Severn Trent PR24 Data Tables Commentary

Supplementary

WONDERFUL ON TAP

SEVERN TRENT

Contents

SUP1A: Connected properties, customers and population

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

Customer numbers (average during the year) Lines 1-9 and Property numbers (average during the year) lines 10-16.

The overall total customers (including voids) increases each year in line with ONS growth forecasts (water and waste totals). These have been calculated based on our region served, less a volume to remove properties connected via New Appointees (NAVs). The information on these NAV volumes can be found in the Developer Services tables and commentary.

In terms of the growth forecasts, we have used new connections forecast data to determine the split between residential and business properties. See Developer Services tables section for more details. Water only and combined customers are assumed to grow at the same rate (ie growth is proportionately allocated to these groups). Any variance between water and waste growth forecasts is applied to the waste only customers.

We have used a consistent approach to all years reported in this table.

As we had a significant reduction in voids at the end of 2022/23, this is reflected in the year average voids movement in the 2023/24 values and is the biggest movement aside from new connections year on year. From 2024/25 we have assumed that voids remain constant as these levels would be below current industry average rates, and we do not plan to specifically target further reductions.

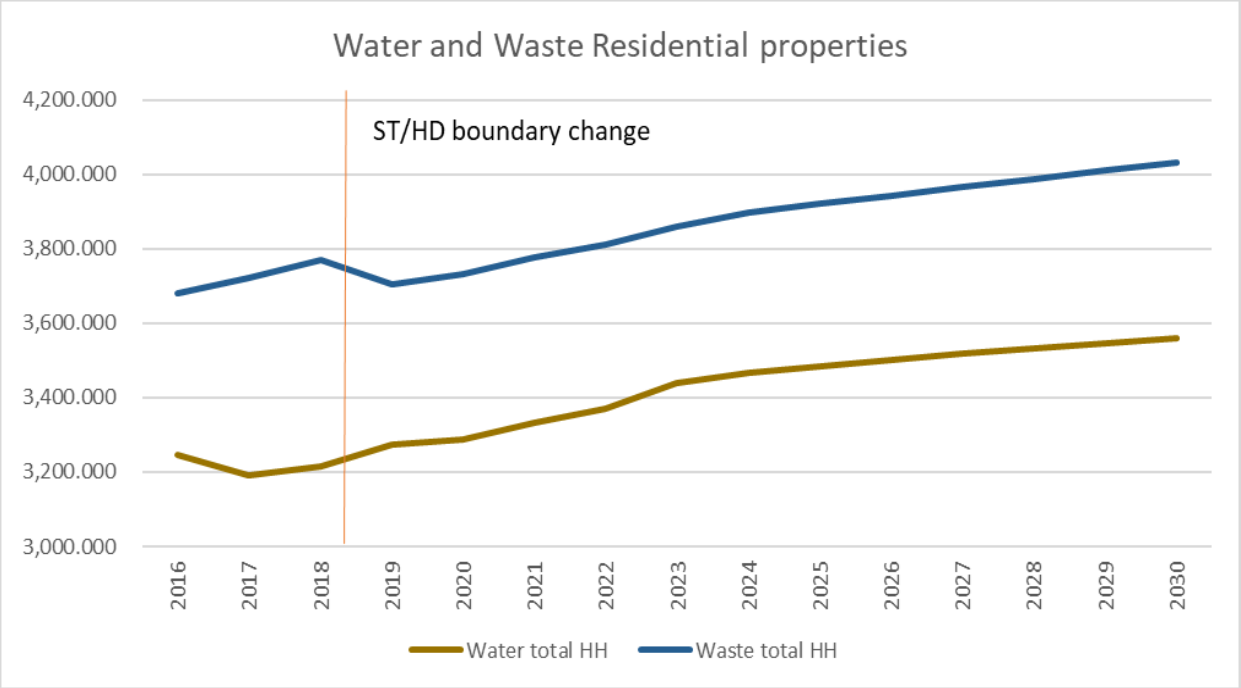
Currently, we are seeing more meter optants than during covid, and this is reflected in our forecast meter optants for the remainder of this AMP, partly driven by our green recovery smart metering role out. The current conversion rate of meter installs to billing based on the meter is 57%, which we forecast to continue for the remainder of this AMP. In AMP8 we have a significant metering programme which results in a large swing from unmeasured to measured customers as we start compulsory metering in 2025/26. As a result of these initiatives, meter penetration (HH and NHH, including voids) moves from 53% to 73% between 2022/23 and 2029/30. Further information on these forecasts can be found in table CW7 and accompanying commentary.

The below confidence grades are higher for the lines with larger values as any movement in the value year on year will be a lower % of the total, and therefore we have higher confidence it is within 1% accuracy. The values are 2 as this is based on external 3rd party forecasts for growth providing and independent source.

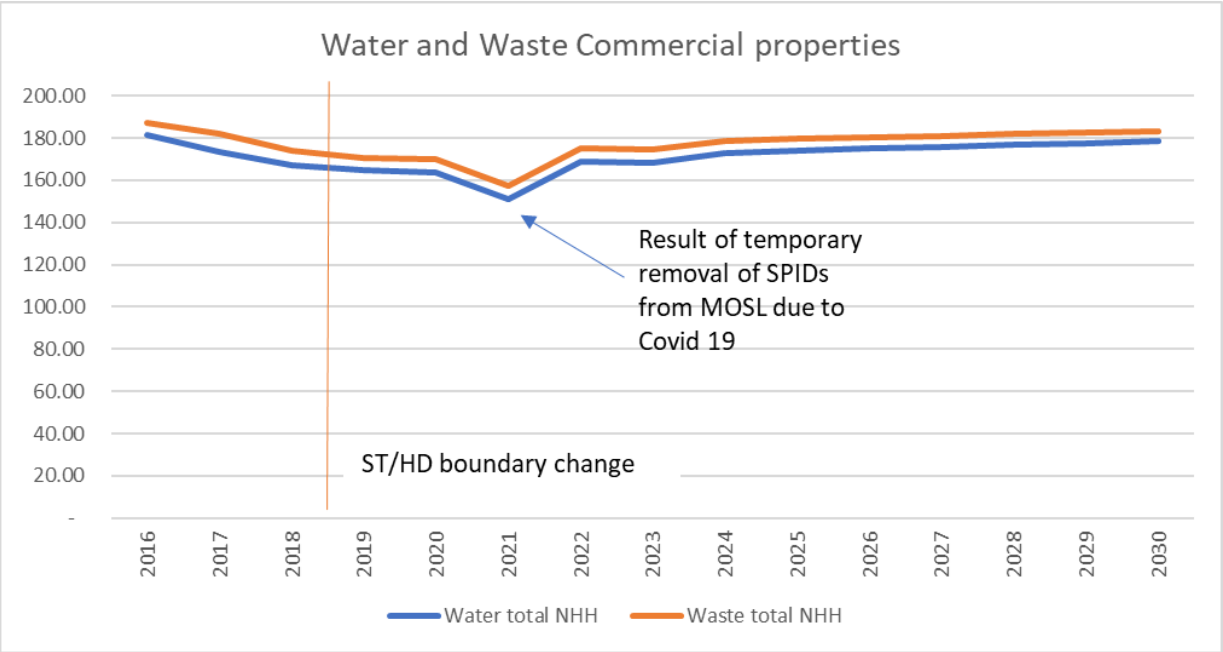
PR24 BP Reference	Line Description	Confidence Grade
SUP1A.1	Residential water only customers	B2
SUP1A.2	Residential wastewater only customers	B2
SUP1A.3	Residential water and wastewater customers	A2
SUP1A.4	Total residential customers	A2
SUP1A.5	Business water only customers	B2
SUP1A.6	Business wastewater only customers	B2
SUP1A.7	Business water & wastewater customers	B2
SUP1A.8	Total business customers	B2
SUP1A.9	Total customers	A2
SUP1A.10	Residential properties billed	A2
SUP1A.11	Residential void properties	B2

SUP1A.12	Total connected residential properties	A2
SUP1A.13	Business properties billed	B2
SUP1A.14	Business void properties	B2
SUP1A.15	Total connected business properties	B2
SUP1A.16	Total connected properties	A2

The below graph shows the residential connected properties for water and waste since the start of AMP6. These values exclude voids and therefore there is some variability in the actuals based on our voids performance. We also note that there is a drop in the volume of waste properties at the point we adjusted the boundary between Severn Trent (ST) and Hafren Dyfrdwy (HD) as Powys customers moved to HD. This is slightly less significant for water as customers moved both ways at the time of the boundary change, with a net increase for ST.



Below is the equivalent graph for business properties. We have seen declining volumes (note these are net of void) until Covid. We have had a programme in place with retailers to incentivise them to bring voids into charge in recent years, which has seen stabilisation in volumes. Long term trend is broadly flat.



Population Data Lines 17 and 18

The overall total population increases each year in line with ONS growth forecasts (water and waste totals).

These have been calculated based on our region served, less a volume to remove properties connected via New Appointees (NAVs). The forecast impact of NAVs uses the current average population per metered property multiplied by the total NAV property volumes to calculate the adjustment.

The water population value is also adjusted from the ONS data to add back the 'missing and transient' population. We have used a consistent value for this which aligns to our APR reporting. This adjustment is around 1% of the current water population value.

Waste Non-resident population data:

A study was undertaken to determine Severn Trent Water's Hidden & Transient Populations Definition & Estimation. Edge Analytics were appointed to carry out this study and provided a report in January 2022 with their outcomes.

Published population statistics from the Office for National Statistics (ONS) provide robust and reliable estimates of the population 'usually resident' within each Water Company's area of operation, however there are uncertainties with regards to additional sub-populations that may not be included in these official statistics. Estimation of these 'hidden and transient' (H&T) populations is a key component of Severn Trent's estimation of non-residential population as part of the APR23 submission to Ofwat.

Non-residential population categories include people staying at second addresses for holiday purposes and short stay visitors such as domestic night and foreign night visitors. The domestic day visitors and daily commuters are explicitly excluded as per Ofwat's definition . The reason for visiting can vary among visiting friends & relatives (VFR), holidays & business. For the purposes of this submission, the business estimates have been excluded on the assumption that they would have been recorded in the place of work.

For reference people staying at second addresses are people who stay at the second address more than 30 days per year and are using it for holiday functions. There is an assumption that total consumption will remain the same for other people such as students or other parent/guardian, i.e. people with second addresses, regardless of where it is being captured.

Domestic and foreign night visitors are people who visit places either for VFR, Holidays or Business. The duration of the visit is short. Foreign inbound visits include flights (air), ferry ports (sea) & Channel Tunnel visits (land).

Evidence has been drawn from a mix of Census data (dated 27th March 2011), survey and administrative sources, in addition to published research. Data has been gathered for a range of geographical areas including national, regional, local authority areas, postal areas and Census output areas (COAs). The estimation process includes scaling to water industry geographies.

We have provided the consultants with COAs mapped to Water Resource Zones which aligned with one of the sources and enabled positioning with other geographical areas such as Local Authority Districts, etc. There are over a thousand different sewage works catchments and as such it was not possible for the study to be undertaken at such a level.

H&T population estimates are presented as 'Low', 'Medium' and 'High' totals, reflecting the uncertainty associated with the process.

An example of estimate ranges is provided here for the second addresses population

For each local authority area, Low, Medium and High estimates have been derived for 'working' and 'holiday' addresses, as follows:

- For the 'working' second address population, the estimates assume that the second address is occupied for one (Low), three (Medium) or five (High) nights per week.
- For the 'holiday' second address population, the estimates assume that the second address is occupied for four (Low), seven (Medium) or ten (High) nights per month.

Non-resident population calculation:

The non-residential population data from the Medium range for second addresses (holiday), domestic night visitors (VFR & holiday) and foreign night visitors (VFR & holiday) were added for each zone.

There are some areas where ST is only providing water services, such as Chester, and other areas where ST is taking and treating the sewerage only, predominantly South Staffs. Our submission has been revised to allow for this.

For the ST operating area, there was a manual correction on the population data with an introduction of an increasing factor to ensure that the entire operating area is captured. The factor was calculated using the number of properties we are billing for waste services over the number of properties we are billing for water services.

The waste Non resident population (line 18) is then assumed to be constant over the forecast period.

As there is limited information for calculation of line 18, we have given this a lower confidence grade.

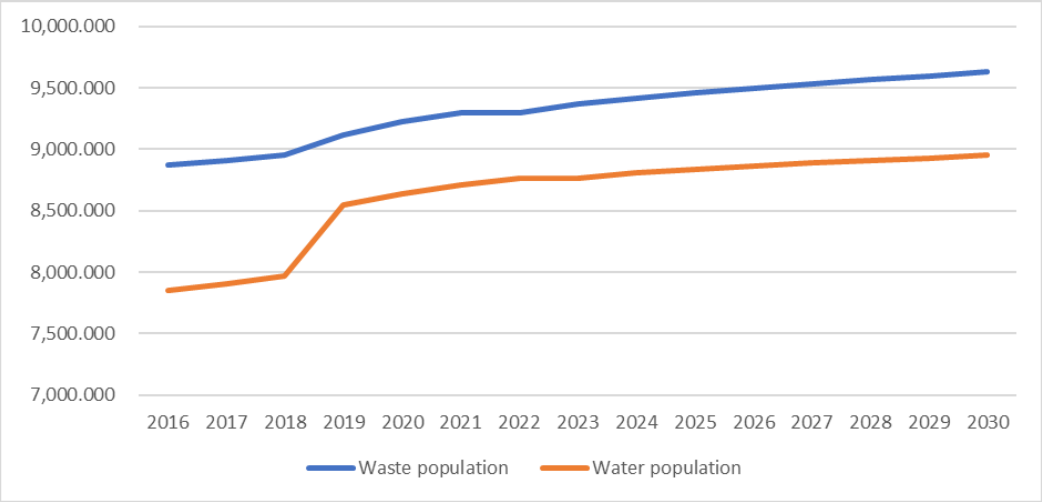
PR24 BP Reference	Line Description	Confidence Grade
SUP1A.17	Resident population	A2
SUP1A.18	Non-resident population (wastewater)	C2

Water population (Residential only) Lines 19-21.

