been re-inputted into the HiAffinity system throughout the year. The number of new customers set up of 30,959 reflects this activity compared to the previous year. Due to the implementation of other projects on the HiAffinity system over the reporting year, coupled with the increased testing associated with the integration of the 3 former billing systems, it is as yet not possible to provide a time-banded breakdown of the new customer set up.

Therefore all new customer set ups have been entered into line B4.41 to ensure the calculated cell at line B4.40 has the correct value in it.

Table B5 Customer Care – Complaints

General comments

Data for this section is similar to the WIC 5 quarterly returns. However as data in the systems was updated after the quarterly returns were submitted, the data may differ slightly from the aggregate of WIC 5 returns for 2004/05.

All customer contacts categorised as complaints are captured on Promise. Data has been taken from Promise to populate the 2004/05 Annual Return.

All written complaints and telephone complaints requiring a written response are directed to a centralised complaint handling team for investigation and response.

B5.1-13 New Written Complaints

B5.1 The total number of written complaints received in 2004/05 has seen a 7% reduction on the previous year. The work that has been carried out encouraging contact agents to resolve each enquiry at the point of contact has helped reduce the number of written complaints received. Performance is in line with 2003/04, with over 99.5% of complaints dealt with

within the 10 day period. As all complaints are logged as new complaints, it is not possible to differentiate between repeat complaints and new complaints. This is reflected in the lower confidence grade.

There are two main reasons for the decrease in performance for response times to written complaints. Firstly, Freedom of Information (FOI) requests are given a GMS of 20 days. During 2004/05 no reporting process for FOI requests where in place, this has now been resolved.

Secondly, during the report year the Developer Services department was centralised in Glasgow, which generated a large amount of written complaints. In some instances, particularly sensitive situations did not warrant a holding letter being sent out. Additional failures occurred due to the pressures put on the department during this period of change while the new department was bedded in.

B5.14-26 New Telephone Complaints

B5.14 The number of telephone complaints requesting a written response has decreased substantially from 170 to 14 requests. This reduction can be attributed to the implementation of technical specialists within the operational contact centre along with the centralisation of customer complaint handling. This allows a member of the complaint handling team to deal with a range of customer complaints, therefore reducing the need for a written response. As all complaints are logged as new complaints, we cannot differentiate between repeat complaints and new complaints. This is reflected in the lower confidence grade.

B5.14a-26 It can be seen that 100% of telephone complaints requesting a written response were dealt with within 2 working days. The centralisation of the customer complaint handling team allows all written requests to be actioned immediately.

B5.27-38 Complaints by Category

An increase of 16% in the total number of complaints compared to the previous year is due to an internal project to focus on customer advisors logging all contacts received through the Promise system. This has resulted in a corresponding increase in complaints logged, and allows the improved visibility of the types of contacts received and to target improvements based on this data. Complaints categorised under water supply have risen because all contact received is now logged on the Promise system. For instance one instance of a burst main may be reported and logged many times. The facility is not yet in place to link these complaints together. Complaints in the water quality category have risen due to water quality problems in Edinburgh and Glasgow during the year. As these procedures were only implemented mid-way through the year, the confidence grade has remained as the previous year.

Table B6 Customer Care – Other

General comments

The statistics were taken from telephony data supplied from the Nortel Symposium database, which automatically logs telephone calls that come in on all customer contact lines. The Kingston Telephone Management System logs all calls from all other areas of the business. The data provided is based on the full year's statistics.

All traffic is routed through telephony systems in Fairmilehead.

This environment has facilitated accurate, robust data capture and categorisation of customer contacts received by Scottish Water.

B6.1-9 Telephone Contacts

B6.2 This line was calculated by dividing the total calls taken on customer contact lines by the total calls taken on all lines within Scottish Water (3,910,494). All telephone data is now logged automatically and this is reflected in the improved confidence grade.

B6.3-5 Telephone performance has shown a significant improvement. The percentage of calls answered within 30 seconds has risen from 84% in 2003/04 to 92% in 2004/05. These improvements are a result of a higher level of efficiency in the contact centre, which has been created by monitoring each individual call handler's performance to maximise overall performance.

B6.6 The total number of calls answered in more than 30 seconds has dropped significantly, from 10% in 2003/04 to 6% in 2004/05. Again, this can be explained by the increased efficiency shown by the contact centre.

B6.8 'All lines busy', has a zero return due to a Message Link service resulting in every customer call receiving either an agent response or a pre-recorded message specific to an event occurring in the customer's STD area code.

B6.9 Calls abandoned have dropped considerably, from 5% in 2003/04 to under 2% in 2004/05. This improvement has been driven by more efficient call handling techniques, resulting in more calls being answered within 30 seconds, reducing the number of abandoned calls.

B6.10-20 Private Septic Tank Emptying

General Comments

Data is entered / captured within the septic tank management system Gemini.

This facilitates the reporting requirements of the business, the WIC 5 Quarterly and Annual Returns.

The data entered in the 2004/05 Annual Return has been extracted from Scottish Water corporate system Gemini.

B6.14-20 There has been a 30% reduction in the number of ad-hoc empties carried out during the year, when compared to last year's ad hoc total. This is a result of Scottish Water encouraging septic tank customers to join our scheduled septic tank emptying scheme which provides a scheduled service at a lower charge than an ad-hoc empty.

In 2004/05 87% of ad hoc requests were carried out within a 30 day period. This is lower than last year's figure of 94%. The high number of customers joining the scheduled scheme means that an ad-hoc emptying cannot always be carried out within 30 days. Where this is the case the customer is contacted and advised of the delay.

B6.21-29 Keeping Appointments

The number of appointments registered in 2004/05 has seen a reduction due to the introduction of a new appointment system, and an increased understanding by the contact centre team as to what requires an appointment. Call handlers have a 'first time resolution' target, which helps reduce the need for appointments.

The system was only introduced at the beginning of 2005 and this is reflected in the low confidence grade.

Table B7 Customer Care – GMS Performance

B7.1-8 Planned Interruptions

B7.5 Scottish Water does not yet have a facility for making automated payments.

B7.6-8 Although there has been a significant increase in the number of planned interruptions compared to the previous year the number of claims only increased from 22 to 26.

B7.9-17 Unplanned Interruptions

B7.14 Scottish Water does not yet have a facility for making automated payments.

B7.15-17 There has been a large decrease in the number of GMS claims made. Although the number of unplanned interruptions decreased by 22% the number of claims decreased by 83% compared to the previous year.

B7.18-22 Sewer Flooding

Following a sewer flooding incident, a field customer adviser attends to assess the situation and authorise any payments required to compensate the problem.

There were 126 more incidents in 2004/05 compared to 2003/04. The proportion of payments made has risen due to the introduction of the new Code of Practice.

'Actual payments made' data was extracted from Scottish Water Financial Systems.

Update on Automatic Payments re Billing Enquiries

As reported last year in the Annual Return Scottish Water do not yet have a facility for making automated payments. The integration of the 3 former billing systems and the associated testing required during the year has impacted the implementation of the automatic payment system.

B7.23-27 Request to change method of payment enquiries

The data entered in the 2004/05 Annual Return was extracted from the HiAffinity access database.

B7.23 The reduction of 70% in the amount of change of payment enquiries not dealt with within the GMS period reflects the increased efficiency and ability of the contact centre to deal with customers enquiries relating to change of payments from previous years.

B7.24-27 It should be noted that customers must claim for any failures to meet guaranteed standards. Therefore, although there have been 104 failures, no claims have been made.

B7.28-32 Other Billing/Charging/Metering enquiries

The data entered in the 2004/05 Annual Return has been extracted from the Hi Affinity access database.

B7.28 The reduction of 47% reflects the ability of the contact centre to resolve enquiries within the standards due to increased knowledge of both metering and billing information required by the customer.

B7.29-32 It should be noted that customers must claim for any failures to meet guaranteed standards. 2004/05 has seen 135 payments claimed which is a significant increase on the previous year.

'Actual payments made' data was extracted from Scottish Water Financial Systems.

B7.33-37 Written Complaints

All customer contacts (written) categorised as complaints have been captured on the corporate customer contact system 'Promise'. The data entered in the 2004/05 Annual Return was extracted from 'Promise'.

B7.34-37 Actual payments made' data was extracted from Scottish Water Financial Systems.

B7.38-42 Telephone Complaints where written response is requested

All customer contacts (telephone complaint - written response requested by the customer) categorised as complaints have been captured on the corporate customer contact system, 'Promise'. The data entered in the 2004/05 Annual Return was extracted from 'Promise'.

No failures or payments were recorded this year.

B7.43-50 Keeping Appointments

The data entered in the 2004/05 Annual Return was extracted from WIC 5 returns.

B7.43 The number of appointments registered in 2004/05 has seen a reduction due to the introduction of a new appointment system, and an increased understanding by the contact centre team as to what requires an appointment.

B7.47-50 Actual payments made' data was extracted from Scottish Water Financial Systems.

It should be noted that, although there are no failures reported, payments have been made to customers where an appointment had been made verbally but not recorded and not attended. These payments have been recorded under ex-gratia payments.

B7.51-52 Ex Gratia Payments Made

The number of ex-gratia payments made during 2004/05 has increased due to a higher than expected level of reimbursements due to failures and a higher level of claims for damage to private property. These can be attributed to water quality problems in Edinburgh and Glasgow and also the increased activity of the capital investment programme.

'Actual payments made' data was extracted from Scottish Water Financial Systems.

B7.53-57 Water Ingress to Gas Mains

No instances of failure to provide information within the time period occurred in 2004/05.

B7.58-62 Meter Applications

The number of failures to provide estimated work within 10 working days of survey not dealt with within GMS period has reduced due to the introduction of new appointment processes and work flow processes during 2004/05.

'Actual payments made' data was extracted from Scottish Water Financial Systems.

B7.63-72 Pressure

B7.63-67
(A) - Failure to inform customer of result of investigation within 5 working days
No instances of failure to inform customer within the time period occurred in 2004/05

B7.68-72
(B) - Instance of Low Pressure
No instances of low pressure measured on the customer's side of the boundary within the time period occurred in 2004/05.

B7.73-82 Major Incidents

B7.73-77
(A) - Failure to provide information
No instances of failure to provide information within the time period occurred in 2004/05

B7.78-82
(B) - Failure to provide alternative supplies
No instances of failure to provide alternative supply within the time period occurred in 2004/05

B7.83-87 GMS Payment

(A) - Failure to make payment within 10 working days

Scottish Water misinterpreted the definitions when reporting this section last year. This year only further GMS payments for failing to pay an original GMS payment in 10 days were counted and Scottish Water recorded no instances where this occurred.

C Tables – Quality

Table C1 Water Quality Outputs – Compliance

General Comments

- All data in this table is for the calendar year 2004.
- Data in lines C1.1 to C1.19 and C1.22 to C1.23 is taken from the Laboratory Information Management System.
- The zones in lines C1.3 to C1.15 are regulation water supply zones as defined in The Water Supply (Water Quality) (Scotland) Regulations 2001, i.e. an area designated for the purpose of the regulations with a population of not more than 100,000 and in which all the premises are supplied for domestic purposes from the same water source or combination of water sources.
- The confidence grade is given as A1 as data is extracted from LIMS with minor data cleansing.

C1.1-4 Summary

C1.1 – These are the determinants which have a limit specified in The Water Supply (Water Quality) (Scotland) Regulations 2001. Free and total chlorines and colony counts, for example, are not included. The number has increased from 123,034 to 152,318. This increase is due to improved compliance (99%) with the statutory number of samples required this year as opposed to last year's shortfall.

C1.2 – These are determinants that exceed the limits specified in The Water Supply (Water Quality) (Scotland) Regulations 2001. No allowance is made for temporary derogations allowed under these regulations. The number of failing determinants has decreased from last year's 1264 to 879 which are due to asset improvements over the last year.

C1.3 - See definition above of supply zone. These zones are set at the beginning of each year. With the introduction of the new legislation, zone sizes have increased resulting in a number of zone mergers and therefore a reduction in the number of water supply zones for 2004.

C1.4 - This is the number of zones that have a determinant that exceeds the limits specified in The Water Supply (Water Quality)(Scotland) Regulations 2001. No allowance is made for temporary derogations allowed under these regulations. Some zones fail for more than one determinant, however each failing zones has only been counted once.

C1.5-15 Specific parameters Within Water Supply Zones

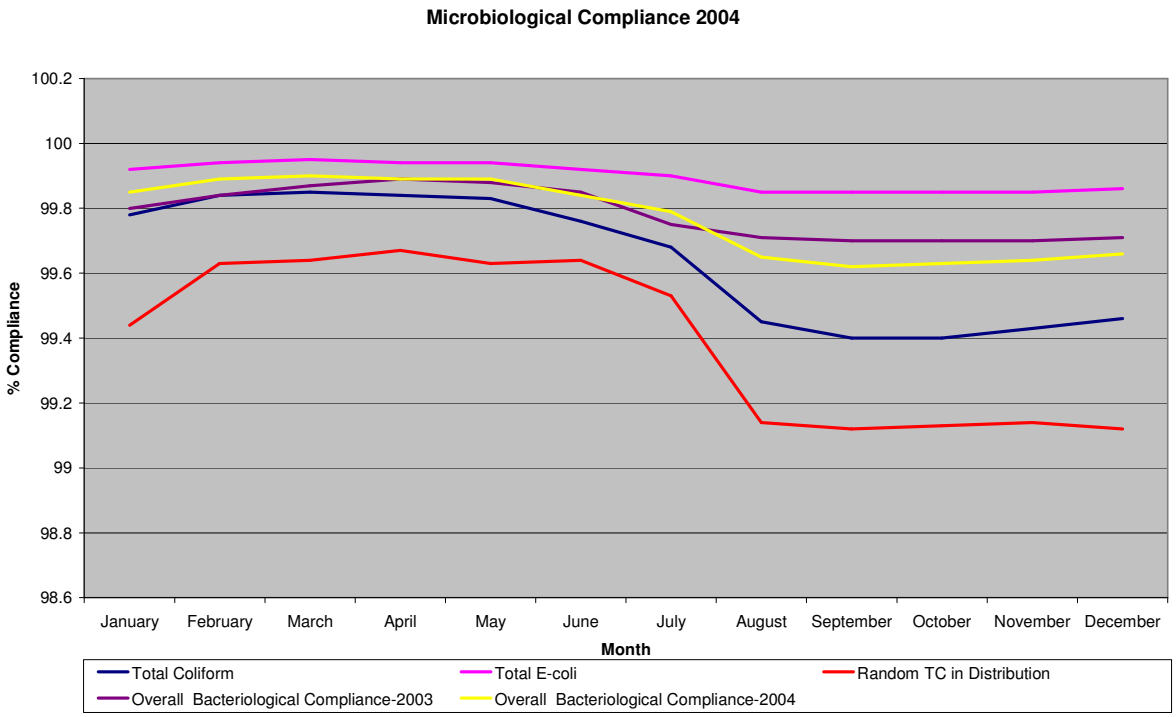
C1.5 to C1.14 – These are the zones that exceed the limits specified in The Water Supply (Water Quality) (Scotland) Regulations 2001 for the determinant shown. No allowance is made for temporary derogations allowed under these Regulations. Some zones fail more than once, however each failing zones has only been counted once.

C1.15 – These are the zones that exceed the limits of parameters both specified in the Water Supply (Water Quality) (Scotland) Regulations 2001 (other than those detailed in lines C1.5 to C1.14) and detailed in the Annual Water Quality Report. No allowance is made for temporary derogations allowed under these Regulations. Some zones fail for more than one determinant, however each failing zones has only been counted once. As required under the 'Annual Return Information Requirements' Appendix C1 lists the zones failing for all other parameters.

C1.16-19 Samples Taken for Water Leaving the WTW's

C1.16 - The number of samples taken for coliforms has decreased since last year due changes in the sampling frequency required by the regulations and due to a number of water treatment work closures.

C1.17 - The number of samples with coliform failures has increased since last year from 108 to 118. This increase may in part be due to extreme weather events which occurred during August 2004. Although microbiological compliance does tend to reduce during the second half of the year a more significant drop occurred in 2004 as can be seen in the graph below.



C1.18 - The number of samples with faecal coliform failures has decreased slightly since last year.

C1.19 - Due to the Cryptosporidium (Scottish Water) Directions 2003 coming into force on 31 December 2003 a more comprehensive cryptosporidium sampling regime was introduced in comparison to the Cryptosporidium (New Water and Sewerage Authorities) Direction 2002. This has meant that there has been a significant increase in the number of water treatment works sampled and therefore the number of cryptosporidium positive results.

C1.20 – The number of untreated supplies is the number of individual properties that are either from a connection to a raw water main before a treatment works or directly to the raw water source that feeds a treatment works. Scottish Water has no supply zones supplied with raw untreated water. This year's Annual Return has updated last year's submission, which only comprised data from the legacy East and West, with properties from the legacy North. This resulted in a rise in the number of untreated supplies and as properties are being recorded across the whole of Scotland the confidence grade has improved to C3.

The 271 properties comprise:

- Unoccupied
- In process of disposal from legacy authority housing stock
- Derelict / Abandoned

- Agricultural use only (outbuildings etc)
- Multiple units counted as one e.g. single supply to large estate

C1.20-23 WTW's/Service Reservoirs

C1.21 – The temporary derogations granted by Scottish Ministers under the Water Supply (Water Quality) (Scotland) Regulations 2001 are known as Authorised Departures. Authorised Departures are granted on a water supply zone basis.

C1.22 - The number of service reservoirs in use has reduced from 1345 in 2003 to 1111 in 2004 mainly due to rationalisation of assets as projects are completed. The number here includes all sample points associated with service reservoirs in use for all or part of 2004. This excludes break pressure tanks which are not sampled and multiple compartments of service reservoirs and clear water tanks, which have a single sample point on the combined outlet. Service reservoirs can be taken out of use temporarily for repair or refurbishment. When in use they must be monitored under the Regulations. The number of service reservoirs in use can also increase. When a treatment works is closed due to the completion of a mains extension it is often converted into a service reservoir.

C1.23 – There has been an increase in the number of service reservoirs having >5% of coliform samples failing from 16 last year to 25 in 2004. This is in part thought to be due to the extreme weather during August 2004 which led to a marked deterioration in microbiological water quality.

Appendix C1 – List of zones failing for all other parameters

2004 DWQR Nos	2004 Zone Name	PCV Parameter
1023	Killiecrankie	1,2 Dichloroethane
2003	Acharacle	1,2 Dichloroethane
2011	Ardgour	1,2 Dichloroethane
2013	Ardrishaig	1,2 Dichloroethane
2014	Ardvourlie Western Isles	1,2 Dichloroethane
2019	Aultbea	1,2 Dichloroethane
2020	Backies	1,2 Dichloroethane
2025	Ballygrant Islay	Nickel
2025	Ballygrant Islay	1,2 Dichloroethane
2026	Balmacara	1,2 Dichloroethane
2039	Bonar Bridge	1,2 Dichloroethane
2047	Carbost Skye	Copper
2048	Carradale	1,2 Dichloroethane
2050	Claddich	1,2 Dichloroethane
2055	Colonsay	1,2 Dichloroethane
2056	Craighouse Jura	1,2 Dichloroethane
2061	Dalmally	1,2 Dichloroethane
2085	Garve	1,2 Dichloroethane
2087	Gigha	1,2 Dichloroethane
2102	Inchlaggan	1,2 Dichloroethane
2103	Inverary	Antimony
2103	Inverary	1,2 Dichloroethane
2108	Inverness	Nitrite
2110	Kilberry	1,2 Dichloroethane
2114	Kilmelford	1,2 Dichloroethane
2125	Laide	1,2 Dichloroethane
2148	Nedd	1,2 Dichloroethane
2156	Oykel Bridge	1,2 Dichloroethane

2004 DWQR Nos	2004 Zone Name	PCV Parameter
2160	Port Charlotte Islay	1,2 Dichloroethane
2166	Roybridge	1,2 Dichloroethane
2184	Spean Bridge	1,2 Dichloroethane
2193	Strollamus Skye	Copper
2199	Tarbert Argyll	1,2 Dichloroethane
2203	Tiree	1,2 Dichloroethane
2210	Torra Islay	1,2 Dichloroethane
2216	Unst Shetland	1,2 Dichloroethane
2222	Whalsay Shetland	1,2 Dichloroethane
3002	Alnwickhill A	Nitrite
3003	Alnwickhill B	Nitrate
3004	Auchneel	1,2 Dichloroethane
3005	Balmore E	Nitrite
3007	Barclye	1,2 Dichloroethane
3012	Broughton	1,2 Dichloroethane
3018	Ettrickbridge	1,2 Dichloroethane
3022	Glengap	1,2 Dichloroethane
3028	Kettleton	1,2 Dichloroethane
3032	Lochenkit	1,2 Dichloroethane
3033	Lochinvar	Antimony
3035	Marchbank A	Nitrite
3036	Marchbank B	Nitrite
3039	Palnure	1,2 Dichloroethane
3043	Penwhirn Barclye	1,2 Dichloroethane
3045	Rawburn	Nitrite
3045	Rawburn	Antimony
3052	Tweedsmuir	Antimony
4005	Ascog Bute	1,2 Dichloroethane
4011	Balmore C5 North	Antimony
4018	Blairlinnans South	Antimony
4037	Daer Coulter	Antimony
4039	Dhu Loch Bute	1,2 Dichloroethane
4050	Lochgoilhead	1,2 Dichloroethane
4054	Milngavie C3	Antimony
4056	Milngavie M1	Antimony
4061	Milngavie M5 Drumchapel	Antimony
4066	Neilston	Antimony
4067	Penwhapple	1,2 Dichloroethane
4070	Strathyre	1,2 Dichloroethane

Table C2 Water Quality Outputs – Asset Performance

General Comments

- All data is for the calendar year 2004.
- All data was taken from the Laboratory Information Management System and where appropriate cross referenced with the published Annual Water Quality Report 2004.
- Compliance value is taken to be the prescribed concentrations or value (PCV) in The Water Supply (Water Quality) (Scotland) Regulations 2001. With the exception of coliforms and turbidity the regulatory PCV limits apply at customer taps rather than water treatment works. Therefore there is no regulatory requirement to sample for the parameters in lines C2.5 to C2.8 and C2.13 to C2.24 at water treatment works.

- The number of treatment works is those works that were in use for all or part of the period 1 January 2004 to 31 December 2004. Some works closed during this period but have been sampled and so are included in the figures.
- During August 2004 Scotland experienced severe weather events. As a result Scottish Water had to continue to operate in extremely difficult conditions over a prolonged period during that part of the year. As a result of the extreme conditions and in particular the resulting high raw water colour and turbidity loadings imposed on water treatment works, weaknesses were identified in several processes. This resulted in:
    - poorer microbiological compliance and general worsening of water quality
    - increased colour penetration through the process
    - increased turbidity in treated water, chlorine demand and Trihalomethanes (THM) risk
    - raised Total Organic Carbon (TOC) levels in final water
    - increased customer complaints regarding quality/bottled supplies

    It was only due to extensive operational intervention and experience at a large number of Scottish Water's water treatment works that a greater deterioration in quality was not seen.

C2.1-4 Coliforms

C2.1 - The number of water treatment works tested for coliforms has decreased in comparison to last year due to the closure of some water treatment works.

C2.2 - The number of water treatment works where samples exceeded the coliform compliance value has decreased from 46 to 40.

C2.3 to C2.4 – Not in use.

C2.5-8 Trihalomethanes (THMs)

C2.5-8 – There were no water treatment works tested for THMs in 2004. There are no regulatory requirements in The Water Supply (Water Quality) (Scotland) Regulations 2001 to test for THMs at water treatment works.

C2.9-12 Turbidity

C2.9 - The number of water treatment works tested for turbidity has increased in comparison to 2003.

C2.12 - The number of water treatment works where <10% of samples exceed 50% of the compliance value was determined by subtracting the sum of C2.10 and C2.11 from C2.9.

C2.13-16 Aluminium

C2.13 - The number of water treatment works tested for aluminium has increased in comparison to 2003. Operational requirements will dictate the need for aluminium sampling throughout any given year therefore the annual number of tests will be subject to change.

C2.16 - The number of water treatment works where <10% of samples exceed 50% of the compliance value was determined by subtracting the sum of C2.14 and C2.15 from C2.13.

C2.17-20 Iron

C2.17 - The number of water treatment works tested for iron has decreased in comparison to 2003. Operational requirements will dictate the need for iron sampling throughout any given year therefore the annual number of tests will be subject to change.

C2.20 - The number of water treatment works where <10% of samples exceed 50% of the compliance value was determined by subtracting the sum of C2.18 and C2.19 from C2.17.

C2.21-24 Manganese

C2.21 - The number of water treatment works tested for manganese has decreased in comparison to 2003. Operational requirements will dictate the need for manganese sampling throughout any given year therefore the annual number of tests will be subject to change.

C2.24 - The number of water treatment works where <10% of samples exceed 50% of the compliance value was determined by subtracting the sum of C2.22 and C2.23 from C2.21.

Table C3 New Obligations – Water

General Comments

- Water supply zones in lines C3.1, C3.10, C3.13, C3.16, C3.18 and C3.20 are water supply zones as defined in The Water Supply (Water Quality) (Scotland) Regulations 2001, i.e. an area designated for the purpose of the regulations with a population of not more than 100,000 and in which all the premises are supplied for domestic purposes from the same water source or combination of water sources.
- Undertakings in lines C3.1, C3.10, and C3.13 are taken to be undertakings relative to section 76E of the Water (Scotland) Act 1980. These are agreed with the Scottish Executive when a treatment works/water supply zone fails to meet a standard. Scottish Water then gives an undertaking that the treatment works will be upgraded or improved by a certain date.
- Undertakings in lines C3.16, C3.18 and C3.21 are based upon risk assessments carried out in accordance with The Cryptosporidium (New Water and Sewerage Authorities) Direction 2002.
- Undertakings in lines C3.21a, C3.21c and C3.21e are based upon annual risk assessments carried out in accordance with The Cryptosporidium Directions (Scottish Water) 2003 which were issued on 19th December 2003. These revised directions place new obligations on Scottish Water and change the risk assessment procedure.
- Lines C3.1 to C3.21 are reported for the financial year since the undertakings are linked to project delivery. Lines C3.21a to C3.21f is reported for the calendar year as with other water quality outputs.
- There are two water supply zones supplied by water treatment works that are currently awaiting a risk assessment under The Cryptosporidium Directions (Scottish Water) 2003.

C3.1-3 Drinking Water Directive (98/83 EC) - A) Lead pcv = 25 µg/l

C3.1 - The number has decreased from last year's figure of 53 to 41 as a result of the installation of orthophosphate dosing at water treatment works, rezoning to deliver water from another supply, and lead communication pipe replacement. This reflects progress of the capital programme.

C3.4-6 Lead pcv = 10 µg/l

C3.4 - There are currently no undertakings to meet the 10 µg/l standard. This may change in future years when there is more clarity on the requirements to meet the 10 µg/l standard by 2013.

C3.7-9 Trihalomethanes pcv = interim

C3.7 - There is no interim THM standard in the Water Supply (Water Quality) (Scotland) Regulations 2001.

C3.10-12 Trihalomethanes pcv = final

C3.10 - The number has decreased from last year's figure of 125 to 93 as a result of the completion of a number of new works and mains extensions.

C3.13-15 Other parameters

C3.13 - The number has decreased from last year's figure of 32 to 24 due to completion of a number of new works and mains extensions.

C3.16-21 The Cryptosporidium (New Water and Sewage Directive) Direction 2000

C3.16 – Scottish Water has no Water Supply Zones with a risk assessment score >100.

C3.18 – The figure has decreased from last year's figure of 24 to 18 due to completion of a number of new works and mains extensions.

C3.20 –The number has decreased from last year's figure of 37 to 28 due to completion of a number of new works and mains extensions.

C3.21a-21f - Cryptosporidium (Scottish Water) Directions 2003

C3.21a – Scottish Water has 32 Water Supply Zones with a risk assessment score >100.

C3.21c – Scottish Water has 76 Water Supply Zones with a risk assessment score between 50 and 100.

C3.21e – Scottish Water has 264 Water Supply Zones with a risk assessment score <50.

C3.31-36 The Abstraction Directive,

The Abstraction Directive does not currently apply to any Scottish Water assets. This may change with the introduction of the Water Environment and Water Services Act. Any implications will be reported in future years.

C3.34-36 The Birds Directive, The Habitats Directive

Nil return is submitted for these lines as Scottish Water has not been requested by SNH or SEPA to carry out works associated with these directives. Again the Water Environment and Water Services Act may introduce new obligations which will be reported in future years.

Table C4 Wastewater Quality Outputs – Asset Performance

The base asset list used for reporting this table is the database of wastewater treatment works maintained by Scottish Water's Strategy & Planning section, which is referred to in the introduction to Table E8. This database records works consent type and whether or not it is

sampled. Not all works are as yet consented, and work is continuing with SEPA to confirm the full list on consented sampled discharges.

Wastewater treatment works compliance is reported by SEPA on a monthly basis. The Strategy & Planning section compiles an internal report on a monthly basis. This report identifies those works that have been agreed with SEPA as failing, as well as the reason for failure. This information has been transferred to the treatment works database to enable this table to be completed.

This table is reported for the calendar year 2004 (this is the same as the previous year). Wastewater treatment works compliance has generally improved in comparison to the previous year due to a combination of; improved asset performance due to completed investment, improved operational practices, and better integration with SEPA through the central Compliance Strategy Steering Group.

C4.1-3 All discharges

This refers to both numeric and non-numeric consents, so the numbers of consented and sampled works are the totals of two-tier, single-tier, non-sanitary and non-numeric consents reported below. The number of compliant works is the number of consented works less the number of confirmed failing works reported in line C4.19.

The changes in the numbers of consented and sampled works are partly a result of data improvements, and partly due to continuing work with SEPA to confirm the sampling regime at works. Confidence grade for discharges sampled in the year has remained at B2. Data received from SEPA is stored in a single source data file.

Total discharges sampled in the year, line C4.2, is reported as 784. This is less than the number reported last year and can be put down to SEPA sampling being more concentrated at a smaller number of works. This figure includes works with non-numeric consents, line C4.17. These works are not actually sampled by SEPA but are visited for inspection.

C4.4-9 Look-up Table Lower Tier Consents and Upper Tier Consents

These two sets of results refer to the same set of consented and sampled works, so lines C4.4 and C4.7 are identical, as are lines C4.5 and C4.8. The figure reported in line C4.6 is the number of works that are consented, minus the number that are not compliant with the look-up table in the appendix of the consent. This figure is calculated, based on the principle that any failure, whether it is of the lower tier parameter or the upper tier parameter, is counted as an exceedence. The determination of whether a works is compliant or not, is therefore made by comparing the number of “exceedences” against the permissible look up table value (per consented parameter). Last year, line C4.6 excluded works failing due to upper tier exceedences which also count as lower tier exceedences (if these had been included then line C4.6 would have been 666 rather than 690). This year, these have been included. The same upper tier exceedences are also counted in line C4.9.

C4.10-12 Single Tier Consents

This section reports works that have only one numerical limit per parameter in their consent. Single tier compliance varies from two tier compliance, where any parameter failure occurs in a single sample, this means that the sample fails. Compliance is measured on the basis that 75% of all the samples must be compliant.

The total number of consents reported in line C4.10 has fallen from last year as SEPA is currently making a general move from single tier consents to two tier consents and hence the total number of compliant works reported in line C4.12 has fallen.

C4.13-15 Absolute non Sanitary Consents

This section reports works that have only non-sanitary parameters in their consent. Consents that contain both sanitary and non-sanitary parameters are included in either two-tier or single-tier as appropriate.

C4.19-21 Discharges confirmed as failing

C4.19 - This is the confirmed number of failing works at the end of the calendar year 2004. As discussed in the introduction to this table, the main reason for the decrease in this figure compared to last year is the improvement in compliance reporting and asset performance as well as improved SEPA liaison through the central compliance strategy group.

C4.20, C4.21 – The list of failing works has been recorded in the Strategy & Planning database used to report loads in Table E8. The figures reported here are thus consistent with Table E8. The confidence grade remains at B2. The figure reported under line C4.21 was incorrectly reported last year due to the wrong denominator being used for the percentage calculation. The corrected figure for AR04 is 19.9%.

C4.22-24 Pollution Incidents

The reporting of pollution incidents is the responsibility of Scottish Water's emergency planning department. Incidents are reported for information only to the Scottish Executive and are not categorised as category 1, 2 or 3. For this reason zero and non-applicable has been entered for these lines.

Table C5 Wastewater Quality Outputs – Asset Performance.

Scottish Water does not sample all wastewater treatment works on a monthly basis. Sampling of wastewater treatment works is either done on an audit basis or in response to failing or near miss SEPA sample results. As a result of this, and as agreed with WIC's office that the cells in this table will be populated as '0' with confidence grades of 'N' for not applicable. This reflects the fact that the audit samples taken by Scottish Water cannot be used as a year to year comparison.

Table C6 Wastewater Quality Outputs – New Obligations

This Table reports commissioned projects in the Report Year, which delivered against the nine key investment drivers relating to new quality obligations. Some works have multiple drivers and therefore the population equivalent will appear more than once in the table. The population equivalent is calculated from the Asset Inventory records. A number of CSOs also have multiple drivers and therefore appear in the total delivered under more than one driver.

The existing WWTPs at Linwood and Johnstone have been abandoned and the flows have been transferred to Erskine WWTP.

Table C6 is reporting that improvements have been made to the existing discharges at Linwood and Johnstone by stopping the flow to the existing watercourse and transferring it.

The solution developed was to take the transferred the flows to Erskine WWTP and undertake works at that site to allow it to cope the increased flow.

C6.1-6 Driver WQ1: Control of Pollution Act 1974 S34

Improvements were undertaken at 65 WWTPs or discharges including Linwood & Johnstone, and Kirkconnel. However 53 of these sites were included as part of the supply and installation of flow monitors throughout Scotland under the WQ 1/1 and EC 1/2 drivers.

There were also 3 sewerage schemes in the Shetland Isles, namely, Greenbank in North Yell, Setter in Yell, and Raga of Mid Yell, where there was upgrading accomplished of the current systems.

C6.7-16 Driver WQ2: Improvements to poor or seriously polluted waters

Improvements were undertaken at 23 WWTPs including Crimond, Eastriggs, Linlithgow and Stenton. There were no Surface Water Discharges/Industrial Estates upgraded against this investment driver in the Report Year. First-time sewerage was provided for parts of communities at Dores, Milton Glenurqhart, and Carbost.

A total of 69 CSOs were upgraded in the 2004/05 period, including Dalmellington, Paisley, Inverallochy and several at Milngavie. 68 UCSOs, from the agreed 432 UCSO list, were delivered. A CSO at Auchinleck was also improved, but was not part of the original UCSO programme.

C6.17-22 Driver WQ3: Protection of Risk

Improvement works were undertaken at 6 discharges including Lochgoilhead, Corrie, Carbost and Pennan.

Phosphorous control was undertaken at 11 sites including Methlick and Shotts.

C6.23-34 Driver EC1: UWWTD Directive

Improvement works were undertaken at 103 Inland Water CSOs such as Cauldhame, Lower Larbert, Kings Link in Aberdeen and 6 in Forfar. 90 of these CSOs are on the original 432 agreed list of UCSOs to be completed in the Q&S2 period.

Upgrading works were also performed at 81 inland WWTPs or discharges, including Alford, and a number of upgrades in the Western Isles. As reported under the WQ1 driver, there were a further 53 sites improved under the Supply & Installation of Flow Monitors Project carried out all over Scotland.

Under the Coastal Waters driver, there were 16 CSOs upgraded including 2 in Whitehills and 2 in Stonehaven. All 16 CSOs are part of the 432 agreed list of UCSOs to be upgraded.

20 STWs were enhanced through improvement works in the report period such as Cromarty and Gairloch. All 16 of the improved CSOs were part of the 432 list.

Through the EC 1/5 driver, there were a total of 17 CSOs improved, with 3 in Ardgay Bonar Bridge, and two each at Ardersier and Tain, with the remainder in places such as Greenock, Paisley and Findhorn Bay. These CSOs are all on the 432 list.

The remaining Estuarial Waters driver saw 4 STWs being advanced; the main ones being at Dunfermline and Jemimaville.

C6.35-38 Driver EC2: Bathing Waters Directive

Improvement works were undertaken at 23 CSOs including Stonehaven, Cairnbulg, and Troon, with 14 included on the list of 432 UCSOs. Improvement works were completed at 5 WWTPs including Millport.

C6.39-42 Driver EC3: Shellfish Waters

There were 10 sites where improvement works had been undertaken, including Spinningdale, Carrick Castle, and Achnaba. There were no CSOs upgraded in the Report Year under this driver.

C6.43-46 Driver EC4: Freshwater Fish Directive

Improvement works were undertaken at 5 sites, for example, Milton Glenurquhart, Invermoriston and Haddington WWTPs. There were no CSOs upgraded in the Report Year.

C6.47-49 Driver EC6: Sludge (Use in Agriculture) Directive

In the 2004/5 period, there were 3 improvement works at Cupar, Haddington, and Dalderse as part of the Sludge (Use in Agriculture) Directive.

C6.49a-c Driver EC8: Habitats Directive

There were 8 improvement works completed in the Report Year under this directive.

C6.50 Driver EC9: Dangerous Substances Directive

Salsburgh and Shotts were the 2 sites where improvement works were carried out in the 2004/05 period.

Table C7 Water Mains Activities

C7.1-9 Water Mains Rehabilitation Under Agreed Programme of Works

The Q&S 2 mains rehabilitation programme has an agreed output of a reduction in condition grade 4 & 5 water main for 3051 km of mains. It was estimated at the start of the programme that this would be achieved by different methods and that a length of mains would be replaced (C7.3) and a smaller length relined (C7.4). This would require programmes of work in 255 Water Supply Zones (C7.2).

The mains rehabilitation programme is primarily delivered by WSZ and not WQZ and as such the figures (C7.1, C7.2 and C7.9) are reported as WSZs this year. Additionally the programme is delivered and reported by financial year which is how it has been presented in table C7.

The confidence grade for line C7.2 is C4 because mains rehab is specifically driven by the agreed target length of mains rather than water supply zones. Therefore the number of WSZ that fall within the programme could change once the programme is complete i.e. once detailed investigation of the WSZ has been carried out; the length of mains requiring rehabilitation becomes apparent.

The number of WSZs (C7.1) was taken from GIS. SW prioritised all WSZs at the beginning of the Q&S 2 period. Programming rehab by WSZ allows schemes to be developed at a level of detail which addresses all the relevant rehab issues at a more distinct level than WQZ. Out with the priority WSZs, additional lengths of main are replaced on a hotspot basis plus a small length from reactive maintenance. These lengths are included in the total length replaced or relined (C7.6 & C7.7).

The length of mains subject to pre-appraisal surveys (C7.5) is identified from GIS. The length of main with post-appraisals is now at 157 kms (C7.8). There is now a post-appraisal programme therefore C7.8 will increase significantly for the 2005-06 return.

The data for work undertaken in the report year has been provided by Scottish Water

Solutions from the project monitoring developed by the programme delivery team and from the data used to populate Table G – Capital Expenditure.

C7.10-14 Water Resource Planning

Confidence grades have improved for the section as data have been taken from the new reporting tool; Perform Spatial Plus. 77% of data for this section were obtained from this corporate system. The balance has been provided from SWS' DMA reporting.

C7.11 is the number of DMAs established in the report year and C7.12 is the number of DMAs that are being established in the 2005-2006 report year. The property coverage (C7.13) and the lengths of mains (C7.14) covered by established DMAs at year end were largely obtained from the DMA reporting tool, Perform Spatial Plus, with the balance provided by SWS.

Table C8 Sewer Activities

C8.1-9 Sewer Rehabilitation Programme

C8.1 The number of sewage drainage areas has been interpreted as responding to the number of Drainage Area Study (DAS) Zones across Scotland. These Zones represent the boundaries within which a Drainage Area Study would be undertaken to produce a Drainage Area Plan. A high Confidence Grade is associated with this figure reflecting the relatively static nature of these boundaries. It is anticipated that only minor alterations to these boundaries would ever be required, none have been required this Report Year.

C8.2 The number of sewage drainage areas subject to a programme of work has been assumed to be the number of Drainage Area Study (DAS) Zones which contain a sewer rehabilitation (or replacement) scheme whether completed, ongoing or to be promoted as part of the current sewer rehabilitation target for Quality & Standards (Q&S) II investment period.

This figure has been collated from the:-

- Capital Investment pre Scottish Water Solutions Sewer Rehabilitation Programme (2002-2004),
- the current Scottish Water Solutions Sewer Rehabilitation Programme (2003 – 2006)
- and remaining Rehabilitation to be carried out in (Q&S II) via the Phase3 Capex1 Area Planner Hotspots.

The sewer rehabilitation needs across Scotland have been identified from the Drainage Area Studies along with local rehabilitation requirements promoted by local Area Planners and Operational staff.

The figure does not include those sewer replacements carried out as part of flooding alleviation or overflow improvement projects.

General Statement

The following two lines relate to the amount of sewerage which has or is to be rehabilitated or replaced in the current Investment Period. In previous Annual Reports the length of sewerage which has been rehabilitated could not be distinguished from that which has been replaced. For this Report year there is a clear distinction between what length of sewerage has been rehabilitated and what length has been replaced as the method of improvement has been recorded and therefore reported against Lines C8.6 & C8.7.

The sewerage length which is yet to be rehabilitated or replaced cannot be distinguished as the method of improvement has not been designed to date. As it is expected that the majority

of the sewerage improvement will be via sewer rehabilitation (as is supported by the information which has been returned to date) then all of the lengths are reported against Line C8.4 with C8.3 reported as missing.

C8.3 This Line has been assumed to be the length of sewer identified for replacement or which has been replaced in the current (Q&S II) target for sewer rehabilitation. The figure reported however is zero with an M (Missing) Confidence Grade due to the reasons identified above.

C8.4 This Line has been assumed to be the length of sewer identified for rehabilitation or which has been rehabilitated in the current (Q&S II) target for sewer rehabilitation. The figure reported here is the total figure for Line C8.3 and C8.4 for the reasons described above.

C8.5 This line has been interpreted as the length of sewerage which has been assessed by CCTV survey in the report year, generated from the current database containing all CCTV survey data produced from the Drainage Area Study (DAS) programme. This does not include any CCTV survey work undertaken by rehabilitation contracts immediately prior to design. It is not expected that these types of surveys will be entered into the database as they will not reflect the state of the sewer post rehab. The reported figure is consistent with that reported in Table D6.

C8.6 This line is assumed to be the length of sewerage which has been replaced in the report year. Length of sewers replaced in report year totals 1.9km. There is now a process for data collection for all sewerage replacement that has been undertaken this year by Scottish Water Solutions Sewer Rehabilitation Project Delivery Team. The Confidence Grade therefore is reported higher than last year at B2.

Sewer Flooding Alleviation Schemes are omitted from this line as they are not deemed to be part of the Sewer Rehabilitation Programme.

C8.7 This line is assumed to be the length of sewerage which has been rehabilitated in the report year. Length of sewers rehabilitated in report year totals 114.19km. There is now a process for data collected for all sewerage rehabilitation that has been undertaken this year by Scottish Water Solutions Sewer Rehabilitation Project Delivery Team. The Confidence Grade therefore should be reported as higher than last year at B2.

Sewer Flooding Alleviation Schemes are omitted from this line as they are not deemed to be part of the Sewer Rehabilitation Programme.

The length of sewer replaced/rehabilitated reported in Table G includes all lengths delivered through the Sewer Rehab programme, Flooding, UCSO and Wastewater Quality Programmes and Reactive Maintenance undertaken in 2004-05. Where sewer rehab projects span more than one year, the length replaced/rehabilitated in 2004-05 is included in Table G with the balance being reported in the appropriate year. The project may have achieved beneficial use in 2004/05 or may continue into 2005/06. The length reported against Reactive Maintenance projects is the actual length replaced at each location and is not the manhole to manhole length.

C8.8 Post rehabilitation surveys have been undertaken this year intended to update the records held in the CCTV database. The total reported here is therefore the sum of the length of sewers which have been either rehabilitated or replaced during the year. At the end of the Report year however none of these records have been returned to Scottish Water's CCTV database. These records will update the records in the following year superseding the existing records.

C8.9 The numbers of DAS Zones which have had a sewerage rehabilitation project completed within its bounds are reported in this line. The data has been collected from

completed projects and only includes where all projects with in a DAS Zone have been completed as part of the (Q&S II) programme. This figure has been collated from the Capital Investment pre Scottish Water Solutions Sewer Rehabilitation Programme (2002-2004), the current Scottish Water Solutions Sewer Rehabilitation Programme (2003 – 2006) and remaining Rehabilitation to be carried out in (Q&S II) via the Phase3 Capex1 Area Planner Hotspots.

C8.10-12 Critical Sewers

As the length of sewer promoted to be rehabilitated or replaced is derived in the Drainage Area Studies and the CCTV work they undertake is concentrated on the critical sewer network then all of the rehabilitation work undertaken is assumed to be on the critical network. The lengths reported for sewers which have been rehabilitated and those which have been replaced is therefore the same as the lengths reported for all sewers in Lines C8.6 and C8.7.

Sewer Flooding Alleviation Schemes are omitted from this line as they are not deemed to be part of the Sewer Rehabilitation Programme.

C8.12 A change in the method by which the length of critical sewers has been calculated resulted in an increase in the overall critical sewer length. This change is reported in this line and is consistent with Line D6.16.

C8.13-16 Drainage Area Plans

General Statement

At present in Scottish Water there is an ongoing programme for the production of Drainage Area Plans (DAPs). The figures relating to this programme of work are reported in Table D6. This programme covers the first time creation of DAPs but does not currently provide for the maintenance of these Plans once created. The figures reported for the following Lines therefore reflect the absence of DAP maintenance to date.

Periodic maintenance is seen as essential to prolong the useful life of the DAPs and therefore get full benefit of the initial cost of their creation (currently projected at approximately £40m). Proposals for the Maintenance of DAPs (as well as additional First Time Creation studies) have been included for the Quality & Standards (Q&S) III investment period as the upkeep of the valuable DAP assets is seen as essential to sustain a full understanding of the sewerage network, how it interacts with both customers and the environment, and for the planning of future development of the network and in assisting with its efficient Operational running.

The Quality & Standards (Q&S) II investment period priority was, and is, for the first time production of Drainage Area Plans. The Q&S III investment period will have DAP Maintenance as a priority together with the extended DAP coverage for the unsatisfactory intermittent discharge environmental and flooding due to overloaded sewers enhancement programmes and to support the production of the Annual Strategic Capacity Report and Development Plans.