Line 19 follows the same growth trend as line 17 for water, but only includes the residential population.

For actuals, as reported in the APR, CACI Ltd provided us with an estimate of the household occupancy rates at an individual property level from the Ocean Database matched to data provided from the company's Target billing system. The billing system data provided enables the occupancy rates to be split out for measured and unmeasured customers.

Therefore, we have adjusted the population split between Measured and Unmeasured in the forecast, based on the forecast average properties, as reported in the lines above, and assuming any change in overall occupancy is reflected equally in both types of customer. For example, if overall occupancy (total ONS population forecast/total ONS properties forecast) increases by 0.2%, we assume that both measured an unmeasured occupancy increase by 0.2%.



As we do not use non-resident population in the calculation of PCC, we have not included any data in the table for these lines. This is consistent with our APR reporting.

PR24 BP Reference	Line Description	Confidence Grade
SUP1A.19	Household population	A2
SUP1A.20	Household measured population (water only)	C2
SUP1A.21	Household unmeasured population (water only)	C2

SUP1B: Properties and meters

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

New connections (lines 1 and 2)

New connections are aligned to those reported in the Developer services table DS4. Please see this table and commentary for details.

PR24 BP Reference	Line Description	Confidence Grade
SUP1B.1	Total new residential properties connected in year	B2
SUP1B.2	Total number of new business properties connections	B2

Residential properties billed (line 3)

As with table SUP1a, the growth forecast is based on the ONS growth forecast. The residential growth is based on the new connections as reported in line 1 above, which excludes NAV properties.

The split of the total billed properties across the meter types is based on the actual position at 31 March 2023 as reported in the APR, adjusted for meter optants, new connections and voids movements as well as meter upgrades. The Metering data is taken from the CW7 data table, with voids changes overlaid to reach the final adjustments required from the previous year's figure.

The compulsory metering programme increases the movement between measured and unmeasured in AMP8. The rise in metered customers is not quite as steep as it would have been due to the increase in NAV connections anticipated from 2023 onwards which are excluded from this table.

PR24 BP Reference	Line Description	Confidence Grade
SUP1B.3	Residential properties billed at year end	A2

Residential properties unbilled at year end (line 4)

We have no properties unbilled due to being below minimum bill.

The total volume of 'other unbilled' has risen from c 12k to c 18k between 2022 and 2023. This is due to the programme to bring voids into charge. As this ramped up towards year end (after we received new government data on occupancy in February) some of the accounts identified and flagged as active in the last two weeks of the year were not billed as at 31 March, increasing the volume of unbilled other at year end. We expect this to drop again in the 2023/24 year. Other reasons for these accounts are:

- Customer query
- System generated query
- Account in probate
- New connection not yet billed

We have only reported on this data for the past 2 years but would expect the volume of unbilled other to remain fairly constant as there will always be some accounts in query, newly removed from void, or added via new connections which won't bill by year end due to meter reading cycles. The value of 12,657 is 0.35% of the total connected properties expected in 2024.

PR24 BP Reference	Line Description	Confidence Grade
SUP1B.4	Residential properties unbilled at year end	C2

Residential void properties at year end (line 5)

We implemented a new voids policy in 2022, in an effort to ensure that those who can (and should) be paying for water are doing so, enabling us to expand the reach of our social tariff. As such the total voids has reduced significantly as at 31 March 2023 from our historical baseline. We intend to maintain a similar level of voids (being lower than current industry average void rates) throughout AMP8.

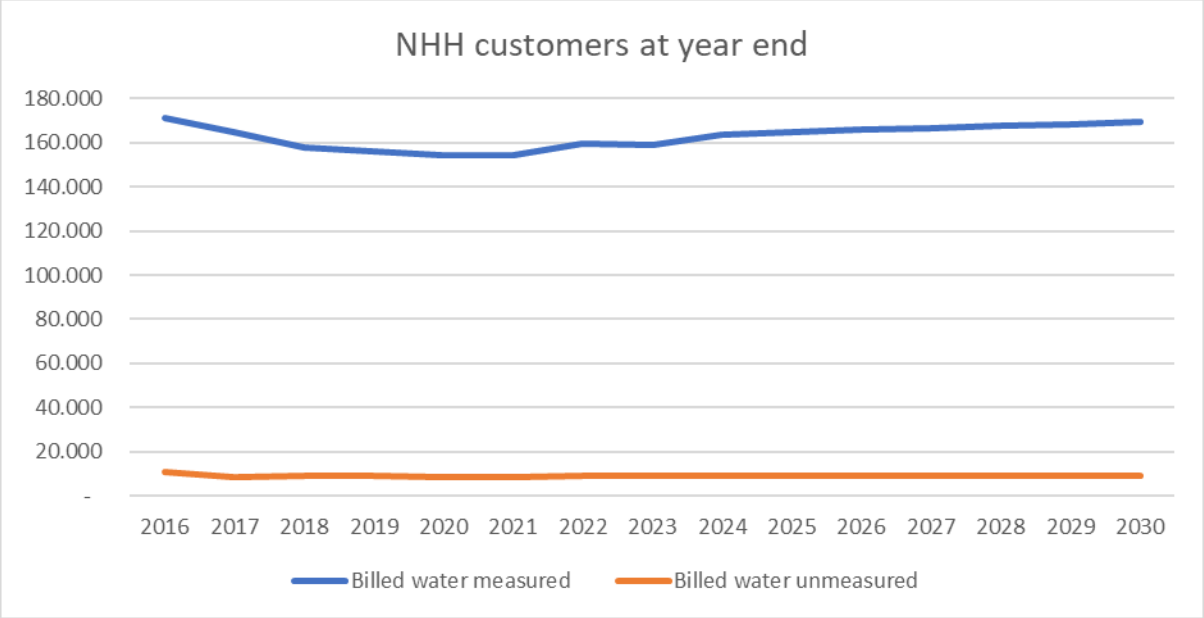
Line 6 is the sum of lines 3-5 above.

PR24 BP Reference	Line Description	Confidence Grade
SUP1B.5	Residential void properties at year end	B2
SUP1B.6	Total connected residential properties at year end	A2

Business properties billed at year end (line 7)

As with table SUP1a, the growth forecast is based on the ONS growth forecast. The business growth is based on the new connections as reported in line 2 above, which excludes NAV properties.

The split of the total billed properties across the meter types is based on the actual position at 31 March 2023 as reported in the APR, adjusted for meter optants, new connections and voids movements as well as meter upgrades. The Metering data is taken from the CW7 data table, with voids changes overlaid to reach the final adjustments required from the previous year's figure.



PR24 BP Reference	Line Description	Confidence Grade
SUP1B.7	Business properties billed at year end	B2

Business properties unbilled at year end (line 8)

This line is zero as per guidance as NHH customers in the market are either billed or void.

PR24 BP Reference	Line Description	Confidence Grade
SUP1B.8	Business properties unbilled at year end	A1

Business void properties at year end (line 9)

This is based on the total voids at 2023 year end, less 'consuming voids' we have identified and are due to bring into charge (working with retailers) in 2024. After this point we have assumed that voids remain flat.

The remaining lines in the table are totals of lines above.

PR24 BP Reference	Line Description	Confidence Grade
SUP1B.9	Business void properties at year end	B2
SUP1B.10	Total connected business properties at year end	B2
SUP1B.11	Total connected properties at year end	B2

SUP4: Green recovery expenditure - water resources and water network+

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

Within the Green Recovery programme there are three schemes that contribute to the water services that are Severn Trent Water schemes. These are:

- Removing lead supply pipes
- Smart metering
- Decarbonising water resources including non-household water efficiency

In addition a fourth scheme, Hampton Loade, is included within this table. This is a South Staffordshire Water scheme where Severn Trent Water pays a contribution to the scheme cost as we take a proportion of the deployable output from the works.

We have described progress with the schemes to date, and what this means for our full AMP forecasts, within our Green Recovery 2023 progress report. However, our water service programme forecast is in summarised in the following tables. The adjusted FD column recalculates an assumed FD based on the percentage completion of each programme and inflates this to 2022/23 prices.

	Final Determination (2017/18 pb)	Adjusted FD (2022/23 pb)	Forecast spend (£m)	Totex Variance (£m)	Totex Variance (%)	Programme completion (%)
Supply pipes	74.6	44.1	58.4	(14.3)	(32%)	50%
Water Resources	139.8	165.0	192	(27)	(16%)	100%
Smart meters	20.1	23.7	22.5	1.2	5.2%	100%
Hampton Loade	7.9	9.4	7.1	2.3	24.1%	100%

This table demonstrates that the supply pipes programme will deliver approximately 50% of the total output at around 68% of the original cost demonstrating and increased unit cost compared to the Final Determination assumptions.

Following agreement with Ofwat to change the solution for the water resource scheme to a single site solution at Church Wilne, the Decarbonising Water programme is forecasting to deliver the full scheme at around 116% of the original cost.

The smart metering programme will complete its delivery early in 2024/25 making savings of approximately 5% compared to the Final Determination.

Hampton Loade is currently forecast to cost around 24% less than the Final Determination.

Within table SUP4 the totex profile for each programme aligns to the total forecast spend presented here. Price control and upstream service allocations have been undertaken through a detailed review of activities, allocating specific activities to align with RAG 4.11 requirements.

Cumulative Totex

We have completed the cumulative totex tables in line with our principles for table CW9. These principles broadly assume:

- Programmes of high volume record cumulative totex in line with the actual totex reported each year. This is to say that each individual job is considered in isolation and reported as 'complete' in the year that it is claimed. This is relevant for the supply pipes, smart metering and NHH water efficiency programmes.
- Multi-year capital programmes report no cumulative totex until the overall scheme, or sub-components within it, are complete. For instance, a project with a raw water abstraction output and a treated water component could report cumulative totex separately for each distinct element. This is relevant for the Decarbonising Water Resources and Hampton Loade programmes.

Mapping Green Recovery spend to CW3

In the following tables we map Green Recovery expenditure in SUP4 to the relevant enhancement lines in CW3. It is worth noting that SUP4 is completed on a post-frontier shift and post-real price effects basis but CW3 is pre-frontier shift and pre- real price effects. As such, the tables show the equivalent value included in table CW3 that, when the SUP11 assumptions are applied, result in the SUP4 values.

2023/24 Capex

	SUP4	SUP4 Value	Mapped to Line		CW3 Pre-Frontier Shift Value
Supply Pipes	SUP4.1	7.767	CW3.109	External lead supply pipes replaced or relined; enhancement	7.814
Water Resources Total Program	SUP4.4	62.254	CW3.53	Supply demand balance improvements delivering benefits starting from 2031; SDB	62.633
Smart Metering	SUP4.7	5.919	CW3.63	New meters introduced by companies for existing customers	3.136
			CW3.72	Replacement of existing basic meters with AMR or AMI meters for household customers	1.347
			CW3.75	Replacement of existing AMR meters with AMI meters for household customers	0.850
			CW3.87	Smart meter infrastructure	0.622
Hampton Loade	SUP4.10	2.795	CW3.53	Supply demand balance improvements delivering benefits starting from 2031; SDB	2.812

2024/25 Capex

	SUP4	SUP4 Value	Mapped to Line		CW3 Pre-Frontier Shift Value
Supply Pipes	SUP4.1	15.738	CW3.109	External lead supply pipes replaced or relined; enhancement	15.931
Water Resources Total Program	SUP4.4	84.196	CW3.53	Supply demand balance improvements delivering benefits starting from 2031; SDB	85.231
Smart Metering	SUP4.7	3.78	CW3.63	New meters introduced by companies for existing customers	2.592
			CW3.72	Replacement of existing basic meters with AMR or AMI meters for household customers	0.776
			CW3.75	Replacement of existing AMR meters with AMI meters for household customers	0.490
			CW3.87	Smart meter infrastructure	0.000
Hampton Loade	SUP4.10	1.573	CW3.53	Supply demand balance improvements delivering benefits starting from 2031; SDB	1.592

2023/24 Opex

	SUP4	SUP4 Value	Mapped to Line		CW3 Pre-Frontier Shift Value
Supply Pipes	SUP4.2	10.003	CW3.110	External lead supply pipes replaced or relined; enhancement	10.064
Water Resources Total Program	SUP4.5	2.159	CW3.110	External lead supply pipes replaced or relined; enhancement opex	2.257
Smart Metering	SUP4.8	1.551	CW3.64	New meters introduced by companies for existing customers; metering	0.225
			CW3.61	New meters requested by existing customers (optants); metering	0.044
			CW3.110	External lead supply pipes replaced or relined; enhancement	0.794
			CW3.88	Smart meter infrastructure; metering	0.497
Hampton Loade	SUP4.11	0.000	CW3.54	Supply demand balance improvements delivering benefits starting from 2031; SDB	0.000

We recognise here that the following allocations are incorrect and should be updated in CW3 based on the following changes to better reflect key drivers of investment:

Programme	Line	Line name	Adjustment required
Water resources	CW3.110	External lead supply pipes replaced or relined; enhancement opex	(2.257)
	CW3.45	Demand-side improvements	2.257
Smart Metering	CW3.110	External lead supply pipes replaced or relined; enhancement	(0.794)
	CW3.76	Replacement of existing AMR meters with AMI meters for residential customers; metering opex	0.794

2024/25 Opex

	SUP4	SUP4 Value	Mapped to Line		CW3 Pre-Frontier Shift Value
Supply Pipes	SUP4.2	12.623	CW3.110	External lead supply pipes replaced or relined; enhancement	12.778
Water Resources Total Program	SUP4.5	1.363	CW3.110	External lead supply pipes replaced or relined; enhancement	1.567
Smart Metering	SUP4.8	1.078	CW3.64	New meters introduced by companies for existing customers; metering	0.102
			CW3.88	Smart meter infrastructure; metering	0.989
Hampton Loade	SUP4.11	0.00	CW3.54	Supply demand balance improvements delivering benefits starting from 2031; SDB	0.00

We recognise here that the following allocations are incorrect and should be updated in CW3 based on the following changes to better reflect key drivers of investment:

Programme	Line	Line name	Adjustment required
Water resources	CW3.110	External lead supply pipes replaced or relined; enhancement opex	(1.567)
	CW3.45	Demand-side improvements	1.567

SUP5: Green recovery expenditure - wastewater network+ and bioresources

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

Within the Green Recovery programme there are three schemes that contribute to the wastewater services that are Severn Trent Water schemes. These are:

- Creating bathing rivers
- Accelerating environmental improvements (WINEP)
- Flood resilient communities

We have described progress with the schemes to date, and what this means for our full AMP forecasts, within our Green Recovery 2023 progress report. We do not repeat the detail here. However, in summary our water service programme forecast is in summarised in the following tables. The adjusted FD column recalculates an assumed FD based on the percentage completion of each programme and inflates this to 2022/23 prices.

	Final Determination (2017/18 pb)	Adjusted FD (2022/23 pb)	Forecast spend (£m)	Totex Variance (£m)	Totex Variance (%)	Programme completion (%)
Flood resilient communities	75.7	89.3	89.8	(0.5)	(0.6%)	100%
Bathing Rivers	78.5	88.5	74.4	14.1	15.9%	100%
Accelerating environmental improvements	168.9	187.1	183.3	2.2	2.0%	94%

This table demonstrates that the flood resilient communities programme will deliver 100% of the modelled output at around 99% of the original cost. It should be noted that we have not been able to secure the full 11% third party contributions and, as such, the company will be picking up any of the shortfall.

The bathing rivers programme is forecasting to deliver 100% of the outputs although we note a change in the make-up of combined sewer overflows and storm tank solutions as noted in our Green Recovery 2023 report. These changes offer a better engineering solution, remove the risk of redundancy with further work in AMP8 and all a c16% cost efficiency to be delivered across the programme all whilst reducing the impact of storm overflow activations to a longer length of the river Avon than originally planned. See SUP10 for further detail.

The accelerating environmental improvements programme will deliver 94% of the outputs for approximately 102% of the costs. We have removed one site from the programme where the solution was proved to be non-cost beneficial, and we are forecasting to not delivery the maximum number of SOAF investigations.

Within table SUP5 the totex profile for each programme aligns to the total forecast spend presented here. Price control and upstream service allocations have been undertaken through a detailed review of activities, allocating specific activities to align with RAG 4.11 requirements.

Cumulative Totex

We have completed the cumulative totex tables in line with our principles for the APR reporting and tables CWW9. These principles broadly assume:

- Programmes of high volume record cumulative totex in line with the actual totex reported each year. This is to say that each individual job is considered in isolation and reported as 'complete' in the year that it is claimed. This is relevant for the flood resilient communities programme and the SOAF investigations of the accelerating environmental improvements programme. We had not captured the SOAF cumulative spend in the APR tables at the point of submission so total cumulative spend differs from the APR by £0.747m.
- Multi-year capital programmes report no cumulative totex until the overall scheme, or sub-components within it, are complete. For instance, a project with a raw water abstraction output and a treated water component could report cumulative totex separately for each distinct element. This is relevant for the accelerating environmental improvements and creating bathing rivers programmes.

Mapping Green Recovery spend to CWW3

In the following tables we map Green Recovery expenditure in SUP4 to the relevant enhancement lines in CWW3. It is worth noting that SUP5 is completed on a post-frontier shift and post-real price effects basis but CWW3 is pre-frontier shift and pre- real price effects. As such, the tables show the equivalent value included in table CWW3 that, when the SUP11 assumptions are applied, result in the SUP5 values.

2023/24 Capex

	SUP5	SUP5 Value	Mapped to Line		CW3 Pre-Frontier Shift Value
Building Sustainable Flood Resilient Communities	SUP5.1	21.448	CWW3.156	Reduce flooding risk for properties; enhancement	21.579
Bathing Rivers	SUP5.4	10.199	CWW3.025	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater	8.285
			CWW3.016	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater	1.976
Accelerating Environmental Improvements	SUP5.7	23.26	CWW3.64	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater	23.402

2024/25 Capex

	SUP5	SUP5 Value	Mapped to Line		CW3 Pre-Frontier Shift Value
Building Sustainable Flood Resilient Communities	SUP5.1	31.466	CWW3.156	Reduce flooding risk for properties; enhancement	31.853
Bathing Rivers	SUP5.4	53.31	CWW3.025	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater	50.718
			CWW3.016	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater	3.246
Accelerating Environmental Improvements	SUP5.7	153.046	CWW3.64	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater capex	154.927

2023/24 Opex

	SUP5	SUP5 Value	Mapped to Line		CW3 Pre-Frontier Shift Value
Building Sustainable Flood Resilient Communities	SUP5.2	14.497	CWW3.157	Reduce flooding risk for properties; enhancement	14.585
Bathing Rivers	SUP5.5	0.624	CWW3.157	Reduce flooding risk for properties; enhancement	0.628

2024/25 Opex

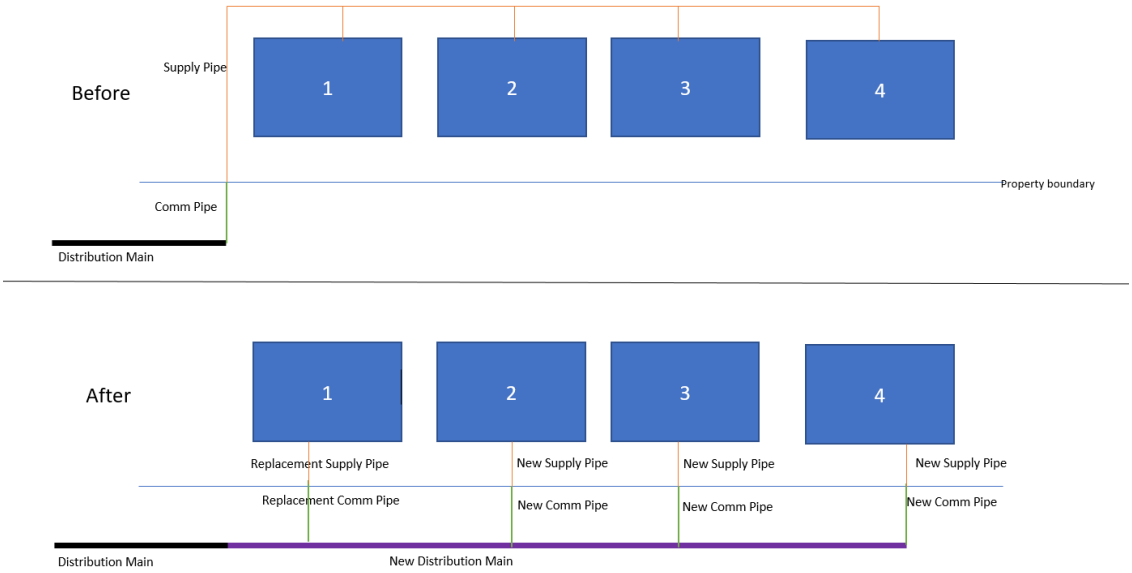
	SUP5	SUP5 Value	Mapped to Line		CW3 Pre-Frontier Shift Value
Building Sustainable Flood Resilient Communities	SUP5.2	14.384	CWW3.157	Reduce flooding risk for properties; enhancement	14.561
Bathing Rivers	SUP5.5	0.226	CWW3.157	Reduce flooding risk for properties; enhancement	0.229

SUP6: Green recovery data

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

Total Length of New Potable Mains (6.1)

We are not predicted to be laying many mains as part of the Supply Pipe replacement programme and have not current done any to date. However, there are scenario's where we would do this, and now have a number in planning. They meet the scenario in the diagram below, where the more efficient resolution to removing the lead supplies is to install short lengths of new main as well as new individual supply pipes.



Given the infrequency of the scenario occurring as well as the need to get agreement from all parties we are only forecasting 0.5km over the duration of the remainder of the programme. This assumes that for every 1600 supply pipes replaced, 0.1km of potable mains will be installed.

Number of lead communication pipes replaced for water quality (6.2)

Lead replacement pipes from the Green Recovery programme are reported as part of CW6. Total numbers of lead pipes we are intending to replace has been driven by our revised forecast of 13,016 for total Green Recovery supply pipe replacements. Lengths have been extrapolated from a subset of areas where the new pipes have been fully mapped and measured.

	22/23	23/24	24/25	Programme
No. Lead Comm Pipes	1270	3,213	7,370	**11954**
Length Lead Comm	3569	11117	25500	**40186**
No. Lead Internal Pipes	1293	2549	5847	**9790**
Length Lead Internal	1293	2549	5847	**9689**
No. Lead External Pipes	1300	2623	6015	**10039**
Length Lead External Comm	19656	39660	90947	**150263**
Total Lead Length Calculated	**24518**	**53326**	**122294**	**200138**

Metering Activities – Totex Expenditure (6.3–6)

The Green Recovery programme is not delivering any business meters so lines 6.4 and 6.6 are nil. SUP6.3 and SUP6.5 is the totex expenditure excluding infrastructure assets such as telemetry and data handling. It is also included in CW7.2 and CW7.4 for AMI meter installations.

Metering Activities – Explanatory Variables (6.7–20)

The Green Recovery programme is not delivering any business meters so lines 6.8, 6.10, 6.13, 6.14, 6.16, 6.19 and 6.20 are nil. We are forecasting delivery of the metering programme ahead of schedule, so in year 5 we will only be completing up to the allowance for each line (New installations and Replacements).

The Supply Demand balance benefit for 2022/23 was delivered from a combination of meters installed in 2021/22 and 2022/23. The same rate of benefit per meter has been applied across forecast deliveries for 2023/24 and 2024/25

Leakage Activities (6.21)

Leakage activity is based on the forecast from the deployment of smart meters and from the replacement of leaking supply pipes. Benefits for 2022/23 were delivered from a combination of meters installed in 2021/22 and 2022/23. Same rate of benefit per meter applied across forecast for meter deliveries for 2023/24 and 2024/25.

For supply pipe renewals the assumptions in the original business case came from the leakage/demand knowledge at the time and was reviewed for consistency of approach in conjunction with the calculations for smart metering and decarbonising water resources Green Recovery schemes. Part of this methodology has been taken forward to calculate the combined leakage benefit from supply pipes renewals i.e., It is assumed 50% of the pipes are leaking however, when replacing a leaking pipe, instead of the replacement resulting in a 32 l/day benefit we are now using 27.09L/day benefit. This assumption has been amended using the company's recognised figure for 2022-23 for the average leakage benefit of replacing unmeasured household leaking pipes.

	22/23	23/24	24/25
Smart Meter Installation	0.38	0.36	0.35
Supply Pipe Replacement	0.02	0.05	0.11
Total	**0.4**	**0.41**	**0.46**

Storage Capacity (6.22-25)

Additional storm tank capacity and additional network storage at CSOs through grey infrastructure will be delivered by our bathing waters programme. These will not come in to affect until the delivery of our final assets in year 5. The volumes have been calculated based on the current initial designs that have been developed to achieve the final outcomes.

We do not have any planned additional storage capacity from green infrastructure. While the Building Sustainable Flood Resilient Communities Programme will be delivering green infrastructure that may deliver effective storage preventing CSO spills, it is not getting them to meet permit conditions, and it is not the driver of this programme, and therefore it is excluded from this line.

SUP7: Green recovery; Water common performance commitments

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

The overall PCC and Leakage figures reported align with the values in table OUT1 which include the benefits of the green recovery programme. The values excluding the benefit are used to populate table OUT8 and drive the ODI payment forecasts included in table OUT6 in line with our annual performance report requirements. Further details are provided in the commentary for OUT1-5.

Per Capita Consumption

The benefits of smart metering on Per Capita Consumption (PCC) are include here. We are reporting a single year benefit for each meter installed, assuming that benefits are maintained only where further education and campaigns target the end user.

From the work carried so far, we have not found a material improvement in PCC from switching to a meter with AMI technology, so we have calculated the expected benefit using only new meter installations. The benefits align with the meter profile reporting in table SUP6.

Leakage

Leakage benefits are based on the speed with which we can identify, notify and fix supply pipe leaks. Smart meters are allowing us to find and fix leaks within days rather than the up to six months on AMR meters due to the nature of read cycles for billing purposes. We have seen a total saving of 0.40 Ml/day in 2022/23 and expect this to increase in FY24 and FY25 as the volume of supply pipes and smart meters increases. This aligns with the values reported in SUP6.

Further details of our Leakage and PCC benefits can be seen in our Green Recovery Report page 20/21.

SUP8: Green recovery; Wastewater common performance commitments

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

The overall Internal Sewer Flooding and Pollution Incidents figures reported align with the values in table OUT1 which include the impact of green recovery. The values excluding the benefit are used to populate table OUT8 and drive the ODI payment forecasts included in table OUT6 in line with our annual performance report requirements. As a reputational AMP7 PC that will not be carried forward into AMP8, our Risk of Sewer Flooding in a Storm forecast has not been included in any of the Outcomes data tables.

Internal Sewer flooding

As the flood resilient communities programme has not yet delivered substantial outputs, we have used the business case assumption that the programme will deliver one less sewer flooding incident within the Mansfield area by 2025. We have followed Ofwat's guidance when determining historic performance split between base and enhancement which requires companies to use the business case assumption where sufficient data does not yet exist to calculate the benefit of enhancement investment in AMP7.

Pollution Incidents

Our green recovery programme, creating bathing rivers has not yet completed and we have not yet seen the benefit in the reduction of pollution incidents. We are forecasting that we will save one pollution incident through this programme by 2024/25. Our performance commitment level has not been amended to account for this forecasted benefit and therefore we have not included this benefit in our forecast for our Pollution Incidents PC in OUT8. Using our EPA v9 methodology sewer length of 93,525 km this would be normalised as 0.11 pollution incidents when rounded to two decimal places in line with how we report this performance commitment. We have made a change to the calculation in the SUP8 data table on line SUP8.4 as 'Performance level - actual impacts of green recovery investment element only calculated (i.e. standardised)' section was not correctly calculating the normalised benefit.