C8.13, C8.14, C8.15 and C8.16
These Lines are all reported as zero reflecting the absence of DAP maintenance provided for in the current investment period. The confidence grade for these figures is recorded as A1 reflecting the fact that no maintenance has been carried out in the report year. Table D6, Lines D6.21 to D6.25 Activities – Studies report the current status of Drainage Studies.

D Tables – Asset Information

Tables D1 to D3 are populated automatically from Tables G5 and G6 and individual confidence grades and commentaries are included where appropriate.

Table D1 Workload Commissioned Assets – Water Service

Table D1 records replaced/refurbished, new and enhanced assets commissioned in the Report Year 2004-05 This is based on Scottish Water's approved investment programme to meet the requirements of legislative driven quality improvements and on-going capital maintenance to ensure that the necessary level of service is maintained.

Commissioned assets have been analysed and allocated to either replaced/refurbishes or new/enhanced as appropriate. The financial information on project capital expenditure has been reconciled with the corporate financial management system. Asset data on completed projects was obtained from Project Managers providing details of the assets commissioned through an Asset Data Capture Form for Table G and upload scripts for Ellipse to ensure that the Asset Inventory was updated. Scottish Water is currently upgrading the Capital Investment Monitoring System to install an Asset Module which will enable asset data to be stored within the corporate system.

Rolling programmes have been shown as commissioned in 2004-05 to ensure that the completed assets are included. However the lower confidence grade reflects concern that not all assets refurbished through minor works have been recorded in Table G.

Where there were more than 5 asset types included within a single project, these have been rolled up to enable the reporting to be as representative as possible of the investment incurred.

D1.34-41 Water Treatment Works

D1.34 – D1.38 These lines include the installation of crypto monitoring equipment at water treatment works across Scotland.

D1.47-51 Water Mains

D1.47 The new and enhanced potable water mains figure includes the lengths of main resulting from new developments. As Scottish Water only makes payments to developers up to the reasonable cost limits for new developments, the investment reported does not reflect the actual costs to developers.

Investment on Water Zonal Plans is not recorded in Table D1 as there is no asset code to report against.

Table D2 Workload Commissioned Assets – Wastewater Service

Table D2 records replaced/refurbished and new/enhanced assets commissioned in the Report Year 2003-04. This is based on Scottish Water's approved investment programme to meet the quality requirements of UWWTD, Bathing Waters Directive and the Control of Pollution Act, together with capital maintenance and infrastructure renewals to ensure that the necessary level of service is maintained.

Commissioned assets have been analysed and allocated to either replaced/refurbishes or new/enhanced as appropriate. The financial information on project capital expenditure has been reconciled with the corporate financial management system. Asset data on completed projects was obtained from Project Managers providing details of the assets commissioned through an Asset Data Capture Form for Table G and upload scripts for Ellipse to ensure that

the Asset Inventory was updated. Scottish Water is currently upgrading the Capital Investment Monitoring System to install an Asset Module which will enable asset data to be stored within the corporate system for regulatory reporting.

Rolling programmes have been shown as commissioned in 2004-05 to ensure that the completed assets are included. However the lower confidence grade reflects concern that not all assets refurbished through minor works have been recorded in Table G.

Where there were more than 5 asset types included within a single project, these have been rolled up to enable the reporting to be as representative as possible of the investment incurred.

D2.31-33 Sewers

D2.31 and D2.32 The new and enhanced critical and non-critical sewers resulting from new developments are included in the commissioned assets and represent the assets adopted. As Scottish Water only makes payments to developers up to the reasonable cost limits for new developments, the investment reported does not reflect the actual costs to developers.

D2.40-44 Sewage Treatment Works

D2.40 –D2.44 The investment reported includes the installation of flow monitors at a number of WWTPs to meet UWWTD requirements.

Investment in Drainage Area Plans/Strategies is not recorded in Table D2 as there is no appropriate asset code to report against.

Table D3 Workload Commissioned Assets – Support Services

Table D3 records the new or enhanced and refurbished or replaced support services commissioned assets.

D3.13-16 Other Non-Operational Assets

D3.13 This line reports investment on laboratory equipment.

D3.30-32 Information Systems

D3.31 The enhancements reported relate to new servers which support the IT infrastructure.

Table D4 Asset Changes – Water, Wastewater and Support Services

The data presented in Table D4 shows the difference in the asset stock due to the following:

- Unified approach to asset classification using Ellipse and GIS.
- Improved understanding of the asset types and banding factors using data cleansing workshops.
- Improved costing information.
- Assets being decommissioned or sold.
- Improved methodology and data provision for gap filling of unknown assets.

Table D5 Asset Performance and Activities – Water Service

D5.1-6 Asset performance indicators

D5.1 Mains bursts per 1000km

The burst incidence rate is based on the number of burst repairs reported in E6.11 divided by the length of potable pipe reported in E6.8. The confidence grade of A3 allocated to the number of burst repairs is described in the E6.11 commentary and carries over to this indicator.

The burst incidence has risen to 216 per 1000km of pipe due to the increase in bursts reported. This is principally due to the more comprehensive collection and recording of bursts in the Scottish Water Work Management System (WAMS) and in the Scottish Water Solutions Proactive Leakage Register. This assessment is based on good quality data across Scottish Water and provides a consistent picture across the operating areas.

D5.2-6 Water condition, performance and risk

The water infrastructure and non-infrastructure percentages are based on the condition and performance data in table H.

D5.7-11 Activities

The total number of Distribution Zone Studies (DZSs) identified (D5.7) is the total number of all the current Water Supply Zones within Scottish Water; these were identified from GIS. The number of zones has increased due to the ongoing process of redesigning boundaries. The DZSs programme, which is linked to the mains rehabilitation programme, is now complete for Q&S2 and there are no ongoing studies (D5.8). Additional funding has been identified for additional DZSs in Q&S3. The number of completed studies (D5.9) refers to the total number of studies completed in conjunction with the mains rehabilitation programme.

The percentage of detailed distribution zone studies completed (D5.10) is 8.45%, which relates to 22.23% of properties covered by studies (D5.11). This discrepancy in percentages is due to the DZS programme covering a number of urban water supply zones with large property coverage.

Table D6 Asset Performance and Activities – Wastewater Service

D6.1-9 Asset Performance Indicators

D6.1 The sewer collapse rate is reported as being slightly higher than last year at 57 per 1000km of sewer (lateral sewers and rising mains is included in this calculation). The sewer collapse figure per 1000km of sewerage is reported consistently with the data collection exercise used for the performance and condition assessment undertaken for Table H4. The data capture of collapse information remains an issue for this year's Return although new corporate system has allowed some improvement in the analysis of the figures. The Confidence Grade assigned therefore remains low at B4.

D6.2 to D6.4 Sewer Overflows

General Statement

In 2002 Scottish Water compiled a Combined Sewer Overflow Database as part of its asset management process. The database was created through the merging of the overflow records of the three previous Authorities. The database initially contained the records of unsatisfactory overflows from the three predecessor Authorities but now contains records on

all overflow types across Scotland. To reflect the Database now containing overflows of all types the Database is now referred to as the Intermittent Discharge Register, aligning the terminology with the Water Companies in England and Wales. An Unsatisfactory Combined Sewer Overflow would now fall under the description of unsatisfactory Intermittent Discharge (uID).

Data improvement on the Register is being addressed through continual liaison with Operations staff and through Drainage Area Studies, a programme of which has been ongoing throughout Quality and Standards (Q&S) II and which is continuing to provide clarification of the overflow asset inventory and characteristics on performance in terms of hydraulics (flooding) and environmental (pollution sources). The Register is also being updated with improved assets reaching the beneficial use stage through investment projects.

D6.2 Number of Unsatisfactory CSOs.

The number of uCSOs which have been removed from the uID Register totals 174, with 131 where capital investment resolved failing parameters and 43 where investigation by SWS has revealed that construction work is not required to make the CSO satisfactory. It was necessary to reduce the number of uCSOs by 100 due to a clarification of the number of uCSOs officially reclassified as satisfactory in previous years. The exercise to classify intermittent discharges for the planning of the Q&S III investment period has continued this year. This involved linking uCSOs with downgraded Water Bodies that were identified by SEPA from their water quality and aesthetic monitoring programme. As a result of this work the number of Q&S3 uIDs has risen from 756 to 770 - an addition of 14 uIDs. Table D6.2 below details the uCSO changes.

Table D6.2 - uID Balance Annual Return 2005

				Removed – SW Action					
D6.2	Opening Balance[1]	Removed Better Info	Removed Inaccuracy correction from 03/04[2]	Removed SW Action[3]	Capital Projects (hydraulic solution)[4]	Capital Projects (screening solution)[5]	Capital Projects (Blocking up CSO)[6]	Q&S III Additions[7]	uID Outstanding Balance
2004/05	1190	0	100	43	25	100	6	14	930
						Removed SW Action Total	174		

1. 1192 was reported in Table D6, but 1190 was in the commentary. 1190 was the correct figure & was broken down in the 03/04 commentary.
2. Adjustment required due to clarification of the uCSO outputs claimed in particular years.
3. No Further Action Claimable QS2. Investigation by SWS has revealed that no further construction work is required at these CSOs.
4. Hydraulic Solution Claimable QS2.
5. Screens Claimable QS2.
6. Blocked Up Claimable QS2.
7. The exercise to classify intermittent discharges for the planning of the Q&S III investment period has continued this year. As a result of this programme refinement the predicted number of Q&S3 CSOs has risen from 756 to 770, which results in the addition of 14 CSOs from this category. The 770 Q&S3 uCSOs includes 64 which are already uCSOs in Q&S2. They are in Q&S3 with failings that are not being resolved in Q&S2 and for this reason have been included again.

D6.3 Number of CSOs.

Improvement in the number of Scottish Water's CSOs (and other IDs such as EOs) has progressed this year through the updating of the ID Register with information from Drainage Studies which have been completed prior to the Report Year and through the Drainage Studies which have been completed throughout the Report Year. The backlog of ID information in completed Drainage Studies is now complete. A net total of 77 CSOs have been added from the Register from last year. Emergency overflows and overflows at WwTW were excluded in accordance with the line definition. Although data has improved from last year following migration to the new CSO Corporate Satellite Application, there remain records from legacy asset databases that do not have the backup documentation required for a Reliability Band "A" or an Accuracy Band "1".

D6.4 Percentage of uCSOs.

The percentage of all CSOs which are classed as unsatisfactory has fallen from last year (30.19% to 23.11%). This is due to the remedial work carried out on uCSOs in 2004 to 2005 (174 resolved.)

D6.5-9 Wastewater condition, performance and risk

The sewer infrastructure and wastewater non-infrastructure percentages are based on condition and performance data in Table H.

D6.10-20 Activities - Critical Sewer Investigations

D6.10 The opening balance for this year's Return has been produced from a database containing all CCTV survey data produced from the Drainage Area Study (DAS) programmes and from other CCTV surveys carried out by Scottish Water and its predecessor Authorities. As the procedures for Drainage Area Studies require CCTV surveys to be carried out on only critical sewers the vast majority of the database relates to Scotland's critical network. A small number of non-critical sewer surveys will be present from survey work executed out with the DAS Programme.

The opening balance for this year's return has been calculated by querying the data for surveys undertaken prior to 1st April 2004. This is a full re-assessment of the opening balance, rather than an adoption of last years closing balance, to account for the additional data which has been added to the database over the last year representing historical survey work undertaken prior to the report year.

The length reported is the length of sewer for which there is a CCTV survey, not the total length of CCTV survey work undertaken. The total therefore only includes a sewer's length once even though it may have been surveyed more than once.

D6.11 The estimation of a sewer condition grade for those sewers which have not been subject to a CCTV survey is not a process which is followed by Scottish Water at present. The figure reported this year, as with last year, is therefore zero. The confidence grade assigned is M, missing.

D6.12 The closing balance for the 2004 Return has been used as the opening balance for the 2005 Return.

D6.13 The figure for the length of new critical sewers has been taken from capital investment programme outputs and from Developer Services information for the Report Year. A process to collect and report the information required from these sources has been put in place whereby a summary of the sewer lengths and what intervention was undertaken is reported. The figure reported in this line is a summary of these feedback reports. An assessment of whether the length of sewer reported is critical or non-critical is not made, the assumption has been made that the full length is critical.

An assessment of the Developer Services new sewer records constructed this year was made by assigning critical status to those which had a large diameter. This identified 27km of sewer.

D6.14 This length has been produced from the Scottish Water CCTV database with a query run to assess the length of sewer surveyed during the Report Year. The length reported is the length of sewer for which there is a CCTV survey, not the total length of CCTV survey work undertaken. The total therefore only includes a sewer's length once even though it may have been surveyed more than once (e.g. from each end of the sewer).

D6.15 Scottish Water has followed a procedure to estimate sewer condition grade on sewers which have not been subject to a CCTV (or other types of) inspection. The figure therefore reported this year is the balance of the critical sewer length which has not been CCTV inspection previously. The process of estimation was followed as part of the assessment for Table H4.

D6.16 The critical sewer length has been assessed this year using a completely different approach from last year. The Sewer Rehabilitation Manual (GIS based method) has been adopted where the sewer depth, material, usage & size in combination with the sewers proximity to geographic features is used to allocate criticality in terms of relative cost consequences covering traffic disruption and engineering difficulties. The process therefore makes an assessment of every sewer in the network based upon these factors and allocates a criticality category A, B (critical sewers) or C (non critical). This approach has increased the amount of critical sewers this year, the difference being reported in this Line as reclassified.

D6.17 No critical sewers have been abandoned this year.

D6.18 The length of sewers assessed by CCTV inspection has increased again this year to 14.5% of the sewerage network (excluding laterals in calculation). This reflects a continuing improvement of asset data and asset condition information.

D6.19 Assessed by estimating total shows the result of the assessment done this year added to the zero opening figure.

D6.20 The length of critical sewer closing balance has increased considerable from last year reflecting the comprehensive revision of how critical sewers have been assessed. The figure expressed in terms of a percentage of the network (excluding laterals in the calculation) is 33.5% which is considered to be more representative of the network and closer to the industry mean in England & Wales.

D6.21-25 Activities – studies

D6.21 A prioritisation exercise undertaken during early 2005 for the planning of the Quality and Standards III (Q&SIII) project identified the Drainage Area Study Zones (DAS Zones) which are proposed to be undertaken prior to 2014. It is intended to undertake a study of a prioritised list of DAS Zones which will provide coverage of the Connected Domestic Population of 95%. In terms of the number of DAS Zones covered 264 Zones are currently complete, ongoing or planned to be done of the 806 total DAS Zones. It should be noted that of the 806 DAS Zones covering Scotland, 68 have no Connected Domestic Population and will therefore never be subject to a Study. The figure is an increase on last years as AR04 reflected only the planned studies for QSII, this year's figure reflects the planned studies for QSII and QSIII.

D6.22 The number of ongoing Studies has reduced from last year reflecting a number of Studies which have been completed and a further clarification of the DAS Zone boundaries relationship with the DAS Projects which were commissioned by the former Authorities. The number reported relates to the status of the DAS Zones as a whole, for example if the majority of the Projects within a DAS Zone are ongoing then the DAS Zone has been counted as ongoing.

D6.23 The number of completed Studies has increased from last year reflecting a number of Studies which have been completed and a further clarification of the DAS Zone boundaries relationship with the DAS Projects which were commissioned by the former Authorities. The number reported relates to the status of the DAS Zones as a whole, for example if the majority of the Projects within a DAS Zone are complete then the DAS Zone has been counted as complete.

D6.24 The percentage of studies completed has increased from last year's Return. It should be noted that this percentage is based on the number of Studies identified for Study (Line D6.21) which has not been constant each year as the planned programme has changed according to the drivers at that time. Should the percentage be calculated on the basis of the total number of DAS Zones then the figures reported would be:

for Annual Return 2004 – 8.9% and for Annual Return 2005 – 10.9%.

D6.25 The percentage of properties covered by completed studies has decreased from last year. This however is a reflection of an over-reported figure in last year's Return due to the difficulty in resolving the legacy Projects with the Scottish Water DAS Zones and assigning a suitable status. The number of DAS Zones completed has risen from last year and this in turn showed an increase in the coverage of the Domestic Connected Population to 31%. This figure is consistent with the assumptions made for the QSIII planning process.

E Tables – Operating Costs and Efficiency

General Comments

The Activity Based Costing Tables E1 and E2 were prepared using reports from the corporate finance system in a format consistent with WIC reporting requirements.

Scottish Water's Activity Based Management (ABM) software, Metify, has been used to allocate costs to WIC activities.

Activity Based Costing was introduced during 2003/04 to develop and maintain a better understanding of cost behaviour throughout Scottish Water. As part of this exercise, costs were allocated to WIC activities enabling more accurate identification of costs, highlighting areas of costing inconsistency, and improving the basis of allocation across the company. The ABM process is still at a relatively early stage of development and as such the results are continuously being reviewed and analysed in order to improve cost allocation.

Scottish Waters ABM strategy entails two main elements:

1. Operational Costing

A costing framework has been established which seeks to consistently capture operational costs by Asset and Zone. The aim is to directly capture all costs which are directly attributable to running assets, which represents 80% of total operational costs. Items such as water rates are not considered to be directly attributable to assets, due to the current basis of Local Authority charging, hence the target is not 100%.

At the end of 2003/04 the level of asset based cost capture was c.30%. Due to improved direct cost capture in the general ledger and the implementation of a single Works and Asset Management system, the level of cost capture has consistently improved over the course of 2004/05 and has now reached a level of c.70%.

The targeted level of 80% cost capture in 2004/05 was not achieved, in the main due to the reduced level of Networks direct staff time capture. This reflects the difficulty of collating robust, up-to-date, timesheet information in increasingly centralised administration centers, from Networks staff working across the breadth of the country.

As part of the Integrated Mobile Strategy, the number of staff who will be able to update asset and resource information electronically in the field is being increased. In pilot tests this has resulted in demonstrable improvements to the quality and timeliness of resource information, and zonal cost capture. The plan is to roll this technology out across the majority of our field-based staff in the early part of 2005/06.

2. Activity Based Costing

The Activity Based Costing system (Metify) is used to capture the costs of activities and processes and to understand what drives the level of costs by activity. As well as helping to understand which areas are impacting costs, these drivers are also used as the basis for attributing costs to WIC activities.

The output from ABM is used as the basis for allocating shared service costs between WIC activities. This system provides a more cost reflective allocation of cost, as costs in these areas tend to be shared between WIC activities, e.g. a call centre operator answers water and wastewater calls, and an IT department supports IT applications which are used by both water and wastewater staff.

The quality of non financial driver data is crucial to understanding the costs of activities. Significant improvements have been made to the quality of non financial information, primarily through the rationalisation of corporate applications, supporting processes and reporting systems.

In addition to shared service costing, ABM has been used to supplement operational costing systems, particularly where there were gaps in direct cost capture, e.g. Networks time capture. However, ABM holds activities at a higher level than individual asset, therefore some extrapolation was required in order to allocate costs to individual large works or banded small works and in the case of wastewater, some further analysis was required to allocate costs to treatment stages.

In 2005/06 the aim is to optimise the integrated costing solution in the general ledger, by further reducing the need to supplement the operational costing system with ABM output.

Total Operating Performance in 2004/05 v 2003/04

With the exception of a £3.3m accrual reversal for a contract claim with regard to a PFI scheme, there are no atypical costs included in the 2004/05 return. However, significant cost increases have been absorbed in 2004/05 associated with power prices, fuel prices, pension contributions and new opex associated with the Cryptosporidium Direction.

Comparative figures for 2003/04 have been restated to exclude PFI costs, allowing a consistent year on year comparison of costs by activity. A year on year comparison of functional costs by activity is attached at Appendix 1.

Total operating expenditure excluding exceptional items (E1.26+E2.26-E1.23-E2.23) reduced by £0.2m to £307.6m (as detailed below), but this is after absorbing increased costs of new trading activities of £20.7m and operating costs associated with new assets of £2.1m.

	2004/05 £m	**2003/04 £m**	**Variance £m**
Total operating costs – Water E1.26	215.556	209.736	-5.820
Total operating costs – Waste E2.26	153.910	150.923	-2.987
Exceptional costs – Water E1.23	-33.981	-31.659	2.322
Exceptional costs – Waste E2.23	-27.805	-21.166	6.639
	307.680	**307.834**	**0.154**

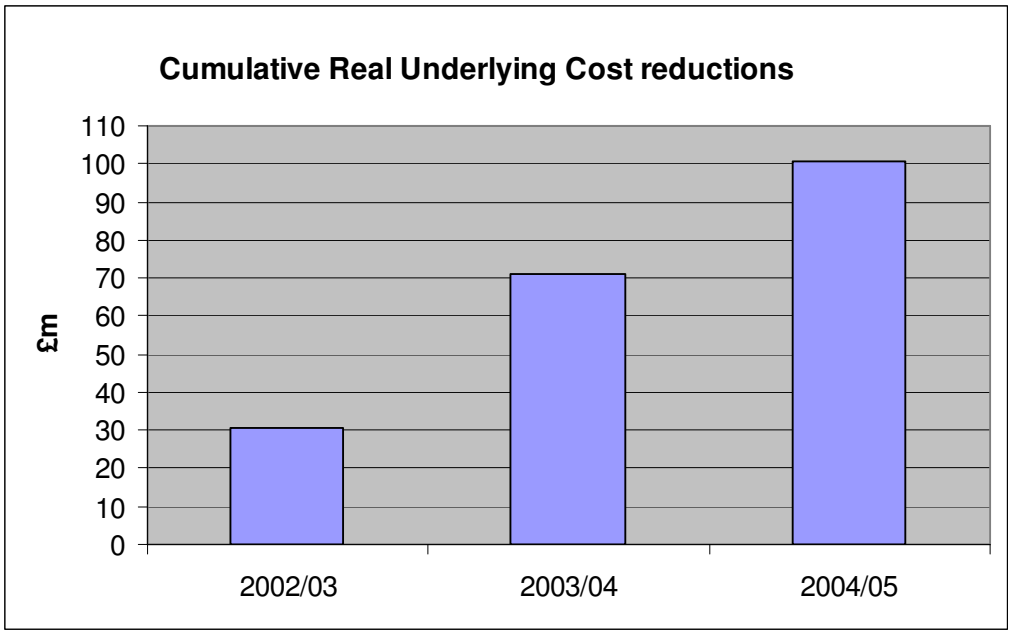
The table below reconciles total operating costs to the Statutory Accounts:-

	2004/05 £m	**2003/04 £m**	**Variance £m**
Statutory water and wastewater opex	270.3	288.1	17.8
Non statutory water and wastewater opex	9.4	12.5	3.1
Other trading activities	27.9	7.2	-20.7
	307.6	**307.8**	**0.2**

In preparing the Statutory Accounts we applied the definitions of core/non core activities consistent with that applied in 2003/04. This differs from the Regulatory Accounts (M and N tables), which have been prepared using definitions proposed in WIC55.

From a regulatory cost perspective, nominal operating costs reduced by £20.9m to £279.7m (£270.3m for core services and £9.4m for traditional non-core services) compared to £300.6m in 2003/04. Continued focus on improving operating efficiency through the business transformation programme has driven this reduction in nominal operating costs.

Real underlying operating costs, when compared to the similar costs of the three former water authorities in 2001/02 (i.e. excluding new operating costs associated with newly commissioned plant), have reduced by £101 million or 29% since the creation of Scottish Water - £30 million in 2002/03, £41 million in 2003/04 and £30 million in 2004/05, as depicted in the following graph.



Total functional expenditure (lines E1.12 & E2.12) reduced by £16.3m (9.0%) from 2003/04 (as detailed below) after absorbing an additional £2.1m of costs associated with new opex. This reduction in operating costs has been driven by the continued focus on improving operating efficiency, through headcount reduction, harmonisation of terms and conditions, increased productivity and general efficiencies.

Analysis of functional expenditure -

	2004/05 £m	2003/04 £m	Variance £m
Total functional costs – Water E1.12	88.830	101.851	13.021
Total functional costs – Waste E2.12	75.773	79.066	3.293
	164.603	**180.917**	**16.314**

Total employment costs (E1.1, E1.10, E2.1 & E2.10) reduced by £11.3m (13.4%) from 2003/04 reflecting the significant headcount reduction in the year, combined with savings resulting from the harmonisation of terms and conditions. The average number of employees during the year reduced by 454 or 10% to 4,0628. Compared with the average level employed by the former water authorities in 2001/02 this equates to a reduction of 1,586 or 28% in the first three years of Scottish Water.

Power costs (E1.2 & E2.2) increased by £1.3m to £18.6m (7.7%), due to the impact of the renegotiated power contract and new operating costs associated with capital investment.

Hired and contracted costs (E1.3 & E2.3) reduced by £4.7m or 21.6% reflecting the reduced reliance on external contractors with more work being carried out in-house by SW employees.

[8] The average headcount includes 253 staff seconded to Scottish Water Solutions.

Spend on materials and consumables (E1.5 & E2.5) increased by £1.5m to £14.4m, with opex efficiency savings being offset by new operating costs associated with capital investment.

SEPA costs (E1.6 & E2.6) increased by £0.8m or 13.5% reflecting the revised charging structure.

Other direct costs (E1.8 & E2.8) were unchanged from 2003/04 at £3.8m.

General and support other costs (E1.11 & E2.11) reduced by £3.9m or 11.3%, again reflecting general opex efficiency savings.

Total business activities spend (E1.16 & E2.16) increased by £0.9m or 2.1% from 2003/04 (as detailed below). Customer Service costs reduced by £0.5m as a result of general efficiency savings and a reduction in collection costs. Within Scientific Services costs increased by £0.3m or 2.2%, with efficiency savings being offset by additional opex costs associated with the new Cryptosporidium Directive (£1.6m). Costs associated with 'other business activities' increased by £1.1m, principally as a result of increased WIC costs (£1.0m), coupled with additional internal costs associated with SR06.

	2004/05 £m	**2003/04 £m**	**Variance £m**
Customer services (E1.13 & E2.13)	27.925	28.391	0.466
Scientific services (E1.14 & E2.14)	11.916	11.657	-0.259
Other business activities (E1.15 & E2.15)	4.978	3.861	-1.117
Total business activities (E1.16 & E2.16)	**44.819**	**43.909**	**-0.910**

Local authority rates (E1.17 & E2.17) reduced by £1.6m from 2003/04 reflecting the impact of property rationalisation and minor rating revaluations. The rates burden in 2005/06 will substantially increase as a result of a change in the basis for calculating the rateable value of the water undertaking, coupled with the impact of the 2005 rating revaluation.

Doubtful debt costs (E1.18 & E2.18) reduced by £4.8m to £33.5m, as detailed below. The domestic charge increased by £1.1m or 4% reflecting tariff increases. The non-domestic charge was £5.9m lower than in 2003/04 reflecting the reduction in aged debt at 31 March 2005 (see F4.2 commentary for details).

	2004/05 Charge	**2003/04 Charge**	**Variance**
Domestic	28.6	27.5	-1.1
Non-domestic	4.9	10.8	5.9
	33.5	**38.3**	**4.8**

Exceptional costs (E1.23 & E2.23) increased by £9.0m to £61.8m, and related to restructuring and transformation costs undertaken as part of the £200m spend to save programme.

Third party costs (E1.25 & E2.25) have been allocated between core and non core in accordance with WIC55 definitions. This differs from the 2004/05 Statutory Accounts which were prepared using definitions of core/non core consistent with those applied in 2003/04.

Third part costs consist of:-

	2004/05 £m	2003/04 £m	Variance £m
Old (inherited) non core activities	6.8	5.7	1.1
New trading activities	28.1	7.1	21.0
Core third party services	6.3	6.8	-0.5
	41.2	**19.6**	**21.6**

Note – the 2003/04 values have been restated to align with the M and N tables which were sent to WIC on 19 May 2005.

Capital maintenance costs (E1.36 & E2.36) reduced by £2.3m but these costs will rise in the future as a consequence of Scottish Water's significant capital investment programme to improve the quality, reliability and efficiency of service provision.

Cost Allocation

A costing framework has been established which seeks to consistently capture operational costs by Asset and Zone. The aim is to directly capture all costs which are directly attributable to running assets.

At the end of 2003/04 the level of asset based cost capture was c.30%. Due to improved direct cost capture in the general ledger and the implementation of a single Works and Asset Management system, the level of cost capture has consistently improved over the course of 2004/05 and has now reached a level of c.70%.

Some extrapolation was required in order to allocate costs from ABM grouped activities costs to individual assets, to individual large works, banded small works and in the case of wastewater, some further analysis was required to allocate costs to treatment stages. In order to achieve this, the aggregated ABM costs have been allocated down to assets/size bands/treatment types etc. in proportion to the direct costs captured at asset level in the general ledger. The confidence grades in tables E4, E5, and E8-10 have been reduced to reflect this.

Water/Wastewater Split of Costs

The proportion of functional expenditure allocated to water activities reduced from 56% in 2003/04 to 54% in 2004/05, as detailed in the table below.

	2004/05 £m	2004/05 %	2003/04 £m	2003/04 %
E1.12 Water	88.830	54%	101.851	56%
E2.12 Wastewater (excl. PFI)	75.773	46%	79.066	44%
	164.603	100%	**180.917**	100%

Of the £16.3m reduction in functional expenditure in the year, £13.0m or 80% of savings were generated in Water activities, with the remaining £3.3m in Wastewater. The savings are discussed in more detail below, but in summary the principal savings were as follows:-

- £11.3m (13.4%) saving in employment costs from 2003/04, reflecting the significant headcount reduction in the year, combined with savings resulting from the harmonisation of terms and conditions. The average number of employees during the year reduced by 10%.
- Reduced reliance on external contractors with more work being carried out internally by SW staff, resulting in a reduction in operating costs.
- Improved operating efficiency resulting from business transformation projects.

- Continued focus on 'working smarter' and improved productivity which has driven further operating efficiency savings.

Table E1 Activity Based Costing - Water Service

E1.0-12 Service Analysis - Water: Direct Costs

Table 1a

Water Resources & Treatment E1.12

	NW £m	NE £m	SE £m	SW £m	Total £m
Functional expenditure:					
2004/05	9.644	8.000	6.535	15.523	39.702
2003/04	9.949	8.572	7.056	17.115	42.692
	0.305	**0.572**	**0.521**	**1.592**	**2.990**

Water resources and treatment costs reduced by £3.0m or 7.0%, from 2003/04. Savings of £2.3m in staff costs (16%) and £1.6m in general and support costs, offset a £1.3m increase in materials and consumables.

53.2% of the savings were generated in the SW area, where water resources and treatment costs reduced by £1.6m or 9.3%. This was principally driven by the substantial headcount reduction in the SW area (143 fewer FTE's in 2004/05, 17.4% lower than in 2003/04). In both the NE and SE operational areas, functional costs reduced by around 7%, again principally driven by headcount reduction. Savings were lower in NW (3.2%) reflecting the geographical spread of assets. Although the number of people employed in NW reduced from 2003/04, the reduction was 4% compared to between 8.7% and 17.4% in the other operational areas.

Water Distribution E1.11

	NW £m	NE £m	SE £m	SW £m	Total £m
Functional expenditure:					
2004/05	9.752	11.104	9.185	19.087	49.128
2003/04	9.465	14.423	12.624	22.647	59.159
	-0.287	**3.319**	**3.439**	**3.560**	**10.031**

Note – 2003/04 figures were restated to correct for an error in the allocation of costs between SW and SE operational areas (£2.326m).

Water distribution costs reduced by £10.0m or 17.0%, from 2003/04. With savings of:-

- £4.4m in staff costs (16.1%), from the reduction in headcount and harmonisation of terms and conditions
- £2.8m (46.6%) in hired and contracted services due to reduced reliance on external contractors
- £3.4m in general and support costs and £0.6m in materials, reflecting the reduction in overheads as a result of reduced headcount and general efficiency savings
- offsetting a £0.7m (24.6%) increase in power costs due to the impact of the renegotiated power contract.

The savings were spread fairly evenly across the NE, SE and SW operational areas. These savings were again principally driven by the substantial headcount reduction in the year and reduced reliance on external contractors. In the NW area costs increased marginally,

although there were savings in direct costs (£0.3m), general and support costs allocated to NW increased by £0.6m, with the allocation of general and support costs in 2004/05 more closely reflecting the geographical spread of assets across Operational areas.

E1.13-26 Operating Expenditure

E1.13 - The allocation of Customer Service costs between water and wastewater was driven by ABM activities. Within ABM, costs were allocated using a number of activity cost drivers including the number of customer contacts from SW's Promise system and the number of bills issued. In total, Customer service costs reduced by £0.5m in the year as a result of a reduction in non domestic collection costs, reduced headcount and general opex efficiencies. The proportion of costs allocated to water services reduced in 2004/05 as a result of improvements in cost allocation within ABM. This resulted in a £1.0m or 6.9% reduction in costs from 2003/04.

E1.14 – The allocation of Scientific Services costs to water and wastewater was driven by ABM activities. Within ABM, costs were allocated using a number of activity cost drivers including the number of sample visits and the number of tests analysed in the year. While the total spend on scientific services increased by £0.3m as a result of new opex costs associated with cryptosporidium, the costs allocated to water activities reduced by £1.3m, with a greater proportion of costs allocated to wastewater from ABM based on resource drivers.

E1.15 – The distribution of the total costs of 'other business services' to water or wastewater was driven by ABM activities based on resource drivers. The total costs associated with 'other business activities' increased by £1.1m, principally as a result of increased WIC costs (£1.0m), coupled with additional internal costs associated with SR06. Costs allocated to water increased by £1.2m.

E1.17 – Local Authority rates for operational assets were captured directly at asset level in the general ledger. Rates for offices and depots were allocated to water and wastewater using ABM. Costs allocated to water reduced by £1.3m in the year as a result of the impact of property rationalisation and minor rating revaluations.

E1.18 – Doubtful debts were allocated to water and wastewater in proportion to the aged debt by service at 31 March 2005.

E1.19-E1.23 – Exceptional costs total £61.8m and relate to restructuring and transformation costs undertaken as part of the £200m Spend to Save programme. These exceptional costs incurred during the year include staff severance costs of £41.3m and £20.5m of other costs, predominantly IT related, associated with the fundamental restructuring and transformation of the business. These costs have been allocated 55% to water and 45% to wastewater which is broadly in proportion to core functional expenditure.

E1.27-28 Reactive and Planned Maintenance (included in Opex)

The allocation of costs to Lines E1.27 and E2.27 was driven by ABM activities.

E1.29-36 Capital Maintenance

E1.29-E1.33 Depreciation is allocated between water and wastewater based on the asset information held in the fixed asset register. For other assets including IT, plant, machinery and vehicles and property, the total depreciation from the fixed asset register is allocated across activities using ABM cost driver data. Depreciation allocated to Other Business Activities has increased by £2.6m to £3.2m in 2004/05. This is principally due to an increase in IT depreciation (£13m increase in the year) a proportion of which was allocated to Customer Services, Scientific Services and Other Business Activities.

E1.35 – Depreciation allocated to Third Party Services increased by £1.1m to £2.0m in 2004/05. Again this is principally due to the increase in IT depreciation, a proportion of which was allocated to third party services.

E1.37-39 PPP Costs

Scottish Water has no PPP water treatment works.

Table E2 Activity Based Costing - Waste water Service

Table E2c
The 2005/06 budget and forecast tables have been populated using the 2005/06 budget approved by the Board in April 2005. The 2006/07 data is based on the Strategic Business Plan issued in April 2005 as part of the SR06 submission. Costs have been pro-rated to service and activity using the 2004/05 E1b data.

E2.0-12 Service Analysis - Waste water : Direct Costs

Table 2a

Sewerage E2.12

	NW £m	NE £m	SE £m	SW £m	Total £m
Functional expenditure:					
2004/05	6.397	9.075	6.754	12.571	34.797
2003/04	5.208	9.506	6.918	15.291	36.923
	-1.189	0.431	0.164	2.720	2.126

Sewerage costs reduced by £2.1m or 5.8%, from 2003/04. There were savings in all cost areas, with the most significant being savings of £1.5m in staff costs (10.5%) and £0.4m in general and support costs.

Costs in the NW area increased by £1.2m, with a £0.7m increase in direct costs which in turn drives a £0.5m increase in the allocation of general and support costs. In total, direct wastewater costs in the NW area reduced year on year, but the proportion of costs allocated to sewerage activities increased. This cost increase was primarily driven by improved visibility of cost capture in the general ledger and the resulting improvement in the allocation of costs to activities within ABM.

£2.7m of savings were generated in Ops SW, where sewerage costs reduced by 17.8% year on year. This was principally driven by the substantial headcount reduction in the SW area (143 fewer FTE's in 2004/05, 17.4% lower than in 2003/04) which generated savings of £0.8m, a reduction in power costs of £0.3m and the reduced reliance on external contractors which resulted in savings of £1.0m.

In the NE and SE operational areas functional costs reduced by 4.5% and 2.4% respectively, again principally driven by reduced headcount. Power costs increased by £0.3m in the year in both the NE and SE areas as a result partly of the impact of the re-negotiated power contract (which reflected the increase in market prices) and partly due to improved visibility of costs from direct cost capture in the general ledger.

Sewage Treatment E2.12

	Total £m
Functional expenditure:	
2004/05	32.141
2003/04	30.874
	-1.267

Note – 2003/04 figures were restated to remove PFI costs to enable a like for like comparison with 2004/05.

Sewage treatment costs are not required to be split by operational area in the Annual Return, year-on-year commentary is therefore provided on total treatment costs.

Sewage treatment costs increased by £1.3m from 2003/04. Costs in 2004/05 include £1.7m for activities which were reported as sludge treatment in 2003/04 (see corresponding reduction in sludge costs year on year). Power costs are not separately captured at Sludge Treatment centres, there is generally only one meter at each site and the power costs associated with this were allocated to sewage treatment in 2004/05. In 2003/04 we estimated that £0.5m of these power costs related to sludge treatment and reported these costs under sludge treatment. In 2004/05, these costs have been included in sewage treatment, but reported on the memorandum line in table E10 for sludge treatment costs. In addition, £1.2m of costs incurred in de-sludging wastewater treatment works were reported under sludge treatment in 2003/04, Scottish Water now consider this to be the final step in the wastewater treatment process and have therefore reported the costs under sewage treatment in 2004/05.

Adjusting for these changes in cost allocation, the underlying costs of sewage treatment were £0.4m lower than in 2003/04, with savings on salaries and hired and contracted costs (£3.7m excluding the £1.2m above) being offset by increases in power (£0.8m excluding the £0.5m above), SEPA (£0.8m), materials & consumables (£1.0m) and general & support costs (£0.6m).

Sludge Treatment E2.12

	Total £m
Functional expenditure:	
2004/05	8.836
2003/04	11.269
	2.433

Sludge treatment costs are not required to be split by operational area in the Annual Return, year-on-year commentary is therefore provided on total treatment costs.

As detailed above, the sludge treatment costs reported in 2004/05 exclude £1.7m of costs associated with activities which were reported as sludge costs in 2003/04. The real underlying movement in sludge treatment costs is therefore a reduction of £0.7m in the year. This is primarily due to a reduction in sludge disposal contract costs in the SW and NE Operational areas.

E2.13-26 Operating Expenditure

E2.13 - The allocation of Customer Service costs between water and wastewater was driven by ABM activities. Within ABM, costs were allocated using a number of activity cost drivers including the number of customer contacts from SW's Promise system and the number of

bills issued. In total, Customer service costs reduced by £0.5m in the year as a result of a reduction in non domestic collection costs, reduced headcount and general opex efficiencies. While Customer service costs reduced by £0.5m, costs allocated to wastewater increased by £0.5m or 3.8%, from 2003/04 as a result of improved cost allocation in ABM.

E2.14 – The allocation of Scientific Services costs to water and wastewater was driven by ABM activities. Within ABM, costs were allocated using a number of activity cost drivers including the number of sample visits and the number of tests analysed in the year. While the total spend on scientific services increased by £0.3m as a result of new opex costs associated with crypto, the costs allocated to wastewater activities increased by £1.6m, with a greater proportion of costs allocated to waste based on ABM resource drivers.

E2.15 – The distribution of the total costs of 'other business services' to water or wastewater was driven by ABM allocations based on resource drivers. The total costs associated with 'other business activities' increased by £1.1m, principally as a result of increased WIC costs (£1.0m), coupled with additional internal costs associated with SR06. However the costs allocated to Wastewater using ABM drivers, reduced by £0.1m.

E2.17 – Local Authority rates for operational assets were captured directly at asset level in the general ledger. Rates for offices and depots were allocated to water and wastewater using ABM. Costs allocated to wastewater reduced by £0.3m in the year as a result of the impact of property rationalisation and minor rating revaluations.

E2.18 – Doubtful debts were allocated to water and wastewater in proportion to the aged debt by service at 31 March 2005.

E2.19- E2.23 – Exceptional costs total £61.8m and relate to restructuring and transformation costs undertaken as part of the £200m Spend to Save programme. These exceptional costs incurred during the year include staff severance costs of £41.3m and £20.5m of other costs, predominantly IT related, associated with the fundamental restructuring and transformation of the business. These costs have been allocated 55% to water and 45% to wastewater which is broadly in proportion to core functional expenditure.

E2.27-28 Reactive and Planned Maintenance (included in Opex)

The allocation of costs to Lines E1.27 and E2.27 was driven by ABM activities.

E2.29-36 Capital Maintenance

E2.29-E2.33 Depreciation is allocated between water and wastewater based on the asset information held in the fixed asset register. For other assets including IT, plant, machinery and vehicles and property, the total depreciation from the fixed asset register is allocated across activities using ABM cost driver data. Depreciation allocated to Other Business Activities has increased by £1.9m to £2.5m in 2004/05, this is principally due to an increase in IT depreciation (£13m increase in the year) a proportion of which was allocated to Customer Services, Scientific Services and Other Business Activities.

E2.35 – Depreciation allocated to Third Party Services increased by £0.2m to £0.3m in 2004/05, again this was principally due to the increase in IT depreciation, a proportion of which was allocated to third party services.

Table E3 PPP Project Analysis

Table Overview

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

The following works form part of each scheme:

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

E3.0-6 Project Data

E3.0a - North West: Highland, Moray Coast - part only (Lossiemouth)

Scottish Water has excluded all costs associated with PPP, including general & and support costs, from table E2b.

E3.0b - North East: Moray Coast - part only (Buckie & Banff/MacDuff), Aberdeen, Levenmouth

E3.0c - South East: AVSE

E3.0d - South West: Dalmuir, Daldowie, MSI

E3.1-2 The determination of resident and non-resident populations is the same as that described in the introduction to Table E8, and also used in E9.1 and E9.2

The population figures have been taken from those used to complete lines E7.1 and E7.2, which were allocated to individual drainage operational areas (DOAs). The population served by each works was taken to be the sum of all the DOAs served by the works.

There has been a general decrease in the resident population reported. About two thirds of this change results from an overestimation of the population reported last year. The remaining decrease is in line with a general decrease in population. There is a marked decrease in the annual average resident connected population since WIC 50, for the following works:

Inverness
Hatton
Nigg
Lossiemouth
Banff/Macduff
Seafield
Whitburn
Levenmouth
Dalmuir

This is due to more accurate allocation of the distribution of properties and population to the waste water boundaries.

There is no significant change in the non-resident population reported.

E3.3 The figures stated here are unsettled COD, which has been estimated from measured settled COD by applying a factor of 1.5. The records of settled COD are held in the Trade Effluent billing system. Unsettled COD has been used for consistency with load data, in which unsettled BOD has been used as being more representative of the load arriving at the works.

Overall there has been an increase of about 20% in the figures compared with last year. This is due mainly to more efficient extraction of data from the billing system.

E3.4 This is the amount of sludge received from other sources including water works and waste water works sludges. Calculation of daily load was from yearly totals/365 and using 95.26 kgCOD/m3 for waste water works sludge and 48.70 kgCOD/m3 for water works sludge. The annual quantities were derived from the Gemini Sludge Management System

In line with a recommendation from the Reporter, sludge loads that are fed directly to treatment centres are excluded from these figures. This is the reason for the very large reduction in the figures, and in the majority of cases the load has been removed altogether.

E3.5 The population equivalent has been assessed from the load received on the basis of 60g BOD/head/day. The method of determining load is fully described in the introduction to Table E8.

There is a slight increase compared with last year: this is a result of increases in the trade effluent and non-domestic loads, offset to some extent by the decreases in resident population and sludge loads noted above.

E3.6 - Based on project status at 31 March 2005. Commissioning of Levenmouth WWTW (sludge dryer system), and Daldowie has yet to be completed.

E3.7-11 Scope of works

E3.7 -Nigg, Fraserburgh, Newbridge & Inverclyde – These works had been wrongly coded in the WIC 50 return as the schemes do include Sewerage.

Fort William	includes incoming sewer and 5 pumping stations
Inverness	includes a major pumping station and associated pumping mains
Hatton	includes extensive pumping mains and pumping stations
Nigg	includes incoming sewer and 6 pumping stations
Fraserburgh	includes short section of incoming sewer and 1 pumping station
Moray Coast	includes extensive pumping mains and pumping stations
Seafield	includes the Esk Valley Sewer, which is served by a number of storm water works and sewage pumping stations.
Newbridge	includes short section of incoming sewer and no pumping stations
Levenmouth	includes 5 pumping stations and associated rising mains and sewers
Inverclyde	includes short section of incoming sewer and 1 pumping station

E3.8 - Only Daldowie does not include sewage treatment – it is exclusively a sludge treatment centre.

E3.9 - The following projects comprise a sewage treatment facility with a common sludge treatment centre:

Highland at Inverness
Aberdeen at Nigg
Moray Coast at Lossiemouth
AVSE (except Seafield) at Newbridge
Dalmuir at Daldowie
MSI at Meadowhead

E3.10 - The following works include incoming terminal pumping stations:

Fort William
Inverness
Hatton
Fraserburgh
Lossiemouth
Buckie
Banff/Macduff
Levenmouth

E3.11 - No plants in this category

E3.17-22 Sewage Treatment - Effluent Consent Standard

E3.17-21 - Data obtained from consents held as part of the PPP contract documentation and verified with the appropriate PPP Company. No changes since previous return.

E3.21- Phosphate consent at Newbridge, East Calder, Blackburn and Whitburn is defined as the mean concentration of total phosphorus in any series of samples in any period of 12 months.

E3.22 - Data obtained from monitoring of SEPA compliance reports.

E3.23-24 Sewage Treatment Flow

E3.23,24 - During 04/05 there were no periods of true dry weather flow, i.e. 7 days without rainfall following 7 days of 0.25mm of rain or less, therefore the following methods have been used to determine dry weather flow and the ratio between maximum and minimum flows.

Confidence grades have been lowered to reflect the lack of true dry weather flow data.

At Highland, Tay, Aberdeen and Moray Coast the data is based on qualifying dry days as defined in Scottish Water's agreements. Namely the mean dry weather flow on all days when there is zero rainfall, following a day when there is less than 0.25mm of rainfall. The ratio of max:min hourly flows is the ratio of the day the median falls on. The PPP Companies provide daily flows and max and min flows for calculating the ratio.