Risk of Sewer Flooding in a Storm

We have modelled that the resilient flood communities programme will deliver 0.04% benefit on this performance commitment by 2025. Although no impact on the risk grade for 2022/23 and 2023/24 values (zero impact expected), we have completed the population equivalent, which we had not completed in the APR. We have identified that the calculation for the Percentage of total pe Option 1b does not appear to be calculating correctly. For these cells (S26, Z26, AG26 and N26) we believe it should be taking the Total pe Option 1b (R26, Y26, AF26 and M26) and dividing it by Total pe served (C26, F26, I26 and L26). This would give 97.43% for each year.

SUP9: Green recovery; Bespoke performance commitments

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

Within this table we outline the impacts of the Green Recovery programme on our AMP7 bespoke performance commitments as follows:

Improvement in WFD criteria (Green Recovery) C06:

This is a new performance commitment created for the accelerating environmental improvement programme to ensure the green recovery investment does not count toward the core programme commitment. It operates in the same way and has the same incentive rate. We have a target of 7 WFD point due by 2024/25 and are forecasting a total of 12. This aligns with the forecasts included in tables OUT8 and OUT6. This bespoke PC is included on line OUT8.39.

Biodiversity (water and wastewater) C03 and C04:

Across the programmes we will enhance a total of 46 hectares of land (water) and 15 hectares of land (waste). These are excluded from the forecasts included in tables OUT8 and OUT6. The water measure appears on line OUT8.14 and the waste measure on OUT8.32.

External sewer flooding F05:

In line with the business case we are forecasting six external sewer flooding incidents will be avoided across Mansfield thanks to the flood resilient communities programme. These values are excluded from the OUT8 and OUT6 forecasts. The forecast for the measure appears on line OUT8.34 with Green Recovery benefit removed, the Green Recovery benefit is included on OUT5.13

Number of water meters installed G13:

The number of water meters installed aligns with SUP10 and SUP6. These values take us the 157,329 meters by 2025. These values are excluded from OUT8.21. There is no AMP8 measure for number of water meters installed.

Resilient supplies G10:

The decarbonising water resources programme will improve resilience by 1.72% by 2024/25. An ex-ante adjustment has been made to our performance commitment level for this performance commitment and therefore we have reported our forecast in OUT8 including the impact of green recovery. As the performance commitment is reported to one decimal place, we have included the impact from green recovery as 1.7%. This bespoke, end of period performance commitment appears on line OUT8.18.

Collaborative Flood Resilience (F09) and Green Communities (F08):

Ofwat included a specific exclusion of the work in the Mansfield area with the updated performance commitment definition. As such we do not include the benefits of the flood resilient communities in the reported performance commitment in table OUT8 and do not need to make an adjustment here. The measures appear on line OUT8.38 and OUT8.37 respectively.

SUP10: Green recovery data capture reconciliation model input

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

Accelerating Environmental Improvements (SUP10.1-9)

WFD Points (SUP10.1)

We are progressing ahead of schedule and aim to have more sites completed this AMP than originally forecast, which means earlier delivery of the WFD obligations. We're forecasting to deliver 25% of our AMP8 WINEP programme in AMP7, so by 2024/25 we will have 47 WFD improvement points assessed as on track for completion and 12 delivered. This is ahead of our regulatory target of seven and will be on track to deliver all 47 points by 2027.

To remove phosphorus from discharges, we are creating more chemical dosing systems and reedbeds, and installing mechanical filters at the front end of the treatment process. We have agreed contracts for the first seven projects, with construction contracts worth £17.8 million, and plans for the remainder of the programme are on track. We will break ground with our first project this summer. This will deliver the majority of our 2025 obligations and will have a significant benefit on the watercourse which those works discharge into.

SOAFs (SUP10.2-5)

We have completed 130 stage one SOAFs, and we have 84 of these which we are continuing on to stage 2, and 80 we expect to go on to stage 3/4 based on the outcomes from the investigations so far. We are continuing these investigations as valuable information has already been collected which will inform future investment decisions, however we are not going to be carrying out any complex SOAF investigations or beginning any new SOAF investigations as new environment act limits the need to any further of these.

Overflow Spill Reduction Intervention (SUP10.6)

We have identified 20 interventions from spills data refreshed each March. We have four planned in for 2023/24 and the remainder for 2024/25. We are also assuming that we will identify 20 more deliverable intervention opportunities from the refreshed spills data.

Pairs of river water quality monitors delivered (SUP10.7)

We have our 25 pairs of monitors going through the final stages of planning and installation. At time of writing 22 pairs had been installed, with the final three imminent for installation.

Storm Water treatment trial (SUP10.8)

There are two different processes of treating stormwater that are to be trialled: Rapid Radicals and Pile cloth media filter (Mecana).

The Storm Generator (the equipment to simulate the storm flows and loads) is being designed and the contracts are being finalised with the two suppliers.

The planned timeline for the trials is:

- Storm Generator built and commissioned: January 2024
- Mecana pilot installed and commissioned: February 2024
- Rapid Radicals pilot installed and commissioned: April 2024

- Trials finished: November 2024

Which leaves plenty of time to understand outcomes and share the learning.

Storm Water Reporting App (SUP10.9)

The storm water reporting application is in early design stage and will be delivered in the final year of the project.

Building Sustainable Flood Resilient Communities (SUP10.10)

We are forecasting to delivery 100% of the programme by the end of March 2025. This is based on delivery of 58,000m3 of storage through a mix of solution types. No individual solution type exceeds the 70% maximum. Our final programme forecasts include:

- Detention basins – 17%
- Bioswales – 53%
- Rain Gardens – 10%
- Permeable paving – 20%

In this type of ambitious, industry-leading programme a significant amount of time is spent on the initial phases of design, mobilisation and piloting. We have successfully completed a broad range of activities within these phases. These are detailed in our recently published Green Recovery Report that can be accessed at the following link: https://www.stwater.co.uk/content/dam/stw/regulatory-library/sve-severn-trent-green-recovery-report-2023.pdf

Phasing of programme is aligned to our delivery contracts with around 23% (13,217m3) being delivered by the end of 2023/24 and the majority being delivered in the final year of the programme.

	Volume (m^3) Forecast			
Intervention Category	2022/23	2023/24	2024/25	**Volume (m^3) Total**
Detention Basin & Bioswales (Natural Solutions)	0	7682	32905	40586
Raingardens & Tree Pits (Urban Streetscape)	35	2287	3386	5708
Permeable Paving	203	3011	8493	11707
Total	**238**	**12979**	**44784**	**58000**

We note that we have calculated the volume based on the modelled assumptions included within the business case. We have continued to improve and evolve the model and will carry on doing this as the solutions are delivered and we can begin to measure real world benefits of the interventions.

Creating Bathing Rivers (SUP.11-22)

One of the most exciting Green Recovery projects that we are delivering this AMP is the creation of the first bathing standard rivers in England and Wales - on the River Leam and River Teme. To deliver this outcome for our region we are delivering interventions at a number of our assets, specifically:

- Three wastewater treatment works – installing Ozone disinfection treatment of final effluent. This enhanced treatment will also help us to understand the potential of new technologies to address emerging issues such as pharmaceuticals and antibacterial resistance. We have started to procurement of key materials and equipment for the project and are finalising the construction designs.

- CSOs – delivering 153,000m^3 improvements through a combination of storage and increased network capacity (including surface water separation).

- Three storm overflows – delivering 76,000m^3 improvements with storage solutions to help manage peak flows

Over the last 12 months, our focus has been on developing the best value set of engineering solutions. Critically, this ensures the three first time disinfection plants are progressed through detailed design, engagement with the supply chain to enable the procurement of ozone solutions for wastewater and early-stage contracts being signed. This ensures the schemes are well on track to be delivered by the end of March 2025.

As we have been progressing our programme of work, we have also looked to ensure that it is aligned to our recently published Drainage Management Plan (which captures all of the recent statutory changes. This has helped reveal a need for a small number of changes to our Bathing Rivers programme to ensure we don't spend customers money inefficiently or disrupt roads and other amenities more than absolutely necessary. Specifically:

- We would like to change the location for 6 of the overflows to ensure we don't undertake work now that will be made redundant by work planned for AMP8
- We intend to include an additional new storm tank improvements where there is a benefit to river water quality to deliver the improvements this AMP.

The benefit of these changes is that we are able to not only deliver the same headline outcome, but we can increase the length of river improved and prevents work being undertaking in AMP7 that will be superseded by work in AMP8.

Importantly, this change does not create any precedent for PR24 but rather aligns the delivery mechanism of the Green Recovery to that being used in the Accelerated Investment Programme (ie, the price control deliverables are defined as number of CSOs, not location of CSOs). We have separately submitted a change control to Ofwat describing the details and reasoning behind each change.

Catchment	Final Determination			Proposed Changes		
	Total Overflows	CSOs	Storm overflows	Total Overflows	CSOs	Storm overflows
Leamington	6	6	0	6	6	0
Coventry	2	2	0	3	3	0
Stratford-upon-Avon	5	5	0	1	1	0
Warwick	2	2	0	1	1	0
River Teme (Ludlow)	5	5	0	5	5	0
Rugby	0	0	0	4	4	0
Wellesbourne storm tanks	1	0	1	0	0	0
Coventry storm tanks	1	0	1	1	0	1
Rugby storm tanks	1	0	1	1	0	1
Itchen Bank storm tanks	0	0	0	1	0	1
Ludlow storm tanks	0	0	0	1	0	1
Totals	**23**	**20**	**3**	**24**	**20**	**4**

Decarbonising Water Resources - Non-household Audits (SUP10.23)

In our efforts to deliver 3,000 effective audits, we have trialled multiple ways of engaging with our customers and partners. This has led to two main streams of audits, Businesses and Retailer led audits.

We engaged with water retailers to understand their capacity to deliver 250 audits across Leicestershire. The advantage of having a retailer lead a trial is that they hold great customer data. Water Plus took the lead, signing up 250 customers and delivering an end-to-end service in 22/23, with another four retailers willing to help in other ways in the future. We have therefore engaged with the retailers to deliver another 250 audits per year for the remainder of the programme.

We have found businesses much harder to engage with than anticipated, however we have identified that the best way to engage with them is through telephony and speaking directly to individuals. After some trials we have engaged internal and external telemarking teams which were established from May 23. These have had an immediate ramp up in sign-ups as predicted from the trials.

The run rate will take us to 100% completion of audits by October 24 giving us the optimum time to complete any remedial works with the businesses and to maximise the leakage savings.

We have been starting to engage some businesses to complete audits in Staffordshire. This is an area that is also water scarce and therefore valuable to include in the audit programme. This is also enabling us to widen the scope of contacts and contractors we can use to engage customers and carry out both audits and remedial actions.

Church Wilne (SUP10.24)

There are five components to the Water Resources Programme: Raw Water Abstraction and Transfer, Treatment Wetland, Pilot Treatment Plant, Treatment Processes and Treated Water Distribution. We are forecasting 100% completion of all these components by March 2025.

The program forecast is built on contractual work dates for the majority of the program. % completion is calculated using earned value management (EVM) within the component level programmes. The project value is taken as the proportion of the FD value and the corresponding component allocation listed in the FD. This project value is then applied proportionally to the 4 project stages and progress is then defined as the sum of the % complete (duration) of each stage multiplied by the stage value.

Validation of progress is done by applying the STW gated project process to each component and monitoring the key milestones that must be passed in order to justify progress data. Subject matter experts are defined for the DWR programme of works which are required to sign off the progress against milestones used in the progress calculations. These include outline design acceptance, detailed design acceptance, factory acceptance tests and site acceptance tests.

	% Complete by Component		
Project	22/23	23/24	24/25
DWR Program	10.60%	56.50%	100.00%
Raw Water A&T	18.70%	61.20%	100.00%
Wetlands	10.50%	64.70%	100.00%
Pilot Plant	100.00%	100.00%	100.00%
Treatment Plant	10.10%	57.50%	100.00%
Distribution	3.50%	45.30%	100.00%

Smart Metering (SUP10.25-26)

We are forecasting to deliver 100% of the programme by the end of March 2025. We accelerated our meter installation programme to contract early and obtained meters at a lower cost. A strong start saw us installing around 30,000 meters in Coventry by the end of May 2022.

The focus of our acceleration was targeting meter replacements in order to maximise the data that would be available, as these are generally less complex than new installations. This has enabled us to use the data inform all aspects of PR24 and other initiatives as early as possible. By the end of 2022/23 we had already completed over 50% of the replacement programme target in just over a year. We are now shifting our focus slightly to target more new installs – we have already completed over 35% of new installs, so are very confident in the delivery of both new and replacements over 2023/24 and 2024/25.

Taking Care of Supply Pipes (SUP10.27)

Our programme has made good progress since last year and has delivered 1,522 supply pipe replacements through the project. In 2023/24 we will accelerate our plans and have set a new ambition of 13,016 (rather than the allowed 26,000) replacements by 2025. Our approach has been adapted to address the following challenges:

- Joint supplies - we found more joint supplies than we had hoped, but they also have proved more challenging to resolve with difficulties getting agreement from all property owners on a supply.

- Specialised plumbers - identifying, recruiting and training enough specialised plumbers in the Coventry area within the timescales needed to ramp up activity quickly proved harder than we assumed. This reduced our output across one of our delivery routes.
- Process complexity - ensuring we time the work right so that both our operatives and plumbers working on the grant scheme are on site at the same time to minimise disruption to our customers.

These issues mean we are also facing several cost challenges as we're forecasting unit rates to be significantly higher than allowances. Although costs are still higher as a consequence, the actions we are taking to identify and deliver efficiency have had good results. Unit costs have dropped since the start of the project and there are further plans to lower these over the next two years, however it is likely to remain higher than the original Final Determination assumptions.

After a full year of the programme running, we have excellent data to inform the forecast for the next two years, and understand the rate of ramp up we can expect. We have used the current three month average weekly run rate to inform the forecast for the remainder of the programme and have built in ramp up of contractor resource that has already been agreed with our contractor partners and has already started to be delivered.

Our Bomere Heath programme is now underway, and we have issued tenders for contractors to support us with this scheme. We aim to begin phosphate disengagement trial works shortly. We have had a fantastic response from the customers in the area, with 381 signed up by the end of March 2023

We are confident in our ability to deliver 13,016 supply pipe replacements.

SUP10.28 – 64

These lines represent green recovery programmes for other water companies. As such these are a nil return for Severn Trent Water.

SUP11: Real price effects and frontier shift

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

SUP11.1 - CPIH: Financial year average indices year on year %

Central CPIH forecast – figures pull from PD1. These CPIH forecasts have been used to calculate the forecast real price effects.

SUP11.2 - Real change in input price – Labour

For our central forecast of labour RPE we have considered historic evidence of labour real price effects, forward looking independent forecasts of real pay growth and also the impact of agreed pay deals across the remainder of AMP7.

For our central forecast of labour real price effects we have calculated average labour real price effects over the past five years. As shown in the below table, the average real price effect based on ONS whole economy average pay growth data is 0.72%.

	2018/19	2019/20	2020/21	2021/22	2022/23	Average
Whole Economy Year on Year average pay growth	3.03%	3.30%	2.01%	6.25%	6.00%	**4.12%**
CPIH	2.13%	1.70%	0.80%	3.67%	8.77%	**3.41%**
Real price effect	0.89%	1.57%	1.20%	2.48%	-2.55%	**0.72%**

Our central forecast for RPE incorporates our long term forecast for real terms pay growth of 0.72% but also impact central forecast agreed paid deal for the years 2023 and 2024. Over these 2 years the following pay deal has been agreed:

2023:

- 7.5% consolidated pay award in July 2023, flowing through to all salary related allowances and pay bands.

2024:

- A consolidated pay award of either November 2023 CPIH or 5%, whichever is higher, flowing through to all salary allowances and pay bands.
- A guaranteed minimum bonus of £1,000 for level 1 employees and £1,500 for level 2 employees.
- Payrises are implemented from July and therefore they do not align with financial years. As a result, the pay increases in July 2023 and July 2024 have an impact on real price effect forecasts for years 2023/24 to 2025/26.

Financial year	July Pay rise	Financial Year Impact	CPIH	Real price effect
FY24	7.50%	6.20%	5.94%	0.25%
FY25	5.0%	5.63%	2.95%	2.60%

Our forecast assumes that real pay growth reverts to 0.72% beyond the period of agreed pay deals. For 2025/26 there is a 3 month impact of the July 2024 pay increase on labour costs on a financial year basis and a 9 month impact of the 0.72% real price effect forecast, resulting in an overall forecast real price effect forecast for 2025/26 of 1.51%

The table shows a summary of forecast labour real price effects. Our approach is to use the Severn Trent pay deal offer to account for the expected real price effects on labour from FY24 an FY25 and then reverting to a 0.72% figure based on historic trends which also aligns closely to the OBR real wage growth forecast.

	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
RPE - Labour	0.25%	2.60%	1.51%	0.72%	0.72%	0.72%	0.72%

Full details of our approach to calculating labour real price effects and supporting analysis is included as an appendix to our cost efficiency annex.

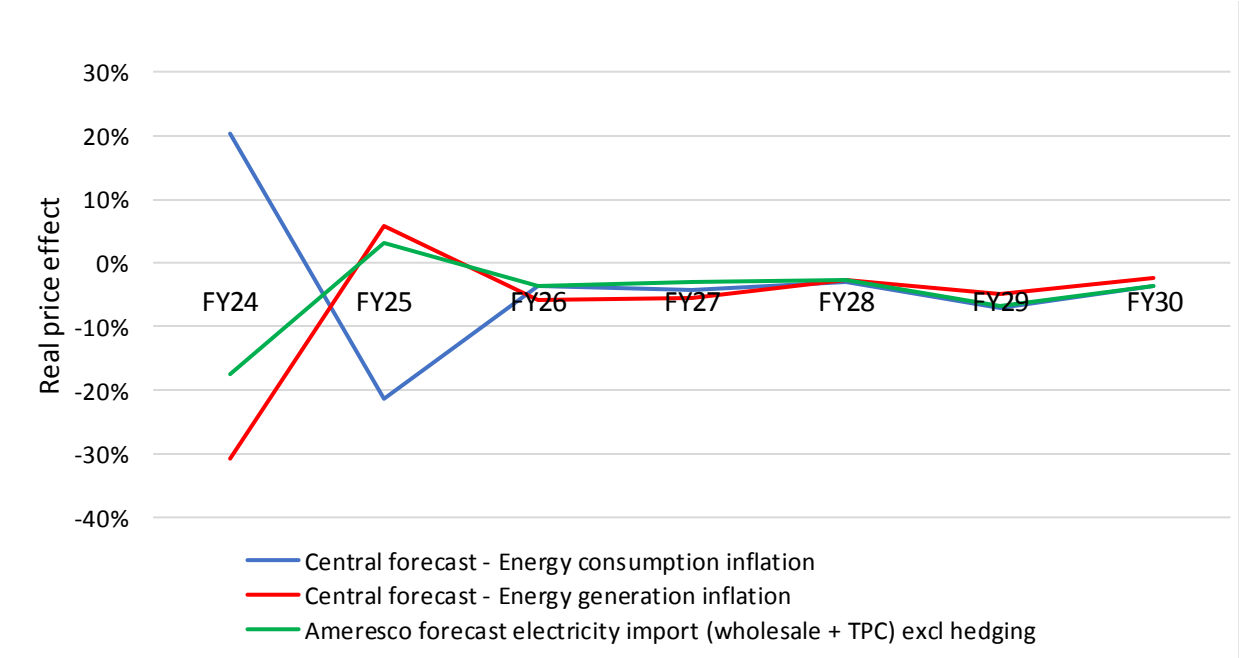
SUP11.3 - Real change in input price – Energy

Our real price effect forecasts for energy are based on gas and electricity price forecasts from Ameresco. In addition, we have included the impact of hedging positions for 2023/24 and 2024/25 which impact our forecast energy price. Severn Trent net power costs comprises a number of distinct elements that have slightly different cost pressures associated with them. The methodology for forecasting input price inflation and real price effects for the various components of net power costs is as follows:

Component of net power costs	Forecast methodology
Half-hourly metered electricity imports	A forecast from Ameresco was used for forecasting Seven Trent Water's half-hourly metered electricity costs, including both the wholesale and non-wholesale energy components of costs. An adjustment has been made to the forecast price for FY24 and FY25 where hedging trades already in place result in a difference between the expected weighted average price per MWh post hedging and the forecast market wholesale price. The weighted average price post hedging for FY24 and FY25 is based on a bottom up model including the impact of budgeted consumption volumes for FY24 and the volume and price of achieved hedging trades.
Non-half hourly metered electricity imports	For non-half hourly metered electricity non wholesale (passthrough) costs make up a larger proportion of costs per MWh compared to half-hourly metered electricity. An adjustment has been made to the Ameresco forecast to account for this difference. During FY25 pass through costs are forecast to make up 56% of small sites costs, compared to just 44% for large sites. This split between passthrough and wholesale costs is used in the calculation of small sites inflation using the Ameresco forecast.
Self supply income / costs	Energy generated by Bioresources and non-regulated Severn Trent Group entities is supplied to wholesale price controls where this electricity is consumed behind the meter. The pricing for self supply for the forecast is based on the forecast weighted average wholesale energy import price (including hedging) plus variable passthrough costs. The passthrough costs included within the Ameresco forecast include both the fixed as well as the variable components of passthrough costs and therefore do not align to the pricing of self-supply. An adjustment has been made to the self-supply inflation forecast to account for the smaller proportion of passthrough costs within self-supply pricing.
Gas exports	The price of gas exports is forecast based on an Ameresco forecast of wholesale gas prices.

Gas imports	The price of gas exports is forecast based on an Ameresco forecast of wholesale gas prices together with a forecast of third party costs (gas transmission, distribution and green levies) from Cornwall Insight.
Electricity exports	When electricity is exported to the grid our income is directly related to the wholesale price of electricity. There is no additional non-wholesale electricity component that needs to be considered for this income. The Ameresco forecast of the wholesale element of electricity import inflation is therefore considered appropriate for forecasting inflation on electricity exports.
Oil imports	The relationship between oil prices and electricity prices is indirect, the relationship is variable due to different factors influencing oil vs electricity prices. Oil costs represent a very small proportion of total power costs (less than 1% for FY24 budget). An assumption has been made that oil costs increase in line with CPIH and so there is no forecast real price effects on oil costs. This assumption has an insignificant impact on the overall energy real price effect forecast.
Incentive income	Renewable heat incentive (RHI), Renewable obligation certificates (ROC), Proof of sustainability (PoS) and Feed in tariff (FiTs) incentives are linked to inflation. The value of other energy incentives, Renewable Gas Guarantee Obligation (RGGOs) and Renewable Energy Guarantee of Origin (REGOs) are linked to market prices. For the purposes of the real price effect forecast the assumption has been made that the value of incentives increases in line with CPIH and so there is no real price effect on incentive income.

The above components can be categorised into energy consumption costs (electricity imports, self supply costs, gas imports and oil imports) and energy generation (electricity exports, gas exports, self supply income, and incentive income). The chart below shows the real price effects for these two categories within energy, and how they compare to the real price effects calculated simply from our Ameresco forecast of electricity prices excluding the impact of hedging.



The significant divergence between our central forecasts and the Amereco forecasts for 2023/4 and 2024/25 are a result of hedging positions that have been taken. There are smaller differences between our forecast real price effects on costs associated with energy consumption compared to real price effects on income arising from energy generation. These differences are primarily due to:

- Hedging positions taken on gas/electricity imports versus gas/electricity exports during AMP7. Differences in hedging on imports compared to exports results in a divergence in expected real

price effects between energy generation (predominantly in Bioresources) and energy consumption (across Water, Waste and Bioresources price controls). The impact of hedging is a significant factor across the forecast period for year 4 and year 5 of AMP7 where there are significant hedging positions and there has been large market price volatility.

- Non wholesale (passthrough) component of energy import costs. Passthrough costs include the cost of energy distribution, transmission, network balancing and green levies. These passthrough costs form a significant component of the costs of electricity imports and therefore changes in these costs affect energy consumption real price effects but not energy generation real price effects. Compared to an 2022/23 price base there is a forecast above inflation increases in passthrough costs, partly related changes in the UK's energy mix and associated grid costs.

To most accurately forecast energy costs and energy income for each price control, real price effects have been applied separately for energy consumption costs and energy generation income. This ensures that forecast totex presented within CW1/CWW1 tables accurately reflects our energy forecasts. SUP11 does not split out real price effects for energy consumption and energy generation, there is only a single line for energy real price effects. The energy real price effects that have been presented within SUP11 are a weighted average of our forecast energy generation and energy consumption real price effects with the weighting based on the percentage split of energy costs and energy income treated as negative operating costs across all price controls in absolute terms.

Energy real price effect forecasts

	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
RPE – Energy consumption	20.27%	-21.37%	-3.53%	-4.34%	-3.16%	-7.04%	-3.54%
RPE – Energy generation	-30.78%	5.77%	-5.75%	-5.57%	-2.82%	-5.04%	-2.31%
Energy generation weighting within totex	68%	68%	68%	68%	69%	69%	68%
Energy consumption weighting within totex	32%	32%	32%	32%	31%	31%	32%
RPE – energy as reported in SUP11	3.73%	-12.63%	-4.24%	-4.73%	-3.05%	-6.42%	-3.14%

Further details and analysis to support our real price effect forecasts for energy can be found within an appendix to our cost efficiency annex. We have also included details of the our price forecasts for gas and electricity import and exports along with details of our energy hedging position within the supplementary energy request table.

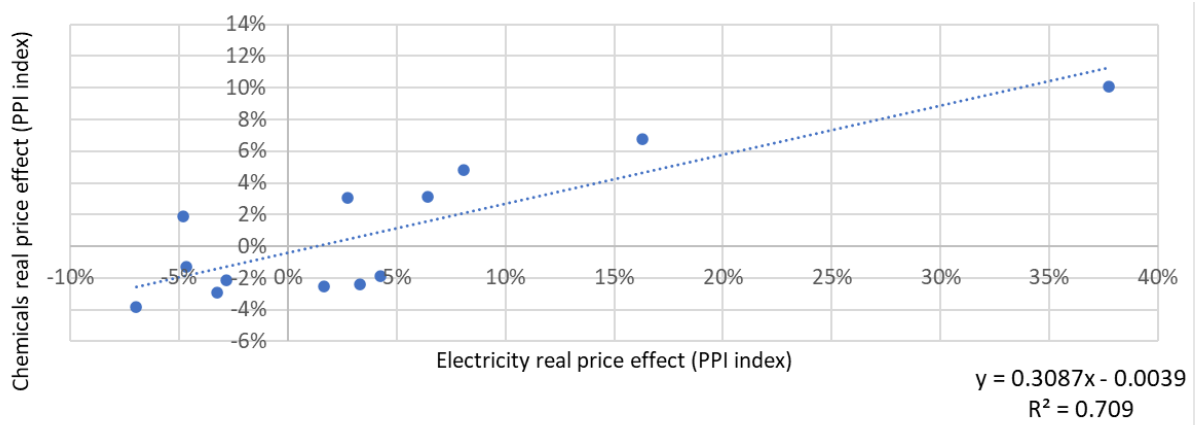
SUP11.4 - Real change in input price – Chemicals

Our forecast for chemical real price effects are based on the relationship between energy real price effects and chemicals real price effects. The basis behind this approach is that historic evidence shows a relationship between energy inflation and chemicals inflation. The relationship base on external historic indices aligns to experience during AMP7 where there has been a significant increase in chemicals unit prices. Higher energy prices have been a large contributory factor to higher energy

costs as energy forms a significant input cost in the manufacturing process for many of the chemicals that we use. There are limited external forecasts for chemicals inflation and so the approach that we have taken is considered appropriate and incorporates our assumption that a forecast real terms reduction in energy prices across AMP8 compared to our base year of FY23 will contribute to a real terms decrease in chemicals unit costs.

Our calculation of the relationship between energy and chemical real price effects is based on ONS producer price inflation (PPI) indices for 'Inputs into Production of Electricity, Transmission and Distribution Services' (GHHP) and 'Inputs of Chemicals' (FSQ7).