At Banff/MacDuff the ratio is very high due to it being a pumped scheme with low night time flow. The confidence grade is B4 to reflect this.

At Levenmouth dry weather flow is the average daily flow during a dry period from 13 – 27 May (excl 20-21/5) based on flow meter readings. The ratio was derived from scada records of the 26 and 27 May.

AVSE: At Seafield dry weather flow is the average daily flow during a dry period from 13 – 19 May. At all other AVSE sites dry weather flow is the average daily flow during the driest period from 7 – 13 May. Calculations are based on flow meter readings.

At Dalmuir and MSI dry weather flow is the average daily flow during a dry period from 21 – 27 May. At Dalmuir the last day of the dry period was used to establish the ratio of max:min hourly flows. At MSI the ratio cannot be calculated due to it being a pumped scheme with flows dropping to zero at night time. Flows are derived from scada records.

E3.25-31 Treatment Works Category

Information contained in these lines is extracted from the project agreements and is given a confidence grade of A1. There are no changes since the WIC 50 Return.

E3.25 - Levenmouth primary stage does not include primary sedimentation.

E3.26 - Includes all plants except Blackburn

E3.27 – Blackburn is the only waste water treatment works with secondary biological treatment

E3.28 - Nitrifying filters and sand filters - East Calder, Whitburn

E3.29 - UV - Inverness, Persley, Fraserburgh, Banff/MacDuff, Seafield, Levenmouth are the only wastewaster treatment works with tertiary A2 treatment.
Rapid gravity Sand filters - Newbridge, East Calder
Biofors tertiary filter – Meadowhead

E3.30 - No plants in this category

E3.31- Rapid gravity Sand filters – Blackburn

E3.32-37 Miscellaneous Data

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

E3.33 - A number of works include inlet pumping stations. Seafield includes an intermediate lift pump. Lossiemouth, Buckie & Banff/Macduff were wrongly coded in the 2003/04 return.

E3.34 - The 2003/04 return showed "own sludge" facilities at Persley, Fraserburgh, Buckie, Banff/Macduff, Stevenston and Inverclyde. In accordance with the WIC 50 return these are classified as conditioning centres and do not "treat sludge". Accordingly the classifications have been changed.

E3.35 - Not in Use

E3.36 - The Sludge Centres are all as per the WIC 50 Return.

Inverness	receives imported sludge from Fort William and other SW plants
Tay	includes tanker import facilities
Nigg	receives imported sludge from Persley and Peterhead (Fraserburgh goes to Peterhead), and other SW plants
Lossiemouth	receives imported sludge from Buckie and Banff/MacDuff and other SW plants
Seafield	includes tanker import facilities
Newbridge	sludge treatment facilities receive imported sludge from East Calder, Blackburn and Whitburn WWTW
Levenmouth	currently does not accept any sludge imports as sludge treatment facilities are under commission
Daldowie	receives sludge from Dalmuir and other SW plants
Meadowhead	receives imported sludge from Stevenston and Inverclyde

Daldowie is exclusively a sludge treatment centre.

E3.37- Not in Use

E3.38-46 Not in Use

E3.47-57 Sewerage Data
Unless otherwise noted AVSE and Levenmouth data was provided by the PPP Contractors, and all other data is extracted from the project agreements.

E3.47-57

Daldowie - The data in the previous return has now been removed. Although the sludge pumping main and associated pumps are all classified as "sewerage" under the Sewerage Scotland Act 1968 it is considered that items E3.47 – E3.57 are for facilities upstream of the treatment process.

E3.47 - For Fort William, Inverness, Nigg, Fraserburgh, Lossiemouth, Buckie and Banff/Macduff, the lengths of the pipelines are scaled from drawings and these measurements are added up to provide the total length of sewers.

The Hatton figures were extracted from a presentation by the PPP contractor.

Seafield: Esk valley trunk sewer estimated from drawing EVPS/ITN/04 as 23km.

E3.48 - All PPP sewers are deemed to be critical.

E3.49 - There are no separate system pumping stations, hence the number of pumping stations is the total of E3.52 plus E3.54.

Data has been corrected for Inverness, Lossiemouth, Banff/Macduff and Buckie.

E3.50 - There are no separate system pumping stations, hence the capacity (m^3) of pumping stations is the total of E3.53 plus E3.55.

E3.51 - At Highland, Moray, Aberdeen and Tay data was provided by the PPP Operator.

Newbridge: data extrapolated from a pro-rata calculated power rating based on a similar sized works. This is reflected in a confidence grade of B4.

E3.52 - The following combined pumping stations are included:

Fort William	Blar Mhor, Caol No1, Caol Transfer, Fort William, Caol Spit WWTW
Inverness	Longman, Allanfearn (2)
Hatton	Riverside, KGV, Stannergate, South Balmossie, Westhaven, Westferry, Broughty Ferry Castle, Inchcape, Fort Street, Gray Street
Nigg	Downies, Portlethen Village, Newtonhill Clifftop, Portlethen South, Portlethen North
Fraserburgh	Fraserburgh Inlet
Lossiemouth	Burghead, Cummingston, Hopeman, Duffus Junction, Moycroft (2), Oakenhead WWTW
Buckie	Portgordon West, Portgordon East, Seatown, Cluny, Nook, Cullen East, Portknockie, Findochty, Portessie, Shipyard, Buckie WWTW
Banff/MacDuff	Whitehills, Whitehills Harbour, Inverboyndie, Scotstown, Castlehill Park, Union Road, Bankhead, Craigfauld, Banff MacDuff WWTW
Seafield	Wallyford, Marine Esplanade (Seafield Inlet)
Newbridge	Ratho (Newbridge WWTW Inlet)
Levenmouth	Buckhaven, Methil, Leven, Roundall (pumps combined flows during storm conditions. Flows in excess of 600l/s are discharged into Roundall PS and pumped to storm outfall), Levenmouth Inlet

Data at Lossiemouth and Banff/Macduff has been corrected.

E3.53 - Data at Lossiemouth and Banff/Macduff, Seafield and Newbridge has been corrected.

Seafield: Capacity of Marine Esplanade PS pumping station unknown to the PPP Contractor. Used Scottish Water Albert Road PS capacity as assets are identical.

Newbridge: data extrapolated from SEPA consent flow rate based on a similar sized works. A confidence grade of B4 has been allocated to reflect this.

E3.54 - The following stormwater pumping stations are included:

Inverness	Longman
Hatton	Riverside, KGV, Stannergate, Westhaven, Broughty Ferry Castle, Inchcape
Nigg	Nigg WWTW
Lossiemouth	Moycroft
Buckie	Portessie
Banff MacDuff	Bankhead

Data at Inverness and Buckie has been corrected.

E3.55 - Data at Buckie and Banff/Macduff has been corrected.

E3.56 & E3.57 The following CSOs are included:

Fort William	Caol No1, Caol Transfer, Caol Spit WWTW (2)
Inverness	Longman, Allanfearn
Hatton	Riverside, KGV, Stannergate, South Balmossie, Westhaven, Broughty Ferry Castle, Inchcape, Panmuirefield (2)
Nigg	Downies, Portlethen Village, Newtonhill Clifftop, Portlethen North, Nigg
Fraserburgh	Fraserburgh Inlet
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	Walliford, Dalkeith, Hardengreen, Harelaw, Haveral Wood, Mayshade, Middlemills, Newbattle, Newton Grange, Suttislea
Newbridge	Broxburn
Levenmouth	Buckhaven, Methil, Leven, Roundall

Data at Fort William has been corrected.

E3.58-65 Sludge Treatment and Disposal Data
In previous years the sludge quantities reported have been the sludge quantities recycled to each route. This year the quantities reported are the total sludge treated at the sludge treatment facilities including the sludge destroyed through the treatment process. This is in accordance with the methodology used in England & Wales and agreed with the Reporter at a technical meeting with Scottish Water.

The information is based on PPP Company records of sludge disposed to the appropriate route, except Allanfearn where the information comes from Scottish Water operations (North West).

TABLE E3a

This table is to provide operating costs for each scheme. As actual data is not available, all costs have been extracted from the financial model. Where the financial model doesn't split costs the following has been assumed:

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

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 identified rates and SEPA charges these have been deducted otherwise actual charges were deducted.

No adjustments were made at Daldowie (rates only), MSI and AVSE as charges are paid by SW and are not included in the financial model. At Dalmuir SW pays the charges but amounts are also included in the model, therefore an adjustment to the model costs was made (rates and SEPA charges included in the model are refunded to SW).

Actual costs are not known and could vary considerably from the financial model. A confidence grade of D6 has therefore been used.

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 SW 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.

See table overleaf:

	E3a.2	E3a.9	E3a.17	
Site	**N**	**T**	**S**	**Comment**
Fort William	N	B3	N	no sludge centre, sludge cost moved to Inverness
Inverness	N	B3	B3	cost distribution is estimated
Tay	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, sludge cost moved to Nigg
Peterhead	N	B3	N	no sludge centre, sludge cost moved to Nigg
Fraserburgh	N	B3	N	no sludge centre, 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 sewerage and 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 sludge centre at works
Daldowie	N	N	A2	sludge treatment only
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

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

These are based on SEPA charges for 03/04 (which were provided by the PPP Contractor) increased by 12% (SEPA charges paid by SW increased by about 12% from 03/04 to 04/05)

Confidence grade for total charges for each site is A2, but because SEPA fees have to be split to take account of the sewerage, treatment and sludge elements the following confidence grades have been assigned:

See table overleaf:

	E3a.3	E3a.10	E3a.18	
Site	**N**	**T**	**S**	**Comment**
Fort William	A2	A2	N	split provided by PPP no cost against sludge as no sludge centre
Inverness	A2	B3	BX	PPP Contracted didn't provide split cost for treatment and sludge, no cost allocated to sludge
Tay	A2	B3	BX	PPP Contracted didn't provide split cost for treatment and sludge, no cost allocated to sludge
Nigg	BX	B3	BX	no split from PPP Contracted, allocated all cost to treatment
Persley	N	A2	N	no sewerage and no sludge centre at works
Peterhead	N	A2	N	no sewerage and no sludge centre at works
Fraserburgh	BX	B3	N	no sludge centre at works, network cost not known but very small
Lossiemouth	A2	B3	BX	PPP Contracted didn't provide split cost for treatment and sludge, no cost allocated to sludge
Buckie	A2	A2	N	split provided by PPP Contracted, no cost against sludge as no sludge centre
Banff MacDuff	A2	A2	N	split provided by PPP Contracted, no cost against sludge as no sludge centre
Seafield	N	A2	A2	no network cost, treatment + sludge cost provided by PPP Contracted
Newbridge	N	A2	A2	no network cost, treatment + sludge cost provided by PPP Contracted
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	B3	BX	PPP Contracted didn't provide split cost for treatment and sludge, no cost allocated to sludge
Dalmuir	N	N	N	SEPA fees paid by SW
Daldowie	N	N	A2	sludge treatment only
Meadowhead	N	N	N	SEPA fees paid by SW
Stevenston	N	N	N	SEPA fees paid by SW
Inverclyde	N	N	N	SEPA fees paid by SW

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

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.

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

This includes advisors and legal costs, power, rents and insurance etc. and the cost of the SW PPP department that deals with PPP schemes which have been allocated to projects based on opex. Costs are as per the P&L.

Confidence grade for total charges is A1, but because the SW 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:

	E3a.5	E3a.12	E3a.20	
Site	**N**	**T**	**S**	**Comment**
Fort William	BX	B4	N	network cost very small, no cost against sludge as no sludge centre
Inverness	B4	B4	B4	
Tay	B4	B4	B4	
Nigg	B4	B4	B4	
Persley	N	B4	N	no sewerage and no sludge centre at works
Peterhead	N	B4	N	no sewerage and no sludge centre at works
Fraserburgh	BX	B4	N	network cost very small, no cost against sludge as no sludge centre
Lossiemouth	B4	B4	B4	
Buckie	B4	B4	N	no sewerage and no sludge centre at works
Banff MacDuff	B4	B4	N	no sewerage and no sludge centre at works
Seafield	B4	B4	B4	
Newbridge	BX	B4	B4	network cost very small
East Calder	N	B4	N	no sewerage and no sludge centre at works
Blackburn	N	B4	N	no sewerage and no sludge centre at works
Whitburn	N	B4	N	no sewerage and no sludge centre at works
Levenmouth	B4	B4	B4	
Dalmuir	N	B4	N	no sewerage and no sludge centre at works
Daldowie	N	N	B4	sludge treatment only
Meadowhead	N	B4	B4	no sewerage
Stevenston	N	B4	N	no sewerage and no sludge centre at works
Inverclyde	BX	B4	N	network cost very small, no cost against sludge as no sludge centre

E3a.6, 13, 21 Scottish Water SEPA Charges

With the exception of Dalmuir and MSI, all standard SEPA charges are met by the Concessionaire and are included in the tariff rates. At Nigg SW meet the additional SEPA charges associated with 2 parameters as detailed in the contract.

Confidence grade for total charges for each site is A1, but because SEPA fees have to be split to take account of the sewerage, treatment and sludge elements the following confidence grades have been assigned:

See table overleaf.

	E3a.6	E3a.13	E3a.21	
Site	**N**	**T**	**S**	**Comment**
Fort William	N	N	N	SEPA charges paid by PPP Contractor
Inverness	N	N	N	SEPA charges paid by PPP Contractor
Tay	N	N	N	SEPA charges paid by PPP Contractor
Nigg	N	A2	N	treatment cost only (exotics)
Persley	N	N	N	SEPA charges paid by PPP Contractor
Peterhead	N	N	N	SEPA charges paid by PPP Contractor
Fraserburgh	N	N	N	SEPA charges paid by PPP Contractor
Lossiemouth	A2	N	N	relates to Moycroft
Buckie	N	N	N	SEPA charges paid by PPP Contractor
Banff MacDuff	N	N	N	SEPA charges paid by PPP Contractor
Seafield	N	N	N	SEPA charges paid by PPP Contractor
Newbridge	N	N	N	SEPA charges paid by PPP Contractor
East Calder	N	N	N	SEPA charges paid by PPP Contractor
Blackburn	N	N	N	SEPA charges paid by PPP Contractor
Whitburn	N	N	N	SEPA charges paid by PPP Contractor
Levenmouth	N	N	N	SEPA charges paid by PPP Contractor
Dalmuir	N	A2	N	no sewerage and no sludge centre at works
Daldowie	N	N	N	SEPA charges paid by PPP Contractor
Meadowhead	N	B3	BX	no split from PPP Contractor, allocated all cost to Treatment
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
Confidence grade for total sewerage cost, total sewage treatment cost and total sludge treatment and disposal cost is D6 as per E3a.1, 8 and 16 (estimated direct operating cost) as this is the most significant element of the cost.

E3a.15 - At all schemes the terminal pumping station costs are met by the Concessionaire and are included in the tariff rates. Accordingly, there is no data.

E3a.24 - Confidence grade for total charges is A1, but because SW PPP department costs have to be split across all sites a confidence grade of B3 has been allocated.

E3a.25 - 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 - The total annual charge is based on the service fees for the year, contingencies and rates (including rebates). Expenditure is taken from the P&L. Following the settlement of the Nigg claim a provision of £3.1m has been reversed.

Confidence grade for the AVSE schemes is B3 as the charges are based on the total AVSE flows. There is no separate charge for each scheme.

E3a.27 - The public sector capital equivalent 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 01/02 WIC return.

E3a.28 - The period quoted is the contract period as defined in the contract.

E3a.29 - Contract end date is as defined in the contract.

Table E4 Water Explanatory Factors - Resources and Treatment

General Comments

There have been continued improvements in the understanding of Scottish Water's non-infrastructure assets during the past year. Auditing is ongoing by Asset Directorate - Strategy and Planning (S&P) of the status of all water supply sources (including minor sources, compensation reservoirs and intakes) to confirm accuracy of the SW Assets. The information collected from data improvement programmes is held within the asset inventory as part of the Works and Asset Management System (WAMS) to allow most data to be sourced from the corporate data set. This allows consistency between Table E and Table H. Where data improvement has taken place for this year's Return, changes will be uplifted back into WAMS.

Although data has improved, it is recognised that there are still data gaps which have required estimates to be made for the submission. These are detailed further within the relevant sections of the commentary below (and within Table H commentary).

E4.0-12 Source Types

E4.0 – E4.5*:* Overall there has been a decrease of 2% in the number of sources from last year, (from 663 to 650) as shown in the table below:

Changes to the Number of Sources

AR04 No. Of Sources	663
Tributaries removed	-11
Incorrect/ no longer used	-24
Additional due to site audits	29
Reductions due to WTW closures 2003-04	-10
Additional due to new WTW 2004-05	3
AR05 No. of Sources	650

These changes are a result of on-going data maintenance by the Water Resource and Reservoir Team within the Assets Strategy & Planning Section. Work has been carried out during the year to improve the understanding of water sources, including on-site audits. This has improved the confidence grades from B4 to B2. The data is stored in the resource planning database. This is referred to in the commentary for Table B1 Water Availability.

As a result of the audit work being input into the corporate system, there are small number changes between source types. However, the overall proportional breakdown of source output produced has not changed significantly.

Where a WTW is served by more than one source type, the output has been allocated to the major source and the minor source output reported as zero. This is due to the fact that the raw water is generally not metered. Confidence grades for this section of the table have changed from B4 to C4 to reflect the overall confidence grade of total distribution input as reported in Table A2.38. The B4 confidence grades reported last year reflected the number of sources by type.

In the section 'Own Source Outputs' the distribution input has been used to calculate the average daily output derived from each source type. This does not take into consideration losses as a result of raw water transmission and during water treatment processes.

Where a WTW was operational for only part of the year, the annual output that was put into supply is included, and the WTW is included in the count of number of works. Since the frequency with which flow meters are read varies (by telemetry or manually - daily, weekly or

monthly) the average daily supply has been calculated as the sum of the annual outputs in megalitres divided by 365.

Distribution Input is virtually unchanged from last year.

E4.6 to E4.7: Scottish Water does not have any raw water exports and correspondingly an A1 confidence grade has been entered for this line.

E4.8 to E4.12*:* There are minor changes to the proportion of distribution input reported by source type.

E4.13-16 Peak Demand and Pumping Head

E4.13: The peak demand to average ratio was calculated using works output data. There has been a change in methodology as detailed below:

In AR04, the maximum output for every WTW in the area was added together to give a peak output by Operational Area. This resulted in different peak weeks per WTW. This year, the overall peak week by Operational Area was calculated. This has significantly lowered the peak values.

For three of the Operational Areas and the overall Scottish Water value, the peak week occurred in 2003-2004; which is reasonable as 2003/04 year was known to be representative of a dry year. However, the NW area peak week occurred in September 2004. This coincides with the new Loch Calder being fully commissioned and a number of WTW also peaking during this month.

Area	Maximum Weekly Volume (Ml/d)	Distribution Input (Ml/d)	Week Ending	Year when peak occurred	Ratio
NE	453.15	427.82	15/08/2003	AR04	1.059
NW	191.60	180.93	27/09/2004	AR05	1.059
SE	413.89	385.61	30/05/2003	AR04	1.073
SW	1478.61	1395.79	05/03/2004	AR04	1.059
Scottish Water	2455.08	2386.51	15/08/2003	AR04	1.029

The confidence grade remains at C4 to reflect the current distribution input confidence grade as in line A2.38.

E4.14 and E6.14-E6.16 Pumping Head - General Comments

The formula below was used to calculate pumping head:

$$Average\ pumping\ head = \frac{\sum (l_i * wp_i)}{d}$$

Where:
i = each site at which pumping occurs
l_i = annual mean lift at site i (m)
wp_i = volume of water pumped at site i
d = distribution input

Methodology

A number of methods were used in determining the average pumping head, depending upon the data available. Lift and flows were assessed separately. Methodologies used are listed below, in order of accuracy:

1) Lift data extracted from the WAMS corporate dataset
2) Continuously recorded or limited flow data for the report year (AR05 Data)
3) Estimates calculated for the re-fresh calculation in July 2004 to support SR06
4) Use of data collected for 2003-04 Return (AR04 Data)
5) Extrapolated by pump type (Distribution or Resources & Treatment) in the same Operational Area, using kw bands

Where borehole lift data was unavailable the following assumptions were used to estimate the mean lift across all borehole pumps:

Borehole lift = 25m estimated Borehole depth
10m estimated headloss
15m target level of service
10m estimated difference in elevation
= 60m

The methodology used to calculate the flow and lift data is shown in the Table below.

Methodology Table: Percentage of pumping head by method

	Method Used to Calculate Lift					
Method Used to Calculate Flow	Ellipse Lift	AR05 Average Lift	SR06 Average Mean Lift	AR04 Average Mean Lift	Average Lift	Total % of Flow Method Used
AR05 Pumped Volume	9.5%	4.2%	6.7%	53.5%	3.8%	77.7%
SR06 Annual Pumped Volume	3.3%	0.4%	0.3%	0.9%	0.0%	4.8%
AR04 Annual Pumped Volume	1.5%	0.7%	0.9%	7.7%	0.0%	10.8%
Average Flow Used	0.2%	0.0%	0.0%	0.0%	6.4%	6.7%
Total % of Lift Method Used	14.5%	5.2%	7.9%	62.1%	10.2%	100.0%

In summary, 77.7% of the total flow volumes were re-estimated for this report year. 14.5% of the lift data was sourced directly from the corporate WAMS system. A further 5.2% of the lift data was estimated for this report year.

A single asset list of pumping stations was sourced from the WAMS and is consistent with those reported in Table H.

E4.14: Resource and Treatment Average Water Pumping Head

The resource and treatment average pumping head figure has increased slightly by 0.74m from 20.95m in AR04 to 21.69m. The following table details the Resources & Treatment pumping head calculated for 2003 and 2004 and 2005.

Resources & Treatment Pumping Head Table

	Units	NW	NE	SE	SW
Resources & Treatment					
E4.14: Av. Pumping Head - **2005**	**m**	**16.03**	**26.52**	**11.46**	**23.79**
E4.14: Av. Pumping Head - **2004**	m	24.24	31.85	13.13	19.36
E4.14: Av. Pumping Head - **2003**	m	19.30	20.17	9.82	12.35

Summary of Major Changes

North West
Spey Boreholes – Dipple and Loch Nell Intake account for 55% of the Resources &Treatment pumping head calculation in this area. Both these pumps have measured figures for AR05. In previous years, estimates were used.

North East
The pumping volume of the River Earn Abstraction Pump (which has an average mean lift of 200m) decreased from 11,358 Ml/year to 7840 Ml/year. The increase during 2003-04 was due to dry weather conditions resulting in a large increase in pumping from the River Earn to Glenfarg WTW by using an additional number of pumps. As reported last year, this is not considered to be "average" conditions as reflected in the reduction in pumped volume this year.

South East
The Hungry Snout pump accounts for 50% of the South East R&T pumping head calculation. The pumping head has reduced by 31% due to a 2.5 Ml/d reduction in pumped volume and a revised lift reduction of 25m.

South West
The top 4 R&T pumps in the South West account for 90% of the R&T pumping head. Measured flow data is available for all 4 pumps; all have increased estimates when compared to AR04.

E4.17-23 Water Treatment Works by Process Type

The works process type is defined in WAMS. Manual checking of the information accuracy was carried out by the new Area Asset Planning Teams for last year's Return. Slight changes have been made to reflect changes as detailed below.

The total number of works has decreased from 371 to 368. Although nine works have been closed, 6 new works have been added.

The confidence grade is C4 to reflect the current distribution input confidence grade as in line A2.38. The B4 confidence grades reported last year reflected the number of works by process type.

E4.24-E4.29: The proportional breakdown of distribution input between the process types has not changed significantly.

E4.30-39 Water Treatment Works by Size Band

The peak hydraulic capacity that was used to place each works in the size bands was determined by the maximum output recorded in WAMS. The maximum output is determined by the actual maximum hydraulic throughput for individual works. The proportional breakdown of distribution input by works size band is almost identical to last year.

E4.41-46 Bulk Import and Exports

E4.41-E4.42 - Both zero as there are no bulk imports or exports to or from other agencies.

E4.43-E4.44 – Both imports and exports are entered as positive values to ensure that the net change in volume (E4.45) is equal to zero.

E4.47-58 Costs

ABM groups the costs of water treatment into two categories - small and large works. The aggregated ABM costs were distributed to individual large works and to small asset bands, in proportion with the direct costs captured in the financial ledger. The costs of water sources and water sludge have been allocated to treatment works based on treatment costs by sizeband. (The costs of treating and disposing of water sludge are contained within water resources and treatment.)

Confidence grades are lower than those in E1b to reflect the levels of allocation that were required.

The total water resources and treatment costs in Table E4 have been aligned with operational size band data provided by Scottish Water's Asset Operations team.

Analysis of water resources and treatment costs by size band:-

	NW	NE	SE	SW	Total
Small treatment works (£m):-					
2004/05	8.469	3.288	3.471	6.246	21.474
2003/04	8.828	3.819	2.661	7.499	22.807
	0.359	**0.531**	**-0.810**	**1.253**	**1.333**
Small treatment works (nr):-					
2004/05	224	33	41	44	342
2003/04	224	33	42	46	345
	-	**-**	**1**	**2**	**3**
Large treatment works (£m):-					
2004/05	1.175	4.711	3.065	9.277	18.228
2003/04	1.121	4.752	4.396	9.616	19.885
	-0.054	**0.041**	**1.331**	**0.339**	**1.657**
Large treatment works (nr):-					
2004/05	2	7	6	11	26
2003/04	2	7	6	11	26
	-	**-**	**-**	**-**	**-**
Total (£m):-					
2004/05	9.644	7.999	6.536	15.523	39.702
2003/04	9.949	8.571	7.057	17.115	42.692
	0.305	**0.572**	**0.521**	**1.592**	**2.990**
Total (nr):-					
2004/05	226	40	47	55	368
2003/04	226	40	48	57	371
	-	**-**	**1**	**2**	**3**

Water resources and treatment costs reduced by £3.0m or 7.0%, from 2003/04. Savings of £2.3m in staff costs (16%) and £1.6m in general and support costs, offset a £1.3m increase in materials and consumables.

Total spend on small works reduced by £1.3m or 5.8% from 2003/04. While the total costs of water treatment in the SE area reduced by £0.5m in the year, the proportion of costs allocated to small works increased by £0.8m as a result of the improved cost capture in the general ledger.

An explanation for variances in large treatment works is provided at E5 below.

Table E5 Large Water Treatment Works Information Database

General Comments

- All data is for the financial year 1 April 2004 to 31 March 2005.
- All data included in these lines were taken from the Laboratory Information Management System (LIMS), with the exception of line E5.14. The data for line E5.14 was taken from the 2005 risk assessments carried out in accordance with the Cryptosporidium (Scottish Water) Directions 2003.
- The raw water data is based on the limited operational baseline sampling programme taken at the water treatment works.
- Iron, manganese, aluminium and THM sampling is not a statutory requirement at water treatment work finals but is a statutory requirement at the customers' tap. The data is based on limited operational baseline sampling taken at the water treatment works. Therefore 0% samples exceeding threshold value may indicate a lack of samples and as such is not necessarily representative of the final water quality.
- The final water coliform and turbidity data are based on statutory sampling taken at the water treatment works.
- Table E5 contains the same 26 large WTWs >25 Ml/d throughput as last year's return. They are listed in alphabetical order within operational area order. Works 1 and 2 are in NW; works 3 to 9 are in NE; works 10 to 15 are in SE; works 16 to 26 are in SW.
- Information provided in this section of the table has been taken from existing data within the Works and Asset Management System (WAMS) and various Water Treatment and Water Quality data-sets.
- All data are for the financial year 1 April 2004 to 31 March 2005.

E5.0-4 Works size

E5.1 - The average daily flow reported here is consistent with distribution input figures reported in Table E4.

E5.2 – This figure is based on daily average of the peak seven day period as per the definition in line E4.13.

E5.4 – Headroom in this table is arrived at via a simple calculated field.

Variance in confidence grades in this section reflect the different levels of data currently held on each of the works, in particular, the varying accuracy of bulk flow measurement devices.

E5.5-14 Raw Water Source

E5.6-5.9 - See general comments

E 5.10-11 - Parameter 'a' is iron. This is considered a problem at some works. The units for parameter 'a' are measured in µgFe/l.

E 5.12-13 - Parameter 'b' is manganese. This is considered a problem at some works. The units for parameter 'b' are µgMn/l.

E5.14 - This is the overall works risk score derived according to the procedures laid down in the Cryptosporidium (Scottish Water) Directions 2003. The score given includes factors such as the treatment processes in place as well as the condition of the catchment and raw water source. High risk is a risk assessment score of greater than 100, medium risk is a score between 100 and 50 and low risk is a score of less than 50. The risk score given for some of the water treatment works differs from the 2003/04 risk scores provided because 2003/04 scores were based on the Cryptosporidium (New Water and Sewerage Authorities) Direction 2002 rather than the Cryptosporidium (Scottish Water) Directions 2003.

E5.15-20 Compliance and Performance

E5.15-20 – The compliance value in line E5.15 is the PCV of 0 coliforms/ 100ml. The threshold value in lines E5.16 to E5.20 is the PCV for that parameter.

E5.21-25 Processes

This information is extracted from the dataset used to populate Table E4.

E5.26-30 Miscellaneous Data

There has been no major investment at any of the water treatment works with a capacity of greater than 25ML/d. As a result the information contained in the miscellaneous data section of the table has not changed from last year with the exception detailed below:

Bradan and Daer were both incorrectly reported as having intake works on site last year. This has been corrected this year.

E5.31-42 Works Cost

E5.31-39 Works Cost

As explained in section E4, costs have been allocated from ABM grouped large works to individual works in proportion to the direct costs captured by asset within the financial ledger. Confidence grades are lower than those in E1b to reflect the levels of allocation that were required.

Analysis of costs for large water treatment works:-

	2004/05 £m	2003/04 £m	Variance £m
Inverness	0.539	0.305	-0.234
Badentinan	0.636	0.816	0.180
Total NW	**1.175**	**1.121**	**-0.054**
Litrathen	0.522	0.406	-0.116
Turiff	0.786	0.891	0.105
Mannofield	0.754	0.805	0.051
Glendevon	0.642	0.701	0.059
Glenfarg	0.955	0.917	-0.038
Clatto	0.451	0.425	-0.026
Invercannie	0.601	0.607	0.006
Total NE	**4.711**	**4.752**	**0.041**
Marchbank	0.459	0.339	-0.120
Castlemoffat	0.850	1.091	0.241
Roseberry	0.574	0.854	0.280
Pateshill	0.520	0.775	0.255
Alnwickhill	0.199	0.466	0.267
Fairmilehead	0.463	0.871	0.408
Total SE	**3.065**	**4.396**	**1.331**
Camphill	0.563	0.410	-0.153
Camps	0.311	0.236	-0.075
Turret	0.465	1.390	0.925
Muirdykes	0.607	0.574	-0.033
Blairinnans	0.482	0.447	-0.035
Overton	0.644	0.496	-0.148
Carron	1.048	1.008	-0.040
Daer	0.996	0.695	-0.301
Bradan	1.341	1.247	-0.094
Balmore	2.005	1.733	-0.272
Milngavie	0.815	1.380	0.565
Total SW	**9.277**	**9.616**	**0.339**
Total Large WTW's	**18.228**	**19.885**	**1.657**

The number of large works remains unchanged from 2003/04 at 26. Costs reduced by £1.7m or 8.3% year on year.

The increased direct cost capture at asset level within the general ledger has allowed improved visibility of costs. This has resulted in some movements in costs (both favorable and adverse) against individual assets in the year, but this has resulted in a more robust assessment of costs in 2004/05.

E5.41 – The cost of treated water pumping is included within water distribution.

E5.42 – The costs of treating and transporting water sludge have been derived from ABM activity costings.

Table E6 Water Explanatory Factors – Distribution

E6.0-7 Area data

E6.0 - Scottish Water is split into four operational areas (North West, North East, South East and South West).

The North West operational area has a very low population density due in part to the number of sparsely populated islands it serves and is rural in nature. The South West has the highest population density of the four operational areas and is more urban in nature but is still not as densely populated as the average E&W company. The South East and North East are predominantly rural areas.

E6.1 - The operational area split of population connected to the water distribution system is built up from population figures provided by the unitary authorities and projected GRO population estimates. Three unitary authority areas (Argyll & Bute, Falkirk and Moray) overlap Scottish Water operational area boundaries. For these areas, OS address points were overlaid across the unitary authority boundaries and operational area boundaries to assign address points to an operational area. Populations were then assigned to operational areas based on the split of address points.

Period 12 data has been used to calculate the population by 4 Operational Areas. This results in a slight discrepancy of 92 people when comparing Table A1.71 and E6.1.

E6.2 - The total number of connected properties has been calculated from Period 12 data. This results in a slight discrepancy when comparing Table E6 to Table A2. Please refer to Table A2.32 Total Water Delivered Commentary for a further breakdown of the differences. The number of non-domestic measured and unmeasured non domestic properties has been sourced from Scottish Water's billing system. The confidence grade reported by operational area is the same as that reported at Scottish Water level. This is an improvement from last year, as no extrapolation was required.

E6.3 - Volume of water delivered to households is the sum of lines A2.1 and A2.5. This methodology is detailed in the commentary for Table A2. There is a slight rounding error when comparing the A2 Tables and Table E6. This is due to Table E6 being reported to 2 decimal places.

The confidence grade at the operational area level is lower than that reported at the Scottish Water level as a number of components of water delivered calculation are Scottish Water specific and not area specific. In particular the per capita consumption figure used is an all-Scotland figure, taken from the Domestic Water Consumption Study 1999. Therefore the confidence grade remains at C4. Further commentary is provided in Table A2.1 Water Volumes.

E6.4 - All measured and unmeasured non-domestic data have been sourced from Scottish Water's billing system. The data has been spatially referenced to postcode level by mapping the corporate address point file to the addresses held within Hi-Affinity. Postcode boundaries together with Water Operational Area boundaries taken from the corporate GIS enabled the derivation of the number and associated water volumes delivered to non-domestic properties. This is consistent with lines A2.9-A2.16 and A2.22 to A2.24 with a slight adjustment of 0.33 Ml/d for Period 12 data. See comment in E6.2 above.

The 2003/04 volumes for unmeasured non-domestic customers were based on 37.3 m3 per £1000 of water rateable value and sourced from Hi-Affinity. These figures were adjusted to include supply pipe leakage for unmeasured customers and unmeasured void customers. A confidence grade of B2 was allocated to the information held in the customer billing systems.

This has been applied to the 4 Operational Areas. This an improvement on last year's confidence grade of C4 due to better geographical allocation of volumes.

E6.5 Area of the Operational Areas
This is the total geographical area within each of Scottish Water's four operational areas, as calculated on the corporate GIS. These boundaries are unchanged since the previous submission but a transposed error between the SE and SW areas has now been corrected.

E6.7 Number of Supply Zones
The new drinking water regulations (The Water Supply (Water Quality) (Scotland) Regulations 2001) came into force at the end of 2003. These allow an area designated for the purpose of the regulations to cover a maximum population of 100,000 (formerly 50,000) and in which all the premises are supplied for domestic purposes from the same water source or combination of water sources.

This data was extracted from Scottish Water's GIS. There has been a reduction in the number of zones due to a number of supply changes and boundary alterations.

E6.8-13 Water Mains Data

E6.8 & E6.10 Water Main data by Operational Area
The total length of main and the length of main > 300mm are as recorded on the Scottish Water's corporate GIS and both show a slight increase on the previous submission.

E6.9 Total Length of Unlined Iron Mains
This is the total length of unlined iron main (cast, spun and ductile) as recorded on Scottish Water's corporate GIS. The unlined iron mains length has decreased slightly by 148km; a 0.8% drop in length over AR04. This reduction in length is due to asset improvement and also better information.

E6.11 Water Mains Bursts
The base data for bursts on water mains is taken from two sources; the Scottish Water Work and Asset Management System (WAMS) and the Scottish Water Solutions Proactive Leakage Register. Job codes reflecting repairs to water mains were abstracted from both data sets and cleansed to ensure no rechargeable (e.g. utility strikes) or communication/customer service pipe repairs were included. The proportion of bursts by operating area is based on polygon analysis.

The number of bursts has risen by 1,636. This is due to the comprehensive collection of bursts within the WAMS and the Proactive Leak Register. The assessment is based on good quality and consistent data across Scottish Water. Confidence grades for AR05 burst data have increased accordingly.

E6.12 Total Leakage

At present Scottish Water does not have a sufficient number of DMAs set up in the distribution system to allow reliable estimates of total leakage to be made from night flow measurements, as specified in the WICS reporting requirements. As such, this line has been calculated as described in Table A2.

E6.13 Properties Reported for Low Pressure

Data reported in this line originates in the calculations behind Table B2. Data from last year's WIC return has been updated based on the following information:

- Information from Level 1 DMA reports being produced as part of the Capital Investment Programme;
- Information from the Glasgow Pressure Management Database;

- Operations Information;
- Capex 5 submissions.

E6.14-16 Pumping Stations

The number of pumping stations and service reservoirs has been sourced from the WAMS. See E4.14 and E6.14-E6.16 - General Comments above.

E6.14 - The confidence grade of this line has increased to B2 due to the pumps now being held within a corporate dataset. There has been some movement of pumps between Resources and Treatment and Distribution categories. This is a reflection of data improvements carried out over the last two years.

E6.15 - The total pumping capacity has been calculated for the operational pumping stations.

The methods used in determining the distribution pumping capacity in M3/d are listed below in order of accuracy:

1. Taken from WAMS corporate system
2. Use of historical 2004 data
3. Estimations based on average of similar pumps using kw bands in each Operational Area

The confidence grade has remained at C4 due to the considerable use of extrapolation.

E6.15a - Data from the Works and Asset Management System (WAMS) has been used to provide total KW capacity for pumping stations. Refer to Table H commentary for further methodology.

E6.16 - The methodology used to calculate the average distribution pumping head is detailed under E4.14 section as a global approach has been applied to all pumps.

The distribution average pumping head has increased from 29.63m to 34.58m (see Distribution Pumping Head Results Table below).

Distribution Pumping Head Results

	Units	NW	NE	SE	SW
Distribution					
E6.16: Av. Pumping Head – **2005**	**m**	**23.28**	**57.49**	**3.29**	**37.76**
E6.16: Av. Pumping Head – **2004**	m	14.24	35.05	2.99	37.29
E6.16: Av. Pumping Head – **2003**	m	15.00	21.00	7.20	28.00

Summary of Major Changes

North West
The source of the lift data used has changed for most of the pumps (73%) from estimated data to WAMS data. In many cases, this has resulted in a higher lift and therefore a higher pumping head value.

North East
The Inchgarth pumps have increased pumped volumes of 21.6Ml/d from 0.1 Ml/d due to an improved estimate based on 50% of the distribution input of Mannofield WTW. The Whitehill 1 +2 TWP have increased from an AR04 flow of 18.3 Ml/d to 38 Ml/d. This is now based on telemetry data.

South East Area:
No major changes to the SE area.

South West:
No major changes to the SW area.

Confidence Grades
Confidence grades remain at C4 with the exception of the South West Area. The higher accuracy of band 3 has been awarded to this area due to better information used from continuously logged flow and pressure data for priority pumps.

E6.17-20 Service Reservoirs & Water Towers

The number of service reservoirs has decreased from 1692 to 1656 (including an increase in water towers) but with an increase in total capacity from 4150 to 4200 Ml. All data has been sourced from the corporate Asset Inventory.

The confidence grades for the number of service reservoirs have improved to a B2. This is a reflection of some of the data improvement undertaken over the last year as part of the on-going asset data improvement process.

The confidence grade of E6.18 (Total capacity of service reservoirs), has improved from C4 to B4. This is due to data being sourced from the corporate data set with 13% extrapolation.

The confidence grade of E6.20 (Total capacity and water towers) has improved from C4 to B2. This is due to data being sourced from the corporate data set with only 2% extrapolation.

Table E7 Waste water Explanatory Factors – Sewerage

General Comments

E7.0-7 Area Data

E7.0 This line is pre-set by WIC to name the Operational Areas.

E7.1 - The distribution of the resident connected population is consistent with the overall population figures reported in other tables of the Annual Return. The distribution involved allocating population occupancy rates to address point counts, which allowed accurate distribution of properties and population to the waste water boundaries. The overall population figure has decreased. The use of the Scottish Water corporate database of non domestic properties, to obtain a more accurate count of domestic properties, was an improvement on last year's assessment.

E7.2 - The distribution of the tourist population, as last year, has been made using the Yellow Point Business directory, a geo-coded directory covering Scotland. The classification of business types was filtered to those which would attract the tourist population and this sample set was used to distribute the population based upon average bedspaces and occupancy. The confidence in these figures reflects the absence of a Scottish Water corporate dataset for tourism, the figures being based on information from Visit Scotland. The method of distribution of the overall tourist figures to the sewerage networks is improved on last year as it utilises a managed, albeit, external database.

E7.3 - The volume of sewage collected has been calculated as the flow which arrives in a Scottish Water sewer (of any type) from any source e.g. rainfall, infiltration, domestic use, industrial use, tidal flows, connected watercourses. The approach used has been applied consistently across Scotland and uses data sets for rainfall, connected properties and sewered areas consistent with the waste water element 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 which relates the number of connected properties to the amount of sewer flow in periods without rainfall. To establish this figure a number of actual recordings of flows were analysed with a known connected property count to establish a range of flow per connected property factors. 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 were used and an average value of run-off per mm 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 Area calculated.

This figure includes all flows which are collected by the waste water network but does not necessarily relate to the flows which arrive at treatment sites as some flows will be lost to overflows and other flows collected by storm sewers will be discharged without treatment.

E7.4 - The total connected properties have been assessed using a consistent database used throughout the Annual Return. The assessment of connected properties has been made by assigning the properties from the Ordnance Survey Address Point database as connected, if they fall within a sewered area boundary. This summary of the numbers within each operational area is made by summing the connected properties in each sewered area according to which operational area they are within. This method relies on the sewered areas to determine connectivity. These boundaries require to be updated to reflect new development on the periphery of the networks and in some areas are missing. The degree to which this undercounts the connected properties is off-set to some extent by the fact that not all properties within a sewered area will be connected to the sewerage network (served by private septic tanks for example). The net result of this is an undercount of the connected properties but the extent of this is small and is therefore reflected in the assigned confidence grade.

E7.5 - The figures remain unchanged from last year as no alteration of the operational area boundaries has taken place. The reporter commented that last year, the area of sewerage district for south east and south west areas appeared to be transposed. This has been rectified in this year's submission.

E7.6 - A number of minor alterations to some of the sewered area boundaries were undertaken this year to gain a better count of connected properties. However, it remains the case that further improvement is required to improve the assessment of connected properties and to reflect the addition of developments on the periphery of the sewerage networks and to address sewered areas which are currently missing from a number of small networks.

The Reporter commented that last year that the drained areas for south east and south west areas appeared to be transposed. This has been rectified in this year's submission.

E7.7 - As with last year's Return this year's figures for annual precipitation have been sourced from the Centre for Ecology and Hydrology (CEH) in their publications Hydrological Summary for the United Kingdom. The data was transferred from the CEH reporting boundaries to Scottish Water's sewered areas and averaged across each operational area. The CEH data is based upon raingauge data collected by the Met Office. The confidence grade assigned this year reflects the lack of a Scottish Water corporate data source (an external source is used) and the method by which the external data was applied to the

individual sewered areas in each operational area. Comparison with actual, detailed recordings of rainfall is a possible future improvement in this data.

E7.8-14 Sewerage Data

General Statement

The length of sewers reported in the following lines has the same base source of data, that being the asset database used for the production of Table H4. This data has been compiled from an extract of sewerage networks from the corporate GIS system augmented by information from completed Drainage Area Studies which have not yet been updated in GIS. A number of queries on the data set were run to remove sewer lengths such as “abandoned”, “isolated”, “planned”, “proposed” and “unknown status”. Sewer lengths associated with PPP projects were also removed. An estimate has been included for the inclusion of new housing and industrial developments which as yet have not been included in GIS and therefore not counted in the total sewer length. This backlog extends prior to the current report year. An allowance has also been made according to data recorded by Developer Services where the length of new sewer adopted this year has been added.

E7.8 - The total length of sewer has been queried from the same asset database as that used for the production of Table H Asset Inventory and described above. The total sewer length increased this year as a result of an update to the estimated number and average length of lateral sewers; an additional estimate of the length of sewer in developments which have not yet been entered into the corporate GIS system and are therefore not part of the sewer length extracted to form the main data for the sewer assets, and from the length of new sewer recorded by Developer Services.

E7.9 - Since AR04, a project was commissioned to gather information on the lateral sewers across Scotland, which resulted in an average length of lateral sewer per address point being calculated. This average length has been applied to the count of connected address points (consistent with the Return address point datasets) which produced a total length of lateral of 15,821km, an increase on last year’s figure of 13,200km. This differs from the figure used in the Sewer Laterals Opex Special Factor claim (16,283km) due to a re-examination of the original lateral sewer surveys which were carried out in July & August 2004. A revised laterals length, based on 206 of these surveys, was determined. This totalled 6.66 metres per property, which is a reduction of 0.21 metres per property. The low confidence grade is due to the small sample set used to extrapolate the total length.

Further investigation of the lateral sewer profile across Scotland is proposed as an asset data improvement project in the upcoming investment period.

E7.10 - The length of combined sewers has been queried from the same asset database as that used for the production of Table H Asset Inventory and described above.

E7.11 - The length of separate storm sewers has been queried from the same asset database as that used for the production of Table H Asset Inventory and described above.

E7.12 - Length of sewer > 1000mm diameter has been queried from the same asset database as that used for the production of Table H Asset Inventory and described above.

E7.13 - The critical sewer length has been assessed this year using an approach based on the same methodology used by England and Wales companies. The Sewer Rehabilitation Manual (GIS based method) has been adopted where the sewer depth, material, usage & size in combination with the sewers proximity to geographic features is used to allocate criticality in terms of relative cost consequences covering traffic disruption and engineering difficulties. The process therefore makes an assessment of every sewer in the network

based upon these factors and allocates a criticality category A, B (Critical Sewers) or C (non critical).

To allow this type of assessment to be undertaken, the data for the key data fields of each sewer were put through a data infill process to improve data coverage overall. A default value was used where insufficient data existed to make a reasonable in-fill attempt.

Criticality was assessed using the pipe characteristics as a first pass. This was followed by an assessment based upon the pipes' proximity to above ground features which would increase engineering costs or cause traffic disruption. These features included motorways, main roads, watercourses, sewers under buildings, sensitive waters and railways. Using a selection of proximity distances for each type of above ground feature the sewer length within these distances was allocated a criticality category and summed to produce a total critical sewer length.