Figure: Relationship between energy real price effects and chemicals real price effects



The ONS 'Inputs of Chemicals' index is based on a survey of manufacturing companies across different sectors. The input chemicals index will include the impact of inflation across a great variety of chemicals. The contribution of different chemicals to the chemicals input index will not exactly match the particular chemicals used by Severn Trent or other in the water sector, however it is considered appropriate to use the generalised chemical input index as a proxy measure for Severn Trent chemicals inflation given that Severn Trent uses a diverse range of chemicals as part of its water, waste and sludge treatment processes with 11 different chemicals in 2022/23 seeing a cost in excess of £1m. In addition, there is strong positive correlation between the input chemical index from the ONS and inflation trends for particular chemicals based on supplier price data with correlation co-efficient above 0.7 for ferric sulphate and aluminium sulphate.

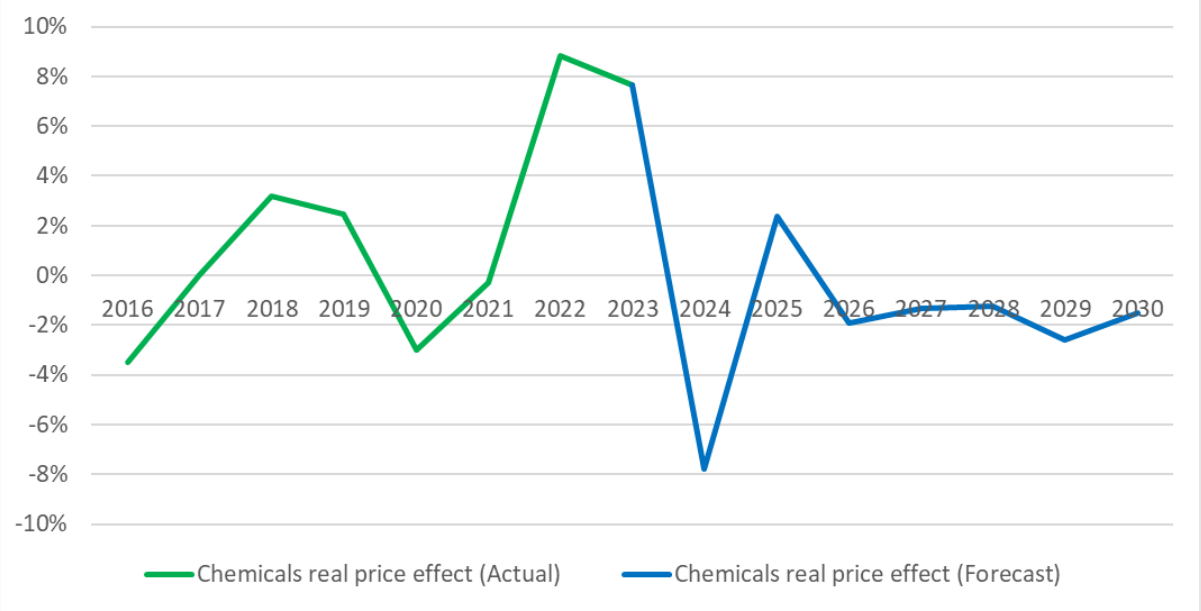
The relationship between energy real price effects and chemicals real price effects based on historic data has been applied to forecast energy real price effects to calculate a forecast view of chemical real price effects.

Forecast chemical real price effects have been calculated as:

$$Chemical\ real\ price\ effect = (Electricity\ real\ price\ effect * 0.3087) - 0.0039$$

The electricity real price effect is calculated in line with the forecasts used to calculate energy real price effect forecast, using a forecast of wholesale electricity prices and third party electricity prices from Ameresco.

As shown in figure below this approach results in a large negative forecast real price effect for chemicals of 7.77% in FY24 (linked to the negative real price effect forecast for energy) and a small negative real price effect each year across AMP8.



Central Chemicals real price effect forecasts

	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
RPE - Chemicals	-7.77%	2.39%	-1.94%	-1.34%	-1.26%	-2.58%	-1.50%

Full details of our approach to calculating chemicals real price effects and supporting analysis is included as an appendix to our cost efficiency annex.

SUP11.5 - Real change in input price - Materials, plant and equipment

There are a number of factors that could contribute to positive or negative real price effects on construction materials, plant and equipment:

Inflationary pressures	Deflationary pressures
Tight labour market in the construction sector impacted by leaving the European Union.	Falling energy prices with an easing of fears over European energy security.
Risk of deterioration of the geopolitical climate in Europe and Asia-Pacific regions causing further supply chain disruption.	Tightening of central bank monetary policy with continued interest rate hikes would increase borrowing costs and disincentivise investment in new infrastructure projects.
End of government support with energy costs – the Energy Bill Discount Scheme for non-domestic customers is to end 31 March 2024. The impact of support ending will be greater for manufacturers of key construction materials such as cement, concrete and steel who benefit from the more generous discounts available to energy and trade intensive sectors.	Recession resulting in a slowing of global demand, putting a downward pressure on energy and commodity prices and reducing investment in new infrastructure projects.
Risk of further energy supply disruptions leading to an increase in energy, commodity, and materials prices. With Europe making a transition away from reliance on Russian gas there is increased risk of a lack of security of energy supply.	Viability concerns could put construction projects on hold or cause delays in construction, reducing demand. This factor is likely to be more pronounced in a high inflation environment where materials prices are rising rapidly and so partly offset the impact of high materials price inflation.
De-globalisation / protectionist government policies.	Rising unemployment would help to ease the tight construction labour market putting a downwards pressure on construction labour costs.
A rise in contractor insolvencies would reduce competition and reduce capacity in the construction market.	Weakening of demand for vessels reducing shipping costs, putting downwards pressure on the price of imported construction materials.

Increase in Water sector infrastructure projects over AMP8 will increase demand for sector specific engineering and construction experience putting an upward pressure on prices.	The end of COVID-19 restrictions in China may help to ease current supply chain issues and ease commodity and materials trading bottlenecks.
Recovery in economic growth putting upward pressure on commodity prices. There is particular risk that there will be an acceleration in growth in China with an increase in demand for commodities and energy following their delay and more gradual reopening following COVID-19 compared to other regions.	
Fiscal policies that result in an increase in large UK infrastructure project spending	

There is significant uncertainty over forecast material real price effects with upside and downside pressures on costs. Given the large uncertainty and range of potential outcomes our central forecast is for zero real price effects on materials, plant and equipment across the forecast period.

SUP11.6 - Real change in input price - Other

Any costs not captured by the other cost categories are included within 'Other'. All of our totex is included within SUP11 and has frontier shift applied. 'Other' cost category includes a large number of different costs including:

- Insurance costs
- Licenses and permits
- Business rates
- Bad debt costs
- Maintenance costs
- Professional fees
- Ofwat fees
- Contracted costs (where we do not have the data available to support an allocation to the labour cost category)
- Bulk Water costs
- Other miscellaneous costs

Pressures on these cost types will be varied and there is no unifying cost pressures that would justify application of a real price effect forecast to all of these costs. Therefore our central forecast is for zero real price effects on "Other costs" across the forecast period.

SUP11.2R/ SUP11.3R/ SUP11.4R/ SUP11.5R/ SUP11.6R - Real change in input price – Labour/Energy/Chemicals/Materials, plant and equipment/Other

Our forecast real price effects for the retail price control are the same as for wholesale therefore the real price effect forecasts included within SUP11.2R – SUP11.6R are the same as in SUP11.2-SUP11.6. Our evidence to support real price effects uses analysis that is independent of price control, RPE forecasts are based on external forecasts and historic trends of external indices and from this analysis there is no rationale to support different forecasts for the retail price control.

SUP11.7 - RPE wholesale water base – Labour

The labour component of wholesale water base is calculated based on the average % of labour costs to Wholesale water base totex across AMP8. Included within labour costs are:

- Forecast employment costs within operating costs
- Forecast capitalised labour costs, included as part of capital expenditure
- Contractor costs where we have data available to support the labour element within contractor costs. Contractor data for AMP7 capital schemes shows a 39.2% labour cost contribution to external contractor costs.

The average contribution of labour costs to totex is 24.60%. There is a reduction in the contribution of labour costs to wholesale water base across AMP8. This is largely due to the increase in forecast business rates in water opex, which results in a higher contribution to the Other cost category relative to the labour cost category.

	Wholesale water
2026	26.83%
2027	25.79%
2028	22.13%
2029	24.08%
2030	24.15%
Average	24.60%

Real price effects have been applied in the CW1/CWW1 tables based on the actual labour costs that are forecast in each year rather than the average contribution of labour costs that is reported within SUP11.

SUP11.8 - RPE wholesale water base – Energy

Wholesale water base has an average 14.76% contribution to totex from energy. Energy generation includes the small value for energy income included within Water price control and forecast within income treated as negative opex. The proportion from energy reduces during AMP8 due to an increase in other costs (predominantly due to an increase in forecast business rates). The Water base forecast does not include additional volumes of energy from growth and the cost type weightings are calculated before cost pressures.

Energy consumption

	Wholesale water
2026	16.67%
2027	15.59%
2028	15.02%
2029	14.46%
2030	15.06%
Average	15.36%

Energy generation

	Wholesale water
2026	-0.64%
2027	-0.62%
2028	-0.60%
2029	-0.58%
2030	-0.58%
Average	-0.60%

The sum of the average AMP8 weightings from energy generation and energy consumption is reported within SUP11.

Real price effects have been applied in the CW1/CWW1 tables based on the actual energy costs/income that are forecast in each year rather than the average contribution of energy costs that is reported within SUP11.

SUP11.9 - RPE wholesale water base – Chemicals

Wholesale water base has an average 3.47% contribution to totex from chemicals. The base expenditure does not include the impact of increased chemicals from growth or any other enhancement scheme.

	Wholesale water
2026	3.80%
2027	3.54%
2028	3.40%
2029	3.26%
2030	3.38%
Average	3.47%

SUP11.10 - RPE wholesale water base - Materials, plant and equipment

Wholesale water base has an average 11.00% contribution to totex from materials. This represents the non-labour component of capital expenditure.

	Wholesale water
2026	11.23%
2027	11.74%
2028	9.17%
2029	12.03%

2030	10.91%
Average	11.02%

SUP11.11 - RPE wholesale water base - Other

Wholesale water base has an average 46.16% contribution to totex from other costs. There is an increase from the beginning of AMP8 reflecting the forecast increase in business rates.

	Wholesale water
2026	42.12%
2027	43.95%
2028	50.88%
2029	46.74%
2030	47.09%
Average	46.16%

SUP11.12 - Total real price effect - wholesale water base

This line is formula driven based on the forecast real price effects and the cost type weightings.

SUP11.13 - RPE wastewater N+ base – Labour

The labour component of wholesale water base is calculated based on the average % of labour costs to Wastewater Network + base totex across AMP8. Included within labour costs are:

- Forecast employment costs within operating costs
- Forecast capitalised labour costs, included as part of capital expenditure
- Contractor costs where we have data available to support the labour element within contractor costs. Contractor data for AMP7 capital schemes shows a 39.2% labour cost contribution to external contractor costs.

	Wastewater
2026	32.47%
2027	30.64%
2028	29.98%
2029	29.93%
2030	30.21%
Average	30.65%

The contribution of labour costs to Wastewater totex is forecast to stay relatively consistent across AMP8 with an average contribution of 31%

Real price effects have been applied in the CW1/CWW1 tables based on the actual labour costs that are forecast in each year rather than the average contribution of labour costs that is reported within SUP11.

SUP11.14 - RPE wastewater N+ base – Energy

Wholesale water base has an average 19.66% contribution to totex from energy. Energy generation is a trivial value within the Waste price control. The proportion from energy remains relatively

consistent during AMP8. Energy volumes and pre cost pressure costs are largely flat across AMP8, any small changes in the energy weighting between years is due to movements in the costs for other cost types.

Energy consumption

	Wastewater network+
2026	19.59%
2027	19.76%
2028	20.18%
2029	19.41%
2030	19.39%
Average	19.66%

Energy generation

	Wastewater network+
2026	-0.01%
2027	-0.01%
2028	-0.01%
2029	-0.01%
2030	-0.01%
Average	-0.01%

The sum of the average AMP8 weightings from energy generation and energy consumption is reported within SUP11.

SUP11.15 - RPE wastewater N+ base – Chemicals

Waste network + base totex has an average 2.68% contribution to totex from chemicals. The base expenditure does not include the impact of increased chemicals from growth or any other enhancement scheme. The proportion remains relatively flat across AMP8

	Wastewater network+
2026	2.67%
2027	2.70%
2028	2.75%
2029	2.65%
2030	2.65%
Average	2.68%

SUP11.16 - RPE wastewater N+ base - Materials, plant and equipment

Waste network + base totex has an average 11.47% contribution to totex from materials, plant and equipment. This represents the non-labour component of forecast capital expenditure.

	Wastewater network+
2026	12.47%

2027	11.07%
2028	10.68%
2029	11.70%
2030	11.41%
Average	11.47%

SUP11.17 - RPE wastewater N+ base - Other

Wastewater network + base has an average 35.55% contribution to totex from other costs. There is an increase into the 2nd year of the AMP as a result of higher forecast business rates costs and due our capex spend profile which reduces from yr1 to yr2.

	Wastewater network+
2026	32.81%
2027	35.83%
2028	36.42%
2029	36.32%
2030	36.35%
Average	35.55%

SUP11.18 - Total real price effect - wastewater N+ base

This line is formula driven based on the forecast real price effects and the cost type weightings.