It is recognised that this approach, although following the SRM industry standard, has some limitations in that the data infill of the sewerage data could be improved, the available data for above ground features was limited in its applicability and for some above ground features no data was available and therefore not accounted for in the assessment.

The total length of critical sewer has increased significantly from last year to a figure of 10,595km, or 33.5% of the total sewer length (lateral sewer length is omitted from this calculation to be comparable with last year's percentage). The increase can partly be allocated to the use of a Scotland wide consistent approach.

The average percentage critical length from the sample of Drainage Area Studies which was used last year showed a very large variation in values (2% to 55%). On closer inspection of these values, it can be seen that there was a wide variation of application of the criticality assessment evaluation with the majority undercounting the length of critical sewer. This again is in part through a lack of available data and also in some cases a lack of the full sewerage dataset, whereby the storm sewerage system was not given to the DAS consultants to assess as they were only modelling the foul and combined systems.

There are no lateral sewers classed as critical.

E7.14 - The total number of sewer collapses across Scotland has increased (by 14%) this Report year. A Confidence Grade of B4 has been assigned to these figures which reflects the use of the Scottish Water corporate databases (Promise and WAMS) but also indicates that there are improvements required to the accuracy of the data recorded and reported from the system.

E7.15-23 Pumping Stations

General Statement

The information gathered for waste water pumping stations for the 2004/05 Annual Return has been based upon Scottish Water's Works and Asset Management System (WAMS) Asset Inventory, which contains the corporately managed list of all pumping station installations. The asset inventory of pumping stations has been augmented this year with additional data on capacity, head, power, designation and function from a number of differing sources. These sources include databases, spreadsheets, paper information, drainage area Studies and other reports from all areas of Scottish Water. Workshops have also been implemented this period to gather further pumping station information. Whilst there is no measurable component from these discussions, feedback has been supportive and there is an awareness of the importance of availability and quality of data.

The figures used for these lines are consistent with the corporate asset inventory, although there remains, however, the issue of inconsistencies within the data held in the asset inventory. A number of duplicates remain present in the inventory and require clarifying and removing where applicable. There also remains a large amount of historical data, which requires auditing and updating to allow generation of values for current reporting periods.

It is the intention to retain this information, improve it and to augment further the data with new information through further data collection exercises and actual site testing.

This year an exercise was undertaken to improve the data associated with the larger pumping installations. The top 50 sites were identified by power rating, whereby a request for current waste water pumping station data was made to all persons in Scottish Water who have responsibility for operating or maintaining waste water pumping stations. This process allowed the generation of more accurate data for the larger pumping stations, thus improving the overall quality and volume of information. In the commentary below this exercise is referred to as the "Top 50."

Unlike last year's return all PPP pumping stations have been removed from the asset inventory and subsequently from the data contained in the Table E submission. This accounts for some variation from last year's values, although any reference to percentage comparisons have been made using revised values, having removed PPP sites from the AR04.

During the process of generating the values to populate the relevant lines in Table E it was noted that there was no specific line whereby foul only pumping stations are detailed. Scottish Water wide there is approximately 36% foul only pumping stations compared to 2% stormwater, which are reported separately in lines E7.20 and E7.21.

E7.15 - The figure for the overall total number of waste water pumping stations has decreased from last year's Return. This is primarily due to the removal of the sites operated by PPP concessionaires. The data obtained from the asset inventory has been assigned to one of the four operational areas and includes all operational pumping stations. The overall figure may be slightly low as a number of minor pumping stations constructed and adopted, as part of new developments may not yet be present in the inventory. This uncounted number is considered to be low and will be included when improvements to GIS and inventory data are undertaken.

E7.16 - The 2004/05 return value for "total capacity of pumping stations (m^3/d)" was produced using pump information collated from several sources. Scottish Water's WAMS data was utilised as the base pumping station information and the capacity fields were populated with additional data obtained from the "Top 50" investigation and from SW workshop initiatives. SW personnel have also added limited additional information to WAMS throughout the year from databases, spreadsheets, paper information, drainage area studies and other Scottish Water reports from within their areas.

On collating this information 21% of pumping stations were found to have a known capacity value and the remaining 79% have been extrapolated using average values generated from sample data. These average values were representative of the pumping station type, but also of the associated power banding, based on the pumping installation size. When comparing the inventory list with the PPP sites removed, this extrapolation percentage is the same as last year's value, but the quality of data is regarded as being higher. Last year the extrapolation was based on the available data for capacity and a single average value was adopted for the individual types of pumping station. This year, the method of extrapolation was altered by providing five average values for each pumping station type & size, which was deemed more representative and accurate.

The effect of this altered extrapolation method and the improved capacity data at the larger sites is to increase the default average values entered where no data is available and, thus, the overall capacity value entered in Table E this year. Whilst the exercise of targeting the "Top 50" pumping stations has improved the data associated with a small percentage of the sites, there remains a large amount of uncertainty in the other historical values within the asset inventory, gathered in previous collection exercises. It is expected that many of the figures provided are the individual pump capacity rather than the required total capacity of the installation and that the capacities could be the design capacity and not an accurate reflection of the actual pumping station performance.

E7.16a - The 2004/05 return value for "total capacity of pumping stations (kW)" was produced using pump information obtained from Scottish Water's WAMS Database. 80% of pumping stations have a known capacity value and the remaining 20% have been extrapolated using an average value generated from the sample. This increase of 9% from 71% last year (when compared to AR04 inventory with PPP sites removed) is primarily due to the additional data obtained the "Top 50" investigation and from SW workshop initiatives. The values entered in Table E7 this year are very similar to last year's submission.

E7.17 - The 2004/05 return value for "average pumping head" was produced using historical & current pump information collated from several sources including Drainage Area Studies, sewerage models, paper records of pumping installations and operational knowledge. The WAMS Database (asset inventory) was utilised as the base pumping station directory and the components of pumping head (annual pumped volume (m^3/d) and annual mean lift (m)) were populated. 12% of pumping stations have a known head value, which is slightly higher than the 11% from last year, with the PPP sites removed. This overall value varies considerably across the four operational areas (NE – 26%, NW – 2%, SE – 19% and SW – 4%). The confidence level in the pumping head figure is low to reflect the absence of available data and the small sample of quality data across the waste water network. The sample figures that have been obtained are improved, but the sample size remains small, which does not allow an effective extrapolation. The values entered in Table E7 are those which have been generated from using the available data in the individual operational areas.

In comparison with last year's figure the average pumping head values have increased throughout the operational areas with an overall value of 15m, rather than 11m being recorded this year. The reason for this is considered to be due to the additional improved data associated with the larger "Top 50" sites, which has had the effect of lifting the value throughout SW's operational areas. Although the size of the sample set and uncertainties over the historical data results in a low confidence grade, it is still slightly higher than last year.

E7.18 - The 2004/05 return values for "total number of combined pumping stations" was produced using pump information type collated from the Scottish Water's WAMS Database. 88% of pumping station types are known, with the remaining 12% extrapolated from the sample data, proportionally over the four operational areas. 63% of the sample pumping stations Scottish Water wide are combined and this is mirrored when separated into the four individual operational areas. The 1% increase in combined type from last year can be explained, through reclassification as part of the "Top 50" investigation and SW workshop initiatives.

E7.19 - The 2004/05 return values for "total capacity of combined pumping stations" was produced using pump information type and capacities held within the Scottish Water's WAMS Database. 21% of pumping stations were found to have a known capacity value and the remaining 79% have been extrapolated as discussed in Line E7.16. With the additional data obtained the "Top 50" investigation and from SW workshop initiatives the capacity value entered in the table has risen. For this line, only combined pumping stations have been considered.

E7.20 - The 2004/05 return values for "Total number of stormwater pumping stations" was produced using pump information type collated from the Scottish Water's WAMS Database. 88% of pumping station types are known, with the remaining 12% extrapolated from the sample data, proportionally over the four operational areas. 2% of the sample pumping stations are stormwater and this is mirrored in the final numbers, although not through the four operational areas. The 1% decrease in stormwater type from last year can be explained, through reclassification as part of the "Top 50" investigation and SW workshop initiatives. The slight reduction in overall known coverage can be attributed to the removal of PPP sites.

E7.21 – The 2004/05 return values for "total capacity of stormwater pumping stations" was produced using pump information type and capacities held within the Scottish Water's WAMS Database. 21% of pumping stations were found to have a known capacity value and the remaining 79% have been extrapolated as discussed in line E7.16. With the additional data obtained the "Top 50" investigation and from SW workshop initiatives the capacity value entered in the table has risen. For this line, only stormwater pumping stations have been considered.

E7.22 - The number of overflows has increased slightly this year through a data cleansing exercise undertaken on the Intermittent Discharge (ID) Register during migration to the CSO Corporate Satellite Application. Drainage Areas Studies were used to provide information for previously unrecorded overflows. Emergency overflows and overflows at waste water treatment works were excluded in accordance with the line definition. Although data has improved from last year following migration to the new CSO Corporate Satellite Application, there remain records from legacy asset databases that do not have the backup documentation required for a Reliability Band "A" or an Accuracy Band "1".

E7.23 - The number of overflows which are equipped with a screen has increased over last year's figure through the information gathered from Drainage Area Studies and new screens being installed during the Q&S2 investment programme. Although data has improved from last year following migration to the new CSO Corporate Satellite Application, an estimation of the number of screens in areas where Drainage Area Studies have not been completed still has to be made as the data pertaining to screens is often unknown. As a result, the confidence remains B4.

Table E8 Waste water Explanatory Factors - Sewage Treatment Works

General Comments

The methodology used this year for determining loads is broadly similar to that used last year. A theoretical figure has been derived, being the sum of the following components:

Domestic resident
Domestic non-resident
Non-domestic
Trade effluent
Public septic tank load
Private septic tank load
Other tankered load (including other WWTW and WTW sludges)
Sludge return liquors (derived from imported sludges)

In line with the Reporter's recommendation, imported sludge loads are not included where they are fed directly to a sludge treatment centre rather than to the sewage treatment inlet. To take account of the impact of these sludges, the element of sludge return liquors that can be attributed to them has been included.

The asset list on which the information in this table is based is held in a database maintained by the Strategy and Planning section. This database is updated continuously by the asset planners responsible for the works, and is reconciled at intervals with the corporate Ellipse system. In due course, we intend to transfer the functionality of this database into the corporate system.

In 8 cases, one effluent stream is treated by two independent operational works (e.g. an inlet works and a secondary treatment works) operating in parallel. In these cases, only the works providing the higher treatment level is included in the number of works to avoid double counting of the effluent stream.

The list is based on those sites that were operational at the end of the reporting year, and includes only non-PPP sites. Where treatment works have been decommissioned and replaced during the year, only the new works have been reported, again to avoid double counting of the load.

The components of load have been determined as follows:

Resident and non-resident domestic
The population figures have been taken from those used to complete lines E7.1 and E7.2, which were allocated to individual drainage operational areas (DOAs). The population served by each works was taken to be the sum of all the DOAs served by the works. The load was assessed on the basis of 60gBOD/head/day.

Where there was more than one treatment works or outfall in a single DOA, the population was divided equally between the works. Where it was not possible to identify a DOA for a works, last year's population data were used, adding approximately 0.44% to the total. A correction factor was applied across all works to bring the figures in line with the original total.

Non-domestic
Volumes as billed from non-domestic establishments were assigned to DOAs on the basis of address point information held in the billing database. Approximately 92% of measured volumes and 96% of unmeasured volumes were allocated in this way. The remaining volumes were added to DOAs pro rata, by operational area. The corresponding loads were determined by assuming a mean concentration of 300mgBOD/litre, which is based on typical sample results.

Trade effluent
Trade effluent loads were taken directly from the records of settled BOD and COD held by the Trade Effluent Section, on a works by works basis. Unsettled BOD was estimated from the settled values by applying a factor of 1.5, and has been used as being most representative of the load received at the works.

Public and private septic tanks
The volume of public and private septic tank emptyings is recorded at area offices. Where only the number of septic tank emptyings is known, volumes have been estimated on the following basis:

Private domestic tanks	4.5 m^3
Public tanks	54m^3

The load has been assessed on the assumption of a concentration of 6g/litre, based on typical sample results.

Other tankered load
In the case of commercial tankered loads, the assessment has been made on the basis of corporate records of sampled tanker loads. Imported waste water and water treatment sludge loads have been assessed from recorded volumes, assuming concentrations of 6g/litre and 0.1g/litre respectively.

Sludge return liquors
Imported sludges that are fed directly to sludge treatment centres (rather than to sewage treatment works) are not included in the above assessments. To take account of their impact, the element of sludge return liquors arising from imported sludges has been included in the works load. This was assessed using the Sludge Treatment Centre Performance Review.

Confidence Grades
There have been no significant changes to the methodology or to data collection, and so the confidence grades are unchanged from last year.

E8.1-10 Numbers

E8.1-E8.8 - The number of works in each size band has been determined from the loads determined by the method defined above, excluding the load from non-resident population.

The total number of treatment works (excluding outfalls) has decreased by 9 to 1807. The number of outfalls has decreased by 14 to 194. The reason for this is the rationalisation of discharges, as works have been upgraded to comply with legislation.

E8.9, E8.10 - The ammonia consent conditions are held in a corporate Consents Database and have been attached to the appropriate treatment works as held in the Asset Inventory, thus enabling them to be categorised as shown here.

There has been a net decrease of 1 in the number of works with the 5-10 mg/l ammonia consent condition and a net increase of 1 in the number with the <5 mg/l condition.

E8.11-20 Loading (average daily load)

E8.11-E8.18 - The method of determining loads has been fully described in the introduction to this section.

The total load (excluding septic tanks), at 229,000 kgBOD/day[9], has not changed significantly from last year (when PPP works are excluded from last year's data). However, there have been changes in the components that make up this load. The load due to resident population has decreased by 3,300 kgBOD/day, although approximately two-thirds of this is the result of a reporting error last year, and the load due to non-resident population by 200 kgBOD/day. The non-domestic load has decreased by 1,700 kgBOD/day, mainly due to more accurate determination of the contributing catchments resulting in more load being allocated to PPP works. The load arising from sludges imported to sludge treatment centres has been excluded, except for their contribution to return liquors, resulting in a net decrease of 3,500 kgBOD/day. These falls have been offset to some extent by an increase of 3,200 kgBOD/day in the trade effluent load, which has resulted from more efficient extraction of data from the billing system. If septic tanks are included in the consideration, there has been a small net decrease in load of 1,400 kgBOD/day (0.6%).

The most significant change to size bands is a 27% decrease in the load on Band 5 works. Linwood WWTW, which was in this band, is now redundant, and the load is transferred to Erskine WWTW, which has moved from Band 5 to Band 6 as a result. 11 other works have moved from Band 5 to Band 4 as a result of changes to the calculated load. The load on

[9] This figure has been rounded.

Band 6 works has in general increased, mainly due to increases in the non-domestic and trade effluent loads.

The load at primary treatment works has fallen by 35%, mainly because of the upgrading of some larger works to secondary treatment. The tertiary A2 load has fallen by 25%; although this is large in percentage terms, the group is a small one, and the actual fall is about 600 kgBOD/day, due mainly to a significant decrease in the trade effluent load at Shotts WWTW. There is a decrease of 5,700 kgBOD/day (20%) in the load on secondary B works. This is partly due to closure of works, notably Linwood WWTW, partly due to reclassification of some works, and partly due to a general decrease in load, mainly in the resident domestic and non-domestic categories.

The 'comments' worksheet states that E8.18 should equal A4.34*(1000/365) and requests that either E8.18 or A4.34 should be amended so that the numbers reconcile. This appears to be an error in the tables, because E8.18 excludes septic tanks, which are included in the total load entering the sewerage system.

If septic tanks are included, the total load received shown on line E8.18 is 235,513 kgBOD/day, which reconciles with the A4.34 total load entering sewerage system of 85,962 tBOD/yr.

E8.19, E8.20 The figures reported here have been determined from the loadings on the works subject to ammonia consent standards specified. The percentage changes in total loading for each consent category (8% and 6% respectively) are noticeably different from the overall change which is insignificant.

E8.21-30 Compliance

E8.21-28 - Percentage compliance has been calculated on the basis of SEPA results. The methodology has changed since last year in that, in the case of two-tier consents, all failures have been counted, not just upper-tier failures. This brings the approach into closer alignment with that for determining whether or not a works is failing. Works that are not sampled are not included in the averaging process for individual treatment categories and size bands. The sampling period is the calendar year 2004.

The percentage compliance figures in general are lower than last year, which reflects the change in methodology. The change of approach is considered to be an improvement, but the impact on the results is so large that a meaningful comparison with last year's results is not possible. A clearer picture will emerge next year when then new approach has been bedded in. Where the cells in this section are listed as O and N confidence grade, this means that these works have not been sampled.

E8.29-30 - The compliance figures for works with ammonia consent conditions generally reflect the decrease discussed above, but this is a small sample of works and deviations from the general pattern can be observed.

E8.31-42 Costs

ABM groups the costs of wastewater assets into small and large work categories and then by grouped treatment types. The aggregated ABM costs were distributed to individual large works and to small asset bands, in proportion with the direct costs captured in the financial ledger.

Confidence grades are lower than those in E2b to reflect the levels of allocation that were required.

The costs of treating and disposing of sludge are contained within Table E10 Sludge Treatment and Disposal.

Costs in Table E8 have been aligned with operational size band data provided by Scottish Water's Asset Operations team.

Analysis of sewage treatment costs by size band:-

	Septic tanks £m	Primary £m	Secondary £m	Tertiary £m	Sea £m	Total £m
Small treatment works – direct costs (£m):-						
2004/05	1.772	0.607	12.771	2.952	0.387	18.489
2003/04	1.686	1.104	12.558	2.233	0.359	17.940
	-0.086	**0.497**	**-0.213**	**-0.719**	**-0.028**	**-0.549**
Small treatment works (nr):-						
2004/05	1,199	67	437	84	194	1,981
2003/04	1,220	70	430	79	208	2,007
	21	**3**	**-7**	**-5**	**14**	**26**
Large treatment works – direct costs (£m):-						
2004/05	-	-	6.256	0.508	-	6.764
2003/04	-	-	5.742	0.697	-	6.439
	-	**-**	**-0.514**	**0.189**		**-0.325**
Large treatment works (nr):-						
2004/05	-	-	19	1	-	20
2003/04	-	-	19	2	-	21
	-	**-**	**-**	**1**	**-**	**1**
General and support costs (£m)						
2004/05	0.431	0.194	5.212	0.953	0.098	6.888
2003/04	0.375	0.303	4.956	0.787	0.074	6.495
	-0.056	**0.109**	**-0.256**	**-0.166**	**-0.024**	**-0.393**
Total (£m):-						
2004/05	2.203	0.801	24.239	4.413	0.485	32.141
2003/04	2.061	1.407	23.256	3.717	0.433	30.874
	-0.142	**0.606**	**-0.983**	**-0.696**	**-0.052**	**-1.267**
Total (nr):-						
2004/05	1,199	67	456	85	194	2,001
2003/04	1,220	70	448	80	208	2,026
	21	**3**	**-8**	**-5**	**14**	**25**

Note – 2003/04 figures were restated to remove PFI costs to enable a like for like comparison with 2004/05.

Sewage treatment costs increased by £1.3m from 2003/04. Costs in 2004/05 include £1.7m of costs for activities which were reported as sludge treatment in 2003/04 (see corresponding reduction in sludge costs year on year). Adjusting for these changes in cost allocation, the underlying costs of sewage treatment were £0.4m lower than in 2003/04.

An explanation for variances in large treatment works is provided at E9 below.

Table E9 Large Sewage Treatment Works Information Database

There has been no significant change in methodology or data capture, and so the confidence grades for this table remain unchanged.

E9.0-5 Works Size

E9.0 - There are 20 large non-PPP works, which is one fewer than last year. One works, Erskine, has been added to the list because it now receives the load from Johnstone and Linwood which are now redundant. Johnstone was previously a large works, and is now removed from the list. The other works to be removed is Galashiels. Here the load has decreased significantly, mainly because the estimate of sludge load has been revised downwards.

E9.1, 9.2 - The determination of resident and non-resident populations has been described in the introduction to Table E8.

In general the figures are similar to those reported last year, and no significance is attached to the small changes that can be observed.

E9.3 - COD is the unsettled value, i.e. the COD load entering the WWTW. It has been estimated from the measured, settled value by applying a factor of 1.5. The information is taken from the Trade Effluent billing system.

The loads are broadly similar to those reported last year, but there is a general upward trend. As noted earlier, this is mainly due to more effective capture of information from the billing system. The increase is most noticeable at Daldowie and Shieldhall: the new figures are believed to be a more accurate reflection of the actual load received at the works.

E9.4 - This is the amount of sludge received from other sources including waterworks and waste water works sludges. Calculation of daily load was from yearly totals/365 and using 95.26 kgCOD/m3 for waste water works sludge and 48.70 kgCOD/m3 for water works sludge. The annual quantities were derived from the Gemini Sludge Management System

As discussed earlier, tanker loads that are fed directly to sludge treatment centres are no longer included in these figures. This change has been made in line with a recommendation made by the Reporter. As a result there is very large reduction in the figures, and in some cases the load has been removed altogether.

E9.5 - The population equivalent has been assessed from the load received on the basis of 60 gBOD/head/day. The method of determining load is fully described in the introduction to Table E8.

There is a general increase in the population equivalent at large works. This is due mainly to increases in trade effluent and non-domestic loads, compared to last year's data, excluding PPP.

E9.6-10 Treatability

These figures are the averages for each parameter for the report year. The results are from Scottish Water's own sampling programme and the information is retrieved from LIMS.

Influent samples are not normally analysed for Total Organic Carbon (TOC), and this has been indicated by applying a confidence grade N.

E9.11-16 Compliance

Figures are the lower consent values taken directly from the discharge consent document as issued by SEPA. Where a parameter is not included in the discharge consent, this is indicated by a confidence grading of N.

Comparison with last year shows that there has been a tightening of the BOD and suspended solids consent standards at Hamilton, and new ammonia standards have been imposed at Dalmarnock and Hamilton.

The percentage compliance has been calculated on the same basis as the figures in lines E8.21 –E8.30: that is, SEPA compliance data using the number of sanitary determinands (BOD, COD, SS and ammonia) analysed for and counting all failures at works with two-tier consents. Compliance is reported as calendar year. SEPA report compliance on a monthly basis.

In general, the results are lower than last year because of the change in methodology. The exception to this is Perth. Reporting has been done on the basis of COPA compliance only and UWWTD failures are excluded from the calculation. Had the same approach been taken last year, Perth would have been reported as fully compliant; i.e. the same as this year.

E9.17-18 Flow

The record of flows is held in LIMS, and this has been updated where known. Some variations from last year's figures have been noted, but there are no significant changes, with the exception of Kinneil Kerse which was misreported last year.

E9.19-25 Treatment Works Category

This information is held in the Ellipse corporate database. A few minor corrections have been made, but there are no significant changes.

E9.26-32 Miscellaneous Data

E9.28 The presence or otherwise of a terminal pumping station is recorded in the Asset Inventory.

E9.33-43 Works cost

As explained in section E8, costs have been allocated from ABM grouped large works to individual works in proportion to the direct costs captured by asset within the financial ledger. Confidence grades are lower than those in E1b to reflect the levels of allocation that were required.

Analysis of costs for large sewage treatment works:-

	2004/05 £m	2003/04 £m	Variance £m
Daldowie	0.508	0.442	-0.066
Galashiels[1]	-	0.255	0.255
Tertiary treatment	**0.508**	**0.697**	**0.189**
Iron Mill Bay	0.091	0.260	0.169
Dunfermline	0.318	0.299	-0.019
Kirkcaldy	0.409	0.483	0.074
Perth City	0.150	0.289	0.139
Troqueer	0.190	0.210	0.020
Kinnel Kerse	0.319	0.236	-0.083
Erskine[2]	0.263	-	-0.263
Alloa	0.223	0.218	-0.005
Stirling	0.405	0.362	-0.043
Dalderse	0.375	0.366	-0.009
Dalmarnock	0.693	0.456	-0.237
Shieldhall	0.932	0.948	0.016
Carbarns	0.224	0.173	-0.051
Dunnswood	0.175	0.118	-0.057
Laighpark	0.648	0.498	-0.150
Phillipshill	0.218	0.157	-0.061
Allers	0.155	0.142	-0.013
Hamilton	0.253	0.251	-0.002
Ardoch	0.215	0.234	0.019
Johnstone[2]	-	0.042	0.042
Secondary treatment	**6.256**	**5.742**	**-0.514**
Total large treatment works	**6.764**	**6.439**	**-0.325**

Note – 2003/04 figures were restated to remove PFI costs to enable a like for like comparison with 2004/05.

[1] This plant was not operational in 2004/05.
[2] The Johnstone works was closed in 2004/05 and replaced with a new works at Erskine.

The number of large works reduced by one from 2003/04, but costs increased by £0.3m or 5.0% year on year.

The increased direct cost capture at asset level within the general ledger has allowed improved visibility of costs. This has resulted in some movements in costs (both favorable and adverse) against individual assets in the year, but this has resulted in a more robust assessment of costs in 2004/05.

E9.42 – The cost of terminal pumping stations is based on 2003/04 estimates.

E9.43 – All sludge costs have been included in E10.

Table E10 Waste water Explanatory Factors - Sludge Treatment and Disposal

1) Scottish Water incurs costs associated with the transportation of sludge from its own sewage treatment works to PPP sludge treatment centres. These costs have been reported in E10 but the corresponding sludge loads are reported in E3. These costs are shown in the table below:

	£m
Farmland Conventional	0.200
Farmland Enhanced	0.439
Incineration	0.682
Reclamation	0.510
Total sludge transportation costs associated with PPP	**1.831**

Where sludge treatment is undertaken by Scottish Water these transportation costs would be reported along with the sludge treatment costs. Both sludge treatment and transportation costs would be recognised within predicted costs generated within the econometric modelling. As PPP is excluded from the efficiency modelling Scottish Water is therefore incurring opex costs of £1.83m for which no predicted opex is currently being recovered within the econometric models. We would request therefore that these costs are removed from the modelled opex costs used in benchmarking efficiency.

Scottish Water believes that it would be preferable to report these costs in future along with PPP costs and would welcome further discussion on this matter.

E10.1-2 Sludge Volumes

E10.1 – The resident population served is determined using the same methodology as in E7.1.

E10.2 – This information was based on information from several sources:

- Scottish Water Gemini Sludge Management database of sludge movements
- Scottish Water Sludge Model
- Databases maintained by a recycling company of the sludge taken to agricultural land.

This year, the methodology used to determine the sludge quantities has changed, to be consistent with the one used by companies in England and Wales. Further details regarding this methodology are shown in the commentary for lines A4.46-53. All figures were based on tonne dry solids (tds), from either calculated sludge quantities or actual tds which are derived from the wet weight information held on the above data bases and sludge solids analysis carried out both on site and in the laboratory.

The accuracy of the data shall improve as Scottish Water is currently upgrading data input to the Scottish Water's sludge management system "Gemini" through direct input from site monitors, monitoring volume and solid content.

E10.3-11 Sludge Treatment and Disposal Costs

The allocation of sludge treatment and disposal costs by disposal route relies on robust sludge movement data linked to financial data. The sludge management system – Gemini, is currently being developed to deliver this data during 2005/06.

In 2004/05, ABM was used to capture the <u>total</u> cost of sludge treatment and disposal, but the delay in implementation of Gemini resulted in a lack of visibility of costs by disposal route. Costs were therefore pro-rated to disposal routes based on 2003/04 ABM results, adjusted for the change in volumes. This has been reflected in the reduced confidence grades.

Analysis of sludge treatment costs by disposal route:-

	2004/05 £m	**2003/04 £m**	**Variance £m**
Farmland:			
Untreated	-	-	-

Conventional	2.977	1.823	-1.154
Advanced	0.587	1.672	1.085
Landfill	0.235	0.057	-0.178
Incineration	0.682	1.733	1.051
Composted	0.155	1.170	1.015
Land reclamation	4.200	4.794	0.594
Other	-	0.020	0.020
Total	**8.836**	**11.269**	**2.433**

Sludge treatment costs reduced by £2.4m from 2003/04, however costs reported in 2004/05 exclude £1.7m of costs associated with activities which were reported in sludge costs in 2003/04. The real underlying movement in sludge treatment costs is therefore a reduction of £0.7m in the year. This is primarily due to a reduction in sludge disposal contract costs in the SW and NE Operational areas.

Confidence grades are lower than those in E1b to reflect the levels of allocation that were required.

All costs associated with sludge handling, treatment and transportation are included within this table, including the costs associated with moving sludge from non-PFI waste treatment centres and sludge conditioning centres to PFI sludge treatment centres.

E10.12-18 Sludge Treatment Type

The numbers and treatment categories are consistent with those reported in E8. Please refer to the commentary for lines E8.1 to E8.7 for further information regarding any changes in banding of works since 2003/04 return.

The table below shows the works assigned to each size banding.

	No sludge treatment	Own sludge	Sludge Centre
Size band 3	189	0	1
Size band 4	131	2	4
Size band 5	24	2 Bo'ness St. Andrews	8 Cumnock Cupar Galashiels Girvan Hawick Lerwick Oban Stornoway
Size Band 6	13 Allers Alloa Ardoch Carbarns Daldowie WWTW Dalmarnock Dunnswood Erskine Hamilton Ironmill Bay Laighpark (Paisley) Philipshill Shieldhall	2 Kirkcaldy Stirling	5 Dalderse Dunfermline Kinneil Kerse Perth Troqueer

The main changes since WIC 50 submission are:

- Duns and Oldmeldrum do not operate as sludge centres;
- Stirling has changed from Sludge Treatment category to own sludge (this is a correction since WIC 50 was submitted);
- Galashiels is now band 5 (it was Band 6 in WIC 50) due to the reassessment of load treated at the works.

Table E11 Management and General

E11.1-4 Employee Numbers

The employee numbers reported in E11 exclude FTE's associated with capital work, third party services and PFI, this ensures consistency with the costs reported in tables E1b and E2b. Employee numbers in 2003/04 have been re-stated to exclude staff employed on PFI activities and to correct for an error identified in the allocation of FTE's between general and support and direct activities.

The following reconciles E11 staff numbers to the annual accounts for 200304 and 200405:

	2004/05 FTE's	2003/04 (restated) FTE's	Variance FTE's
Direct operations	1,721	2,188	467
Indirect operations (General and support)	193	211	18
Other (incl hired and contracted)	535	557	22
Total employee numbers per E11	**2,449**	**2,956**	**507**
Staff involved in capital & transformation projects	856	1,009	153
Staff associated with PFI	7	7	-
Statutory waste and wastewater services	**3,312**	**3,972**	**660**
Staff associated with third party activities	485	324	-161
Staff seconded to Scottish Water Solutions	265	220	-45
Total FTE's per Statutory Accounts	**4,062**	**4,516**	**454**

The average number of employees during the year reduced by 454 or 10% to 4,062. Compared with the average level employed by the former water authorities in 2001/02 this equates to a reduction of 1,586 or 28% in the first three years of Scottish Water.

E11.5-20 Management and General Assets

E11.5, E11.6, E11.9 – E 11.14 Data has been sourced from existing records. However, it should be noted that the majority of premises have not been measured or valued in the past year. Where this is the case, the information has been sourced from historical records, or has been estimated.

A change to our classification of sites has resulted in a decrease in the number of offices & an increase to the number of depots.

The majority of our sites have integrated functions. For example, control rooms are primarily for water production but also have some waste water control functionality. For this reason areas of water and waste water have been obtained by applying a percentage split (53% water, 47% waste water) to the majority of office and depot sites. In a limited number of

cases the functionality of the premises is clear and in these cases the correct areas were used.

Scottish Water does not have any single workshop sites but some depots have limited workshop facilities.

Scottish Water has three main control rooms. This figure excludes minor control rooms that exist on many single production sites.

E11.7- E11.8

Scottish Water's five laboratories are based in Edinburgh, Dundee, Turriff, Kirkwall and Stornoway. This is one less than last year as the Leven House laboratory in Glasgow is now closed. The laboratories (and areas) have been apportioned according to the following method:

- Turriff, Kirkwall and Stornoway all have water functionality (therefore have been allocated in this respect.)
- Watermark House (Edinburgh) and Bullion House (Dundee) have waste water and water functionality (these have been assigned to the waste water service for ease of interpretation of the data).

Note that there has been a significant decrease in the total laboratory area since 2003/04, by 12,518m^2. This is due to the fact that this year, only the main functional laboratory building space is included, whereas last year, the total site area was included.

E11.15 The values were calculated by replacement cost per vehicle where available. Some values were determined from historic averages for different vehicle types. Contractors' vehicles were included in the total for this figure and SWS vehicles were excluded.

E11.16 The number of telemetry outstations in 2004/05 has been extracted from Ellipse Work and Asset Management system.

E11.17 Last year, the data for this line was incorrect due to extraction of data from an out-of-date data source. In addition the percentage of coverage for water and waste water with telemetry were each calculated for a total of 9394 water and waste water assets, which gave an artificially low figure.

This year, the data is based on an extract of data from Ellipse, which includes telemetry outstations installed during Q&SII.

E11.18 The number of personal computers has been sourced from the data on operational assets which populates the H tables. The allocation to water and waste water has been done using the same percentage split as for employee numbers in E11.4

E11.19 The number of workstations has been sourced from data on operational assets which populates the H tables. The allocation to water and waste water has been done using the same percentage split as for employee numbers in E11.4.

E11.20 The number of mainframes has been sourced from data on operational assets which populates the H tables. The figure has been double counted on the basis that no mainframes are used exclusively for one service.

Year-on-year variance analysis by service and activitiy **Appendix 1**

200304	Water Resources & Treatment	Water Distribution	**Total Water**	**% Water**	Sewerage	Sewage Treatment	Sludge Treatment	**Total Sewerage**	**% Wwater**	**Total Service**
Employment costs	14.426	27.222	**41.648**	58%	14.599	11.644	3.576	**29.819**	42%	**71.467**
Power	6.061	2.752	**8.813**	51%	3.637	4.394	0.458	**8.489**	49%	**17.302**
Hired and contracted services	3.456	6.118	**9.574**	44%	5.396	2.448	4.541	**12.385**	56%	**21.959**
Materials and consumables	7.603	2.376	**9.979**	77%	1.400	1.149	0.369	**2.918**	23%	**12.897**
Service charges SEPA	0.268	0.017	**0.285**	5%	1.021	4.621	0.024	**5.666**	95%	**5.951**
Other direct costs	0.272	2.140	**2.412**	64%	1.026	0.281	0.060	**1.367**	36%	**3.779**
Total direct costs	**32.086**	**40.624**	**72.710**	55%	**27.079**	**24.537**	**9.028**	**60.644**	45%	**133.354**
General and support employment costs	3.090	5.210	**8.300**	64%	2.514	1.581	0.596	**4.691**	36%	**12.991**
General and support other costs	7.516	13.326	**20.842**	60%	7.330	4.757	1.645	**13.732**	40%	**34.574**
Functional expenditure	**42.692**	**59.161**	**101.853**	56%	**36.923**	**30.875**	**11.269**	**79.067**	44%	**180.920**

200405	Water Resources & Treatment	Water Distribution	**Total Water**	**% Water**	Sewerage	Sewage Treatment	Sludge Treatment	**Total Sewerage**	**% Wwater**	**Total Service**
Employment costs	12.118	22.820	**34.937**	58%	13.071	9.887	2.427	**25.385**	42%	**60.322**
Power	5.896	3.428	**9.324**	50%	3.620	5.682	0.005	**9.306**	50%	**18.630**
Hired and contracted services	3.117	3.270	**6.387**	37%	5.363	1.717	3.744	**10.824**	63%	**17.212**
Materials and consumables	8.948	1.754	**10.702**	74%	1.337	2.131	0.228	**3.697**	26%	**14.399**
Service charges SEPA	0.315	0.043	**0.358**	5%	0.965	5.430	0.003	**6.399**	95%	**6.757**
Other direct costs	0.336	2.045	**2.381**	63%	0.959	0.405	0.056	**1.420**	37%	**3.801**
Total direct costs	**30.730**	**33.359**	**64.090**	53%	**25.315**	**25.252**	**6.464**	**57.031**	47%	**121.121**
General and support employment costs	3.254	4.715	**7.969**	62%	2.380	1.978	0.490	**4.849**	38%	**12.818**
General and support other costs	5.718	11.053	**16.771**	55%	7.102	4.910	1.881	**13.893**	45%	**30.664**
Functional expenditure	**39.702**	**49.128**	**88.830**	54%	**34.797**	**32.141**	**8.836**	**75.773**	46%	**164.603**

Variance	Water Resources & Treatment	Water Distribution	**Total Water**	**% Water**	Sewerage	Sewage Treatment	Sludge Treatment	**Total Sewerage**	**% Wwater**	**Total Service**
Employment costs	2.308	4.402	**6.711**	60%	1.528	1.757	1.149	**4.434**	40%	**11.145**
Power	0.165	-0.676	**-0.511**	38%	0.017	-1.288	0.453	**-0.817**	62%	**-1.328**
Hired and contracted services	0.339	2.847	**3.187**	67%	0.033	0.731	0.797	**1.561**	33%	**4.747**
Materials and consumables	-1.345	0.622	**-0.723**	48%	0.063	-0.982	0.141	**-0.779**	52%	**-1.502**
Service charges SEPA	-0.047	-0.026	**-0.073**	9%	0.056	-0.809	0.021	**-0.733**	91%	**-0.806**
Other direct costs	-0.064	0.095	**0.030**	-137%	0.067	-0.124	0.004	**-0.053**	237%	**-0.022**
Total direct costs	**1.356**	**7.265**	**8.620**	70%	**1.764**	**-0.715**	**2.564**	**3.613**	30%	**12.233**
General and support employment costs	-0.164	0.495	**0.331**	191%	0.134	-0.397	0.106	**-0.158**	-91%	**0.173**
General and support other costs	1.798	2.273	**4.071**	104%	0.228	-0.153	-0.236	**-0.161**	-4%	**3.910**
Functional expenditure	**2.990**	**10.033**	**13.022**	80%	**2.126**	**-1.266**	**2.433**	**3.294**	20%	**16.317**

F Tables Statutory Accounts

General comments

The F tables for 2004/05 have been prepared from the Statutory Accounts in accordance with WIC definitions.

With the exception of an accrual release of £3.3m, for contractual claims with regard to PPP schemes, there are no atypical costs included in the return for 2004/05. However, significant cost increases have been absorbed in 2004/05 associated with power prices, fuel prices, pension costs and the new Cryptosporidium Directive.

Table F1 Income and Expenditure Account

F1.1 The following table summarises the year on year movement of the main components of income:-

	2004/05 £m	2003/04 £m	Variance £m
Household	606.2	580.3	25.9
Commercial & core secondary[10]	290.4	327.6	-37.2
Trade effluent	23.2	28.5	-5.3
Non statutory services	12.3	14.5	-2.2
New non core trading activities	28.4	7.4	21.0
	960.5	**958.3**	**2.2**

In preparing the Statutory Accounts we have applied the definitions of core/non core activities consistent with that applied in 2003/04. This differs from the Regulatory Accounts (M and N tables), which have been prepared using definitions proposed in WIC55. The key differences are as follows:-

- Income from - Pipe connections, mains diversions, water agreements and sewer diversions included in non statutory services (Non core) above but in statutory services (Core) in the Regulatory Accounts

The 2003/04 figures reported above have been restated to reflect the transfer of domestic septic tank income to Core (£1.2m), this income was previously reported under Non Core in the 2003/04 return.

Statutory Services
Turnover from core water and wastewater services supplied to household customers increased by 4.4% to £606.2m driven mainly by the tariff increase effective from 1 April 2004. Turnover from services supplied to business customers decreased by 11.9% to £313.6m. The decrease in core business turnover arose primarily as a result of the volume of credit adjustments required as part of the data cleansing exercise to improve the robustness of customer data held on the new billing system.

Non Statutory Services
Turnover from the provision of those non-core services that were traditionally provided by the former Water Authorities declined by 15.2% to £12.3m. This reduction in turnover results from Scottish Water's primary focus on core business activities.

[10] This includes core secondary income of £6.2m in 2004/05 and £7.5m in 2003/04

Analysis of income from non-statutory services by WIC annual return category:-

		2004/05 £m	2003/04 £m	Variance £m
F10.37	Water for electricity	0.015	0.210	-0.195
F10.39	Pipe connections and mains diversions - Water	6.493	8.148	-1.655
F10.40	Farming, forestry, fishing and recreation	0.837	1.235	-0.398
F10.41	Other rents	0.397	0.481	-0.084
F10.42	Laboratory services	0.542	1.394	-0.852
F10.43	Corporate consultancies	0.090	0.077	0.013
F10.46	Other income[1]	1.963	1.145	0.818
F10.49	Private septic tank emptying - non domestic	0.429	0.405	0.024
F10.50	Other sewerage	0.297	0.929	-0.632
F10.51	Pipe connections and mains diversions - Waste	1.202	0.518	0.684
		12.264	**14.542**	**-2.278**

[1]Other income includes income from shipping water, water agreements and sundry income.

New Non-Core Trading Activities

Scottish Water's new trading activities relate primarily to the sale of contracting services to Scottish Water Solutions and the provision of water-related services to major business customers. Turnover from those activities increased from £7.4 million in 2003/04 to £28.4 million in 2004/05. £21.7million (2004, £4.0 million) of this income relates to mains rehabilitation and other capital investment activities carried out on a commercial basis by Scottish Water's contracting division for Scottish Water Solutions Limited. Scottish Water Solutions Limited has been accounted for under FRS9 Associates and Joint Ventures as a JANE (Joint Arrangement Non Entity) and not as a subsidiary. Consequently, this trading income for sales to Scottish Water Solutions Limited is included in turnover and associated costs within cost of sales.

An analysis of income by activity is detailed below:-

	2004/05 £m	2003/04 £m	Variance £m
Business Development activities	5.9	3.4	2.5
SW Contracting	22.5	4.0	18.5
	28.4	**7.4**	**21.0**

The table below presents this same information by WIC annual return category :-

		2004/05 £m	2003/04 £m	Variance £m
F10.39	Pipe connections and mains diversions - Water	0.265[1]	-	0.265
F10.46	Other income	25.330	6.267	19.063
F10.43	Corporate consultancies	0.615[3]	-	0.615
F10.52	Other wastewater related income	2.222[2]	1.215	1.007
		28.432	**7.482**	**20.950**

Reconciliation of total non statutory income to F10

The table below reconciles the secondary income from non statutory services, new non-core and core trading activities to that set out in table F10 :-

		Old/inherited non core	New trading activities	Core secondary	Total	Total 2003/04
F10.35	Building water	-	-	2.533	2.533	2.865
F10.36	Troughs, taps etc	-	-	1.996	1.996	1.718
F10.37	Water for electricity	0.015	-	-	0.015	0.210
F10.39	Pipe connections and mains diversions - Water	6.493	0.265[1]	-	6.758	8.339
F10.40	Farming, forestry, fishing and recreation	0.837	-	-	0.837	1.235
F10.41	Other rents	0.397	-	-	0.397	0.482
F10.42	Laboratory services	0.542	-	-	0.542	1.394
F10.43	Corporate consultancies	0.090	0.615[3]	-	0.705	0.077
F10.45	Revenue grant income	-	-	0.005	0.005	0.037
F10.46	Other income	1.963	25.330	0.037	27.329	8.572
F10.48	Private septic tank emptying - domestic	-	-	1.676	1.676	1.348
F10.49	Private septic tank emptying - non domestic	0.429	-	-	0.429	0.405
F10.50	Other sewerage	0.297	-	-	0.297	0.929
F10.51	Pipe connections and mains diversions - Waste	1.202	-	-	1.202	0.519
F10.52	Other wastewater related income	-	2.222[2]	-	2.222	1.215
		12.264	**28.432**	**6.246**	**46.942**	**29.344**

See F10 comments for further detailed comments.

[1]The new non-core income from connections reflects income from external contractors for self lay. Income from this activity is forecast to increase substantially in 2005/06.
[2]This includes income from wastewater reception permits.
[3]This includes corporate consultancy income from external clients, this income was previously reported in F10.46 other income in 2003/04.

F1.2/1.4/1.5/1.6 Total operating costs reduced by £0.2m to £307.6m but this is after absorbing increased costs of new trading activities of £20.7m and operating costs associated with new assets of £2.1m. Excluding these two items, operating costs reduced by £23.0m year-on-year.

A year-on-year analysis of other operating costs is detailed in the following table:-

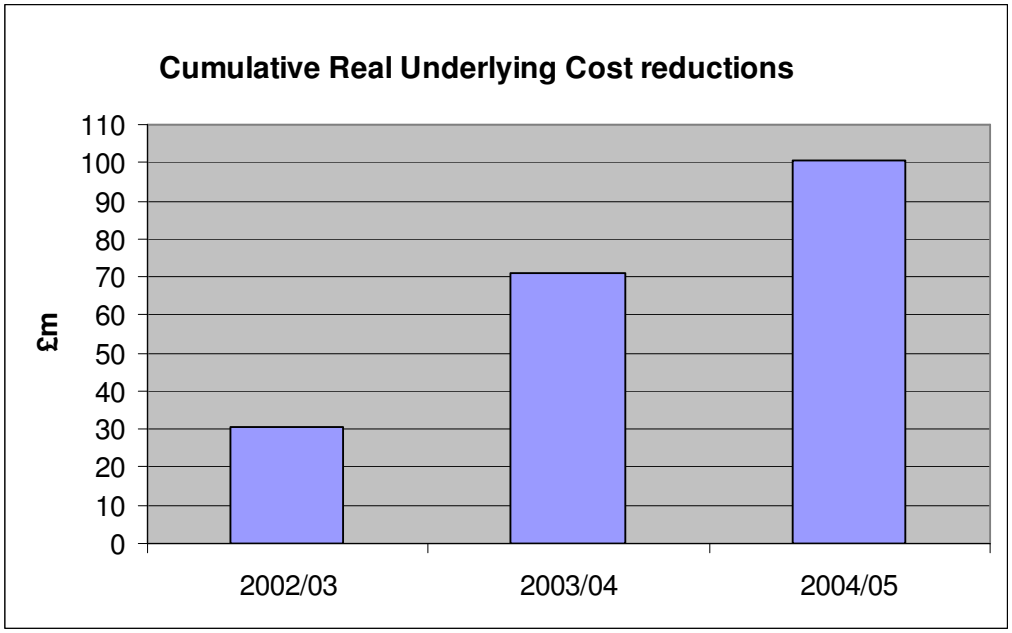
	2004/05 £m	2003/04 £m	Variance £m
F1.2 Staff costs	117.607	128.336	10.729
F1.4 Other operating costs	186.535	176.927	-9.608
F1.5 Bad debt	33.794	38.570	4.776
F1.7 Recharge to capital	-30.255	-35.911	-5.656
	307.681	**307.922**	**0.241**

The table below reconciles total operating costs by activity to the Statutory Accounts:-

	2004/05 £m	2003/04 £m	Variance £m
Statutory water and wastewater opex	270.3	288.1	17.8
Non statutory water and wastewater opex	9.4	12.5	3.1
Other trading activities	27.9	7.2	-20.7
	307.6	**307.8**	**0.2**

From a regulatory cost perspective, nominal operating costs (i.e. excluding depreciation, PPP charges and costs associated with new trading activities) reduced by £20.9m to £279.7m (£270.3m for core services and £9.4m for traditional non-core services) compared to £300.6m in 2003/04. Continued focus on improving operating efficiency through the business transformation programme has driven this reduction in nominal operating costs.

Real underlying operating costs, when compared to the similar costs of the three former water authorities in 2001/02 (i.e. excluding new operating costs associated with newly commissioned plant), have reduced by £101 million or 29% since the creation of Scottish Water - £30 million in 2002/03, £41 million in 2003/04 and £30 million in 2004/05, as depicted in the following graph.



Staff costs
Staff costs reduced by £10.7m from 2003/04, reflecting the significant headcount reduction in the year, combined with savings resulting from the harmonisation of terms and conditions.

By effective use of the employee voluntary severance scheme, the average number of employees during the year reduced by 454 or 10% to 4,062. Compared with the average level employed by the former water authorities in 2001/2 this equates to a reduction of 1,586 or 28% in the first three years of Scottish Water.

The number of people employed at the end of the year, after taking account of 260 leavers on 31 March, reduced to 3,756.

Other operating costs (F1.2/F1.5/F1.7)
Other operating costs increased by £10.5m from 2003/04, but this is after absorbing increased costs of new trading activities of £12.5m and new opex costs of £2.1m. Excluding these two items, costs reduced by £4.1m, with savings in all areas offsetting a £0.7m increase in general costs (increased WIC costs), a £2.0m increase in transport costs (increased demand for vehicle and plant hire) and a £0.8m increase in power costs (renegotiated power contract).

F1.3 The cost of PPP schemes in the year was £112.7m; £0.3m lower than 2003/04. Underlying costs in 2004/05 were £116.0m, but this was offset by a £3.3m credit relating primarily to the release of an accrual made in 2003/04 for a contractual claim on the Aberdeen project. £3.3m was the excess element of accrual above the claim value that was settled.

Underlying costs:-

	2004/05	**2003/04**	**Variance**
	£m	£m	£m
Total costs per above	112.7	113.0	0.3
Atypical credits/(costs)	3.3	(3.1)	(6.4)
Underlying costs	116.0	109.9	(6.1)

Expenditure by project is analysed below: -

	2004/05	**2003/04**	**Variance**
	£m	**£m**	**£m**
Dalmuir	7.1	7.0	-0.1
Daldowie	15.6	14.0	-1.6
Meadowhead, Stevenston, Inverclyde	12.2	12.1	-0.1
Inverness and Fort William	8.0	7.0	-1.0
Tay	19.6	18.7	-0.9
Aberdeen	10.4	13.3	2.9
Moray	10.2	10.8	0.6
Almond Valley/Seafield	19.5	20.7	1.2
Levenmouth	8.4	8.7	0.3
	111.0	112.3	1.3
Other costs	1.7	0.7	-1.0
Total costs	**112.7**	**113.0**	**0.3**

Costs at Almond Valley/Seafield were £1.2m lower than in 2003/04, reflecting a £1.2m rates rebate in 2004/05.

F1.5 Bad debt charge

	2004/05 Charge	2003/04 Charge	Variance
Domestic	28.6	27.5	-1.1
Non-domestic	5.2	11.1	5.9
	33.8	38.6	4.8

The bad debt charge for the year was £4.8m lower than for 2003/04. The domestic charge increased by £1.1m or 4% largely as a result of the tariff increase. The non-domestic charge was £5.9m lower than in 2003/04 reflecting the reduction in aged debt at 31 March 2005 (see **F4.2** commentary for details).

F1.7 £30.3m of costs were recharged to capital in 2004/05. As can be seen from the table below 55.1% of this recharge is for costs, which are directly charged to capital projects. A further 35.0% of expenditure was incurred on planning and programme management costs associated with the delivery of the capital programme, and the remaining £3.0m (9.9%) relates to the incremental capital overhead costs, which were allocated across all capital projects.

	£m	% of total
Direct capitalisation - project delivery	16.7	55.1
Indirect capitalisation – project design	10.6	35.0
Capitalised overheads	3.0	9.9
	30.3	100.0

The recharge to capital is £5.6m lower than 2003/04 and reflects the volume of work now carried out by Scottish Water Solutions.

F1.12 & F13 Depreciation, including infrastructure maintenance charges, reduced by £2.3m to £260.3m but these costs will rise in the future as a consequence of Scottish Water's significant capital investment programme to improve the quality, reliability and efficiency of service provision.

F1.14 The net gain on sale of assets to March was £9.4m, £8.7m of this was generated from the disposal of property and £0.7m from the disposal of vehicles. An analysis of property disposals is provided below:

	Gain/(Loss) on Sale £m
32 Cottages & Houses	**2.2**
16 Depots & Stores	**1.9**
Woodlands office	**2.2**
7 Water Treatment Works	**0.3**
Whitemyers laboratory	**0.2**
Reservoirs & others	**1.9**
Total Gain/(loss) on property disposals	8.7

F1.16 & F1.17 At 31 March 2005 the weighted average interest cost of the £2,274.8m outstanding debt was 6.24% (2004- 6.34%). Net interest payable during the year was £136.1m; £0.6m lower than 2003/04. Interest cover, based on cash generated before capital expenditure, increased from 2.5 in 2003/04 to 3.1 in 2004/05.

F1.20 Tax has been charged at 29.6% recognising deferred taxation, but no corporation tax is payable. The effective tax rate was below 30% and reflected a lower chargeable gain for tax purposes, than the gain on sale of assets shown in the financial statements.

F1.22 Exceptional costs charged in the year totalled £61.8m and related to restructuring and transformation costs undertaken as part of the £200 million 'Spend to Save' programme.

An analysis of the total cumulative "spend to save" expenditure over 2002/03, 2003/04 and 2004/05 is set out in the table below.

	2002/03 £m	**2003/04 £m**	**2004/05 £m**	**Cumulative total £m**
Business transformation	15.3	18.7	20.4	54.4
Staff severance costs	9.3	34.1	41.4	84.8
Total charged to income and expenditure account	**24.6**	**52.8**	**61.8**	**139.2**
New capital investment to improve efficiency *	15.3	21.6	7.5	44.4
Total	**39.9**	**74.4**	**69.3**	**183.6**

** Costs for 2002/03 and 2003/04 have been revised to reflect corrections in classification between spend-to-save capital investment and the Quality and Standards 2 capital investment programme. Consequently, expenditure reduced by £1.6 million in 2002/03 and increased by £2.3 million in 2003/04.*

WIC Control Checks

F1.9-F1.3 = E1.26+E2.26

Operating costs per F tables		**Operating costs per E tables**	
Total costs F1.9	420.340	Total water costs E1.26	215.556
Less PPP costs per Statutory Accounts F1.3	-112.659	Total waste water costs E2.26	153.910
	307.681		369.466
Add exceptional costs F1.22	61.785		
	369.466		

Total operating costs per F tables		**Total operating costs per E tables**	
Total costs per F1.9	420.340	Total costs per E1.39	379.347
Asset depreciation F1.12	115.291	Total costs per E2.39	250.411
Infrastructure depreciation F1.13	145.000	PPP costs excl from E tables	112.659
Exceptional items F1.22	61.785		
			742.417
	742.416		

Infrastructure depn. per F tables		**Infrastructure depn. per E tables**	
		Total costs per E1.29	104.512
		Total costs per E2.29	40.395
		Allocated to third party	0.093
	145.000		145.000

F3.15 = F2.19

F2.19 Government & other loans	2,233.245	**F3.15** Total borrowings	2,274.839
F3.6 Non government loans < 1 year	10.689		
F3.13 Non government loans > 1 year	30.905		
	2,274.839		**2,274.839**

F1.3 should equal E1.37 + E2.37

E1.37 – No PPP costs incurred in provision of the water service.

E.237 – Cell defined by WIC as 'not in use'.

Table F2 Balance Sheet

F2.1-3 Fixed Assets

F2.1 Capital investment in the year was £527.4m, up £118.9m compared to 2003/04. £519.9m (2004-£389.3m) was invested in the delivery of the Quality and Standards regulatory capital programme and £7.5m related to capital expenditure incurred as part of the "spend-to-save" programme.

Of the £519.9m regulatory capital investment programme, £360.5m was delivered through the programme allocated to Scottish Water Solutions Limited. This included the £21.7m of turnover generated by Scottish Water Contracting referred to at F1.1 above. The nature of the contractual agreement between Scottish Water and the other shareholders in Scottish Water Solutions Limited is such that the parties are engaged in joint activities that do not constitute an entity carrying on a trade or business in its own right. Consequently, Scottish Water Solutions Limited, has been accounted for under FRS 9 Associates and Joint Ventures as a JANE (Joint Arrangement Non Entity). On this basis Scottish Water accounts directly for its own gross assets, liabilities and cash flows in the joint arrangement thus dispensing with the need for Group Accounts.

F2.4-8 Current Assets

F2.5 See detailed comments for F4.

F2.9-12 Creditors: Amounts Falling Due Within one Year

F2.10 See detailed comments for F4.

F2.13-18 Creditors: Amounts Falling Due After More than One Year

F2.14 See detailed comments for F4.

F2.16 The table below summarises the movement in provisions from March 2004. The charge in the year includes £41.2m, which is the severance liability associated with the staff who signed up for voluntary severance this year, and a £0.8m increase in the provision for stranded asset costs and excess travel costs. The utilisation includes payments made for employees who left under voluntary severance this year, payments to the pension funds for VS leavers and rental payments for redundant assets.

Analysis of movement in provisions:-

	At 31/03/04	Charge in the year	Utilisation in the year	At 31/03/05
Reorganisation – severance	63.0	41.2	-23.1	81.1
Deferred tax	48.6	27.1	-	75.7
Others (incl. stranded asset costs)	3.2	0.8	-1.2	2.8
	114.8	**69.1**	**-24.3**	**159.6**

Table F3 Analysis of Borrowing

Government loans, both short and long term are disclosed in the balance sheet under Capital and Reserves in accordance with the Accounts Direction. Other debt is recorded under short and long term creditors in accordance with the Companies Act

	2004/05 £m	2003/04 £m
Government debt (F2.19)	2,233.245	2,138.516
Creditors < 1 year (F3.6)	10.689	12.727
Creditors > 1 year (F3.14)	30.905	41.594
Total debt	**2,274.839**	**2,192.837**
Cash in hand (F2.6)	-7.517	-10.581
	2,267.322	**2,182.256**

During the year, net debt increased by £85.1m to £2,267.3m. The increase was driven by £247.4m of new long-term loans at a weighted average interest cost of 4.75%, partially offset by £90.4m repayment of long-term loans, a £75.0m net reduction in short-term loans and a £3.1m reduction in cash balances.

F3a Analysis of Borrowings

All new short-term borrowings and repayments are netted off, i.e. short-term loans taken out and then repaid during the year are shown as zero.

Table F4 Analysis of Debtors and Creditors

F4.2 Trade debtors

	31-Mar Household £m	31-Mar Commercial £m	31-Mar Total £m	01-Apr Household £m	01-Apr Commercial £m	01-Apr Total £m
Earned debt	***224.3***	***78.3***	***302.6***	***207.5***	***94.1***	301.6
Unearned debt	0.0	0.0	0.0	0.0	0.0	0.0
Gross Trade Debtors	224.3	78.3	302.6	207.5	94.1	301.6
Provisions	***199.4***	***35.4***	***234.8***	170.9	40.0	210.9
Net Trade Debtors	**24.9**	**42.9**	**67.8**	36.6	54.1	90.7

The commercial customer aged debt analysis is: -

	Actual 31 Mar £m	Opening 1 April £m
Overdue – over 1 year	11.7	28.2
Overdue – 3-12 months	**21.4**	**23.7**
Overdue – less than 3 months	**12.7**	**17.3**
Aged debt	**45.8**	**69.2**
Current	**32.5**	**24.9**
Gross debt	**78.3**	**94.1**
Credit note provision	-12.0	-6.6
Bad debt provision	**-23.4**	**-33.4**
Total net commercial debt	42.9	54.1

The net £23.4m reduction in aged debt was achieved largely through adjustments determined as part of the data cleansing project. £15.1m was written off against the bad debt provision and £8.6m was written off against the credit note provision.

Aged debt as a percentage of turnover reduced from 19.4% at 31 March 2004 to 14.6% at 31 March 2005, primarily as a result of the data cleansing described above.

Household income collection was 1.50% better than budget at 91.85%.

F4.3 Other debtors

Other debtors were £3.1m higher than at March 04 , this was due to the closing VAT debtor at March 05 being £3.0m higher than at March 04.

F4.4 Prepayments & Accrued Income

Prepayments and accrued income were £2.4m lower than at March 04. This was predominantly as a result of the prudent approach taken to accrued income in light of the ongoing data cleansing exercise (£4.1m).

F4.7-14 Creditors due within one year

F4.8 Trade creditors

Trade creditors were £14.9m higher than at March 04. The March 04 creditor was artificially low due to the reduction in the number of outstanding purchase orders on the legacy Accounts Payable systems, to facilitate the transfer of data onto the single SW-wide Accounts Payable system which came into operation in April 2004.

F4.9 Capital creditors

Capital creditors were £14.2m higher than at March 04. This was due in part to an increase in the value of work done accruals and balances due to SWS due to the phasing of capital spend (£11.8m), a £6.3m increase in capital creditors (refer to F4.8 above), offset by a £3.9m reduction in capital retentions.

F4.13 Accruals

Closing accruals were £16.1m higher than at March 04. This was due to an increase in PPP accruals (£4.5m), a £6.7m increase in accruals for Goods Received Not Invoices (refer to F4.8 above) and a £4.9m increase in general accruals.

F4.15-21 Bad Debt Provisions remaining, netted against Debtors

F4.15 Domestic Bad Debt Provision

The table below outlines the aged profile of household debt at 31 March 2005.

	96/97 to 00/01	**01/02**	**02/03**	**03/04**	**04/05**	**Total**
	£'000	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Gross debt	72,638	***27,581***	***30,940***	***38,327***	***54,804***	***224,290***
Credit note provision	***(62)***	***(33)***	***(180)***	***0***	***(4,381)***	(4,656)
Bad debt provision	(72,576)	(26,866)	(28,491)	(31,823)	(34,952)	(194,708)
Net debt	**-**	**682**	**2,269**	**6,504**	**15,471**	**24,926**

F4.17 – F4.20 The non domestic bad debt provision was calculated using the same methodology applied in 2003/04 i.e. provided for 100% of all debt > 1 year old (A) and 50% of all debt >3 months but < 1 year old (B), but in addition a further 25% (C) was provided for all debt greater than 1 month, but less than 3 months old to reflect the risk attached to historic debt which was adjusted and re-billed (and therefore included in debt <3 months old) as part of the data cleansing project.

	£m
Opening BDP at 01/04/05	33.368
Less debt written off	-15.083
Plus top up to provision required in year	5.128
Total provision required at 31/03/04 **= A+B+C**	**23.413**

The provision is calculated for total debt rather than for debt by service, as a result we have used extrapolation to populate rows F4.17 to F4.20, hence the reduced confidence grades.

Table F5 Cash Flow Parameters

F5.1-4 Debt and Credit Periods

F5.1 Debtor days figure calculated as in 2003/04, by adding trade debtors (F4.2) plus bad debt provision (F10.61) divided by turnover (F1.1) times 365 days.

F5.2 and F5.4 The creditors ledger report does not differentiate between capital and revenue expenditure. A degree of judgement has therefore been used to split the creditors days calculation between trade and capital in this table.

Table F6 Working Capital

See commentary for F4.

Table F7 Cash Flow Statement

F7&F8 Cash Flow Statement

This has been prepared on a cash basis and is consistent with the Statutory Accounts. Comment on all material cashflow items is included above.

Table F8 Reconciliation of Operating Surplus (Deficit) to Net Cash Flow from Operating Activities

F7&F8 Cash Flow Statement

This has been prepared on a cash basis and is consistent with the Statutory Accounts. Comment on all material cashflow items is included above.

Table F9 Analysis of fixed assets by asset type (for report year)

See F2.1 for commentary.

Table F10 Analysis of income

Total turnover for the year increased by 0.2% to £960.5m, with additional revenue from tariff increases and increased new trading activity, offsetting a reduction in core business turnover resulting from the volume of credit adjustments required as part of the data cleansing exercise to improve the robustness of customer data held on the new billing system

F10.1-16 Water

Primary Income – Water

F10.1 – Domestic unmeasured income increased by 4.6%, in line with expectations from tariff increases and information on customer base movement, derived from the councils.

F10.7 to F10.8 – Non-domestic measured volume income reduced by £11.3m or 12.3%, as a result of the value of credit adjustments raised as part of the ongoing data cleansing exercise, this was partially offset by the impact of tariff increases.

	Variance from 2003/04 £m	Variance from 2003/04 %
Standard volume < 100Ml (F10.7)	-13.7	-21.7 %
LUVA's (F10.7a)	-4.7	-36.0 %
Standard volume 100-250 Ml (F10.7b)	2.5	60.2 %
Deals (F10.8)	4.6	42.6 %
Measured volume – Water	**-11.3**	**-12.3 %**

Income from LUVA customers reduced by £4.7m from 2003/04, and income from Deals customers increased by £4.6m as customers were moved from LUVA tariffs on to non standard tariffs.

F10.11 Non-domestic measured fixed water income reduced by £12.3m or 39.1%, as a result of credit adjustments associated with meter rightsizing and the data cleansing project.

F10.12 – F10.13c Income from unmeasured water customers reduced by £1.5m or 8.5%, as a result of credit adjustments raised as part of the data cleansing exercise.

	Variance from 2003/04 £m	Variance from 2003/04 %
Unmeasured RV (F10.12)	-1.0	-9.6%
Unmeasured RV with relief (F10.12a)	0.3	100.0%
Unmeasured fixed (F10.13a)	-0.8	-10.6%
Unmeasured – Water	**-1.5**	**-8.5%**

F10.17-34 Wastewater

F10.17 Domestic unmeasured income has increased by £13.0m or 4.3%, in line with expectations from tariff increases and information on customer base movement, derived from the councils.

F10.23 to F10.24 Non-domestic measured wastewater income has reduced by £9.7m or 14.7%, as a result of credit adjustments associated with meter rightsizing and the data cleansing project.

	Variance from 2003/04 £m	Variance from 2003/04 %
Measured fixed (F10.23)	-7.4	-45.3%
Measured volume (F10.24)	-2.3	-4.7%
Measured – Waste	**-9.7**	**-14.7%**

F10.25 and F10.29 There was an £11.0m switch between measured and unmeasured income from Property Drainage customers in 2004/05. Income from these customers was reported as measured income in 2003/04 but as unmeasured in 2004/05.

	Variance from 2003/04 £m	Variance from 2003/04 %
Measured PD (F10.25)	-10.7	-14.6%
Unmeasured PD (F10.29)	11.7	69.6%
Measured – Waste	**1.0**	**1.1%**

F10.28 to F10.28a Non-domestic unmeasured wastewater income has decreased by £2.2m or 9.4% from 2003/04 as a result of credit adjustments associated with the data cleansing project.

	Variance from 2003/04 £m	Variance from 2003/04 %
Unmeasured RV (F10.28)	-1.7	-10.0%
Unmeasured fixed (F10.28a)	-0.5	-6.6%
Unmeasured – Waste	**-2.2**	**-9.4%**

F10.33 Trade Effluent income was £5.3m or 18.4% lower than 2003/04 at £23.2m. This was largely as a result of a £2.3m over accrual at March 2004.

F10.35-47 Secondary Income – Water Related

Please refer to F1.1 above for commentary on secondary income.

F10.48-53 Secondary Income – Wastewater Related

Please refer to F1.1 above for commentary on secondary income.

F10.55-61 Bad Debt Provision in Year

F10.55 to F10.61 See comments at **F4.15** to **F4.20 and F1.5**.

Table F11 Taxation Analysis

Table F11 has been populated on a basis consistent with that applied in Table B7.15 in the second draft business plan.

All figures reported are unchanged from those reported in B7.15, other than as follows:-

- The values reported in 2004/05 have been updated to reflect the actual results from 2004/05.
- The percentages transferred from WIP in 2005/06 and 2006/07 have been revised to reflect the closing WIP at March 2005.
- Depreciation on capitalised revenue (non infra) in 2005/06 has been revised to reflect the actual spend on 'investigations' in 2004/05, which is claimed as a revenue deduction in 2005/06.

The opening capital allowances pools, losses brought forward and general provisions brought forward, in 2004/05 have been updated to reflect actuals.

G Tables Investment Plan (Actuals and Forecasts)

Table G presents Scottish Water's capital expenditure programme showing the actual expenditure in the Report Year and forecasts for future years. The outturn expenditure reported for 2004-05 was £520M against the £505M budget set in Scottish Water's Business Plan. The current forecast outturn for the Q&SII programme is £2,179m and reflects the current view of the investment requirements to deliver the Q&II service and legislative objectives. It includes COPI allowance of £170M. The cumulative total investment to March 2005 is £1,265m which represents 58% of the total programme.

Table G is based on Ver 3.3 of the WIC 18 Baseline Programme agreed with the Water Industry Commissioner in October 2004 and reflects further agreed substitutions and includes aggregation and disaggregation from projects in the baseline. As Table G requires the reporting of all projects with expenditure in the Q&SII price control period, investment incurred on Additional Items, Non Q&SII Commitments, Q&S3III Programme Development and Q&SI Carryover are included.

The capital programme is divided into three areas for delivery purposes:
1. SWS – Allocated Programme
2. SWS – Managed Programme
3. SW Programme – Katrine Water Supply, Small Value Capital Works and Support Services

Scottish Water has entered into a Framework Agreement for the delivery of the Small Value Capital Works Programme. A baseline programme for the remainder of their work has been established but the financial forecasts were not fully monitored at 31 March 2005 with the outstanding balance remaining against the capital maintenance lines. The SVCP projects will be updated in CIRQ1 2005-06.

The main focus for investment in the Report Year has continued to be legislatively driven quality improvements. As can be seen in the summary tables, compliance with Water Quality Undertakings in the Water Service sector and with Urban Wastewater Treatment Regulations in the Wastewater Service sector accounted for the most significant proportion of investment. However, considerable investment was also made on Infrastructure Renewals, accounting for approximately 27% of the 2004/05 programme.

Quality improvements continue to dominate the capital programme in future years although the level of capital maintenance will increase in 2005-06 to maintain compliance at existing sites. Planned expenditure on mains and sewer renewals will reduce in 2005-06.

Spend to Save projects totalling £7.5M have not been included in the Return. A report on the Spend to Save project is in Appendix G4.

Financial Profile and Methodology

The financial information provided in G5 and G6 of the submission has been reconciled with Scottish Water's corporate finance system. The Life to Date expenditure has been fully reconciled between the Financial System and the Capital Investment Monitoring System (CIMS). The current year project information in G5 and G6, from which information in other tables is derived, represents the end-of-year position as reported in the fourth quarter capital investment return to the Commissioner, and as stated in the Statutory Accounts.

Scottish Water Solutions (SWS) undertake their monitoring in Primavera (P3e) and an interface has been built to enable transfer of the financial, outputs and milestone data to CIMS on a monthly basis. There is a daily interface between Peoplesoft 8.4 and CIMS with actual costs being recorded in CIMS. Scottish Water Project Managers update their project data directly into CIMS.

The 2004/05 return reflects the efficiency targets set out in WIC 23 and the expenditure in 2002/05 reflects the actual expenditure incurred in each project. The future forecasts are the latest best estimate and therefore are deemed to be inclusive of an element for inflation.

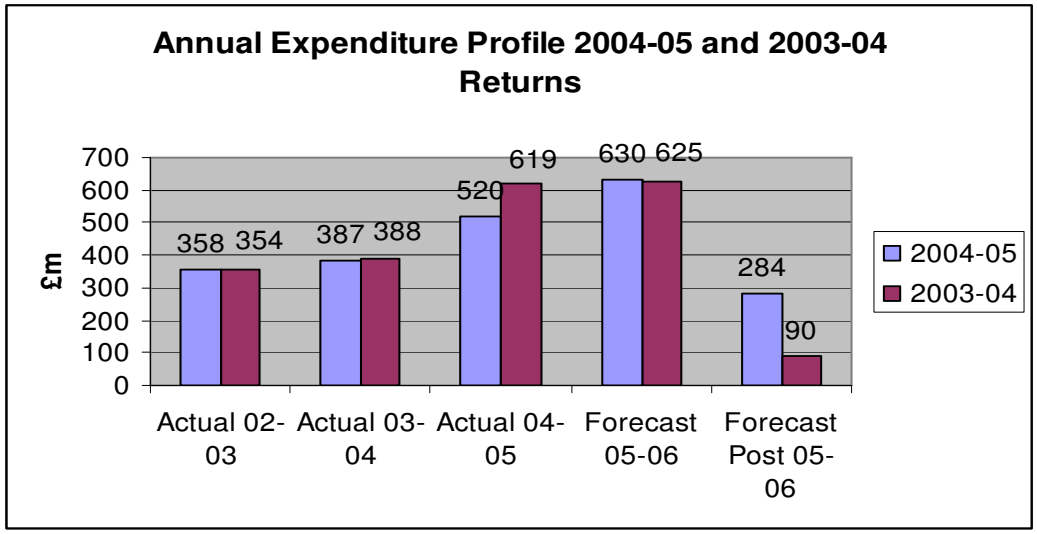
As a project advances through the development stages of feasibility and options appraisal to reach an agreed target cost, the cost information and certainty improves. On obtaining an agreed target cost, any variance above the thresholds contained in the Capital Investment Approval Process requires a Capex 4 to be produced to explain the change in forecast and to seek approval to an amended scope and/or budget.

2005-06 and post 2006 Financial Profiles

Tables G5 and G6 reflect a forecast expenditure of £699M in 2005-06 which is taken from CIMS and is based on an accumulation of current best forecasts at project level. However, it is considered that there are risks associated with this level of expenditure and therefore a programme adjustment line of -£69M was included in CIRQ4 2004-05 bringing the forecast down to £630M. This is shown in Graph G1.1 below, resulting in an overhang to Q&SIII of £284M. A number of projects included in the overhang are substitutions agreed with the Drinking Water Quality Regulator and SEPA. Service Reservoir Security and Dangerous Substances and Explosive Atmosphere Regulations which form part of the Additional Items for which log-up funding has been agreed appear in the overhang and the balance is made up of Water Quality or Wastewater Quality projects where land, planning, consent issues require to be resolved or have delayed progress on projects such as Loch Katrine Water Supply.

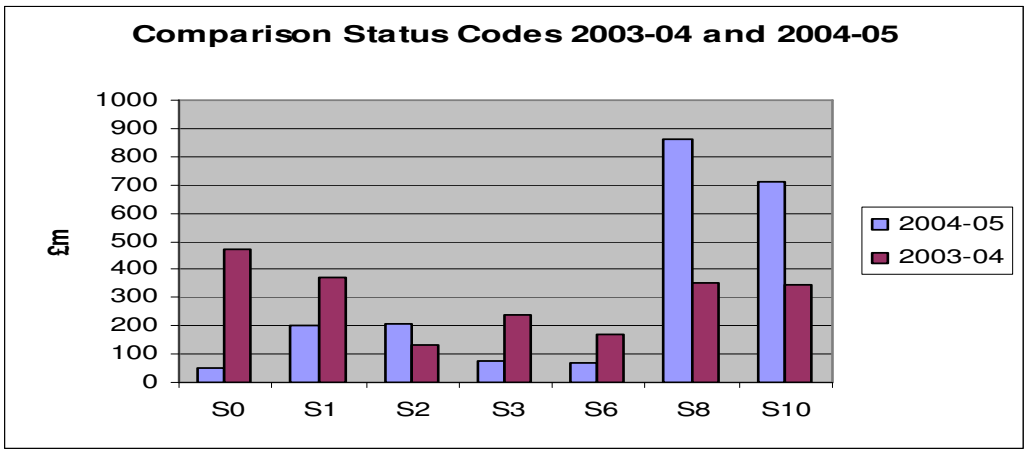
Graph G1.1 shows the annual expenditure totals and the forecasts for 2005-06 and the overhang into Q&SIII.

Graph G1.1



Graph G1.2 shows the progress of the investment programme through the various project stages from project strategy to beneficial use between 2003-04 and 2004-05.

Graph G1.2



Programme Outputs – Cumulative Position to March 2005

The WIC 18 Baseline Programme Ver 3.3 has 9 output measures and 53% of the total programme outputs target was delivered by March 2005 with Scottish Water meeting 99% of the 2004-05 targets. Table G1.3 shows position as at March 2005.

Table G1.3

Output Code	Output Description	Unit	Cumulative Delivered to end 2004/05	Q&SII Target	Percentage of total target
DW_FT	Properties receiving FT provision of water	Nr	270	408	66%
DW_P	Removal of properties from poor pressure register	Nr	817	1391	59%
DW_WQ	Drinking Water drivers addressed	Nr	261	628	42%
WM_R	Mains rehabilitated	Km	2354	3051	77%
WW_C	Continuous discharges removed	Nr	179	613	29%
WW_FR	Removal of properties from 'at risk' flooding register	Nr	490	829	59%
WW_FT	Properties receiving FT provision of sewerage	Nr	311	1229	25%
WW_R	Sewers rehabilitated	Km	223	410	54%
WW_UCSO	UCSO's removed	Nr	283	432	66%

Proportional Allocation of Financial Expenditure and Opex Impact to Purpose and Output Codes

The WIC 18 Baseline Programme Ver 3.3 reported agreed outputs to be delivered in the Q&SII period but these do not match the Regulatory Purpose and Output Measures. No percentage split was allocated to the output drivers in the WIC 18 Baseline Programme. Following agreement of Ver 3.3, the allocation of percentages to projects where there were multiple outputs was reviewed and updated. The methodology applied was in line with the methodology in 2003-04 Return.

The output measures were considered first and a percentage split allocated on the basis of the number of outputs with the associated purpose measures reflecting the total of outputs. For example:

- Project with 4 quality outputs had 25% allocated to each output and purpose measure of 100% quality.
- Project with 4 maintenance outputs and 1 quality output had 20% allocated to each output with 80% allocated to maintenance purpose measure and 20% to quality purpose measure.
- Project with one quality, one maintenance and one growth output had 34/33/33 allocation to both purpose and output measures.

Where better information was available on the percentage split between outputs, this has been reflected in Table G. Work is continuing to enable Capex forms to be created within CIMS and on completion, the purpose and output measure data will be collected on Capex 3 and Capex 5 forms as approvals are sought.

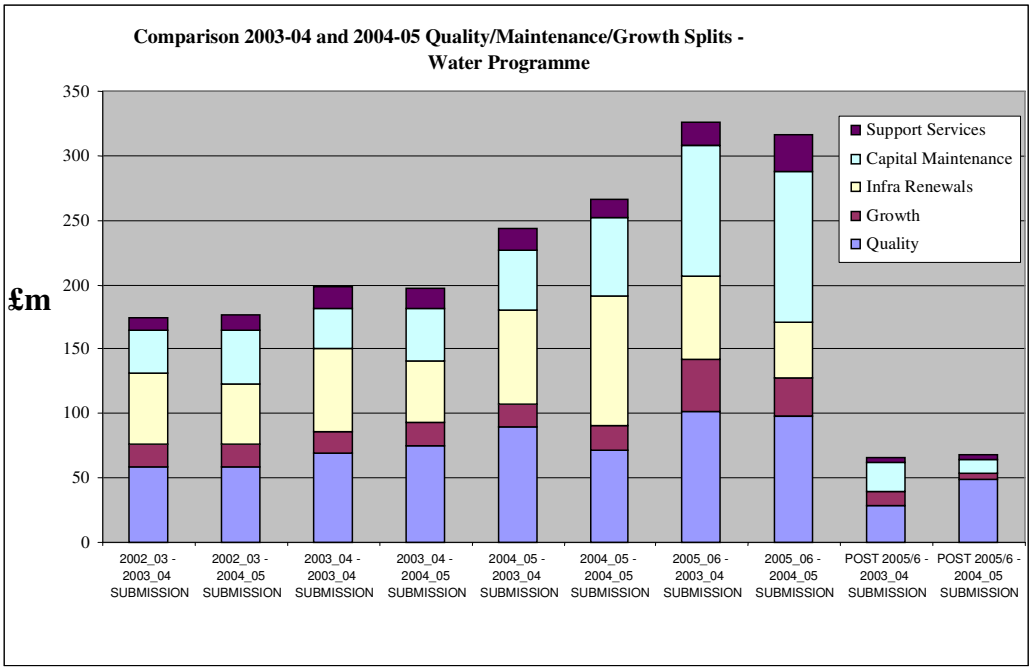
The methodology for updating the opex impact from the original WIC 18 Baseline opex is to take the impact from approved Capex 3 targets where a project has reached this milestone, or the forecast impact of the preferred option at Capex 2. The WIC 18 Baseline value is used for projects which are pre-Capex 2. Projects which are agreed quality removals have had the opex Baseline value removed and, where substitution projects have not yet reached Capex 2, an estimate of forecast opex has been included. It is intended to update the opex impact in Capex 5 forms when the revised Capex forms are finalised. Opex impact on Support Services projects is shown at project level but does not feed through in the summary tables. Details of the opex impact from IT and Fleet projects for 2004-05 and beyond is shown in Table G1.4.

Table G1.4

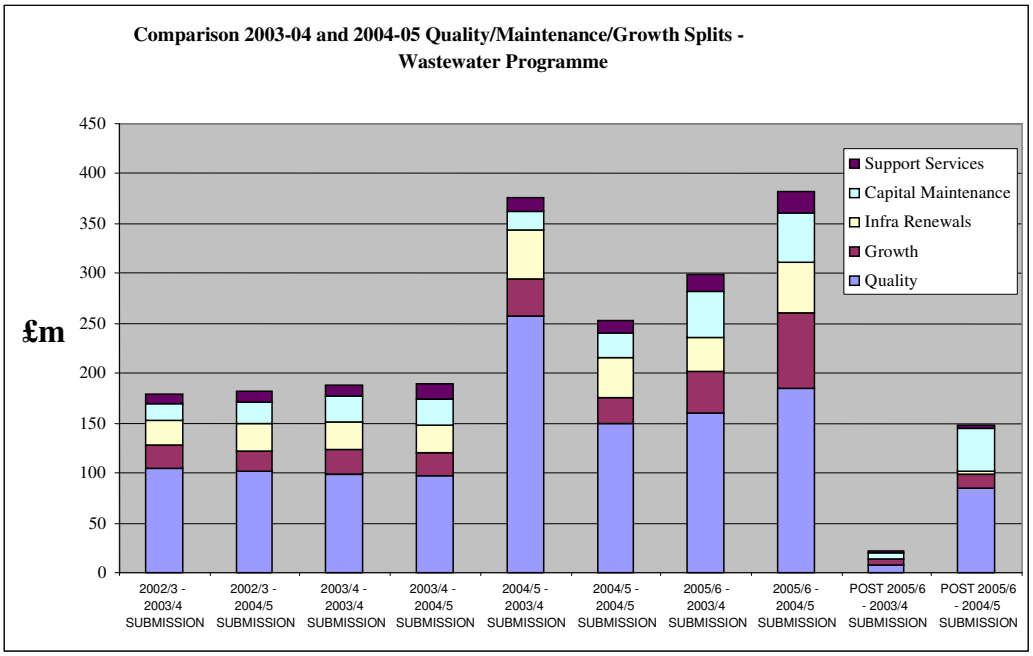
Support Service	2004-05 £m	2005-06 £m	2006-07 £m
IT Projects	-0.0173	0.1328	0.2404
Fleet	0.0621	0.1879	0
Total	0.0448	0.3207	0.2404

The comparison between the actual and forecast expenditure splits between quality, growth, infrastructure renewals, capital maintenance and support services in the 2003-04 and 2004-05 returns are shown in Graphs G1.5 and G1.6 below. It should be noted that the expenditure by year shown does not take account of the programme adjustment shown in Graph G1.1 above.

Graph G1.5



Graph G1.6



Projects with No Asset Outputs

These projects fall into four categories:

- Projects that provide improvement information and understanding of the existing assets, collection and distribution systems. This is achieved through development of Drainage Area Plans, Water Zonal Plans, establishment of DMAs, Pre and Post Renewal Assessments, CCTV surveys. Area or Functional Strategies have also been progressed to consider the overall requirements of Scottish Water to meet quality standards and maintain appropriate levels of service. These enable prioritisation of investment and development of appropriate

solutions to deliver the Quality and Standards outputs and identification of the lengths of mains and sewers which require rehabilitation in Q&SII and into the Q&SIII period. Investment of £3.3m has been incurred in 2004-05 and a further £15m is forecast in 2005-06.

- Q&SIII Development
- Quality and Capital Maintenance projects removed from the programme. These projects report their actual expenditure incurred on feasibility and are reported as S10.
- IT projects to deliver new or enhanced corporate systems e.g. CIMS, WAMS, and Peoplesoft Optimisation.

Data

The confidence grading associated with actual financial information in G5 and G6 would be A1 / A2 as it is based on sound records and procedures. However, the overall confidence grade has been reduced to B3 due to inherent limitations in apportioning costs to purpose and output codes and incremental opex costs.

Confidence Grades G1 – G4

As previously stated, the financial information on each project is reconciled with Scottish Water's corporate finance system and has a high confidence grade. However, the analysis applied to establish driver apportionment leads to a reduction in accuracy to +/- 5%

Table G1 Summary - Water Service

Where no line comment is given, the information is a summary derived from Table G5.

G1.1-6 Base Service Provision

G1.1 – Base operating expenditure is calculated from total operating expenditure (E1b.26).

G1.5 – This figure represents total Infrastructure Maintenance investment in the Report Year. There were no grants or contributions received in 2004/05 for infrastructure maintenance.

G1.7-10 Backlog

As projects have been disaggregated into the WIC 18 Baseline Programme, all WIC 18 projects have been reported as base service provision. There is only one mains rehabilitation project with backlog driver.

Different approaches had been taken by predecessor Authorities in the allocation of base and backlog and it is considered inappropriate to continue to reflect this inconsistency.

G1.13-17 Growth

G1.15 – This figure includes investment in WIC 16 First Time Water Supply.

G1.17 – Additional operating expenditure is calculated through analysis of the proportion of capital spend allocated to the Output codes on each individual project and applying the same split to the operating costs.

G1.18-22 Grants and Capital Contributions

G1.18 – No grants for infrastructure assets were received in the report year.

G1.19 – One grant totalling £11.4k for non-infrastructure assets was received in the report year and related to EKP security upgrade.

G1.20 – One contribution was received relating to a Water Quality project.

G1.21 – No contributions were received in the Report Year.

G1.22 – No assets adopted or acquired at nil cost were included in the MEA value in Table D3.

Details of grants and contributions received in control period are shown in Appendix G3. No grants and contributions are reported for future years as, although it is anticipated that a number will be received, the values have not yet been agreed with the parties concerned.

G1.23-27 Expenditure Totals

G1.27 – The report year figure matches that in E1b.26. In future years, due to this line being a calculated field, the data appearing in this line reports the change in opex resulting from the compliance programme and growth programme.

Table G2 Summary - Wastewater Service

Where no line comment is given, the information is a summary derived from Table G6.

G2.1-6 Base Service Provision

G2.1 – Base operating expenditure is calculated from total operating expenditure (E2b.26).

G2.5 – This figure represents total Infrastructure Maintenance investment in the Report Year and there were no grants/contributions were received towards wastewater infrastructure maintenance projects.

G2.7-10 Backlog

As projects have been disaggregated into the WIC 18 Baseline Programme, all WIC 18 projects have been reported as base service provision. There are no projects reported with backlog drivers.

Different approaches had been taken by predecessor Authorities in the allocation of base and backlog and it is considered inappropriate to continue to reflect this inconsistency.

G2.13-17 Growth

G2.13 – The figures include investment in WIC 16 Development Constraints.

G215 – The figures include investment in WIC 16 First Time Sewerage

G2.17 – Additional operating expenditure is calculated through analysis of the proportion of capital spend allocated to the Purpose Category codes on each individual project and applying the same split to the operating costs.

G2.18-22 Grants and capital contributions

G2.18 – No Grants for infrastructure assets were received in the Report Year in respect to wastewater assets.

G2.19 – No grants for non-infrastructure assets were received in the Report Year.

G2.20 – No contributions towards infrastructure projects were received.

G2.21 – One contribution to a Wastewater Quality project non-infrastructure asset was received.

G2.22 – No assets adopted or acquired at nil cost were included in the MEA value in Table D3.

Details of grants and contributions received in control period are shown in Appendix G3. No grants and contributions are reported for future years as, although it is anticipated that a number will be received and the values have not yet been agreed with the parties concerned.

G2.23-27 Expenditure Totals

G2.27 – The report year figure matches that in E2b.26. In future years, due to this line being a calculated field, the data appearing in this line reports the change in opex resulting from the compliance and growth programmes.

Table G3 Quality - Wastewater Service

Where no line comment is given, the information is a summary derived from Table G5.

G3.1-8 Drinking water directive

G3.2, G3.4, and G3.6 – the increase in opex costs shown in the Report Year reflects the incremental increase following completion of projects within 2003-04 and 2004-05. Changes have been identified for future years. Due to the application of the equal percentage allocation to all output measures, the opex calculation by driver may be distorted. No data is collected on the opex costs by driver as part of the Capex approval process. Unless a specific process can be attributable to a single output driver, an appropriate split by driver cannot be established. Any opex changes resulting from capital maintenance on non-infrastructure assets has been shown against DW3. Any opex changes resulting from capital maintenance on infrastructure assets has been shown against DW5. Support Services opex impact is shown in Table G1.4 above.

G3.9-10 The Cryptosporidium Direction 2000

G3.10 – the increase in opex costs shown in the Report Year reflects the incremental increase incurred following completion of projects within 2003-04 and 2004-05. Changes have been identified for future years. As with Drinking Water Directive, it is not possible to split the opex impact against individual outputs unless a specific process can be wholly attributed to this driver.

G3.11-12 Water Mains Rehabilitation

Investment in Mains Rehabilitation is driven by the criteria of condition and serviceability. The only projects reporting a DW5 output measure are agreed with DWQR. Further projects may be confirmed as being DW5 where quality improvements can be established but are currently be reported against infrastructure renewals.

G3.13-14 The Abstraction Directive

No investment has been identified against this Directive.

G3.15-16 The Birds Directive, The Habitats Directive

No investment has been identified against this Directive.

Table G4 Quality - Wastewater Service

Where no line comment is given, the information is a summary derived from Table G6.

G4.1-4 Driver WQ1: Control of Pollution Act 1974 Section 34

G4.2 – Opex savings identified against base and backlog non-infrastructure capital maintenance projects have incorporated into WQ1/1.

G4.5-10 Driver WQ2: Improvements to poor or seriously polluted waters

G4.11-14b Driver WQ3: Protection of Risk

G4.15-26 Driver EC1: UWWTD Directive

G4.15-26 – UWWTD continues to be the principal driver for quality investment in the Report Year with coastal waters accounting for the majority of spends. The opex increase resulting from upgraded levels of wastewater treatment in the Report Year and future years is primarily driven by UWWTD requirements. As the opex impact is calculated at project level, the split between drivers has been apportioned on the basis of the output measures percentage split.

G4.27-30 Driver EC2: Bathing Waters Directive

G4.27-30 – Although the Scottish Executive wished all projects with a Bathing Water driver to be completed in advance of the 2003 Bathing Water season, it has not been possible to advance all projects to meet the change in deadline and investment will continue in future years. A number of projects delivered temporary solutions with the permanent solution to be completed at a later date. The opex implications are reported in appropriate years.

G4.31-34 Driver EC3: Shellfish Waters

G4.31-34 – The majority of expenditure to meet Shellfish Waters requirements is within 2004-07.

G4.35-38 Driver EC4: Freshwater Fish Directive

G4.35-38 – The majority of expenditure to meet Freshwater Fish Directive requirements is within 2004-06.

G4.39-40 Driver EC6: Sludge Directive

G4.39-40 – Expenditure in the Report Year relates principally to work on projects where sludge treatment facilities have been identified in association with wastewater treatment projects.

G4.41-42 Driver EC9: Dangerous Substances Directive

G4.41-42 – Expenditure continued with 2 projects reaching beneficial use.

Table G5-6 Project analysis – water and wastewater services

Commentary on these tables is on a column by column basis.

Authorities Investment Code (Column 1)

This is the unique number which identifies the project within the capital investment programme and CIMS. There are a number of exceptions where projects required to be split to enable reporting of the water and wastewater asset outputs in G5 and G6. These are principally Support Services projects. The codes reported include the CIMS code to enable these to be tied back to their original code.

A number of programme groups have been aggregated and reported against a single code. These include WZPs, DAPs, PPRA, DAS projects and are reporting the total actual and forecast expenditure for the programme against a single project.

Project Title (Column 2)

This is the title defined by Scottish Water and is taken directly from the capital investment programme and CIMS. The only exceptions are the projects which have been rolled to programme groups.

Status Code (Column 5)

The project status code is taken from the pre-determined set of codes, which reflect the current stage of the project. Progress on projects is updated monthly through CIMS and status codes are adjusted to indicate the milestones which have been achieved. The S8 construction code has been used for all rolling programmes/projects where there are asset outputs to be reported in 2004-05 although some elements of the project may be at any stage from identification of investment need through to project hand-over.

Design Code (Column 6)

The appropriate codes have been allocated to projects to reflect the design route being progressed. Projects that have not progressed to feasibility stage are largely being reported as D0. All projects identified for delivery by Scottish Water Solutions are shown as D6.

Procurement Code (Column 7)

The procurement code reflects the principal procurement route for each project, although a number may employ more than one procurement route. All projects identified for delivery by Scottish Water Solutions are shown as P6.

Expenditure Profile (Columns 7.1-16)

The sums entered are total capital expenditure including design and supervision costs. The total expenditure column, which sums up the individual years, is formatted in £millions. The Report Year financial information held in CIMS has been reconciled with the corporate finance system. A consistent approach to accruals has been adopted across Scottish Water which will ensure that the corporate finance system and CIMS reflect the value of work done and are reconciled.