SUP11.19 - RPE bioresources base – Labour

The labour component of Bioresources base is calculated based on the average % of labour costs to Wastewater Network + base totex across AMP8. Included within labour costs are:

- Forecast employment costs within operating costs
- Forecast capitalised labour costs, included as part of capital expenditure
- Contractor costs where we have data available to support the labour element within contractor costs. Contractor data for AMP7 capital schemes shows a 39.2% labour cost contribution to external contractor costs. The assumption has been made that this will be the same across AMP8 capital spend

	Wholesale water	Wastewater	Bioresources
2026	26.83%	32.47%	127.92%
2027	25.79%	30.64%	110.66%
2028	22.13%	29.98%	93.21%
2029	24.08%	29.93%	100.31%
2030	24.15%	30.21%	91.78%
Average	24.60%	30.65%	104.78%

The contribution of labour costs to Bioresources fluctuates significantly during AMP8 and is over 100% in some years. This is because the Bioresources net totex includes a significant value for income treated as negative opex, the vast majority of which is energy export and incentive income. In years where the labour % is above 100% labour costs are larger than the Bioresources totex which is reduced for energy income. The value of labour costs remains relatively flat in £m terms but

reduces as a percentage of totex due to an increase in power consumption from sludge volume growth (which is included within Bioresources base costs).

Real price effects have been applied in the CW1/CWW1 tables based on the actual labour costs that are forecast in each year rather than the average contribution of labour costs that is reported within SUP11.

SUP11.20 - RPE bioresources base – Energy

Bioresources base has an average -182.70% contribution to totex from energy. It is a negative value because Bioresources has net income from energy consumption and generation. The percentages for both consumption and generation are above/below 100% as the costs and income from energy are both higher than the Bioresources net totex figure before cost pressures. The £m figures for Bioresources energy consumption and generation both increase across the AMP, due to higher sludge volumes from growth (additional opex from growth is included within base)

Energy consumption

	Bioresources
2026	134.30%
2027	110.78%
2028	96.62%
2029	113.12%
2030	101.55%
Average	111.27%

Energy generation

	Bioresources
2026	-368.34%
2027	-302.12%
2028	-249.32%
2029	-292.11%
2030	-258.01%
Average	-293.98%

The sum of the average AMP8 weightings from energy generation and energy consumption is reported within SUP11.

SUP11.21 - RPE bioresources base – Chemicals

43.41% of Bioresources totex is from chemicals costs. The figure appears high because the percentage is calculated on the net Bioresources totex figure which includes income treated as negative opex. Chemicals costs increase across AMP8 due to sludge volume growth but the % weighting from chemicals reduces because of the impact of movements in other cost categories

	Bioresources
2026	51.17%
2027	42.39%
2028	37.98%
2029	44.48%
2030	41.03%
Average	43.41%

SUP11.22 - RPE bioresources base - Materials, plant and equipment

40.44% of Bioresources totex is from materials, plant and equipment costs. The figure appears high because the percentage is calculated on the net Bioresources totex figure which includes income treated as negative opex

	Bioresources
2026	45.63%
2027	44.40%
2028	38.94%
2029	36.78%
2030	36.48%
Average	40.44%

SUP11.23 - RPE bioresources base - Other

94.07% of Bioresources totex is from other costs. The figure appears high because the percentage is calculated on the net Bioresources totex figure which includes income treated as negative opex. The majority of Bioresources other costs are business rates, H&C (where there is no basis to allocate to labour costs) and credits from interworks tinkering.

	Bioresources
2026	109.32%
2027	93.89%
2028	82.58%
2029	97.43%
2030	87.16%
Average	94.07%

SUP11.24 - Total real price effect ~ bioresources base

This line is formula driven based on the forecast real price effects and the cost type weightings.

SUP11.25-SUP11.29 - RPE wholesale water enhancement – Labour/Energy/Chemicals/Materials/Other

The split between cost types for enhancement includes:

- Forecast chemicals, energy, labour and other costs for running new assets and for opex delivered enhancement programmes.
- Consistent with the approach to base expenditure we have included labour costs within contractor costs where we have data available to support the labour element within contractor costs. Contractor data for AMP7 capital schemes shows a 39.2% labour cost contribution to external contractor costs. The assumption has been made that this will be the same across AMP8 capital spend.

The weighing included within SUP11 is the average weighting of the cost types across the five years of AMP8.

Water enhancement weighting

	FY26	FY27	FY28	FY29	FY30	Average
Chemicals	2%	2%	1%	1%	2%	**2%**
Energy	4%	3%	2%	2%	4%	**3%**
Labour	50%	49%	48%	47%	47%	**48%**
Other	4%	3%	3%	2%	3%	**3%**
Materials, plant & equipment	41%	43%	46%	48%	44%	**44%**

Real price effects have been applied in the CW1/CWW1 tables based on the actual labour costs that are forecast in each year rather than the average contribution of labour costs that is reported within SUP11.

SUP11.30 - Total real price effect - wholesale water enhancement

This line is formula driven based on the forecast real price effects and the cost type weightings.

SUP11.31-SUP11.35 - RPE Wastewater N+ enhancement – Labour/Energy/Chemicals/Materials/Other

The split between cost types for enhancement includes:

- Forecast chemicals, energy, labour and other costs for running new assets and for opex delivered enhancement programmes.
- Consistent with the approach to base expenditure we have included labour costs within contractor costs where we have data available to support the labour element within contractor costs. Contractor data for AMP7 capital schemes shows a 39.2% labour cost contribution to external contractor costs. The assumption has been made that this will be the same across AMP8 capital spend.

The weighing included within SUP11 is the average weighting of the cost types across the five years of AMP8.

Waste enhancement weighting

	FY26	FY27	FY28	FY29	FY30	Average
Chemicals	2%	2%	2%	2%	3%	2%
Energy	1%	1%	2%	2%	3%	2%
Labour	49%	48%	47%	45%	44%	47%
Other	1%	1%	0%	2%	4%	2%
Materials, plant & equipment	47%	47%	49%	49%	46%	48%

Real price effects have been applied in the CW1/CWW1 tables based on the actual labour costs that are forecast in each year rather than the average contribution of labour costs that is reported within SUP11

SUP11.36 - Total real price effect ~ wastewater N+ enhancement

This line is formula driven based on the forecast real price effects and the cost type weightings.

SUP11.37-SUP11.41 - RPE Wastewater N+ enhancement – Labour/Energy/Chemicals/Materials/Other

The split between cost types for enhancement includes:

- Forecast chemicals, energy, labour and other costs for running new assets and for opex delivered enhancement programmes.
- Consistent with the approach to base expenditure we have included labour costs within contractor costs where we have data available to support the labour element within contractor costs. Contractor data for AMP7 capital schemes shows a 39.2% labour cost contribution to external contractor costs. The assumption has been made that this will be the same across AMP8 capital spend.

The weighing included within SUP11 is the average weighting of the cost types across the five years of AMP8.

Bioresources enhancement weighting

	FY26	FY27	FY28	FY29	FY30	Average
Chemicals	0%	0%	0%	0%	0%	**0%**
Energy	0%	0%	0%	0%	0%	**0%**
Labour	51%	50%	49%	47%	47%	**49%**
Other	0%	0%	0%	2%	4%	**1%**
Materials, plant & equipment	49%	50%	52%	51%	49%	**50%**

Real price effects have been applied in the CW1/CWW1 tables based on the actual labour costs that are forecast in each year rather than the average contribution of labour costs that is reported within SUP11

SUP11.42 - Total real price effect ~ Bioresources enhancement

This line is formula driven based on the forecast real price effects and the cost type weightings.

SUP11.43 - RPE Additional control – Labour

N/A for Severn Trent – left blank as we have no costs within additional control.

SUP11.44 - RPE Additional control – Energy

N/A for Severn Trent – left blank as we have no costs within additional control.

SUP11.45 - RPE Additional control – Chemicals

N/A for Severn Trent – left blank as we have no costs within additional control.

SUP11.46 - RPE Additional control - Materials, plant and equipment

N/A for Severn Trent – left blank as we have no costs within additional control.

SUP11.47 - RPE Additional control - Other

N/A for Severn Trent – left blank as we have no costs within additional control.

SUP11.48 - Total real price effect ~ Additional control

This line is formula driven but is not applicable to Severn Trent.

SUP11.49 - RPE retail – Labour

The labour component of retail price control is calculated based on the average % of labour costs to retail totex across AMP8. Included within labour costs are:

- Forecast employment costs within operating costs
- Forecast capitalised labour costs, included as part of capital expenditure
- Contractor costs where we have data available to support the labour element within contractor costs. Contractor data for AMP7 capital schemes shows a 39.2% labour cost contribution to external contractor costs.

The average contribution of labour costs to AMP8 totex is 35%.

	Retail
2026	36%
2027	36%
2028	35%
2029	34%
2030	34%
Average	35%

SUP11.50 - RPE retail – Energy

Energy consumption/generation represents a trivial component of retail totex:

Energy consumption

	Retail
2026	0.47%
2027	0.46%
2028	0.44%
2029	0.42%
2030	0.41%
Average	0.44%

Energy generation

	Retail
2026	-0.02%
2027	-0.02%
2028	-0.02%
2029	-0.02%
2030	-0.02%
Average	-0.02%

The sum of the average AMP8 weightings from energy generation and energy consumption is reported within SUP11.

SUP11.51 - RPE retail – Chemicals

The retail price control does not have any chemicals costs, the weighting is therefore 0.00%

SUP11.52 - RPE retail - Materials, plant and equipment

The retail price control includes an average of 2.11% allocated to material, plant and equipment. This includes retail capital expenditure less contractor labour costs and Severn Trent capitalised salaries.

	Wholesale water	Wastewater	Bioresources	Retail
2026	11.23%	12.47%	45.63%	1.88%
2027	11.74%	11.07%	44.40%	1.91%
2028	9.17%	10.68%	38.94%	2.16%
2029	12.03%	11.70%	36.78%	2.34%
2030	10.91%	11.41%	36.48%	2.26%
Average	11.02%	11.47%	40.44%	2.11%

SUP11.53 - RPE retail - Other

Retail costs allocated to "other" include bad debt costs, contractor spend for which there is no evidence to support allocation to labour costs and other misc expenses. The largest component of this cost category for retail is bad debt costs:

	Wholesale water	Wastewater	Bioresources	Retail
2026	42.12%	32.81%	109.32%	61.42%
2027	43.95%	35.83%	93.89%	61.61%
2028	50.88%	36.42%	82.58%	62.25%
2029	46.74%	36.32%	97.43%	63.00%
2030	47.09%	36.35%	87.16%	63.36%
Average	46.16%	35.55%	94.07%	62.33%

SUP11.54 - Total real price effect ~ retail

This line is formula driven based on the forecast real price effects and the cost type weightings.

SUP11.55/ SUP11.56/ SUP11.57/ SUP11.58/ SUP11.59/ SUP11.60/ SUP11.62 - Frontier shift assumptions

Our detailed analysis to derive the frontier shift values is set out in Annex 4a.

We consider an appropriate frontier shift challenge on costs to be 0.61% per annum and have integrated this into our plans. This reflects wider macro-economic trends, and the level of productivity growth that firms in competitive industries have been able to achieve in the recent past. To reach this value, we have:

- placed more weight on the years since the financial crisis than the years before it, arguing that several macro-economic shocks and changes in the institutions governing the economy have made achieving pre-crisis productivity extremely challenging. The 'productivity puzzle' in the United Kingdom suggests these issues are ingrained for the economy as a whole. In short, the world is very different now to 20 years ago.

- considered several different comparator groupings to attempt to make the calculation more robust. We have considered: the group used by Europe Economics at PR19,;a group based on a report by Economic Insight commissioned by a group of water companies; and our own grouping.
- elected to use an 80:20 'gross output' to 'value added' productivity split. 'Gross output' is generally regarded to be the correct productivity measure for this purpose, but 'value added' is a more robust, easily calculated measure. Therefore, we consider a small offset to the gross output values to be appropriate.

Our frontier shift estimates are summarised in the table below. For wholesale, we first triangulated across the comparator groups before triangulating the two candidate time period options to reach the final frontier shift estimates. For retail, we simply triangulated across the two time period options for the single retail comparator set. When finally triangulated, this gives the 0.61% per year that we have used across the our plan.

Our frontier shift estimates

Comparator Group	Time Period	GO (VA) Weighting	Frontier Shift
Ofwat PR19	1996-2019; 2010-2019	0.8 (0.2)	0.44%
Economic Insight	1996-2019; 2010-2019	0.8 (0.2)	0.59%
SVE	1996-2019; 2010-2019	0.8 (0.2)	0.56%
SVE, Weighted	1996-2019; 2010-2019	0.8 (0.2)	0.41% (Water) 0.39% (Waste) 0.56 (Bio)
SVE, Retail	1996-2019; 2010-2019	0.8 (0.2)	0.64%
Ofwat PR19	1996-2019; 2009-2019	0.8 (0.2)	0.69%
Economic Insight	1996-2019; 2009-2019	0.8 (0.2)	0.70%
SVE	1996-2019; 2009-2019	0.8 (0.2)	0.69%
SVE, Weighted	1996-2019; 2009-2019	0.8 (0.2)	0.66% (Water) 0.66% (Waste) 0.69% (Bio)
SVE, Retail	1996-2019; 2009-2019	0.8 (0.2)	0.66%
Average (Wholesale)	***1996-2019; 2010-2019***	***0.8 (0.2)***	***0.50% (Water) 0.49% (Waste) 0.53% (Bio)***
Average (Wholesale)	***1996-2019; 2009-2019***	***0.8 (0.2)***	***0.69% (Water) 0.68% (Waste) 0.69% (Bio)***
Average (Wholesale)	**Average**	**0.8 (0.2)**	**0.59% (Water) 0.59% (Waste) 0.60% (Bio)**
Average (Retail)	**Average**	**0.8 (0.2)**	**0.65%**
Average (uniform, constant frontier shift)	**Average**	**0.8 (0.2)**	**0.61%**

In SUP11 we have reported the 'Average (uniform, constant frontier shift)' line. This is because we have worked backwards to generate a uniform challenge across all costs to facilitate entry into our data systems. This gives the same overall allowance but marginally changes the allocations. None of the allocation differences are close to material. Given water and waste are responsible for the vast majority of the cost base, the uniform challenge is 0.61%.

Full details of our approach to calculating frontier shift and supporting analysis is included as an appendix to our cost efficiency annex.

SUP11.61 - Frontier shift assumptions – Additional control

Severn Trent Water does not have any costs within additional control and so the frontier shift is not relevant and has been left blank.