Total Change in Operating Costs (Column 17)

The information on changes in operating costs has been derived from a number of sources. These include opex costs of existing assets, operational experience and use of manufacturers' data where Scottish Water has limited or no experience of operating certain

treatment processes. The effects of new investment take account of changes in staffing levels, rent and rates, power costs, chemicals and other consumables, monitoring and sampling costs. The WIC 18 baseline opex value has been used for projects which are pre-Capex 2 and, for substitution projects which are pre-Capex 2 an estimate has been included. The WIC 18 baseline value is updated from the forecast impact on preferred option from Capex 2. Where projects are at Capex 3 or beyond, the approved opex impact value from Capex 3 has been used. Any amended change in forecast opex resulting from an approved Capex 4 application or Capex 5 approval will be updated.

Year of Commissioning (Column 18)

This is the planned year of commissioning and is entered in financial year format. The information entered is taken from CIMS for the majority of projects. However, to enable the commissioned asset information to feed into Tables D1 – D3, rolling programmes are being reported with a year of commissioning of 2004-05 but only the elements completed in 2004-05 are shown in the asset columns. This is in accordance with reporting practice for previous years.

Total Contributions (Columns 19-20)

Total contributions refer to the values of grants or contributions from third parties received in the Report Year and the totals shown in the summary tables represent payments received against these projects. These include security grants and contributions from individuals or organisations to quality upgrades or capital maintenance. No infrastructure grants or contributions towards New Roads and Streetworks Act work (NRSWA) from Roads Authorities are shown as these are not credited to projects which are reported at net expenditure as the assets cannot be depreciated.

No grants or contributions have been shown in future years as these will be reported on receipt as full agreement has not yet been obtained on anticipated contributions.

Total grants and contributions received in the Q&II period on individual projects are shown in Appendix 3.

Capital Expenditure Analysis (Columns 21-23)

This is split into the three areas of contract costs, design and supervision costs, and other direct costs. These are expressed as a percentage of the total project costs. At present, due to the methodology for recording future expenditure forecasts on Scottish Water Solutions projects, it is not possible to extract the capex expenditure split against these three areas from CIMS and generic programme grouping breakdowns have been utilised. Once Capex forms are created within CIMS, the capital expenditure analysis will be updated at Capex 2, Capex 3 and Capex 5.

For design and build contracts, there may be misallocation between design and contract costs.

Purpose Analysis by Investment Category (Columns 24-33)

Purpose analysis by investment category has been undertaken on a project by project basis. As the WIC 18 Baseline Programme did not allocate percentage splits to projects with a combination of quality, capital maintenance and growth drivers, the methodology outlined in the General section has been applied. As the current Capex 3 does not update the Purpose and Output analysis, these have not been updated when the project has received approval for a defined scope and target cost. However, this is being addressed as part of the CIMS upgrade where Capex forms will be created and stored within the monitoring system. Small

Value Capital Programme projects reflect the purposes identified through the Capex approval process. Purpose codes have been matched to output measures.

Output Measures (Columns 34-43.5)

For quality purpose codes, there has been a straight mapping to quality output measures. Multiple output measures have been allocated the appropriate percentage split based on methodology outlined above. Quantities are reported as follows:
DW1 – DW5 – number included in WIC 18 Baseline Programme Ver 3.3. This does not reflect the number of Water Quality Undertakings that will be delivered by the project which may cover more than one water quality zone.
EC1/1, EC1/3, EC1/5, EC2/1, EC3/1, EC4/1, EC2/1, EC3/1, EC4/1, WQ2/2 – the quantity relates to the number of uCSOs on the 432 list agreed with SEPA. Where there are multiple outputs against the same CSO, the quantity is reported against the first EC output.
EC1/2, EC1/4, EC1/6, EC2/2, EC3/2, EC4/2, EC8, WQ1/1, WQ2/1, WQ3 – the number relates to the number of continuous discharges in the WIC 18 baseline addressed by the project. Where there are multiple outputs, the quantity is reported against EC or the WQ1.

For non-quality purpose codes the quantities indicated for output measures are as follows:

- Wa1 – it is currently not possible to evaluate the impact on the weighted water quality index resulting from an individual project. These have all been shown as 0.
- Wa2 and Wa4 – as there are no WIC 18 Baseline programme outputs; the value has been left as 0.
- Wa3 – the number of properties which will be removed from the Poor Pressure Register have been shown. Projects with no specified number of properties have been shown as 0 where pressure has been identified as a driver.
- Wa5 – where a project is contributing to the target of 3051km of main to be rehabilitated in the WIC 18 baseline, the length has been shown. For projects with no length, or non mains renewal capital maintenance, the value has been left as 0.
- Wa6 – as there are no WIC 18 Baseline Programme outputs, the value has been left as 0.
- Ww1 – the number of properties removed from the Internal Flooding Register is indicated by projects reported as complete in the Report Year and rolling programmes reporting only the asset outputs delivered in 2004-05. For future years, the quantities reported are the expected number to be removed but may be subject to change as the projects are developed.
- Ww2 – where a project is contributing to the target of 410km of sewer to be rehabilitated in the WIC 18 baseline, the length has been shown. For projects with no length or non sewer renewal capital maintenance, the value has been left as 0.
- Ww3 –. as there are no WIC 18 Baseline Programme outputs, the value has been left as 0.
- Cs1 – this output measure has not been used.
- Cs2 – as this output measure is included against Capital Maintenance where the purpose measure is picked up in the Summary Tables, there is a duplication of expenditure calculated in Tables G5 and G6. However, the values feeding through to the Summary Tables is correct as Cs2 does not contribute to the G1 or G2 values. A list of the projects with Cs2 outputs and the benefits to customers are shown in Appendix G1.

Where purpose codes of WM3 or SM3 have been used for Support Services, these codes have also been entered as output measures. WM3 and SM3 have also been used for the SWS Share Account.

A list of projects delivering requirements of the Security and Emergency Measures Directive and the Code of Practice for Security of Service Reservoirs is shown in Appendix G2.

Asset Replacement or Refurbishment (Columns 44-93)

Report year assets have been coded on the basis of actual assets replaced or refurbished using asset codes and size banding from Table H definitions. Where there were more than five asset types included within a single project, these have been rolled up to enable the reporting to be as representative as possible of the investment incurred. Costs have been allocated on the basis of the total project expenditure given in column 16. The expected assets to be replaced or refurbished through future projects have been similarly entered. For projects commissioned in the Report Year, prior and post condition, performance and risk grades were provided from the 2003-04 Asset Inventory and from the 2004-05 Table H Existing Asset Inventory. The performance, condition and risk grades prior to investment for future years are derived from the 2004-05 Table H Existing Asset Inventory. The performance, condition and risk grades post investment are derived from the anticipated changes to assets based on the level of expenditure against the estimated asset replacement cost (EARC). For rolling programmes, the codes, quantities and costs reflect the assets commissioned in 2004-05 and therefore prior and/or future asset outputs are not reported.

Due to rolling programmes on mains renewals and sewer rehabilitation, Table G does not reflect the lengths and investment on infrastructure renewals fully in the asset tables. It is anticipated that the lengths replaced or rehabilitated will achieve the values established in the WIC 18 Baseline Programme Ver 3.3 by 2005-06.

New and Enhanced Assets (Columns 94-108)

Report year assets have been coded on the basis of actual assets created or enhanced using asset codes and size banding from Table H definitions. Where there were more than five asset types included within a single project, these have been rolled up to enable the reporting to be as representative as possible of the investment incurred. Costs have been allocated on the basis of the total project expenditure given in column 16. Future assets types and size bands have been estimated on the basis of the likely solutions to be delivered. For projects beyond Capex 3 the assets reported reflect the expected assets to be commissioned. For rolling programmes, the codes, quantities and costs reflect the assets commissioned in 2004-05 and therefore the future asset outputs are not reported.

It should be noted that the investment recorded against asset outputs may give a misleading impression of the costs of removing CSOs from the unsatisfactory CSO list. Where the solution requires the laying or upsizing of significant lengths of sewer to enable the elimination or improvement of individual CSOs, the civil costs reported against CSOs may form a relatively minor part of the project. Similarly, the removal of a CSO from the Unsatisfactory list may be achieved through upgrades of Wastewater Treatment Plants or pump stations.

Depreciation (Columns 109-115)

For completed projects and projects under construction, depreciation types have been allocated on the basis of the WIC definitions and the asset life classification being utilised in the Q&SIII submission. The proportion of expenditure against different asset types is calculated to provide the project level split across asset life categories. Depreciation for future projects has been projected on the basis of the anticipated asset types resulting from the likely solutions to be delivered.

Appendix G1

CS2 Projects

The attached table details the projects with Cs2 as one of their output measures and the benefits resulting for customers.

AUTOCODE	Project Description	Benefit to Customers
4065	ALNESS MR	Reduction in pressure problems, interruptions and improved water quality
4066	BADACHRO - SIDHEAN NAH AIRDE BRANCH MR	Reduction in pressure problems, interruptions and improved water quality
4067	BARBARAVILLE MR	Reduction in pressure problems, interruptions and improved water quality
4068	BONAR BRIDGE MR	Reduction in pressure problems, interruptions and improved water quality
4069	BROOMHILL MR	Reduction in pressure problems, interruptions and improved water quality
4070	BRORA MR	Reduction in pressure problems, interruptions and improved water quality
4071	DULNAIN BRIDGE MR	Reduction in pressure problems, interruptions and improved water quality
4072	EDDERTON MR	Reduction in pressure problems, interruptions and improved water quality
4073	EMBO MR	Reduction in pressure problems, interruptions and improved water quality
4074	KILMUIR BRANCH MR	Reduction in pressure problems, interruptions and improved water quality
4075	MARYBURGH MR	Reduction in pressure problems, interruptions and improved water quality
4076	MILTON MR	Reduction in pressure problems, interruptions and improved water quality
4077	MULCHAICH PRV DMA MR	Reduction in pressure problems, interruptions and improved water quality
4078	MUIR OF ORD MR	Reduction in pressure problems, interruptions and improved water quality
4079	POOLEWE MR	Reduction in pressure problems, interruptions and improved water quality
4080	PORT NIS MR	Reduction in pressure problems, interruptions and improved water quality
4081	TORE MR	Reduction in pressure problems, interruptions and improved water quality
4082	THURSO ORMLIE DMA MR	Reduction in pressure problems, interruptions and improved water quality
4083	ULLAPOOL MR	Reduction in pressure problems, interruptions and improved water quality
4084	ABERDEEN WATER SUPPLY - WELLINGTON RD	Reduction in pressure problems, interruptions and improved water quality
4085	BALNAGOWAN MAINS RENEWAL (SHANDWICK MAINS)	Reduction in pressure problems, interruptions and improved water quality
4086	CARSE AREA WATER SUPPLY RENEWAL AT KINFAUNS INTERCHANGE	Reduction in interruptions
4087	A92 DUNDEE TO ARBROATH TRUNK ROAD - ALTERATIONS TO WM	Reduction in pressure problems, interruptions and improved water quality
4088	CARSE AREA WATER SUPPLY RENEWAL AT GLENDOICK INTERCHANGE	Reduction in interruptions
4089	GAIRLOCH MAINS RENEWAL (DESIGN)	Reduction in pressure problems, interruptions and improved water quality
4090	INVERASDALE MAINS RENEWAL (DESIGN)	Reduction in pressure problems, interruptions and improved water quality
4091	MULBUIE (BLACK ISLE) MAINS RENEWAL (DESIGN)	Reduction in pressure problems, interruptions and improved water quality
4092	KILCHOAN MAINS RENEWAL	Reduction in pressure problems, interruptions and improved water quality
4093	BONAR BRIDGE ZONAL MAINS RENEWAL	Reduction in pressure problems, interruptions and improved water quality
4094	WATER MAINS RENEWALS 2002 - 2003 - TAYSIDE WEST AREA	Reduction in pressure problems, interruptions and improved water quality
4095	WATER MAINS RENEWALS 2002 - 2003 - TAYSIDE EAST AREA	Reduction in pressure problems, interruptions and improved water quality
4096	WATER MAINS RENEWALS 2002 - 2003 - GRAMPIAN	Reduction in pressure problems, interruptions and improved water quality
4097	WATER MAINS RENEWALS 2002 - 2003 - FINDOCHTY	Reduction in pressure problems, interruptions and improved water quality
4098	WATER MAINS RENEWALS 2002 - 2003 - FRASERBURGH PHASE 2	Reduction in pressure problems, interruptions and improved water quality
4099	MULCHAICH PHASE 2 MR (CONSTRUCTION)	Reduction in pressure problems, interruptions and improved water quality
4100	STRATHPEFFER (UPPER) MR DESIGN	Reduction in pressure problems, interruptions and improved water quality
4101	TULLICH MR DESIGN	Reduction in pressure problems, interruptions and improved water quality
4102	SOUTH HOY AND FLOTTA WMR	Reduction in pressure problems, interruptions and improved water quality
4103	MARYBURGH MR (DESIGN)	Reduction in pressure problems, interruptions and improved water quality
4104	KILTARLITY MAINS RENEWAL	Reduction in pressure problems, interruptions and improved water quality
4105	GOLSPIE MAINS REPLACEMENT	Reduction in pressure problems, interruptions and improved water quality

4106	CLAYSIDE (BRORA) WATER MAINS RENEWALS	Reduction in pressure problems, interruptions and improved water quality
4264	DUNDEE - CLATTO TO JEANFIELD AUGMENTATION	Reduction in pressure problems, interruptions and improved water quality
5473	INVERNESS WATERMAINS REPLACEMENT	Reduction in pressure problems, interruptions and improved water quality
5662	GILBERTSON ROAD, LERWICK MR	Reduction in pressure problems, interruptions and improved water quality
5663	URCHANY (NAIRN) MR DESIGN	Reduction in pressure problems and interruptions
5664	LOCHINVER MR - DESIGN	Reduction in pressure problems, interruptions and improved water quality
5665	BALAGUNLOUNE MR - CONSTRUCTION	Reduction in pressure problems, interruptions and improved water quality
7616	INVERURIE WWTP-ODOUR SURVEY	Identify cause of apparent odour problem
8299	UNALLOCATED NORTH MAINS RENEWALS	Reduction in pressure problems, interruptions and improved water quality
8329	N - Garmouth Septic Tank Outfall	Remove outfall from popular fishing pool
8478	Nairn WWTP Peracetic Acid Dosing and Odours	Address odour problem
8515	Killen Pump Upgrade	Improve and maintain steady water pressure and avoid interruptions
8518	Kilcoy Redcastle MR	Reduction in pressure problems, interruptions and improved water quality
8519	Elgin Kellas River Crossing Repairs	Risk assessment - not progressed
8554	Culloden Castle Stuart MR	Reduction in pressure problems, interruptions and improved water quality
8628	Troqueer WWTW - Odour Control Equipment	Identify cause and address odour problem
8664	Grantown WWTP - Odour Problem	Project currently on hold
8745	ELECTROCHLORINATION & CHLORAMINATION AT SANDY LOCH WTW & EELA WTW	Address odour and taste complaints
9016	Pitcalzean Pump Upgrade	Improve and maintain steady water pressure and avoid interruptions
9127	KEISTLE PUMP UPGRADE	Improved water quality

Appendix G2

Security and Emergency Measures Directive and the Code of Practice for Security of Service Reservoirs

Projects addressing security measures as part of the Security and Emergency Measures Directive or Code of Practice for Security of Service Reservoirs are reported with a number of different purpose and output measures as shown below. In some instances this reflects the original codes allocated when projects commenced.

Autocode	Project Description	Purpose Codes	Output Codes
54	ALNWICKHILL/FAIRMILEHEAD WTW SECURITY	WM1, WM2	Wa5, Wa6
1218	SERVICE RESERVOIR SECURITY	WM2	Wa6
1842	TREATMENT WORKS SECURITY	SM2	Ww3
3121	PENINVER CWT - SECURITY COVER REPLACEMENT	WM2	Wa6
3122	KILCHATTAN CWT - SECURITY COVER REPLACEMENT	WM2	Wa6
3123	TIGHNABRUAICH CWT - SECURITY COVER REPLACEMENT	WM2	Wa6
3124	COLINTRAIVE CWT - SECURITY COVER REPLACEMENT	WM2	Wa6
3125	CARRICK CASTLE CWT - SECURITY COVER REPLACEMENT	WM2	Wa6
3126	CAIRNDOW CWT - SECURITY COVER REPLACEMENT	WM2	Wa6
4232	ROSS PRIORY/ GLENHOVE SECURITY	QW1, WM1	DW3, Wa5
4387	SR SECURITY - COVER REPLACEMENT	WM2	Wa6
5079	MILLHALL SR INTERNAL & PERIMETER SECURITY	WM2	Wa6
6684	ALNWICKHILL/FMH WTW SECURITY - HIGH LEVEL SECURITY	WM2	Wa6
6685	ALNWICKHILL/FMH WTW SECURITY - NON-VP ELECTRONIC & PHYSICAL SECURITY	WM2	Wa6
6686	ALNWICKHILL/FMH WTW SECURITY - SECURITY FENCING	WM2	Wa6
7031	CASTLE KENNEDY WWTW - REPLACEMENT SECURITY FENCE	SM2	Ww3
7508	CLATTO/BLACKWATER SECURITY PH1	WM3	WM3
7509	SECURITY SCHEME FOR CLATTO DEP	WM3	WM3
7514	INVERCANNIE/BULLION SECURITY	WM3	WM3
7518	CP SECURITY OF SERVICE RES.	WM3	WM3
7519	SR SECURITY- COVER REPLACEMENT	WM2	WM3
7728	AIRDRIE - DALMACOULTER SERVICE RESERVOIR - EKP SECURITY WORKS	WM2	Wa1
7729	SECURITY OF SRS - RETENTION	WM2	Wa1
7730	SENSITIVE SITES SECURITY	WM2	Wa1
7731	SERVICE RESERVOIR - PHYSICAL SECURITY - PHASE 1 ENHANCED SITES	WM2	Wa1
7732	BRADAN WTW - EKP SECURITY WORK	WM2	Wa1
7733	GLASGOW MILNGAVIE WTW - EKP SECURITY WORK	WM2	Wa1
7755	TREATMENT WORKS - PHYSICAL SECURITY UNALLOCATED	WM2	Wa6
8014	UDSTON SERVICE RESERVOIR , HAMILTON - SECURITY COVER REPLACEMENT	WM2	Wa1
8318	UNALLOCATED SERVICE RESEVOIR SECURITY MEASURE	WM2	Wa6
8342	Inverurie WWTW Security	SM2	Ww3
9309	SCOTTISH WATER WIDE TREATED WATER STORAGE TANK SECURITY IMPROVEMENTS	WM2	Wa6
9651	GLASGOW RAW RESERVOIRS SECURITY	WM2	Wa6
10158	SW WIDE TREATED WATER STORAGE TANK SECURITY IMPROVEMENTS PHASE 2	WM2	Wa6
10711	SWW Treated Water Security Phase 2 - Part A	WM2	Wa6
10712	SWW Treated Water Security Phase 2 - Part B	WM2	Wa6
10713	SWW Treated Water Security Phase 2 - Part C	WM2	Wa6
10714	SWW Treated Water Security Phase 2 - Part D	WM2	Wa6
10715	SWW Treated Water Security Phase 2 - Part E	WM2	Wa6
10716	SWW Treated Water Security Phase 2 - Part F - WTW EKP Sites	WM2	Wa6
10717	SWW Treated Water Security Phase 2 - Part G - Invercannie Old Aqueduct	WM2	Wa6

Appendix G3

Total Grants and Contributions

The total value of grants and contributions received in Q&SII is shown by project below.

Autocode	Project Description	Grant Non-infrastructure	Grant Infrastructure	Contribution Non-infrastructure	Contribution Infrastructure
237	INVERURIE - MARKET PLACE CSO & STRATHBURN CULVERT				£482,000
1206	SITE SERVICING - HOUSING - WATER				£1,245
1235	CARGENBRIDGE DRAINAGE SCHEME (AIRDS POINT TANKS)			£201,438	
3553	WESTERN ISLES JOINT RURAL PILOT SCHEME			£50,000	
4181	NEW WTW AT CALDER HOY TO SERVE CAITHNESS, DOUNREAY & NORTH SUTHERLAND			£1,200,000	
4182	PIPELINE & ASSOCIATED SR'S & PS'S TO SERVE CAITHNESS,DOUNREAY & NORTH SUTHERLAND				£470,000
4331	GOLSPIE WWTP	£39,960			
5079	MILLHALL SR INTERNAL & PERIMETER SECURITY	£20,845			
5556	BROADFORD (HARAPOOL) TREATMENT PHS. 2&3	£34,435			
6684	ALNWICKHILL/FMH WTW SECURITY - HIGH LEVEL SECURITY	£29,600			
7174	CARDHU WWTP			£5,000	
7176	DOUNBY WWTP ACCESS RD UPGRADE			£5,500	
7514	INVERCANNIE/BULLION SECURITY	£3,700			
7528	CARSE AREA WATER SUPPLY - RENEWAL AT INCHTURE INTERCHANGE				£26,085
7730	SENSITIVE SITES SECURITY	£16,100			
8629	Retrofit Suds Research Project				£196,433
9651	GLASGOW RAW RESERVOIRS SECURITY	£497,000			

Appendix G4 - Spend to Save Report

The £200m spend-to-save allowance is being used to achieve business efficiencies and transform business performance, in particular where a positive payback can be generated before March 2006. Spend to Save is funding three principal business activities:

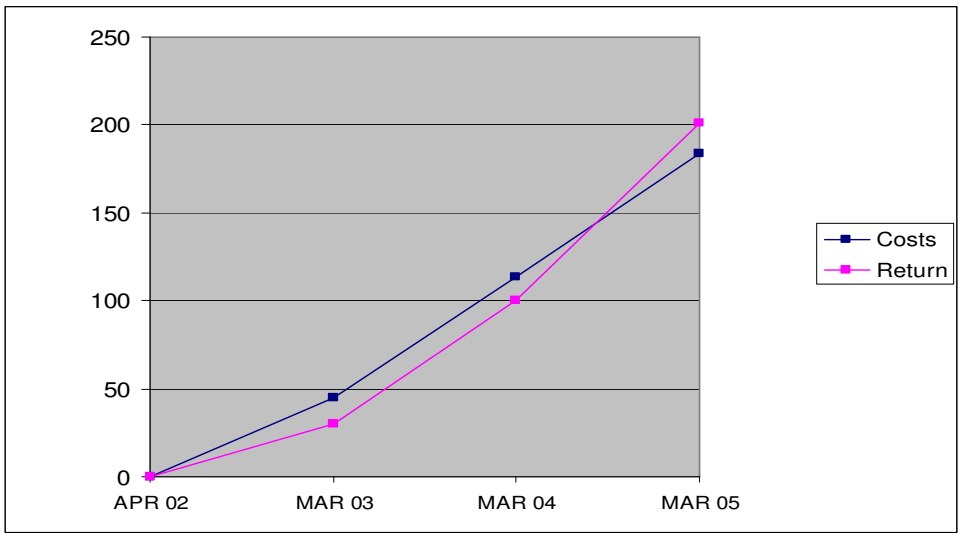
- Staff severance and the related excess staff costs arising from the time delay between employees becoming surplus to business unit requirements and their departure from Scottish Water.
- Capital investment outwith Q&S II that will reduce operating costs.
- Transformation projects.

In the period from April 2002 – March 2005, we had used £183.6m of this Spend to Save allowance in the following areas:

- Staff severance
- Excess staff costs
- Business transformation projects
- Non Q&SII capital expenditure

Return on Investment

The graph below shows the cumulative payback from our Spend to Save in the period April 2002 – March 2004.



At March 2005, the cumulative Spend to Save Investment exceeded the cumulative operating cost savings by £17.1m. This successful outcome was achieved by adopting a programme that contained a blend of 'enabling' and 'efficiency-delivering' projects.

Staff Severance

The severance costs were incurred in reducing our employee numbers to 4,062 at March 2005 and in signing up a further 260 staff to leave. The severance costs have been calculated in accordance with the rules for the voluntary severance scheme.

Excess Staff Costs

Excess staff costs reflect the lag between employees becoming surplus to business requirements and their departure from the business resulting from Scottish Water's policy of adopting a voluntary-only approach to employee severance. This voluntary approach to employee severance was implemented to:-

- maximise the number of employees who would leave Scottish Water by choice;
- obtain employee, union and political support for the significant down-sizing required; and
- gain Scottish Executive support by seeking to avoid large-scale compulsory redundancies, particularly in advance of the 2003 Scottish Parliamentary elections.

As these costs relate to the severance of employees from Scottish Water, they are funded from Spend to Save as set out in our Strategic Business Plan.

Business Transformation

Scottish Water is undertaking a challenging transformation programme that will deliver, for the full financial year of 2005/06, sustainable reductions in core operating costs to £254m. Full details of the transformation programme were set out in the SBP.

The transformation programme is designed to give the optimum pace of change given the need to:

- improve customer service, water quality and environmental performance levels;
- rationalise business functions, invest in enabling activities to transform working practices to create a step change in efficiency to enable the necessary reduction in operating costs;
- work in co-operation with the Trade Unions and employees through the Scottish Water Council as being the most effective way to gain employee support for sustainable change; and
- to seek staff reductions initially through voluntary severance only.

Projects have been initiated within an overall transformation programme to radically improve the performance of the business. While many individual projects have very strong financial returns, other projects have no such explicit financial return as they enable the achievement of efficiencies through other projects. These enabling projects deliver, for example, the employee change required through enhanced engagement, restructure the terms and conditions of employment and provide significantly improved information for decision making.

A list of all the transformation projects is included at Table GA1.

The savings delivered through the transformation programme are being delivered in the following areas:-

Efficiency area	Delivered by
Staff costs	Staff reductions achieved by:- • Streamlining of processes. • Centralisation of activities. • Stopping activities that do not add value. • Asset automation upgrading and telemetry. • Better planning and scheduling. • IT rationalisation. • Upskilling and reducing staff supervision. Cost reductions delivered by:- • Rationalisation of terms and conditions of employment. • Reductions in overtime through more flexible working.

Bad debts	• Working with, and incentivising, the Local Authority billing and collection agents to improve:
	  • customer base records
	  • billing patterns
	  • debt collection performance
	• Cleansing the business customer database to enable accurate billing.
	• Proactive credit management and pursuit of non-payment of business debts.
	• Disconnecting business customers for non-payment.

Power	• Competitive buying process. • Active contract management. • Changing power demand to times of low tariff. • Reduced power use through optimisation of treatment processes and pumping regimes.
Chemicals	• Competitive buying process. • Active contract management. • Improved dosing regimes and review of chemical resource used.
Fleet	• Fewer vehicles being used. • Improved maintenance regimes. • Competitive purchases. • Active contract management.
IT/Telecoms	• System rationalisation. • Reduced maintenance licence charges. • Competitive purchasing. • Active contract management.
Repairs and Maintenance	• Better planning and scheduling on a measured risk basis. • Move towards planned maintenance.

Non Q&SII Capital Expenditure

Capital investment outwith the Quality & Standards programme has been made to deliver operating efficiencies, particularly on those projects that result in the automation of previously manual processes. Cumulative capital expenditure to March 2005 amounts to £44.5m and is detailed in Table GA2.

Table GA1 Transformation and Spend to Save Analysis to March 2005 - Opex and Capex

Project Title	Cumulative Spend to 31 Mar 04	Spend in 2004/05	Cumulative Spend to 31 Mar 05
	£k	£k	£k
People			
Compensation and Benefits	2,931	2,438	5,369
Quantum & Internal Comms	839	-	839
Values	290	-	290
HR Organisational Design	22	-	22
Training Strategy	449	320	769
Digital Media	119		119
Transformation Programme - People	**4,650**	**2,758**	**7,408**
Customer Service Enhancements			
Household Billing and Collection	175	107	282
Customer Mngt Centre (M21S) (and Cust Org) - I&E	1,872	586	2,458
Customer Mngt Centre (M21S) (and Cust Org) - Capex	190	-	190
Business Debt Management & Collection	1,415	4	1,419
Revenue Maximisation Phase 1	1,935	13	1,948
Tariff Review	64	-	64
Web Development Phase 1	367	-46	321
Implementation of SW Code of Practice	9	41	50
Billing Service Improvements	0	1,194	1,194
P2R Phase 2	0	3,871	3,871
Web development	0	205	205
Revenue Maximisation Phase 2	377	1,662	2,039
Trans Prog - Cust Serv Enhancements	**6,404**	**7,637**	**14,041**
Financial Control			
Sourcing Teams	660	72	732
Financial Control	176	65	241
Dealing with the Euro	0	-	0
Transformation Programme - Financial Control	**836**	**137**	**973**
Integrated Support Services			
Fleet Vehicle Utilisation	41	-	41
Property Rationalisation	124	11	135
Laboratory Rationalisation	157	50	207
Programme setup and Management	3,120	912	4,032
Health & Safety Compliance (CAPEX)	0	-	0
Business Programme Optimisation Programme	670	1,302	1,972
Trans Prog - Integrated Support Sevices	**4,112**	**2,275**	**6,387**
System Rationalisation			
Rationalisation to a Single Platform (CAPEX)	18,843	2,307	21,150
Procurement MI & Systems/Processes & Proc	185	-	185
Trans Prog - System Rationalisation	**19,028**	**2,307**	**21,335**
Data Quality Improvements			

Activity Based Management	562	-6	556
IT Service Management	105	-1	104
MIS - Business Intelligence (CAPEX)	2,034	1,397	3,431
Information Strategy	20	-	20
Management Information (BCD)	71	-	71
Customer Revenue Reporting - WIC 22	667	-	667
Develop SW Customer Database	475	-	475
Customer Information for Emergencies	33	4	37
Business Billing	368	-	368
Trans Prog - Data Quality Improvements	**4,335**	**1,394**	**5,729**
Improvement Asset Performance			
Promise To Resol (P2R) / Workflow M (Incl PWP) - I&E	4,508	1,194	5,702
Promise To Resol (P2R) / Workflow M (Incl PWP) - Capex	958	6	964
Asset Data Improvement Project Phase 1	909	659	1,568
Asset Delivery	777	-2	775
Asset Planning	0	-	0
Investment Programme Review	25	-	25
Engineering Services	110	-	110
Risk Management	158	-	158
Specifications & Standards	75	-	75
Strategic Asset Planning	454	-	454
Operations Management Centre	0	570	570
Risk Based Maintenance	0	50	50
Health & Safety Bar Coders	0	36	36
Asset Data Improvement Phase 2	0	1,522	1,522
Standby Generation	0	10	10
Work Manuals	0	95	95
Trans Prog - Improved Asset Performance	**7,974**	**4,140**	**12,114**
Total	**47,339**	**20,648**	**67,987**
S2S Capex - Various as per Appendix 2	14,942	3,794	18,736
Backlog leakage	2,400	-	2,400
Contractual overtime buy-out	1,158	419	1,577
Non - Q&S: Asset Prog	**18,500**	**4,213**	**22,713**
Severance	**43,490**	**41,346**	**84,836**
Excess Staff Costs			
Direct Payroll	2,560	3,565	6,125
Travel and Subsistance	128	178	306
Total Employment Costs	***2,688***	***3,743***	***6,431***
Vehicle Hire	3	-	3
Administration & Other Costs	2	-	2
Total Excess Staff Costs	**2,693**	**3,743**	**6,436**
Scottish Water Set up Charges	**1,600**	**-**	**1,600**
Total Annual Expenditure	**113,622**	**69,950**	**183,572**

Income & Expenditure Analysis	76,655	62,446	139,101
Capital Analysis	36,967	7,504	44,471
Total Transformation and Spend to Save	**113,622**	**69,950**	**183,572**

Table GA2 Spend to Save and Transformation Capital Expenditure

Autocode	Project Description	Cumulative Expenditure to March 05
000138	SPEND TO SAVE	1.38
004118	TELEMETRY SYSTEMS - FUNDED FROM S2S	-34,626
004376	BUCKIE - THE NEUK - SWS	12,144
004377	ROSEHEARTY - THE CASSA SURFACE	43,069
004378	MANHOLE INFILTRATION DIGHTY S	21,371
005219	CUMMINGSTON SW SEPARATION	143,472
005288	SPEND TO SAVE - INFILTRATION AT KING GEORGE V CATCHMENT	4,191
005289	SPEND TO SAVE - INFILTRATION WITHIN INVERGOWRIE/RIVERSIDE CATCHMENT	83,491
005295	SPEND TO SAVE - PPP INVERNESS SCHEME 1	71,887
007273	PROJECT KESTREL	69,416
007928	LOMOND SUPPLY CROSS CONECTION (KATRINE)	757,576
008036	Spend to Save All	-873,470
008345	S2S Utility Billing System Bureau Services	120,763
008492	KILTARITY WwTP - GRIT REMOVAL	4,750
008493	Conon Bridge WWTP Pumps	85,307
008608	Inshes Sewer Connect to Allanfearn	59,816
008609	WasteWater Pump Replacemnents	49,236
008696	Stanley Humus Return	12,053
008697	Huntly WWTP - Provision of Autodesludging Facilities	73,566
008698	Balbeggie Pumps	11,281
008700	Inverurie WWTP - New Sludge Transfer System	189,416
008701	Aboyne WWTP - Automation of Sludge Treatment Facilities	11,168
008714	Crossgates Interim & Contingency Solutions	12,631
008826	Netherburn WWTW - STS	100,638
008828	Merging Control Rooms in Asset Operations	76,714
008829	Loch Bradan - Turbine Generator	527,370
008830	STS Building Services Efficiency	450,966
008831	Dalderse WWTW - Biogas CHP Scheme	44,382
008927	Lerwick Sludge De-Water Feed Pump Improvements	3,723
008928	Kirkhill WWTW - RAS/SAS Pumps	14,201
008929	Fort Augustus WWTP - RAS/SAS Pumps	8,329
008946	Shieldhall Automation - S2S	1,779,779
009047	Ayre Rd & Weyland Bay WWPS, Kirkwall	191,175
009049	TURBIDITY METERS AT FULL CHEMICAL TREATMENT WORKS	65,138
009050	ELECTROCHLORINATION AT ERISKAY	13,007
009051	ELECTROCHLORINATION AT BERNERAY	12,431
009052	ACCESS TO FLOW REGULATION CHAMBER AT NORTH LOCHS TREATMENT WORKS	7,694
009053	ALVES WWPS TELEMETRY	991
009134	EAST CRAIGS WIND TURBINE TO SUPPLY GOWANBANK WPS	9,972
009149	BANCHORY WWTP - SCUM REMOVAL SYSTEM	26,162
009157	BOWHOUSE WWTW ADDITONAL AERATION	20,346
009303	DEANSTON WWTW SCREEN	59,573
009304	ALLOA WWTW AUTO DESLUDGING	61,214
009305	PROCESS OPTIMISATION PHASE 3	534,333
009390	BO'NESS WWTW - INSTALL SLUDGE PRESS	75,725
009392	STRATHMIGLO WWTW ADDITONAL AERATION	17,547
009393	CHLORAMINATION AT LEWIS & HARRIS	19,164
009437	BATHGATE WWTW AUTO DESLUDGING	32,068
009438	BRIDGEND WWTP AUTO DESLUDGING	9,094
009515	ALMONDBANK WWTW - REPLACE DESLUDGE VALVE	1,355
009516	ABERFELDY WWTW - REPLACE COVERS	2,430

Autocode	Project Description	Cumulative Expenditure to March 05
009559	DUNDEE CLATTO WTW - TURBINE UPGRADE	30,938
009593	LOCH FINGLAS TURBINE REFURBISHEMENT - S2S	49,770
009603	ROC MODIFICATIONS AT LINTRATHEN WTW, DAER WTW AND CLATTO WTW	65,076
009604	SALMON INN HYDRO TURBINE OVERHAUL AND ACCESS IMPROVEMENT	67,386
009606	OPTIMISING PUMPING REGIMES IN DISTRIBUTED WATER NETWORKS	794
009607	DATA MINING AT KINNEIL KERSE	1,597
009608	FINE BUBBLE DIFFUSERS AT TROQUEER WwTW	10,432
009609	STS WIND TURBINES	116,400
009610	DAER ADDITIONAL HYDRO TURBINE	24,994
009618	BRIDGEND WwTW SCREEN	35,306
009619	WINCHBURGH WwTW SLUDGE THICKENING UNT	59,914
009628	POWER FACTOR CORRECTION	22,156
009629	S2S CLOSURE/VALIDATION PROJECT	102,665
009643	HYDRO ENERGY POTENTIAL IN SCOTTISH WATER ASSETS	22,077
009645	WIND TURBINE TO SUPPLY TURRIFF WTW	24,489
009646	WIND TURBINE TO SUPPLY MUIRESK WPS	618
009647	WIND TURBINE TO SUPPLY FOREHILL WTW	16,172
009648	WIND TURBINE TO SUPPLY GLENHOVE WPS	15,313
009747	STS - DALDERSE DIGESTERS	1,134,425
009748	STS - KINNEIL KERSE SLUDGE RECEPTION	379,117
009749	STS - WWTW DISSOLVED OXYGEN CONTROL	65,419
009751	STS - INSTALL PEAK LOPPING/TRIAD AVOIDANCE GENERATOR (DALDERSE)	40,157
009752	STS - POWER CORRECTION FACTOR WWTWON	4,757
009753	STS - VARIABLE SPEED DRIVES IRONMILLS WWPS	5,638
009754	STS - REPLACE INEFFICENT PUMPS AT GLENHOVE GOWANBANK	148,442
009755	STS - REPLACE INEFFICENT PUMPS AT BLAMORE GLENHOVE	64,563
009756	STS - REPLACE INEFFICIENT PUMPS AT GLENHOVE DALMACOULTER	116,615
009757	STS - INSTALL COAGULENT CONTROLLERS	129,698
009758	STS - REPLACE LIGHTS AT BALMORE/ROSS PRIORY PSs	571
009759	STS - INDUSTRIAL CUSTOMER METER REPLACEMENT	37,454
009761	STS - WWTW AUTOMATION AND TELEMETRY	795,428
009763	STS - SUDGE THICKENER	-8,680
009764	STS - JEDBURGH DIGESTERS	-459
009765	STS - CLOSE SELKIRK PS	2,780
009766	STS - UPPER GLENDEVON TURBINE	39,583
009767	STS - QUARTER HYDRA POWER STATION	16,802
009768	STS - INSTALL PEAK LOPPING/TRIAD AVOIDANCE GENERATOR (WHITEADDER)	37,468
009770	STS - SR TELEMETRY IMPROVEMENTS	1,261,079
009771	STS - PRESSURE MANAGEMENT AND LEAKAGE CONTROL	2,878,439
009774	STS - TELEMETRY IMPROVEMENTS	31,408
009775	STS - REPLACE INEFFICENT PUMPS (WITH TRAINING IN THERMODYNAMIC TESTS)	259,985
009776	STS - ENERGY OPTIMISERS PILOT INSTALLATION AT DALDERSE WWTW	6,169
009777	STS - ENVIROS PROCESS OPTIMISATION	9,901
009778	STS - BUSINESS CUSTOMER PORTAL	1,809
009780	STS - ZENWORKS	4,750
009781	STS - HYDRO POWER POTENTAL AT ESW RESERVOIRS, WTWS & TRUNK MAINS	11,369
009782	STS - BRAEVAL WWPS	-2,306
009783	STS - WRC SEWERAGE BLOCKAGES STUDY	415
009785	STS - LOCH TURRET WTW - INSTALL SUBMETERING	77,978
009786	STS - PICAPS	21,933
009787	STS - PURCHASE OF LOCH GLOW	350
009788	STS - PILOT TO PROGRESS FURTHER OPPORTUNITIES AT OTHER FACILITIES	794

Autocode	Project Description	Cumulative Expenditure to March 05
009789	STS - CARRONVALLEY LIGHTING EFF.	164
009790	STS - LOCH TURRET REPLANT RENEWABLES OBLIGATION	222,215
009791	STS - BUILDING SERVICES EFFICIENCY	60,936
009792	ENERGY AUDITING - STRATEGY & PLANNING	118,978
009941	GIRVAN WTW - SUPPLY AND INSRALL 2 CONVEYERS	60,914
010062	SMALL WIND TURBINE(S) FEASIBILITY	87,370
010085	STS INVERURIE WwTW - SCUM REMOVAL	77,826
010102	CUPAR WwTW ADDITIONAL AERATION	25,449
010103	KIRKCALDY WwTW - BLOWERS AIR INTAKE	12,306
010104	ABERDOUR SILVER SANDS WwTW - DECANT PUMPS	19,966
010154	BLUTHERBURN HEADWORKS - PUMP REPLACEMENT	37,231
010155	METHILHILL CSO REPLACEMENT COVERS	6,969
010156	IRONMILL BAY WwTW PUMP LIFTING GANTRY	32,178
010157	ALLOA AERATION AUTOMATION	70,371
010201	WALKERBURN WwTW - SLUDGE TANK DEWATERING	17,286
010202	ELMVALE ROW - FLOODING	13,677
010236	KINGUSSIE WwTP SCREEN	71,252
010238	Daer TW - Hydro Scheme	82,396
010239	Overton TW - Energy Saving Measures	60,244
010241	Var WTW-Energy Saving Measures	63,885
010242	Var WOSW locations - Small Scale Hydro Investigations	74,617
010243	Var WOSW locations - Small Scale Wind Farm Investigations	112,152
010244	Var Wastewater PS - Pump Efficiency Testing etc	110,571
010245	Laighpark (Paisley) WWTW - Energy Saving Measures	122,385
010246	Troqueer WWTW - Sludge Thickening Facilities	708,262
010247	DALMARNOCK TO DALDOWIE SLUDGE MAIN - INSTALL FINE SCREENS AT DALMARNOCK PSTs	28,627
010248	Var WWTWs - Provision of Sludge Thickening Facilities	18,094
010249	Var WWTWs - Prov of Sludge Holding/Thickening Facilities	36,506
010250	Var WWTWs - Auto Sludge Surplussing Facilities & Additional Holding Capacity	25,576
010251	Var WWTWs - Auto-desludging & Holding Capacity Install	218,644
010252	Daldowie WWTW - Screenings Handling & Auto-desludging Facilities	198,002
010253	VARIOUS WWTWs - ENERGY & PROCESS OPTIMISATION	75,147
010254	VARIOUS WTWs - ELECTRICAL SUB-METERING INSTALLATION	51,890
010255	Dunside WTW - Abandonment of Works	12,850
010256	Lochfoot WTW - Abandonment of Works	20,174
010257	Rankinston UV Chamber - Abandonment	217,513
010258	Garshake WTW - Abandonment of Works	143,802
010259	Glasgow - Balmore Road Complex-Security gates	86,692
010260	Var WWTWs &WWPSs - Power Factor Correction Equipment	10,242
010261	VARIOUS WTWs - POWER CORRECTION EQUIPMENT	1,880
010262	VARIOUS WwPSs - INSTALL VSD CONTROL EQUIPMENT	43,998
010263	VARIOUS WwPSs - REPLACEMENT PUMPS & CONTROL EQUIPMENT	55,960
010264	VARIOUS WPs - REPLACEMENT PUMPS & CONTROL EQUIPMENT	29,144
010265	VARIOUS WTWs - ELECTRICAL SUB-METERING INSTALLATION	42,513
010266	Hamilton WWTW - Aeration Lane Optimisation	40,803
010267	TELEMETRY SIGNALS - END TO END TESTING	145,759
010268	Blanefield-Burncrooks WTW - Prov of Sludge Treatment Plant	38,333
010269	Waterside - Amlaird WTW - Sludge Pipeline	4,219
010273	TELEMETRY SIGNALS - END TO END TESTING REMEDIAL WORKS & RETESTING	103,980
010274	Belmore WTW SSWD - Feasibility	44,984
010275	Lochinvar WTW SSWD - Feasibility	27,893
010276	Camps WTW SSWD - Feasibility	19,523

Autocode	Project Description	Cumulative Expenditure to March 05
010277	Muirdykes WTW SSWD - Feasibility	23,501
010278	Amlaird WTW SSWD - Feasibility	27,428
010279	Philipshill WWTW SSWD - Feasibility	19,133
010280	Bradan WTW SSWD - Feasibility	13,130
010281	S2S - Loch Katrine Link Turbine (Strathblane) - Feasibility	45,531
010282	S2S - AFTON HYDRO SCHEME - PLANNING	32,138
010283	S2S - GLEN FINLAS HYDRO SCHEME - PLANNING	28,299
010284	S2S - LOCH ARKLET HYDRO SCHEME - PLANNING	33,393
010285	S2S - CAMPHILL/MUIRHEAD/GLENGAVEL/BALCK ESK HYDRO SCHEMES - PLANNING	26,202
010286	Wastewater Non-Infrastructure-S2S-Erskine WWTW Sludge Transfer	7,687
010287	VARIOUS WwTWS - PROCESS CONTROL PHASE 1/PHASE 2 DEVELOPMENT	25,267
010288	Prov of Telemetry to various High Risk WWTWs - Feasibility	37,827
010289	Var WTWs-Installation of VSDs-Development	130,385
010290	VARIOUS PSs - REPLACE PUMPS & CONTROL EQUIP, DEV CONTRACT 2	123
010301	Armadale WWTW Auto Desludging	8,450
010302	Galashiels WWTW Auto Desludging	7,143
010304	Linlithgow WWTW Auto Desludging	8,450
010306	Eddleston WWTW Screen	75,657
010307	Rosewell WWTW Screen	37,914
010308	Gifford WWTW Screen	13,000
010417	SANDYBRAES - SECONDARY CHLORINATION	36,977
010444	DHU LOCH WTW - SLUDGE PRESS FILTER CLOTH REPLACEMENT	3,110
010445	ANSTRUTHER - CONCERES SCREEN REPLACEMENT	53,156
010446	PUMP REFURBISHMENT (11) PUMPS	20,016
010460	S2S - BUILDING SERVICES EFFICIENCY - PHASE 3	146,008
010501	ASHGROVE WTW - SKIP OPTIMISATION	16,479
010510	PERTH WwTW - SCREEN REPLACEMENT & AUTO DESLUDGE	175,047
010552	SPEND TO SAVE - BUILDING SERVICES EFFICIENCY PHASE 4	31,342
010571	ALAN PARK ROAD, EDINBURGH - FLOODING	8,633
010572	BLAIRBEATH ROAD, RUTHERGLEN - FLOODING	506
010573	LAUREL AVENUE, LENZIE - FLOODING	8,756
010633	PUMP TESTING AT GOWANBANK, INCHGARTH & BALMOOR	11,826
010640	Glasgow-Morningside St, Carntyne-Interim & Contingency Solutions	7,533
010641	GLASGOW - BURNSIDE ROAD, RUTHERGLEN - FLOODING	2,779
010694	MUIR OF ORD WWTP - INLET SCREEN (STS)	117,998
010695	CUMNOCK WWTW - MAXIMISATION OF BENEFITS OF CHP FACILITY	15,802
010830	Replacement Aluminium Monitors at WTW`s	55,351
010831	Drongan WWTW - Timed Auto Desludging	17,982
010832	Linlithgow - Mill Rd - Flooding Prevention	1,352
010872	Appin WWTW - New Pump Valves	3,449
010873	Benderloch WWTW - New Pump Valves	2,038
010874	Gremista WWPS - Inlet Screens	3,057
010875	Lairg WWTW - De Watering Facilities	622
010876	Taynuilt WWTW - Instal Pump & Pipework	49
010956	Kirkmuirhead - Vere Terr - Flooding	725
010957	Wishaw - Mossbank Rd - Flooding	5,547
010958	Larkhall - Ashgillhead Terrace - Flooding	3,120
011116	Craigneuk, Airdrie - Flooding	22,814
011297	Glasgow - Tollcross Garage - Flooding	7,532
011324	Flooding - Contingency & Interim Solutions - Project 1 Strathblane Rd, Milngavie	4,016
011325	Flooding - Contingency & Interim Solutions - Project 2 Mainsacre Dr, Stonehouse	4,960
	Total S2S	***18,735,571***

H Tables – Asset Inventory and System Performance

Table H1-H6 Asset inventory

Methodology & Data sources

- The Current Asset Inventory is produced using the WIC definitions and created by the SW Asset Management System.
- A structured approach has been adopted, grouping the Asset Data into the key components and analysing each of these areas for gaps in X factors, condition / performance grades and EARC calculations.
- The Gaps in X factors have been populated using simple extrapolations based on the data present. The commentary in each sub section defines in detail the methodologies for these extrapolations.
- The gaps within Condition and Performance have been dealt with in a similar methodology. In each WIC grade (Non Infrastructure only), an analysis was carried out to obtain the percentages of population in each grade at the sub asset level. This is the basis for the main extrapolation. To allocate the missing grades a methodology was then applied by using table G outputs for base maintenance by project, by site, to prioritise the allocation of missing condition and performance grades to sub assets within these projects.
- Data sources for the Asset Inventory are Ellipse for non-infrastructure and INMS for infrastructure.
- The EARC's have been calculated using a Cost base based on last years cost equations with a COPI index figure used from the April 2005 business plan.

Table H1a MEAV Summary

On 24 June we advised that the sample survey indicated that further work was required before table H1A could be completed as well as our intention to extend the original sample set for revaluation. We indicated that this work would be complete by 2 September and that we would submit table H1A at that time.

The extended survey is now complete and confirms our earlier indication that a proportion of the non infrastructure assets within the H Tables are undervalued. When we wrote on 24 June we had considered using the results of the pilot exercise to update the H table values.

However, while we have identified an undervaluation trend through the pilot exercise, we do not consider that we have a sufficiently extensive sample set of revaluations to extrapolate this to fully complete the H table valuations. While an extrapolation may move us towards an improved estimate it would not result in a more robust valuation.

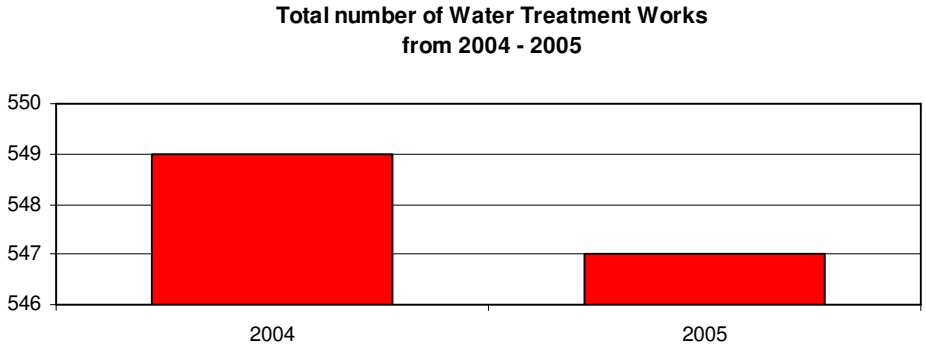
In the absence of an extensive asset revaluation we propose that the current EARC valuation of £28.2bn should be considered as our MEAV valuation with a confidence level of +/-10% as stated in the annual return. We have completed table H1A on this basis. Following our analysis we consider that £28.2bn is likely to be the lower bound figure.

We will now consider a full asset revaluation for implementation early in the 2006-10 period. This would be a significant undertaking for the business, taking up to 24 months to complete, and would provide a more robust platform for the Strategic Review of Charges for the period post 2010.

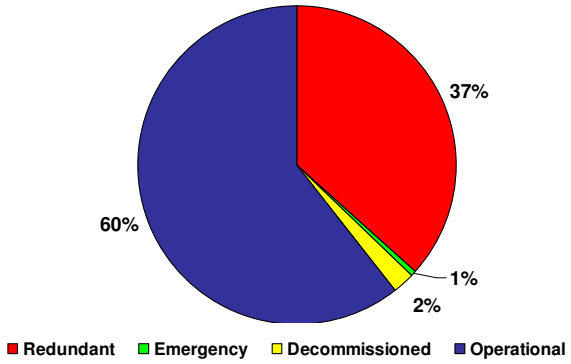
Table H2 Water Non-Infrastructure

H2.1-8 Water Treatment Works

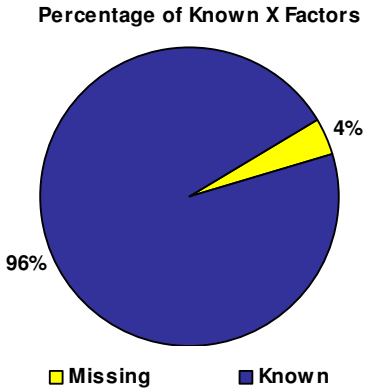
Asset Stock



The total number of works has decreased 549 in 2004 to a total of 545 in 2005, a difference of 4 sites. Five new Water Treatment Works have opened this year; while there have been 35 closures. As a result of data cleansing the total number of works has dropped.

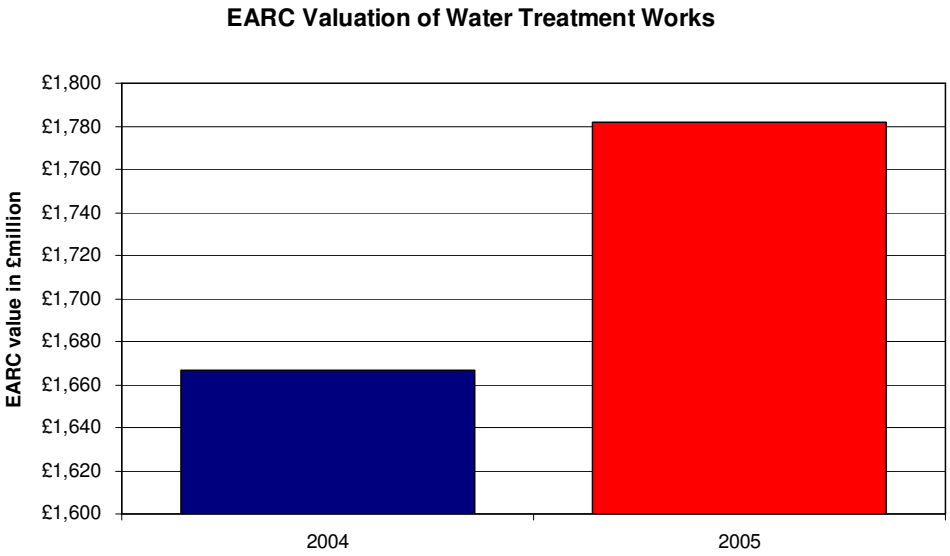


The above Pie chart shows the percentages of sites in each status. The operational sites make up 60% of the total, a count of 330 sites. An additional 1% is Emergency sites, a count of 3 sites. Decommissioned sites make up 2% of the total, a count of 12 sites. The Redundant sites make up 37% of the total, a count of 200 sites.



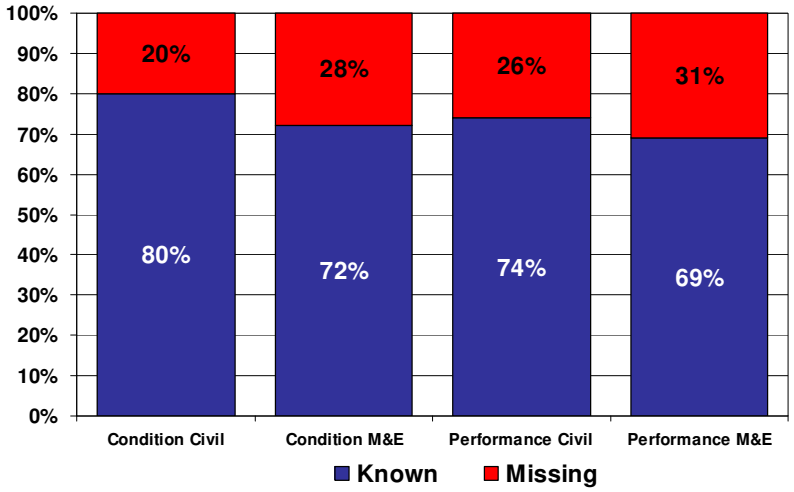
The above pie chart shows a high percentage of known X factors (design capacity) for Water Treatment works. The small percentages of works are redundant works and are assumed to be in the lowest size banding of works.

Asset Valuation



The Asset valuation for 2005 has increased by 6.4% on last year, from £1.667 Billion in 2004 to £1.782 billion in 2005. This slight increase in value is mainly due to inflation.

Condition and Performance Assessment



The graph shown above indicates a high percentage of data is present on the condition and performance of the all sub assets at Water Treatment works. There have been some improvements as a result of 42 site surveys during the year.

The condition of sub assets in condition grades 4 and 5 has risen from 8.9% in 2004 to 10% in 2005, an increase of 1.1%. This increase is due to assets being found in poorer condition during surveys.

The Performance of Water treatment works sub assets in performance grades 4 and 5 has increased from 13.5% in 2004 to 14.9% in 2005, an increase of 1.5%. This Increase is due to assets being found to be under performing during surveys.

The table below lists the new sites opened during the year.

PLANT_NO	Site Name	Status	Design Capacity (Ml/d)
WTW000744	BRAEMAR WTW	Operational	0.52
WTW000741	FORT AUGUSTUS (NEW) WTW	Operational	0.449
WTW000738	FORT WILLIAM WELLFIELD WTW	Operational	11
WTW000131	KILCHRENAN TAYNUILT NEW WTW	Operational	0.75
WTW000737	LOCH CALDER WTW (NCRS)	Operational	17.5

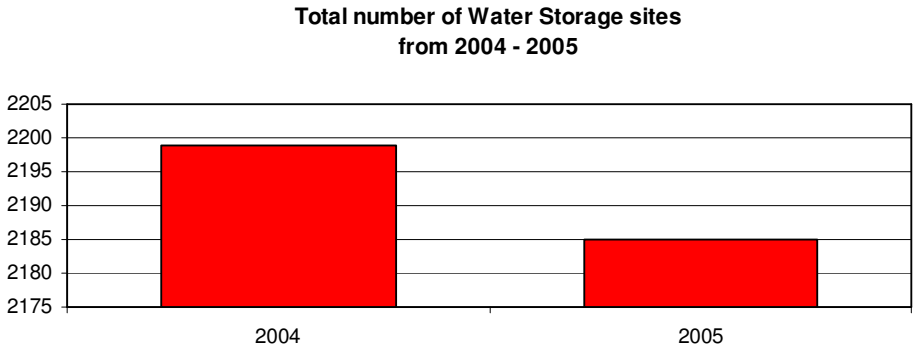
The table below lists the works closed during the year.

PLANT_NO	Site Name	2004 status	2005 status	Design Capacity (Ml/d)	Date Closed
WTW000393	ARDNEASKAN WTW	Operational	Redundant	0.004	Dec 04
WTW000315	ARMADALE WTW	Operational	Redundant	0.66	July 04
WTW000310	BETTYHILL MOR WTW	Operational	Redundant	0.16	July 04
WTW000572	BRAEMAR AUCHENDRYNE WTW	Operational	Redundant	0.25	Feb 05
WTW000651	BROUGHTON WTW	Operational	Decommissioned	0.2	Apr 05
WTW000327	CALDER WTW	Operational	Redundant	10	July 04
WTW000088	DOLPHINTON W.T.W (U.V. PLANT)	Operational	Redundant	0.11	June 04
WTW000600	ERNE'S WARD, SUMBURGH WTW	Operational	Redundant	0.6	Oct 04
WTW000426	FORT AUGUSTUS WTW	Operational	Redundant	0.455	Jan 05
WTW000280	GRAVIR WTW	Operational	Redundant	0.1	Nov 04

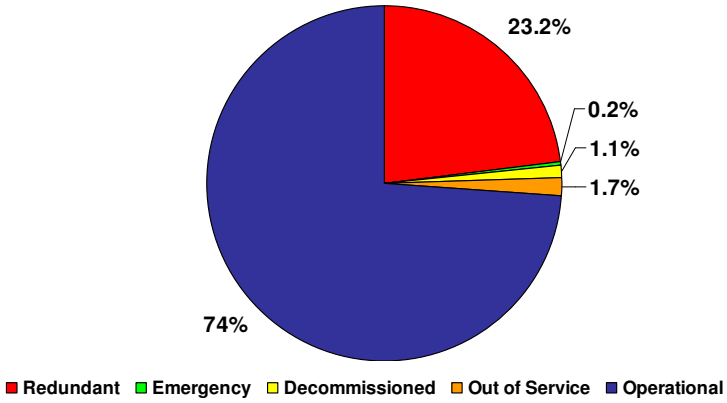
WTW000277	HABOST WTW	Operational	Redundant	0.2	Nov 04
WTW000328	HOY WTW	Operational	Redundant	10	July 04
WTW000378	ISLEORNSAY WTW	Operational	Redundant	0.07	June 04
WTW000670	JELLYHOLM WTW	Operational	Decommissioned	10.4	Jan 05
WTW000313	MEADIE	Operational	Redundant	0.08	July 04
WTW000383	MELVAIG	Operational	Redundant	0.11	Sept 04
WTW000320	MELVICH/STRATHY WTW	Operational	Redundant	0.56	July 04
WTW000293	NEDD WTW (CHLORINATOR)	Operational	Redundant	0.04	Feb 05
WTW000382	NORTH ERRADALE WTW	Operational	Redundant	0.12	Oct 04
WTW000218	RANKINSTON W.T.W. (DISINF. ONLY)	Operational	Redundant	0.23	July 04
WTW000549	ROYBRIDGE WTW 1	Operational	Redundant	0.26	Mar 05
WTW000324	SHEBSTER WTW	Operational	Redundant	6.8	July 04
WTW000308	SKERRAY WTW	Operational	Redundant	0.11	July 04
WTW000696	SLIGHHOUSES WTW	Emergency	Decommissioned	0.45	Dec 04
WTW000546	SPEAN BRIDGE WTW	Operational	Redundant	0.37	Mar 05
WTW000322	STRATH HALLADALE WTW	Operational	Redundant	0.17	July 04
WTW000312	STRATH NAVER WTW	Operational	Redundant	0.037	July 04
WTW000614	STROMNESS WTW	Operational	Redundant	0.8	Nov 04
WTW000242	TAYNUILT W.T.W.	Operational	Redundant	0.242	June 04
WTW000495	TERPERSIE (ALFORD) WTW	Operational	Redundant	0.45	Nov 04
WTW000330	TOFTCARL WTW	Operational	Redundant	4.55	Sept 04
WTW000307	TONGUE WTW	Operational	Redundant	0.21	Sept 04
WTW000705	WANTON WALLS WTW	Operational	Decommissioned	2.05	Dec 04
WTW000594	WEST BURRAFIRTH WTW	Operational	Redundant	0.03	Dec 04
WTW000617	WIDEFORD WTW	Operational	Redundant	1.9	Feb 05

H2.9-10 Water storage

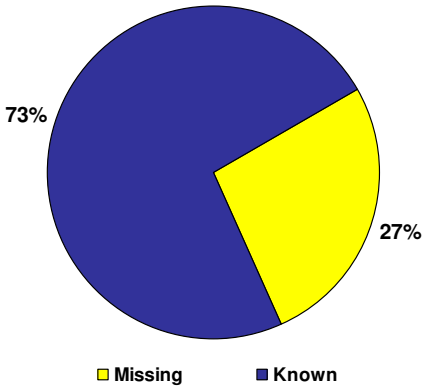
Asset Stock



The total number of Water Storage sites has decreased from 2199 in 2004 to a total of 2185 in 2005, a decrease of 15 sites. This is mainly due to data improvement carried out at a data cleansing workshop. Duplicate sites were identified during these meetings with operations and asset planners and have been subsequently removed from the corporate system.



The above Pie chart shows the percentages of sites in each status. The operational sites make up 74% of the total, a count of 1613 sites. An additional 0.2% is Emergency sites, a count of 5 sites. Out of Service sites make up 1.7%, a count of 38 sites, while Decommissioned sites make up 1.1% of the total, a count of 23 sites. The Redundant sites make up 23% of the total, a count of 506 sites.



The above chart shows that the asset valuation was based on having X factors for 73% of Water storage sites. The missing 27% was based on an extrapolation of the 73% known water storage sites. The methodology for the extrapolation was to group the sites by the sites Region, Its tank type (Break Pressure Tank, Clean water tank, service reservoir and Water tower) and categorise it into the WIC s size band based on the known design capacity. This data is then converted into a percentage in each of the above areas, which gives the basis for the extrapolation across the whole asset stock.

Asset Valuation

The asset valuation for 2005 has decreased slightly by 0.1% on last year, from £906.2 million in 2004 to £905.6 million in 2005. This slight decrease is due to the reduction in number of water storage sites.

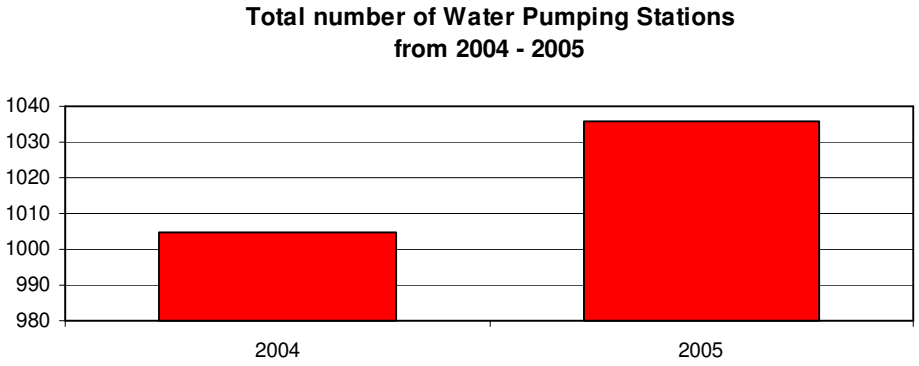
Condition and Performance assessment

The condition of sub assets in condition grades 4 and 5 has decreased from 10.8% in 2004 to 8.1% in 2005, a decrease of 2.7%. The reason for this slight decrease is mainly due to the base data being updated with new condition data.

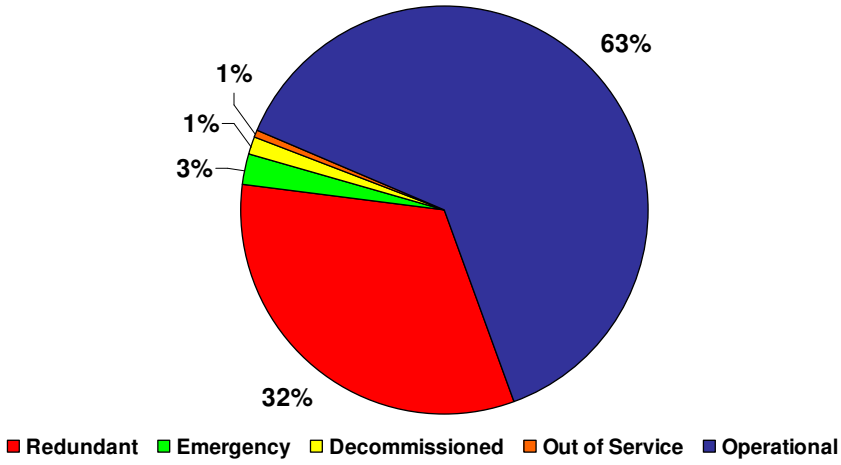
The Performance of Water Storage sub assets in grades 4 and 5 has decreased from 10.2% in 2004 to 7.2% in 2005, a reduction of 3%. The reason for this slight decrease is mainly due to the base data being updated with new Performance data.

H2.11-13 Water pumping stations

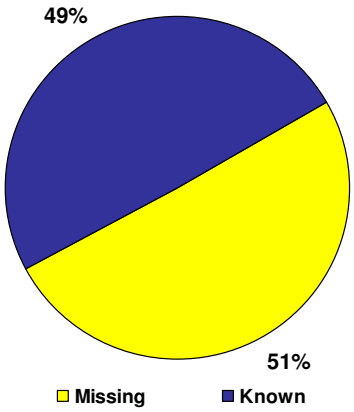
Asset Stock



The total number of Water pumping stations has increased from 1005 in 2004 to a total of 1036 in 2005, an increase of 31 sites. This increase is mainly due to new pumping stations that have been constructed during the year.

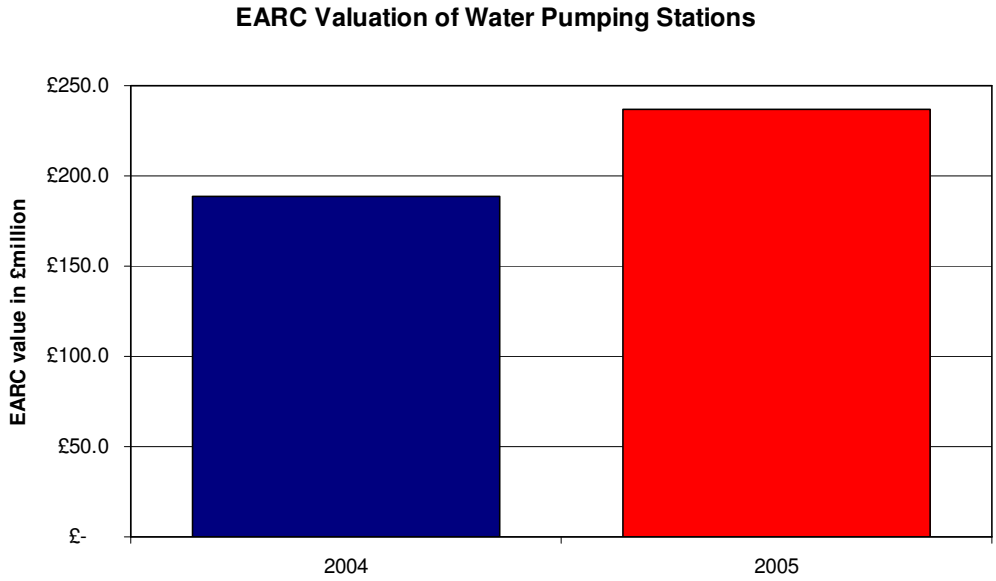


The above Pie chart shows the percentages of sites in each status. The operational sites make up 63% of the total, a count of 653 sites. An additional 3% is Emergency sites, a count of 27 sites. Out of Service sites make up 1%, a count of 7 sites, while Decommissioned sites make up 1% of the total, a count of 13 sites. The Redundant sites make up 32% of the total, a count of 336 sites.



The above chart shows that the asset valuation was based on having X factors for 49% of Water Pumping Stations. The missing 51% was based on an extrapolation of the 49% known Water Pumping stations. The methodology for the extrapolation was to group the sites by their WIC grade, then group by the sites Region and categorise it into the WIC s size band based on the known Kilowatt rating. This data is then converted into a percentage in each of the above areas, which gives the basis for the extrapolation across the whole asset stock.

Asset Valuation



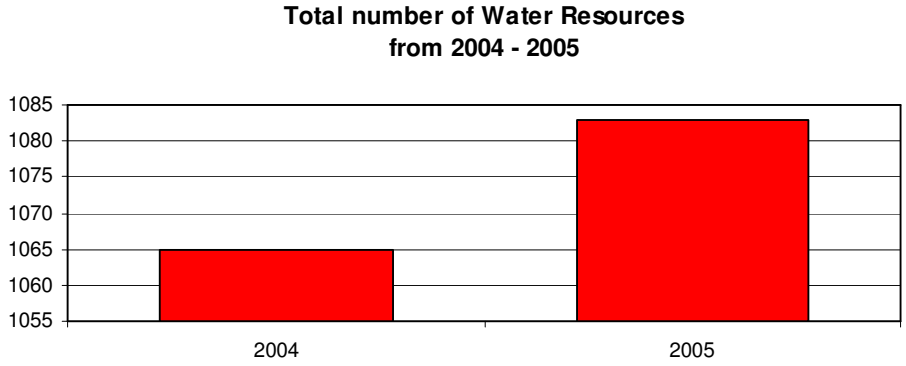
The asset valuation for 2005 has increased by 26% on last year, from £188.3 million in 2004 to £237.1 million in 2005. This is mainly due to improved information on Water Pumping stations. The Total kW rating overall has risen from 81,149kW to 85,562kW in 2005.

Table H3 Water Infrastructure

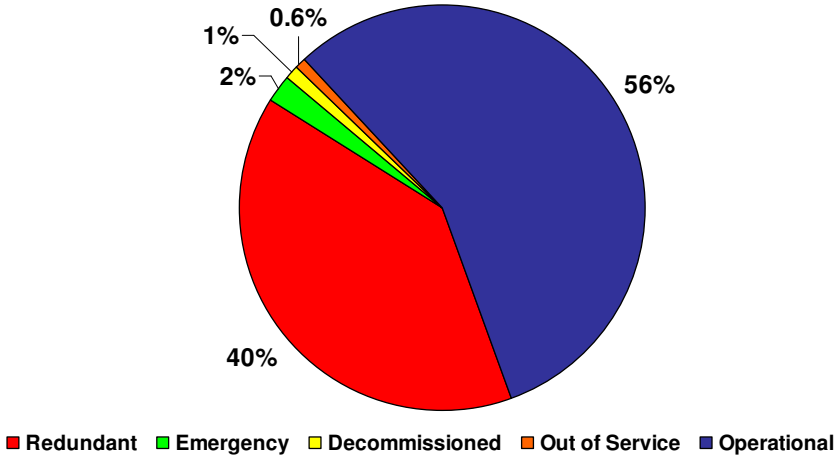
The figure reported in line A1.42 is the number of meters that generate revenue. The figure in line H3.8 is the meters in line A1.42 plus all the other meters that Scottish Water owns. These will include meters such as those at vacant properties, those where the customer is exempt from charges, meters at Scottish Water properties and combination meters.

H3.1-2 Water Resources

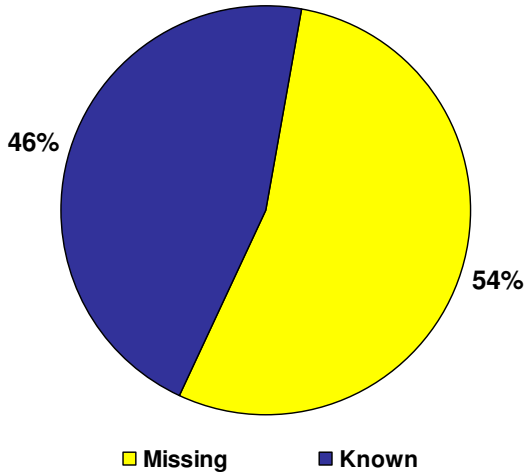
Asset Stock



The total number of Water resources has increased from 1065 in 2004 to a total of 1083 in 2005, an increase of 18 sites. This increase is due to better data on water resources as site surveys have been carried out over the past two years.

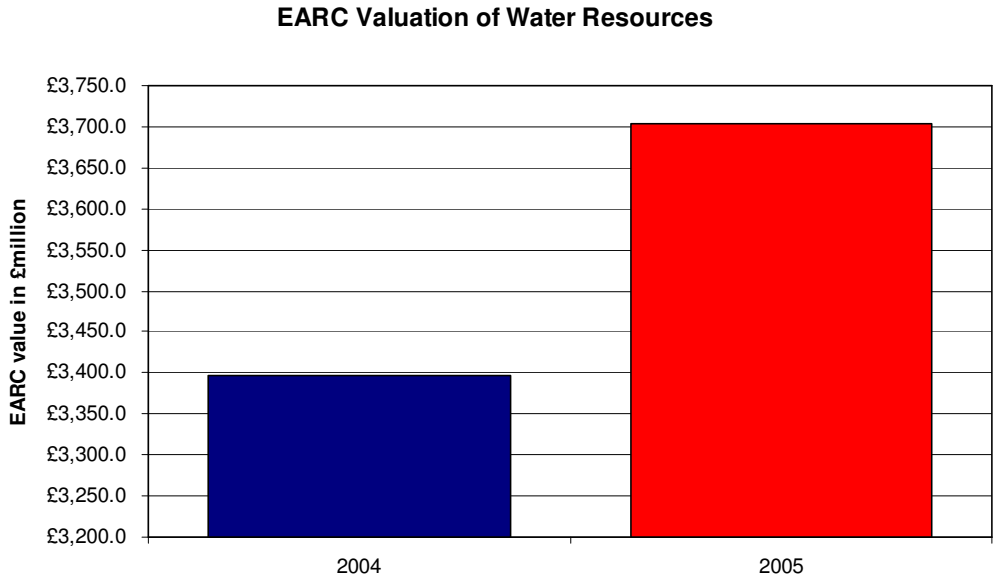


The above Pie chart shows the percentages of sites in each status. The operational sites make up 56% of the total, a count of 612 sites. An additional 2% is Emergency sites, a count of 22 sites. Out of Service sites make up 0.6%, a count of 7 sites, while Decommissioned sites make up 1% of the total, a count of 14 sites. The Redundant sites make up 40% of the total, a count of 428 sites.



The above chart shows that the asset valuation was based on having X factors for 46% of water resources. The missing 54% was based on an extrapolation of the 46% known water resources. The methodology for the extrapolation was to group the sites by there WIC grade, then group by the sites Region and categorise it into the WIC size band based on the known flow rating. This data is then converted into a percentage in each of the above areas, which gives the basis for the extrapolation across the whole asset stock

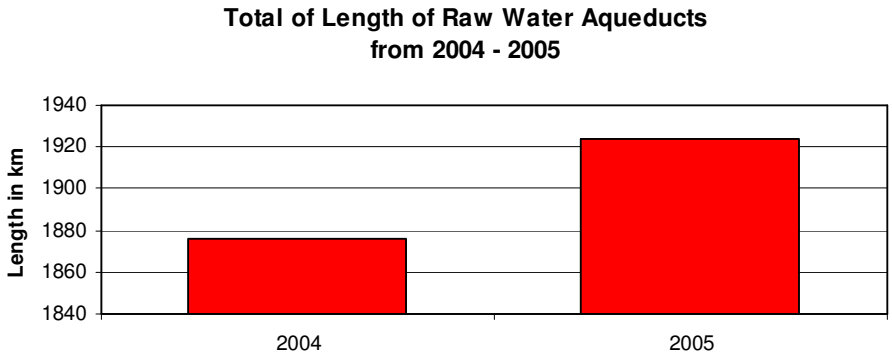
Asset Valuation



The asset valuation for 2005 has increased by 9% on last year, from £3,397.3 million in 2004 to £3,703.9 million in 2005. This is mainly due to inflation.

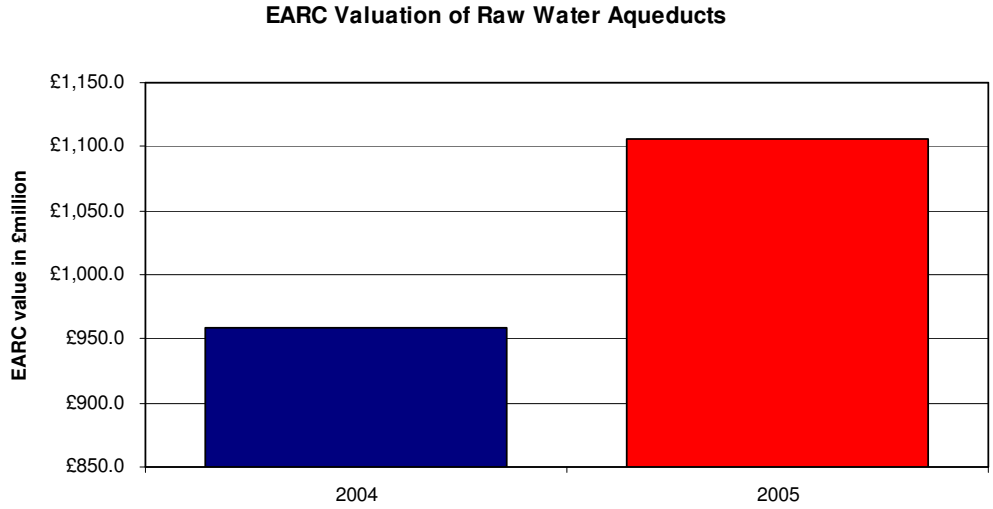
H3.3 Raw Water Aqueducts

Asset Data



The total Length of Raw Water Aqueducts has increased from 1876.4 km in 2004 to a total of 1924 km in 2004, an increase of 47.6 km.

Asset Valuation



The asset valuation for 2005 has increased by 15% on last year, from £959.4 million in 2004 to £1,106.1 million in 2005. This is due to the EARC model update for sizes ranges that include significant tunnels and bridges on the aqueduct inventory.

The condition of sub assets in condition grades 4 and 5 has decreased from 39.9% in 2004 to 38.9% in 2005, a decrease of 1%. This is due to the refinement of the deterioration model.

The performance of sub assets in condition grades 4 and 5 has decreased from 42.9% in 2004 to 42.4% in 2005, a decrease of 0.5%.

Methodology

The base data on raw water mains and aqueducts has been taken from the Scottish Water corporate geographic information systems (SWGIS). The condition and performance grading of raw water mains has followed the principles developed for the potable water main asset stock.

Strengths of submission
The condition grading model has been updated to include the pipe samples from the Q&S2 investigations for rehabilitation. A further 1492 pipe samples have refined the Iron corrosion and AC deterioration models. The addition of many more AC pipe samples and the use of this material in raw water systems raised confidence in the condition grading of this asset type.

This additional refinement of the corrosion rates, particular to Scotland, incorporates the latest findings and provides independent audits on pipe deterioration modelling. The improvement in burst/repair data from WAMS has significantly improved in the AR05 submission, with incidence calculation skipping short repairs to minimise over reporting burst incidence from short lengths.

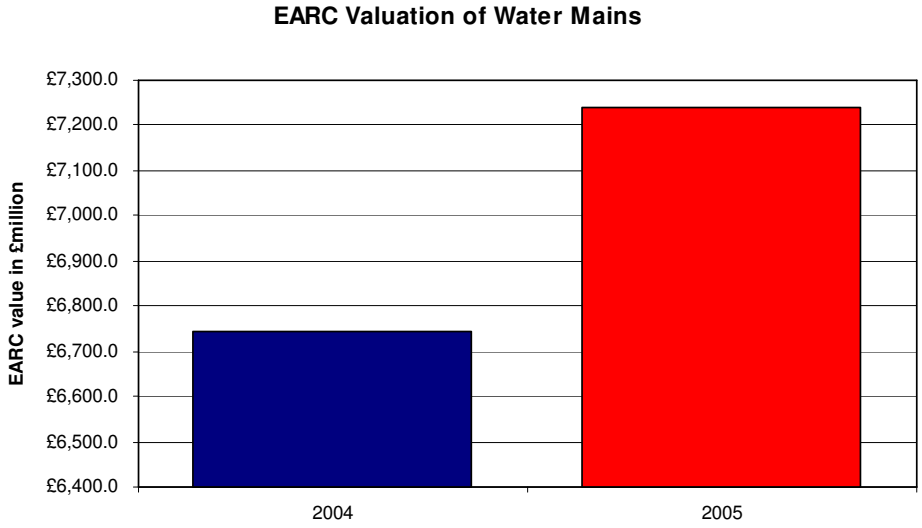
Issues with data

Historically data cleansing of GIS records for raw water main assets has not achieved the same level of investment as that for potable mains. This is due to the lesser use being made of the GIS on a day to day basis for operating this asset stock. Attribute data for raw water mains is therefore still relatively poor.

The aqueducts data set has had some attention this year, regularising some of the length references. However no rehabilitation of the aqueducts suggested by surveys in 2003 is incorporated on the record.

H3.4-8 Water Mains

Asset Valuation



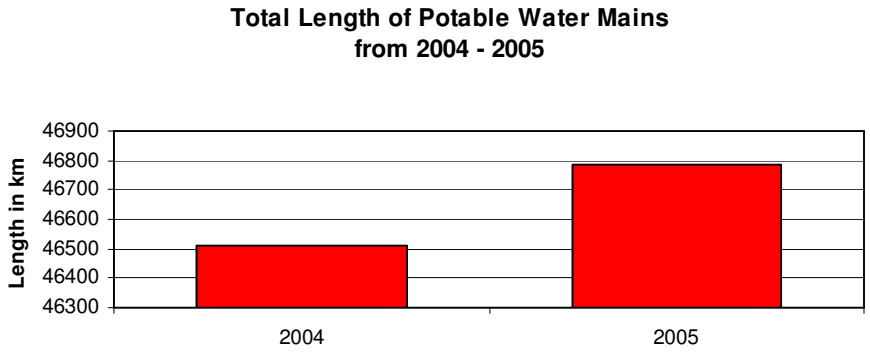
The asset valuation for 2005 has increased by 7% on last year, from £6,743.3 million in 2004 to £7,238.6 million in 2005.

The condition of sub assets in condition grades 4 and 5 has increased from 37.4% in 2004 to 37.7% in 2005, an increase of 0.3%. This is due to changes in the predicted deterioration rates for pipe. The record backlog from the Q&S2 programme would offer an estimated reduction of 6.7% in Condition Grade 4 & 5.

The performance of sub assets in condition grades 4 and 5 has decreased from 30.3% in 2004 to 23.9% in 2005, a decrease of 6.4%. The refined corrosion model and the effect of works programmes on customer service is the main reason for this fall.

H3.4 Potable Water Mains

Asset Data



The total Length of Potable Mains has increased from 46,508.97 km in 2004 to a total of 46,788 km in 2005, an increase of 279.03 km.

Methodology

The base data on water mains is held on the Scottish Water corporate geographic information system (SWGIS), with further analysis required to assign condition and performance grades carried out through the application of fully documented INMS methodologies. The condition of the mains has been analysed using the INMS asset grading methodology.

Strengths of Submission

The condition grading model has been updated to include the pipe samples from the Q&S2 investigations for rehabilitation. A further 1492 pipe samples have refined the Iron corrosion and AC deterioration models. This additional refinement of the corrosion rates, particular to Scotland, incorporates the latest findings and provides independent audits on pipe deterioration modelling. The improvement in burst/repair data from WAMS has significantly improved in the AR05 submission, with incidence calculation skipping over short lengths of pipe to minimise over reporting of burst incidence from short lengths.

For the performance grading, the data available on customer complaints and water quality failures is much as the previous return. To offset the effect of customer disruption from major rehabilitation programmes, incidents matching streets where work was carried out were omitted from the performance incidence analysis.

Issues with data

The increase in AC pipe samples considerably extends the confidence in the AC deterioration model. An issue remains on the comparison between the Barcol hardness and Phenopthaline approach to assessing residual pipe life. The issue is compromised by the focus of the programme on problem mains, where poor joint performance is an issue, though not addressed by the current approach to condition.

Analysis of the reported outputs 2004/05 and the SWGIS records show that a significant record backlog exists for the year. Similar evidence can be tracked back over previous years Q&S2 programme and the Legacy programmes. An implication of an 'Off-Inventory Adjustment' is outlined in a separate note and below. While Q&S2 records can be anticipated, acquiring records for Legacy schemes in time for AR06 will require advancement of the Asset Data Improvement Programme (ADIP) record project before Q&S3.

Comparisons with Previous Return

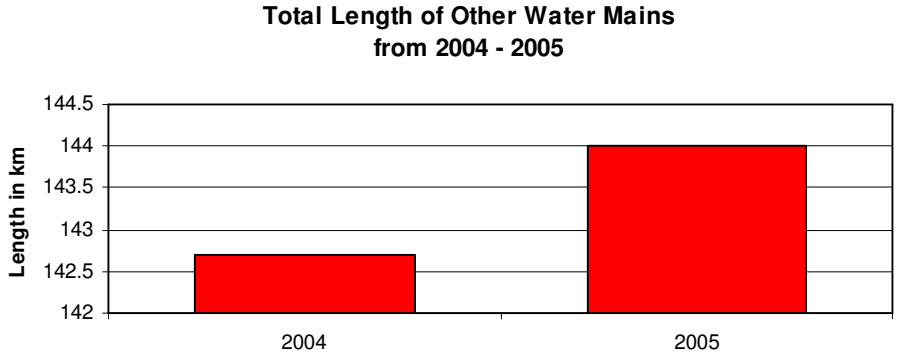
Inventory has risen by 0.6%by length and 7.3% by value.

The percentage value of mains reported as being in Condition grades 4 & 5 rises 1%, though a 2% reduction in lengths from the previous return. This is due to changes in the predicted deterioration rates for pipe. The record backlog from the Q&S2 programme would offer an estimated reduction of 6.7% in Condition Grade 4 & 5.

The percentage of mains in performance grades 4 & 5 has reduced by 7% to 27% by value; reduced by 11% to 29% by length. The refined corrosion model and the effect of works programmes on customer service could be the reason for this fall.

H3.5 Other Water Mains

Asset Data



The total Length of Other Mains has increased from 142.7 km in 2004 to a total of 144 km in 2005, an increase of 1.3 km.

Methodology

Pipe meeting WIC classification in Raw Water, Potable and Service Pipe Scottish Water corporate geographic information system (SWGIS) inventories are reported from base data extracted from the SWGIS. Condition and performance analysis follows the principles applied to the potable mains.

Strengths of Submission

This year's submission is consistent with the previous year's detailed effort of assets included in this category.

Issues with data

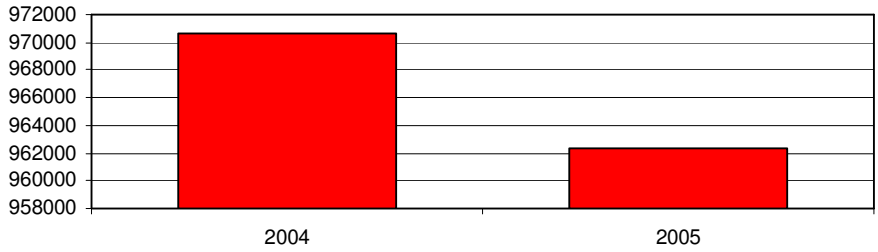
Although all water mains are recorded on the SWGIS, some mains falling within the 'other mains' definition, such as raw water mains supplying industrial customers, are not currently classed as a separate type on the SWGIS from other raw water mains. Their identification and extraction cannot therefore currently be automated.

Q&S 2 Output reports suggest an Off Inventory addition of 1.06km mains classed redundant but retained for raw water use for industry that is in the records backlog.

H3.6 & H3.7 Communication Pipes (Lead and Other)

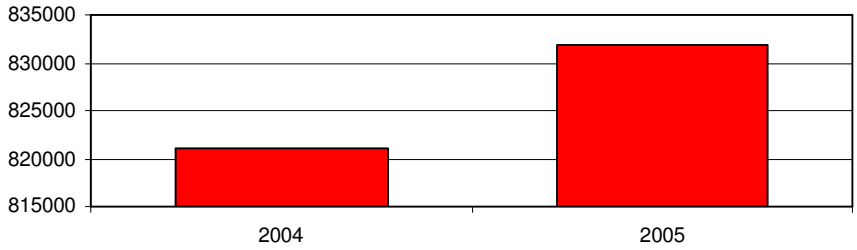
Asset data

Total number of Communication Pipes Lead from 2004 - 2005



The total number of Communication pipes lead has decreased from 970,658 in 2004 to a total of 962,412 in 2005, a decrease of 8,246.

Total number of Communication Pipes Other from 2004 - 2005



The total number of Communication pipes other has increased from 821,051 in 2004 to a total of 831,854 in 2005, an increase of 10,803.

Methodology

Information on communication pipes has historically not been recorded on Scottish Water's corporate geographic information system (SWGIS). An attempt to derive and track Communication Pipe inventory using the Integrated Network Management Systems (INMS) Communication Pipe Database, which provides a framework of assessment of communication pipe numbers, material type and location on which to base condition and performance. Procedures exist to cover this approach.

The INMS Communication pipe database has a record of all the properties within the area of supply based on the June 2003 OS Address Point Data, with inferred connection to the nearest SWGIS potable water main. The age of the communication pipe is then assumed to be the same as the age as the water main/property to which it is connected. As different material types were used in distinct time periods, the material of the communication pipe can then be derived from its age. It has been assumed for these purposes that lead was used for communication pipes up to 1963.

Tracking Communication Pipe renovation and repair has been attempted, though specific location data is poor. The AR05 assessment is based on the AR04 assessment with adjustments for activities in year 2004/05.

Strengths of submission

The INMS Communication Pipe Database has now been in use for a number of years and is believed to provide the best estimate on communication pipes numbers and material types from the information available.

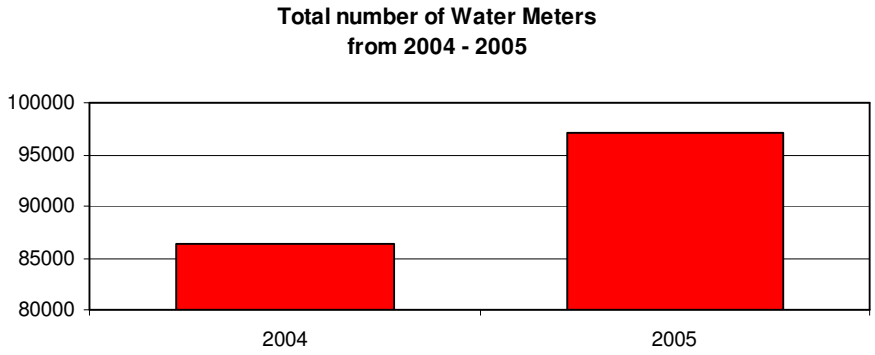
Issues with data

Where information exists in the authority's works management systems, or other historical records, that lead replacements have occurred, these are also incorporated into the communication pipe database. However information on older historical lead replacements is limited and more will have occurred than have been incorporated.

The WAMS work order system reports 2,557 new connections. No mechanism for reporting developer self-lay Communication Pipes was available for update of inventory.

H3.8 Water Meters

Asset Data



The total number of Water Meters has increased from 86,284 in 2004 to a total of 97,147 in 2005, an increase of 10,863.

Methodology

The meter inventory has been derived from extracts from customer billing system in April 2005. Condition grades have then been allocated based upon the service life of the meter and the age of installation. Service lives are assumed to be for meters below 40mm 15 years, for those from 40 to 125mm 10 years, and for those above 150mm, 6 to 10 years. Meter performance is considered to be synchronous with condition.

Strengths of submission

Meter details are now held on one system for the whole of Scotland for the first time. This gives higher confidence to the overall asset stock assessment as well as allowing the development of a consistent basis for assessing condition.

Issues with data

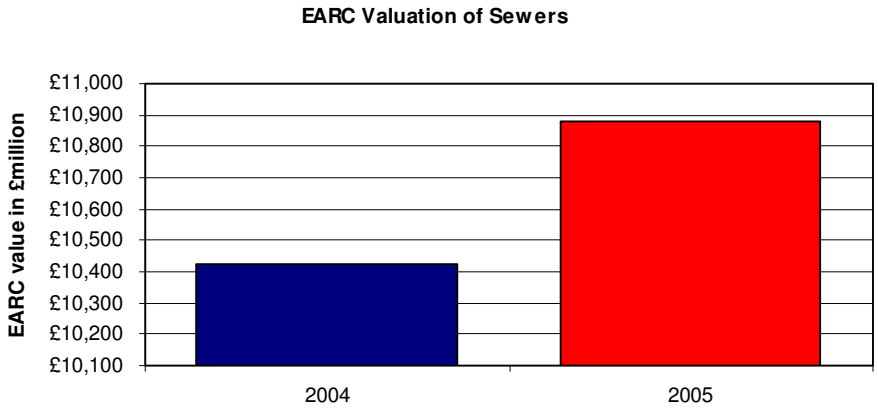
Although meter details are now held on one system – Hi-Affinity, the information on installation date relies on the data migrated from the legacy systems, with the older meters likely to have the lowest confidence. A total of 20,300 meters had no age installed data, so meter serial number was used.

Meter classification between Domestic and Non-Domestic is difficult with 21,473 have blank 'Use' fields – assumed non-domestic to tally with figures reported in AR04.

Table H4 Wastewater Infrastructure

H4.1-3 Sewers

Asset Valuation



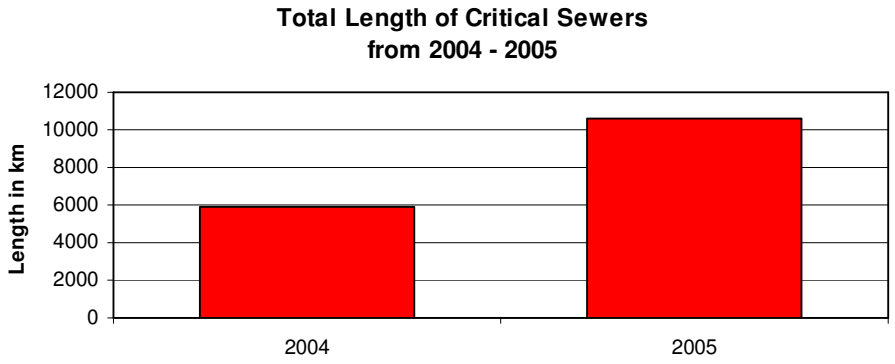
The asset valuation for 2005 has increased by 4% on last year, from £10,424.9 million in 2004 to £10,879.9million in 2005. This is mainly due to the total length of sewers increasing.

The condition of sub assets in condition grades 4 and 5 has decreased from 21.8% in 2004 to 20.5% in 2005, a decrease of 1.3%. This is mainly due to new data following CCTV surveys.

The performance of sub assets in condition grades 4 and 5 has increased from 14.1% in 2004 to 16.3% in 2005, an increase of 2.1%. The decrease in performance is primarily a result of laterals performance profile. The poor performance of laterals is supported by the survey results and by the intervention data.

H4.1 Critical Sewers

Asset Data



The total Length of Critical Sewers has increased from 5,869.84 km in 2004 to a total of 10,595.4 km in 2005, an increase of 4,725.56 km. The length of critical sewers has increased on the previous return due to the revised method of determining the proportion sewers that are critical.

Methodology

The sewers inventory has been extracted from the corporate GIS and supplemented by an off-inventory data infill using STC data from Drainage Area Studies and CCTV inspection data where available. To address a lack of completeness in the SWGIS sewerage inventory attributes, a comprehensive data infill process for size, material and depth was initiated using logical link rule bases to provide data on a consistent basis for asset banding and valuation.

Sewers have been removed on the basis that they are flagged as Proposed, Planned, Abandoned, Private or PFI. The principles of the Sewerage Rehabilitation Manual (SRM) have been followed to identify critical sewers.

Condition grade is based on the CCTV survey data collected from the whole of Scotland and graded using the SRM method for structural condition. A simulation of the distribution of grades has been used on those sewers not inspected.

Performance grades have been based upon silt depths as recorded in the CCTV sample dataset and grades simulated in the same way as Condition for sewers that have not been inspected.

In the case of both condition and performance, the distribution of grades derived from the CCTV sample for each size band has been applied to the entire dataset using a random simulation. In this way the relationship with size has been preserved and the fact that the CCTV sample has a much larger size profile than the whole dataset has been taken account of.

Finally the intervention data was used to supersede the CCTV or simulated grades where available. The philosophy was that an intervention dataset was created by amalgamating the PROMIS and WAMS datasets grouped by events in the same post-code within 21 days. Interventions on laterals were not included and treated separately. These incidents were then associated with the closest sewers by distance.

Strengths of Submission

The main improvements over the previous submission are the revised method for determining the critical sewers, the improved data infill methods and the modified and simplified approach to performance.

The critical sewers are now determined by an automated and repeatable method and can be reviewed DAS results in a consistent way.

Infill methods used rule based logical links techniques.

The approach to performance is based on recent Scottish Water intervention data is robust, and provides a basis for consistency over future years.

Issues with Data

There is still a considerable backlog in updating the GIS with information from completed Drainage Area Studies and indeed other sources, which results in poor coverage in the GIS on key fields of size, depth material and STC Reference. Infill methods are being improved for WIC reporting but are not yet consistent with the SWGIS.

The whole of CCTV dataset has been assessed, giving coverage of about 4715 km although not all can be reliably linked to a sewer in the inventory.

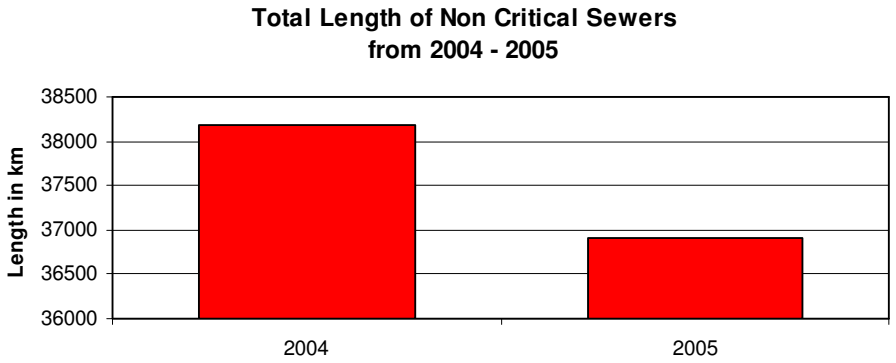
The Promise CRM system, which was rolled out in April 2003, has improved the capture of performance data but the implementation of the system is only in its first phase. The association of work directly with the sewer asset concerned has yet to be achieved. Although data is being filled in about interventions, the full integration between WAMS and Promise is ongoing improvement. The existence of a 5-year period of good blockage data is still in the future.

There are areas of the method that are arbitrary and revisions may make it difficult to compare successive WIC Returns (in particular determination of criticality, definition of intervention data, relationship between grade and intervention etc).

Performance and condition are still simulated for all but 3,629 km of the network (neglecting those with interventions). This figure may rise with more CCTV surveys and improved referencing but these statistical extrapolations will be part of the method in the future unless a deterministic model can be devised.

There are no lateral sewers classed as critical.

H4.2 Non-Critical Sewers



The total length of non critical sewers has decreased from 38,185.49 km in 2004 to a total of 36,911.1 km in 2005, a decrease of 1,274.39 km. The length of non-critical sewers has decreased primarily due to the increase in the estimate for the length of laterals and the revised estimate of the new development backlog.

The calculation for the length of lateral sewers is based on the average length of pipe per connected property. The number of connected properties has increased to 2,375,477 and the average length has been revised to 6.66m, giving a total length of 15,821km i.e. an increase of 2,621km (+19.9%) from the 2004 WIC return.

Methodology

The sewers inventory has been extracted from the corporate GIS and supplemented by an off-inventory data infill using STC data from Drainage Area Studies and CCTV inspection data where available. To address a lack of completeness in the SWGIS sewerage inventory attributes, a comprehensive data infill process for size, material and depth was initiated using logical link rule bases to provide data on a consistent basis for asset banding and valuation.

Finally certain sewers have been removed on the basis that they are flagged as Proposed, Planned, Abandoned, Private or PPP. As for previous submissions, length of laterals and length is calculated from unit lateral length per connected property.

Condition grade is based on the CCTV survey data collected from the whole of Scotland and graded using the SRM method for structural condition. A simulation of the distribution of grades has been used on those sewers not inspected.

Performance grades have been based upon silt depths as recorded in the CCTV sample dataset and grades simulated in the same way as Condition for sewers that have not been inspected.

In the case of both condition and performance, the distribution of grades derived from the CCTV sample for each size band has been applied to the entire dataset using a random simulation. In this way the relationship with size has been preserved and the fact that the CCTV sample has a much larger size profile than the whole dataset has been taken account of.

Finally the intervention data was used to supersede the CCTV or simulated grades where available. The philosophy was that an intervention dataset was created by amalgamating the PROMIS and WAMS datasets grouped by events in the same post-code within 21 days. Interventions on laterals were not included and treated separately. These incidents were then associated with the closest sewers by distance.

For the laterals, condition distribution is assumed to be the same as the CCTV survey data for Size band 1 and Depth band 1 sewers and performance distribution is taken from the laterals survey result. The CCTV survey data from that survey indicated that laterals performance is considerably worse than Size 1 Depth 1 survey, but this conclusion is supported by the data collected in Promise (where a flag distinguishing mains and laterals is available the laterals produce far more interventions per unit length).

The estimate of sewer length added to the dataset for new housing sites has assumed to be in condition and performance grades 1.

Strengths of submission

The data infill methods have been improved and the approach to performance has been modified and simplified. The infill methods used were rule based logical links techniques.

The approach to performance is based on recent Scottish Water intervention data, which is robust and provides a basis for consistency over future years.

Issues with data

There is still a considerable backlog in updating the GIS with information from completed Drainage Area Studies and indeed other sources, which results in poor coverage in the GIS on key fields of size, depth material and STC Reference. Infill methods are being improved for WIC reporting but are not yet consistent with the SWGIS.

The whole of CCTV dataset has been assessed, giving coverage of about 4715 km although not all can be reliably linked to a sewer in the inventory.

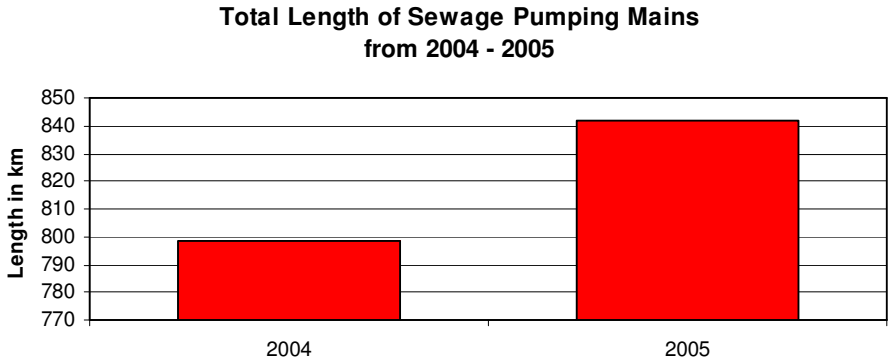
The Promise CRM system, which was rolled out in April 2003, has improved the capture of performance data but the implementation of the system is only in its first phase. The association of work directly with the sewer asset concerned has yet to be achieved. Although data is being filled in about interventions, the integration between WAMS and Promise needs improvement. The existence of a 5-year period of good blockage data is still in the future.

There are areas of the method that are arbitrary and revisions may make it difficult to compare successive WIC Returns (in particular determination of criticality, definition of intervention data, relationship between grade and intervention etc).

Performance and condition are still simulated for all but 3,629 km of the network (neglecting those with interventions). This figure may rise with more CCTV surveys and improved referencing but these statistical extrapolations will be part of the method in the future unless a deterministic model can be devised.

H4.3 Sewage & Sludge Pumping Mains

Asset Data



The total Length of Sewage & Sludge pumping Mains has increased from 798.41 km in 2004 to a total of 842 km in 2005, an increase of 43.59 km. This is largely due to the adoption of small diameter pumping mains.

Methodology

The base data on rising mains has been extracted directly from the corporate GIS with a logical link data infill process applied to improve attribute population. A secondary default data infill was then carried out.

The condition of these assets has then been assessed on the basis of their age and material, with the performance assessment similarly derived. Those assigned to grades 4 & 5 through this methodology are primarily pre-1950 ferrous and asbestos cement mains and uPVC mains laid after 1950.

Strengths of submission

The submission is based on an auditable process applied comprehensively across the inventory.

The use of a geographic assessment of soil conditions has brought the condition assessment consistent with the approach used for raw water mains.

Issues with data

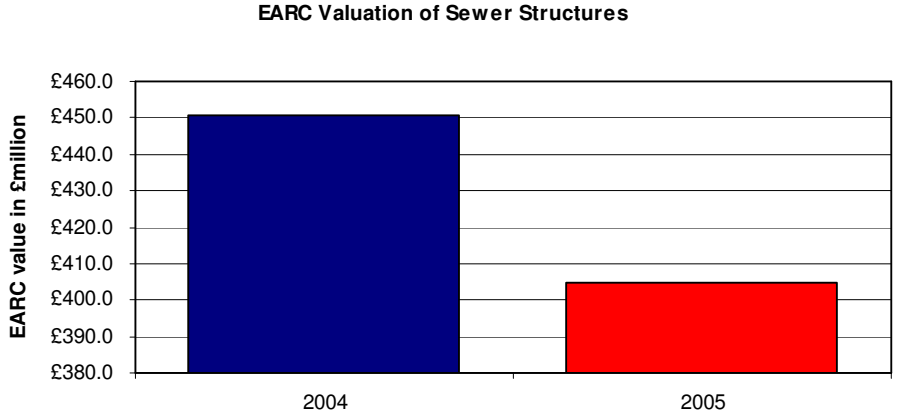
There is no evidence of a systematic assessment of the location, size and material or performance of rising mains. The recorded length of 842km equates to 1.8% of the sewerage inventory.

The method of assessment relies on age and material has been primarily derived from work carried out on the water network. A more specific assessment of the parameters affecting rising mains and in particular their unique corrosion environment would help to improve the condition assessment.

As the base data on material type and age recorded on the GIS for this asset is currently poor in comparison with other datasets, the confidence is low.

Sewer Structures Overview

Asset Valuation

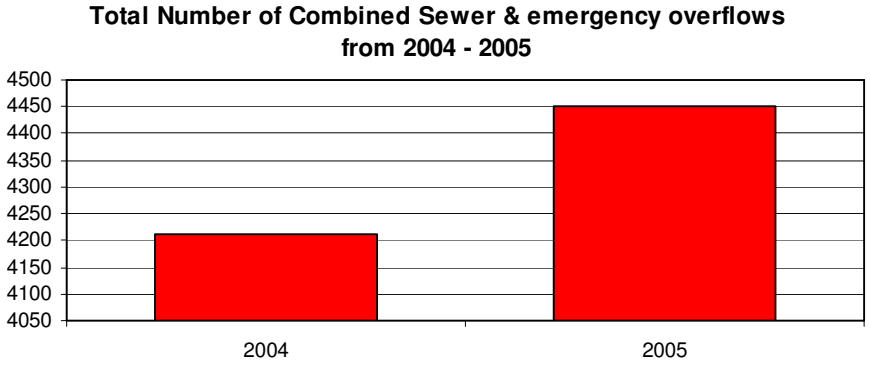


The asset valuation for 2005 has decreased by 10% on last year, from £450.9 million in 2004 to £404.9 million in 2005.

H4.4-5 Sewer structures

H4.4 Combined Sewer & Emergency Overflows

Asset Data



The total number of Combined Sewer & emergency overflows has increased from 4210 in 2004 to a total of 4451 in 2005, an increase of 241.

Methodology

The WIC Return this year is interim while a major data reconciliation project on CSO data is in progress. This project has involved reconciling as far as possible data from five main sources prior to loading it on to a new company-wide corporate application.

This set includes Emergency Overflows (EO's) and CSO's at Wastewater Treatment Works. CSOs identified as "abandoned" are also included. An assessment of these assets indicated that unless complete redundancy is achieved, these assets still have the potential to attract similar replacement and maintenance costs to operational CSOs.

Condition grades have been derived from the results obtained from overflows which have been surveyed. The chamber, CSO structure and M&E are graded in a five-option system (Good/Fair/Adequate/Poor/Bad) and the worst of the three grades has been taken as the grade (1 to 5 as above).

Performance data has been based on the SEPA classification and supporting information. If the SEPA classification is unsatisfactory, the CSO is grade 4 or grade 5 and otherwise the CSO is grade 1, 2 or 3. This classification is always available and divides the CSOs into two sets. The supporting data used is the modelled number of floods per annum, whether the CSO passes formula A flow or not and whether it is screened or not. For each of the two sets, these fields are used to subdivide the sets and if the fields are absent, the remaining CSOs are divided pro-rata.

Strengths of submission

The inventory is based on source data used for the corporate tactical application for CSOs and provides a consistent basis for reporting into the future.

The Scottish Water "Overflows and Outfalls Corporate Satellite Application" database will be the source for the data on overflows in future. This corporate system holds the most comprehensive CSO asset, condition and performance data available to Scottish Water at present. The system links to the corporate asset data inventory, Ellipse. The quality and quantity of the data is continually being improved by Drainage Area Studies and Operations/Area Strategic Planner knowledge.

The dataset currently includes 4752 overflows of which 4453 are deemed to be relevant to the WIC Return, Table H. The 299 excluded discharge surface water, treated effluent or bifurcate overflow into another sewer.

SEPA classification is available for 100% of CSOs.

Issues with data

The size (as design Pass-forward flow) have been estimated with, in order of priority, listed Pass-forward flow, outgoing diameter (and Colebrook-White assumption to calculate flow), incoming diameter (and Colebrook-White assumption to calculate flow, then halved), Formula A. The default size is 271 l/s where calculating data is absent.

The coverage of condition data is poor. Overflows not surveyed have been allocated grades through extrapolation from the sampled dataset. Only 715 appear to have been surveyed. Asset data and condition and performance data for currently non-surveyed overflows should however continue to improve through the ongoing programme of Drainage Area Studies and through data update from asset planners in the field.

The dataset currently includes 4752 overflows of which 4451 are deemed to be relevant to the WIC Return, Table H. The 299 excluded discharge surface water, treated effluent or bifurcate overflow into another sewer.

Comparisons with Previous Return

The increase over last year has been from 4210 to 4451, and is almost entirely due to improved data following the reconciliation exercise. The reconciliation and development of corporate application represents a significant improvement both in data quality and its future management.

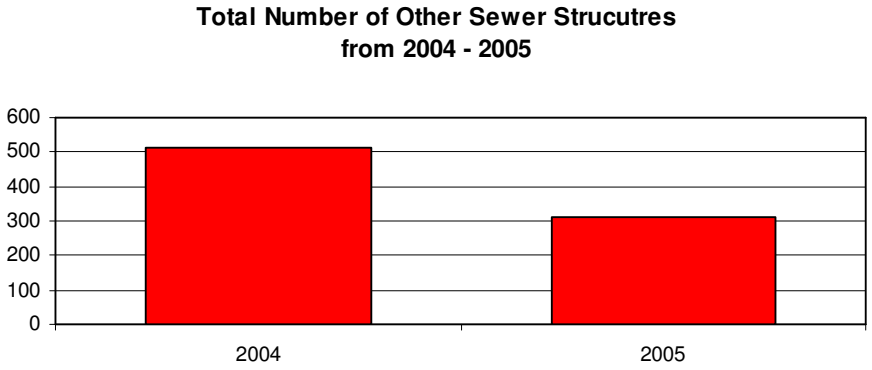
The proportion of overflows in condition grades 4 & 5 has reduced from 19% to 6%, and the proportion in performance grades 4 & 5 has reduced from 30% to 22%. The 22% of

performance grade 4 and 5 is a direct indication of the number of CSOs classified as unsatisfactory by SW. The changes in percentage are indicative of a more logical system of classification and not changes in the assets.

The proportion of overflows in condition grades 4 & 5 has reduced from 19% to 6%, and the proportion in performance grades 4 & 5 has reduced from 30% to 22%. The 22% of performance grade 4 and 5 is a direct indication of the number of CSOs classified as unsatisfactory by SW. The changes in percentage are indicative of a more logical system of classification and not changes in the assets.

H4.5 Other Sewer Structures

Asset Data



The total number of Sewer Structures has decreased from 511 in 2004 to a total of 312 in 2005, a decrease of 199. This is because AR04 was a projected estimate whereas the 312 this year is based on a register.

Methodology

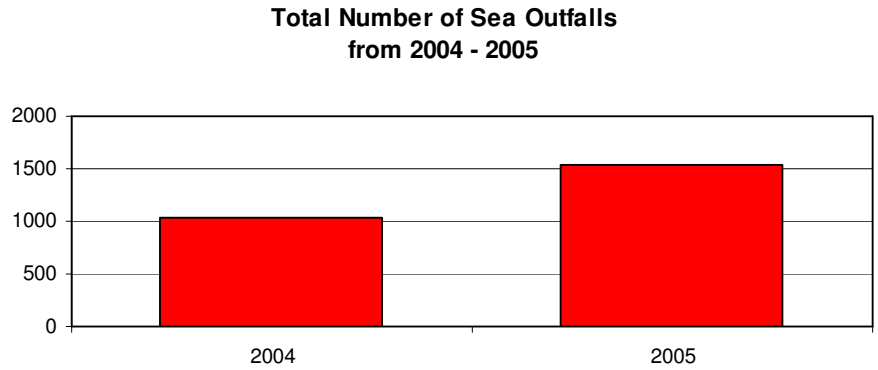
The data required for this report line has been interpreted as referring only to storage tanks. A project to integrate the ELIPSE Asset system the Corporate SWGIS is in progress and reconciled ELIPS Inventory of Storm tanks, basins, ponds was used as a basis.

There is currently no condition and performance data available for these structures, and to make this transparent all assets have been allocated condition and performance grades on a pro-rata basis 20% Grade 1; 20% Grade 2; 20% Grade 3; 20% Grade 4; 20% Grade 5, allocated by random number.

H4.6-7 Sea outfalls

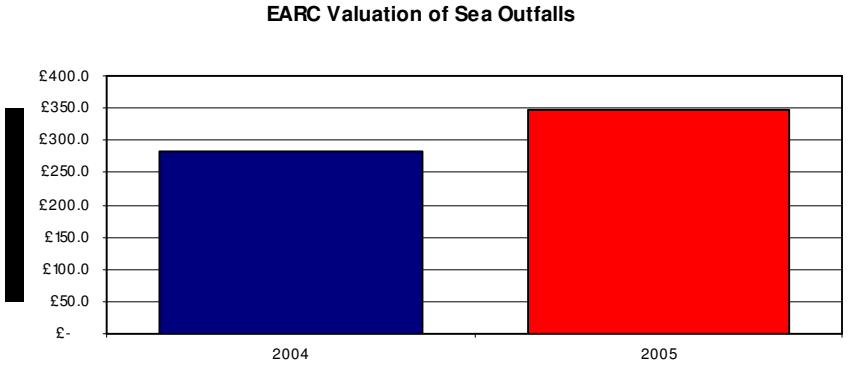
H4.6 & H4.7 Short & Long Sea Outfalls

Asset Data



The total number of Sea outfalls has decreased from 1028 in 2004 to a total of 1535 in 2005, an increase of 507. This increase is primarily due to better information being available.

Asset Valuation



The asset valuation for 2005 has increased by 23% on last year, from £282.6 million in 2004 to £348.2 million in 2005. This increase is mainly due to the increase in the number of outfalls.

The condition of sub assets in condition and performance grades 4 and 5 have decreased from 26.7% in 2004 to 11.9% in 2005, a decrease of 7.7%. This is primarily due to a change in Methodology (see below).

Methodology

The asset stock listing has been improved further since the previous return, with a revision of the total number of short sea outfalls to 1504, an increase of 476 from the 2004 figure of 1028. The number of long sea outfalls is 31 (as compared to 30 last year). The outfall listing comes primarily from the GIS but with outfalls from the SIIOP system added in where they have not yet been recorded on the GIS.

The condition assessment has been based on asset age where available. PVC outfalls have been assigned grades 1 to 4, concrete outfalls grades 1 to 3, brick outfalls grades 3 to 5 and vitrified clay outfalls grades 1 to 5. Performance grading has followed the same methodology as the condition grading.

Strengths of submission

The overall dataset for this asset has been improved. A condition and performance assessment methodology has been developed based on recorded age.

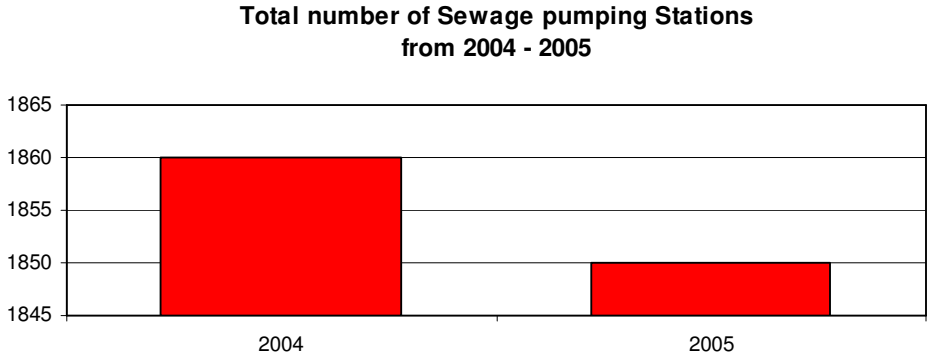
Issues with data

The base data held on the new corporate GIS, while being a better data source than the separate datasets available for the previous return, still requires further improvement. The current age-based condition grading requires to be calibrated with data from actual field surveys. Performance grading does not have a separate method at present.

Table H5 Wastewater Non-Infrastructure

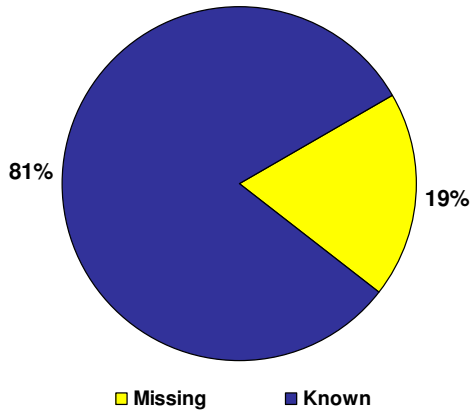
H5.1-2 Sewage Pumping Stations

Asset Stock



The total number of Water pumping stations has decreased from 1860 in 2004 to a total of 1850 in 2005, a decrease of 10 sites. This is mainly due to data improvement carried out at a data cleansing workshop. There were duplicate sites found during these meetings with operations and asset planners and have been subsequently removed from the corporate system.

The operational sites make up 98% of the total, a count of 1818 sites. Out of Service sites make up 0.1%, a count of 2 sites, while there is only one Decommissioned site. The Redundant sites make up 1.9% of the total, a count of 29 sites.

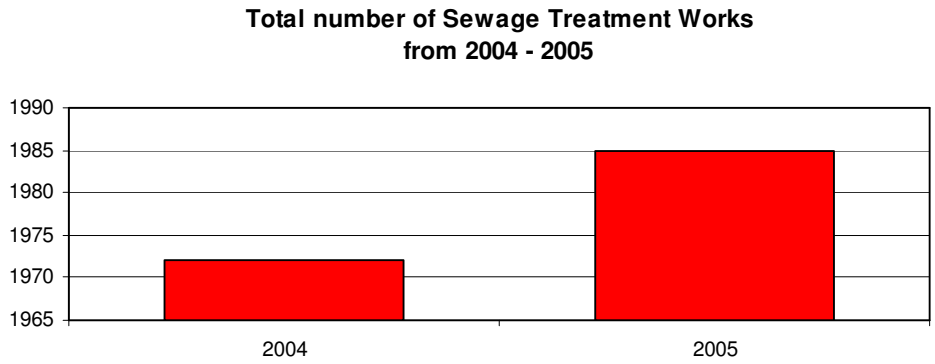


The above chart shows that the asset valuation was based on having X factors for 81% of Sewage Pumping Stations. The missing 19% was based on an extrapolation of the 81% known Sewage Pumping stations. The methodology for the extrapolation was to group the

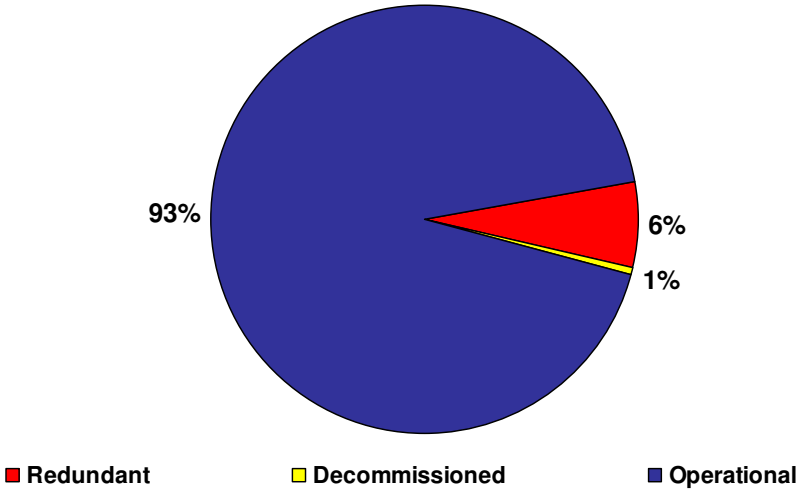
sites by their WIC grade, then group by the sites Region and categorise it into the WIC s size band based on the known Kilowatt rating. This data is then converted into a percentage in each of the above areas, which gives the basis for the extrapolation across the whole asset stock.

H5.3-7 Sewage Treatment Works

Asset Stock

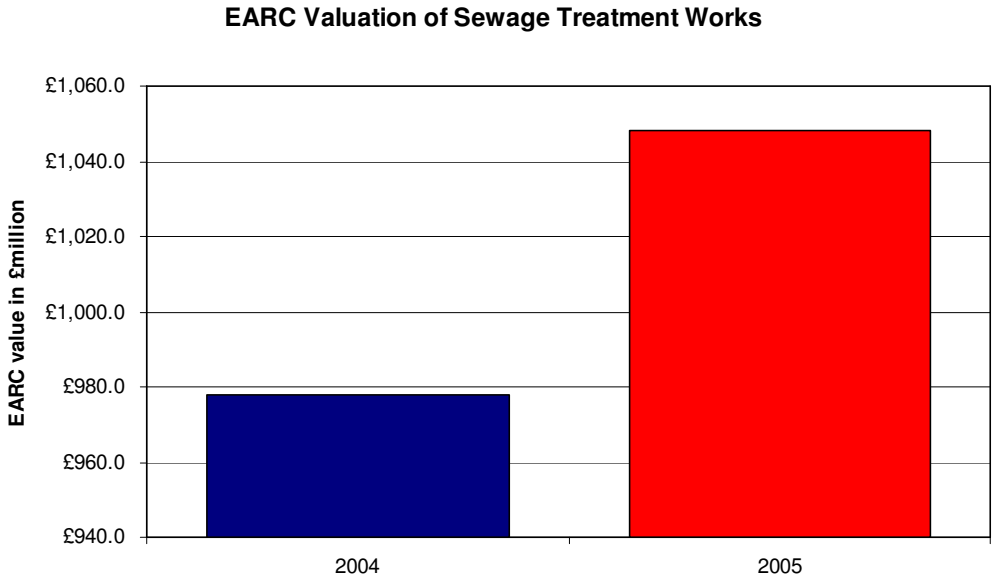


The total number of Sewage Treatment Works has increased from 1972 in 2004 to a total of 1985 in 2005, an increase of 13 sites.



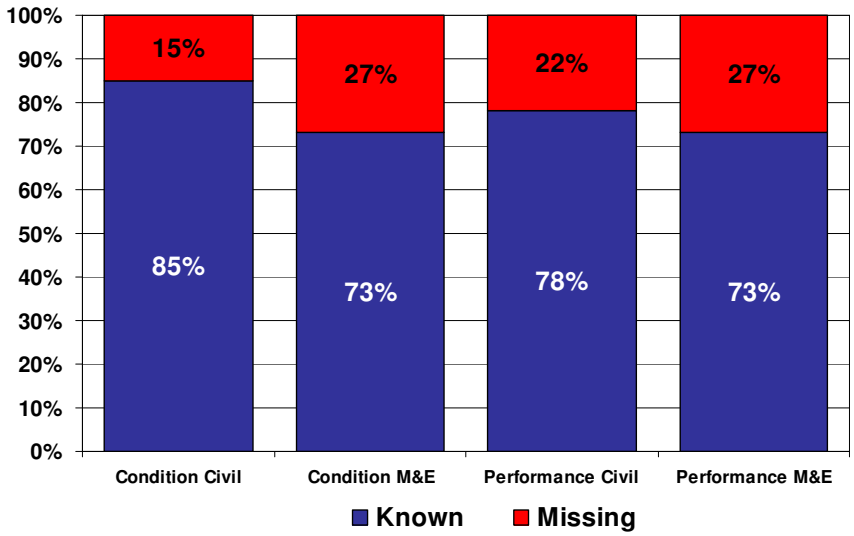
The operational sites make up 93% of the total, a count of 1848 sites. Decommissioned sites make up 1%, a count of 13 sites. The Redundant sites make up 6% of the total, a count of 125 sites.

Asset Valuation



The asset valuation for 2005 has increased by 7% on last year, from £977.9 million in 2004 to £1048.4 million in 2005. This is mainly due to inflation and the increase to the total number of works.

Condition and Performance Assessment



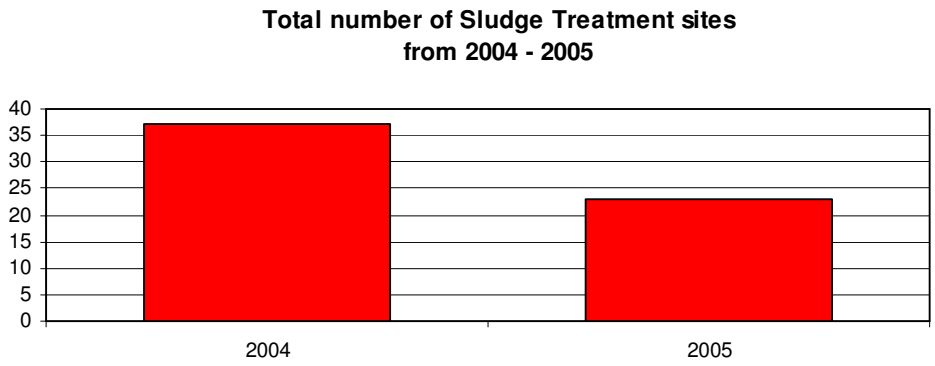
The above graph shows that a high proportion of data is present for the condition and performance of sub assets at Sewage Treatment works. In the last year, 109 sites were surveyed. This has helped to reduce the percentage of missing data.

The condition of sub assets in condition grades 4 and 5 has increased from 15.4% in 2004 to 16.2% in 2005, an increase of 0.8%. This slight increase is mainly due to improved condition survey data that has changed the overall condition profile.

The performance of Sewage Treatment works sub assets in performance grades 4 and 5 has increased from 16.3% in 2004 to 17.3% in 2005, an increase of 1%. This slight increase is mainly due to improved performance survey data that has changed the overall performance profile.

H5.8-13 Sludge Treatment Facilities by Disposal Type

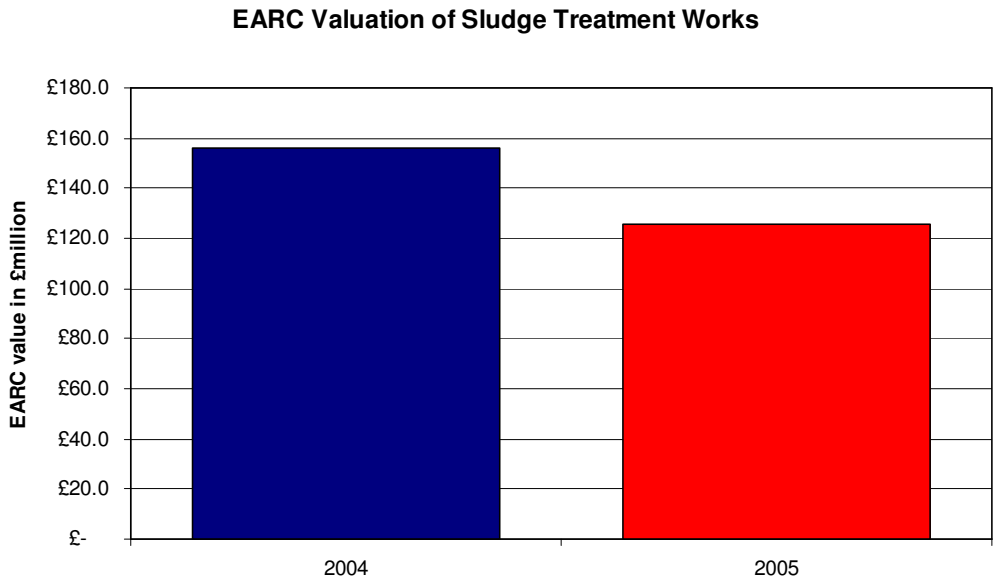
Asset Stock



The total number of Sludge Treatment Works has decreased from 37 in 2004 to a total of 24 in 2005, a decrease of 13 sites. This is mainly due to sludge centres being closed down.

23 of the sites are operational and 1 site is redundant.

Asset Valuation



The asset valuation for 2005 has decreased by 19% on last year, from £155.7 million in 2004 to £125.7 million in 2005. This is mainly due to the reduction in numbers of Sludge treatment works.

Table H6 Support services

H6.1 & 6.2 Offices and Depots

Methodology

Scottish Water has inspecting all offices and depots to determine function, suitability, condition and performance. As expected there was significant changes occurred to building valuations, maintenance regimes and in some cases the use of buildings.

The number of offices and depots has reduced from last year 03/04 as a result of SW rationalisation and utilisation of staff.

We have a mixture of offices, depots with offices, depots, yards and office depot facilities at works. The office & depot inspection will identify these types and future reports may need to clarify where there is no option to reduce numbers because the facility is part of an operating asset.

Strengths of submission

The base data on all Laboratory equipment is held on an Asset Register which lists all the relevant information concerning each piece of equipment including age, initial cost, maintenance costs and current status.

This information was collected from operational staff who offered technical advice on the state of each piece of equipment.

Issues with data

Current and future restructuring may result in changes in strategy and therefore investment. Prudent accounting practice of publicly listed companies would require regular asset revaluation's. The cost for such a valuation has not been built into existing budgets.

H6.3 Control Centres

There are three control centres; Balmore Road, Fairmilehead and Dundee. Each containing both water and wastewater centres. These centres have been surveyed and new areas established.

H6.4 Vehicles and Plant

Strengths of submission

The current vehicle and plant inventory has been gathered in a methodical manner and is held on a centralised database. The replacement programme is based on an industry standard lifecycle policy.

H6.5 Telemetry Systems

Methodology

A Scottish Water Telemetry Strategy is at the implementation stage and the expansion of telemetry outstation assets will be prioritised according to Legislative Requirements, Efficiency/Performance and Spend-to-Save based on risk assessment.

The top-end telemetry system currently being used in the former East area has been rolled out to the former North and West areas.

There are up to 330 outstations that will be replaced during 2004 to 2006 as part of the roll-out of the new Scottish Water telemetry system.

A financial impact analysis was undertaken, which formed the basis of a single Equivalent Asset Replacement Cost (EARC) of £5K to replace any outstation. In practice this would increase significantly for larger sites. The figures also do not take into account costs for instrumentation upgrading and allowing for increased i/o to take into account new telemetry i/o standards.

The figures input for asset life appear to be pessimistically low. Line H6.5 shows it to be in the 'short' range. Without putting accurate numbers into Life this figure will not reflect the true nature of the replacement needs

No indication is given for outstations listed/not listed in the return which are installed on site but not yet commissioned.

Strengths of submission

This submission has taken information from the existing eight legacy systems and collated the outstation base into the four geographical areas of the business. This information has been data-based so that it will assist in future asset planning. It is intended to cleanse and add a structure to this data so that it is more accurate and valuable.

Issues with data

There is data missing from outstation sites in Scottish Water's North West and North East areas. Data is in question and is current being validated.

Comparisons with Previous Return

Much of the information used for this return is the same as last year's but with new outstations added. No attempt has been made to cleanse historical data.

H6.6 Information Systems

Methodology

Scottish Water Information systems have a centralised asset database. The required data was extracted from this database and an estimate of the replacement value was calculated.
The condition of all information systems assets, particularly PCs within Scottish Water is good, due to a number of projects designed to improve the overall quality and performance of the company wide network. The Scottish Water IT Infrastructure Rationalisation Projects run within the framework of the overall IT Rationalisation Programme are now complete. Projects that have been implemented over past two years include: server environment development, desktop environment development, remote communications development, network services development and security & systems management development. The result of these projects is a greatly improved, more efficient information systems network.

Strengths of submission

The current information systems asset data is updated on an ongoing basis into a central database. Each PC, Workstation or Mainframe that has been brought into commission or been taken out of commission has been systematically recorded and reported.

The replacement programme is based on an industry standard lifecycle policy.

Issues with data

There is some confusion concerning the exact meaning of the existing information systems definitions of: PC, Workstations and Mainframes. It is suggested therefore that it would be more meaningful to use the definitions: Laptops, Desktops & Servers, in place of the existing definitions, as this would fit the department definitions of asset stock more closely and allow more accurate results to be reported in the future.

H6.7 Other Non-Operational Assets, Land and Forestry

Methodology

It has been assumed that the number of assets will remain similar in the foreseeable future, though they could be affected by a future strategy. Capital investment for Land and Forestry will be limited to maintaining existing assets and amounts to less than £100,000 over the investment period. Scottish Water is reducing the number of surplus houses the authority owned resulting in the disposal of significant numbers of houses through tenants 'right to buy' legislation and open market sales. Expenditure on Tenanted Farms will be limited to maintenance costs as required under the terms of the relevant leases, as the numbers of such farms are falling as the reasoning for owning them to protect the catchment area is now less important with improved water treatment facilities.

Strengths of submission

Scottish Water has a relatively high level of knowledge of the asset inventory and these details are held on a number of corporate databases.

Weaknesses of submission

Any future investment cannot be determined until Scottish Water develops or implements a new strategy for Other Non-Operational assets.

P Tables – Tariff Basket Information

Fields which have a 'Prev Reference' have been copied directly from the A tables, the balance of the data has been derived from standing data within the WIC22. For any commentary on numbers in the A tables, please read the appropriate section in the A table commentary.

Table P1 Water Service – Unmeasured Domestic

The data for unmetered households in Annual Return tables A & P is identical to that used in the Draft Business Plan. As explained in the DBP household growth has been aligned with Scottish Executive projections for household growth. However in 2006/07 the blend of households has been adjusted to reflect the revenue impact of the Scottish Executive's household reduction scheme that is due to take effect from 1 April 2006.

The figures for 2005/06 do not reflect the potential one year benefit to Scottish Water due to councils using their discretionary powers to reduce second home discounts to a minimum of 10%. Although some of the councils are understood to be taking advantage of this opportunity and others are currently undecided, it appears that many of the bigger urban councils appear not to be implementing the changes.

Table P2 Water Service – Unmeasured Non-Domestic

Please see commentary in section A1.62 – A1.77 as the numbers in this table are based on 2004/05 Annual Return numbers.

Table P3 Water Service – Measured Domestic

Please see commentary in section A1.12 as the numbers in lines P3.1 - P3.6 are based on 2004/05 Annual Return numbers.

Lines P3.7 - P3.10 have been derived from the WIC 22.

Table P4 Water Service – Measure Non-Domestic

Please see commentary in section A1.48 – A1.61 as the numbers in lines P4.1 – P4.17 are based on 2004/05 Annual Return numbers.

Lines P4.18 - P4.28 are a mix of the Annual Return and numbers derived from the WIC 22.

Table P5 Wastewater Service – Unmeasured Domestic

The data for unmetered households in Annual Return tables A & P is identical to that used in the Draft Business Plan. As explained in the DBP household growth has been aligned with Scottish Executive projections for household growth. However in 2006/07 the blend of households has been adjusted to reflect the revenue impact of the Scottish Executive's household reduction scheme that is due to take effect from 1 April 2006.

The figures for 2005/06 do not reflect the potential one year benefit to Scottish Water due to councils using their discretionary powers to reduce second home discounts to a minimum of 10%. Although some of the councils are understood to be taking

advantage of this opportunity and others are currently undecided, it appears that many of the bigger urban councils appear not to be implementing the changes.

Table P6 Wastewater Service – Unmeasured Non-Domestic

Please see commentary in section A3.69 – A3.76 as the numbers in lines P6.1 - P6.4 are based on 2004/05 Annual Return numbers.

Lines P6.5 – P6.6 have been derived from the WIC 22 and may be subject to change after further analysis based on the P table definitions.

Table P7 Wastewater Service – Measured Domestic

Please see commentary in section A3.14 as the numbers in lines P7.1 – P7.5 are based on 2004/05 Annual Return numbers.

Lines P7.7 – P7.10 have been derived from the WIC 22.

Table P8 Wastewater Service – Measured Non-Domestic

Please see commentary in section A3.35 – A3.30 as the numbers in lines P8.1 – P8.17 are based on 2004/05 annual return numbers.

Lines P8.18 – P8.22 have been derived from the WIC 22.

Table P9 Wastewater Service – Measured Domestic: Drainage Charges

All lines in P9 have been derived from the WIC 22.

Table P10 Wastewater Service – Unmeasured & Measured Non-Domestic: Surface Water Drainage

All lines in P10 have been derived from the WIC 22.

Table P11 & P12 Wastewater Service – Trade Effluent

The data for trade effluent customers in Annual Return tables P is identical to that used in the Draft Business Plan.