SUP11.63 - Net price change - Wholesale water base

Values are formula driven, calculating the combined impact of frontier shift and total real price effects for Wholesale water base totex:

Net price change = ((1+ total real price effect) * (1- frontier shift)) -1

SUP11.64 - Net price change - Wastewater N+ base

Values are formula driven, calculating the combined impact of frontier shift and total real price effects for Wastewater network + base totex:

Net price change = ((1+ total real price effect) * (1- frontier shift)) -1

SUP11.65 - Net price change - Bioresources base

Values are formula driven, calculating the combined impact of frontier shift and total real price effects for Bioresources base totex:

Net price change = ((1+ total real price effect) * (1- frontier shift)) -1

SUP11.66 - Net price change - Wholesale water enhancement

Values are formula driven, calculating the combined impact of frontier shift and total real price effects for Wholesale water enhancement totex:

Net price change = ((1+ total real price effect) * (1- frontier shift)) -1

SUP11.67 - Net price change - Wastewater N+ enhancement

Values are formula driven, calculating the combined impact of frontier shift and total real price effects for Wastewater network + enhancement totex:

Net price change = ((1+ total real price effect) * (1- frontier shift)) -1

SUP11.68 - Net price change - Bioresources enhancement

Values are formula driven, calculating the combined impact of frontier shift and total real price effects for Bioresources enhancement totex:

Net price change = ((1+ total real price effect) * (1- frontier shift)) -1

SUP11.69 - Net price change - Additional control

Values are formula driven, but are not relevant to Severn Trent Water as we have no costs within additional control

SUP11.70 - Net price change - Retail

Values are formula driven, calculating the combined impact of frontier shift and total real price effects for retail totex:

Net price change = ((1+ total real price effect) * (1- frontier shift)) -1

SUP11.71 - Cumulative net price change - Wholesale water base

Values are formula driven, calculating the cumulative net price change due to real price effects and frontier shift.

SUP11.72 - Cumulative net price change - Wastewater N+ base

Values are formula driven, calculating the cumulative net price change due to real price effects and frontier shift.

SUP11.73 - Cumulative net price change - Bioresources base

Values are formula driven, calculating the cumulative net price change due to real price effects and frontier shift.

SUP11.74 - Cumulative net price change - Wholesale water enhancement

Values are formula driven, calculating the cumulative net price change due to real price effects and frontier shift.

SUP11.75 - Cumulative net price change - Wastewater N+ enhancement

Values are formula driven, calculating the cumulative net price change due to real price effects and frontier shift.

SUP11.76 - Cumulative net price change - Bioresources enhancement

Values are formula driven, calculating the cumulative net price change due to real price effects and frontier shift.

SUP11.77 - Cumulative net price change - Additional control

Values are formula driven, but are not relevant to Severn Trent Water as we have no costs within additional control

SUP11.78 - Cumulative net price change – Retail

Values are formula driven, calculating the cumulative net price change due to real price effects and frontier shift.

SUP12: Direct procurement for customers (DPC)

Note: where relevant, values in this PR24 data table align to the 15 July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

We detail within this table all schemes with Whole Life Totex of >£200m. This includes some 'bundled' schemes which comprise individual schemes that have been grouped together to form work packages that meet the £200 million threshold. Not all the schemes detailed pass Ofwat's DPC tests. Costs are expressed in 2022-23 prices consistent with the base year for the business plan.

SUP12.1: The project name of each of our schemes with Whole Life Totex of >£200m.

SUP12.2: Details of the relevant price control that the project sits in.

SUP12.3: Confirmation of whether the project is base or enhancement (or in the case distribution mains renewals both).

SUP12.4: These schemes are identified in other areas of the PR24 data tables so we have referred to these tables (and the relevant lines).

SUP12.5: "Annex 4d: Supporting Markets and Direct Procurement for Customers" is the annex of our PR24 business plan where you can find further details on the schemes considered for DPC.

SUP12.6: Our assessment of whether a scheme is suitable for DPC or not. This can be found in the annex "Annex 4d: Supporting Markets and Direct Procurement for Customers".

SUP12.7: The Whole Life Totex has been calculated by:

Whole life totex = initial capex + (annual opex*economic life) + renewal capex

Where the economic life is based on the useful life of the asset with the highest proportion of initial capex within a scheme.

[Please note the whole life totex (SUP12.7) will not always equal the sum of SUP12.8 (development costs), SUP12.9 (construction costs) and SUP12.10 x SUP12.12 (opex x asset life) because there will be no renewal capex between AMP8 – AMP10.]

SUP12.8: AMP8 development costs on an annual basis.

SUP12.9: Total construction costs annually in AMP8 and then on an AMP basis for AMP9 and AMP10.

SUP12.10: Annual opex. We have not considered utilisation rates within this but have assumed an annual opex.

SUP12.11: The type of asset the project is.

SUP12.12: The asset life

SUP12.13: The year we expect operation of the asset to begin.

SUP12.14: AMP8 DPC related costs on an annual basis.

Ten of the twelve schemes in the table related to the **Water Network Plus** control.

For our **Water Network Plus** schemes the data has been taken from the scheme cost build-up calculations which form part of the 3rd line assured data for data table CW8, as well as our assured WRMP. The cost data and scheme information has been assured as part of our WRMP process. The Strategic Resource Option team have built the bottom-up costs for the potential DPC SRO schemes (Minworth and Grand Union Canal).

The Water Network Plus schemes which have been identified as meeting the Whole Life Totex threshold have then been included in the SUP12 data table, for water this relates to the following schemes (we have included a summary of the assets):

- Carsington to Tittesworth pipeline. This is a raw water pipeline scheme from our Strategic Grid water resource zone to our North Staffs water resource zone. Construction to start in 2025 with scheme in operation from the start of AMP9. This 800mm diameter pipe will give us a deployable output benefit of 30 Ml/d.
- West Midlands raw water storage. This is a new raw water storage solution with accompanying water treatment works in Shropshire to supply customers in our Shelton water resource zone. The scheme would transfer raw water from the River Severn via raw water pipeline to a new raw water store. This would then be subsequently abstracted for direct treatment. The indicative deployable output benefit of this scheme is 32.5 Ml/d. The construction and operation start date are subject to acquiring the asset from a third party.
- Heathy Lea to North Notts transfer. This is a treated water pipeline scheme from our Strategic Grid water resource zone to our Nottinghamshire water resource zone. It will require a new pipeline and associated pumping station. Deployable output benefit of the scheme is 30 Ml/d. Construction to start in 2025 with scheme in operation from the start of AMP9.
- Hallgates to Elms Farm pipeline (bundled scheme). This is bundled treated water pipeline scheme. Construction in AMP8 with operations beginning in AMP9.
- Minworth Strategic Resource Option. This scheme is for capital works at our Minworth sewage treatment works to support transfers of final effluent south. Intended operation start date of 2032.
- Grand Union Canal (GUC) Strategic Resource Option. This scheme is to undertake the appropriate interventions on the GUC to enable the transfer of final effluent. Intended operation start date of 2032.
- Active Leakage Control (ALC). This is the investment for our ongoing ALC activities.
- Distribution main renewal. This is the investment for to undertake our distribution mains renewal programme. It is ongoing.
- Smart metering. We have an ambitious smart metering programme. The intention to be universally smart metered (95% penetration) by 2035.
- Water WINEP No Deterioration network reconfiguration. This investment is required due to our WINEP licence capping obligations which will mean our sites will need to operate differently to how they operate today.

Four options have been assessed as suitable for DPC as can be seen in SUP12.6.

For both SUP12.8 and SUP12.9 for the water network plus schemes (but not for the SRO schemes) we have taken an average of the AMP total and split it evenly across each year of AMP8. For our own development costs (SUP12.8) we assume 10% of cost and 90% construction cost (SUP12.9).

For SUP12.14 where applicable, we have assumed 3% of the total scheme CAPEX as DPC related costs. This 3% is then split evenly across the AMP.

For active leakage control we have assumed no AMP8 project development costs as this will be a continuation of current activities.

For distribution mains renewal we have assumed 6% of costs are development costs. 94% of costs are construction costs.

For smart metering we have assumed no development costs.

For the **Strategic Resource Options (SRO)** schemes – the Grand Union Canal Strategic Resource Option and Minworth Strategic Resource Option the projects are being developed between Severn Trent and Affinity Water. As per the Ofwat guidance (August 2023, version 6, 14.6) both Affinity Water and Severn Trent have included the total construction costs in SUP12.9. However, in SUP12.8 and SUP12.14 we have included our share of the development and DPC related costs to progress through the RAPID gated process. These are 2/3 of the total costs for Minworth SRO and 1/2 of the total cost for GUC SRO. These proportions are based upon our share of the forecasts that were provided, and accepted, in our Gate 2 submissions.

The **Waste Network Plus** schemes which have been identified as meeting the Whole Life Totex threshold have then been included in the SUP12 data table, for waste this relates to the following two schemes (we have included a summary of the assets):

- Coventry-Finham. This is a regulatory WINEP obligation providing investment to meet a no-deterioration Nickel consent (11.1µgl average annual permit condition). The notional solution is a Granular Activated Carbon (GAC) plant. This comprises a GAC filter, interstage pumping station, GAC backwash pumping station, dirty backwash returns pump, carbon transfer area and tanker access facilities plus ancillaries. Construction is expected to begin and be completed during AMP8. Operation is expected to begin in 2030.
- Coleshill. This is a regulatory WINEP obligation providing investment to meet a new 3mg/l Ammonia consent. The notional solution comprises additional Activated Sludge Plant capacity (c25000m^3), new Final Settlement Tanks, associated Return Activated Sludge facilities, Sludge thickening and holding and Tertiary Solids Removal. These new structures are to be integrated into the existing plant. Construction is expected to commence and be completed during AMP8. Operation is expected to begin in 2030.

Neither of these schemes have been taken forward as suitable for DPC.

For our Waste Network Plus schemes the data has been taken from the scheme cost build-up calculations which form part of the 3rd line assured data for our WINEP submission to the EA. The project development costs in SUP12.8 (15% of total CAPEX) for these two waste network plus schemes follow a flat profile up until construction commencement. The cost profile (85% of total CAPEX) then follows an estimated procurement and construction profile for larger value CAPEX projects based on typical historical profiles with costs typically reducing in the final year of construction.

SUP14: Customer engagement and affordability/acceptability of business plans

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

SUP14.1 and SUP14.2 – these numbers relate to the total number of households and non-households we have engaged with on the business plan. A full breakdown of the research activities is provided in Annex 3a, Section 1. As detailed in the Annex the majority of research projects have been published in full on our 'Listening to you' webpage. We have not included in this business as usual research activities that are not related to the price review. We have not included the number of people who attended the Your water, your say event as we do not have a record of attendees and which were household customers versus stakeholders and other interested parties.

Affordability and Acceptability of business plans

SUP14.3 – SUP14.12 – These lines are intentionally blank. We did not conduct research with water only customers as these represent a small (<10%) portion of our customer base.

SUP14.3 to SUP14.17 These lines contain the results of our research, conducted in line with the CCW and Ofwat guidance, supported by challenge from the Expert Challenge Panel (our Independent Challenge Group) and independent assurance from Sia Partners. Full details are provided in Annex 3a and the associated research report. The full data tables (weighted and unweighted) are published on our webpage. A total of 3969 household customers and 200 non household customers completed the survey.

SUP14.18 to SUP 14.27 – These lines are intentionally blank. We made the decision not to survey customers in the South Staffs Midlands region (we supply their sewerage service, but they are billed by South Staffs on our behalf), but we did provide our waste water bill prediction for South Staffs to use in their research. These customers represent around 12% of our customer base however we don't have their contact / billing details so we couldn't provide a meaningful tailored bill prediction for them nor would we have been able to use the same push to web survey methodology. Our ECP supported this decision. South Staffs have shared their research findings with us on the affordability for their Midlands customers of the whole bill.

SUP14.28 to SUP14.32 – We have weighted the household and non-household results together using water consumption volumes, as per the guidance, using data lines CW5.31 - 5.34.

SUP15: Affordability - residential customers

Note: where relevant, values in this PR24 data table align to the 15th July 2023 APR submission and have not been updated to reflect any restatement unless specifically noted.

SUP15.1 Number of customers on social tariffs

The forecast numbers for line SUP15.1 reflect a policy decision. Our approach is that the number of customers covered by Severn Trent's social tariff, the Big Difference Scheme, and WaterSure should add up to at least the number of customers our model estimates will be in water poverty by the end of AMP8. We have set a realistic rate for the annual increase in the number of customers on the social tariff so that this objective is delivered. Effectively in 2029-30 it is calculated as: the number of customers in Water Poverty (SUP15.48) minus the number of customers on WaterSure (SUP15.2) with some headroom to allow for the uncertainties in forecasting water poverty in seven years' time.

SUP15.2 Number of customers on WaterSure tariffs

The forecast is based on the typical run-rates from the starting point in 2023.

SUP15.3 Number of customers not on social tariffs

This is equal to total customers less

- Social tariff customers; less
- WaterSure customers (because WaterSure customers are also recipients of cross-subsidy).

SUP15.4 Total amount of money provided by customers and company to fund social tariffs discounts

No commentary. This line is calculated internally within the table.

SUP15.5 Average social tariff discount

No commentary. This line is calculated internally within the table.

SUP15.6 Total reduction in bills for WaterSure customers

We assume that the same percentage discount that applies in 2020-23 can be projected forward to 2023-30. This discount is multiplied by the number of customers forecast to be on WaterSure tariffs in the future.

SUP15.7 Average WaterSure tariff discount

No commentary. This line is calculated internally within the table.

SUP15.8 Total amount of money collected from all customers in charges to fund social tariffs discounts

No commentary.

SUP15.9 Average cross-subsidy from customers

This line is calculated internally within Ofwat's template for the table. Note that this is at odds with the way that we would consider the level of support available, because it is calculated as total collected (line SUP15.8) divided by the number of customers on social tariffs (SUP15.1) and the number of customers not on social tariffs (SUP15.3). We do not collect any money to support subsidies from customers that are in receipt of a subsidy. A more useful measure would the level of

subsidy from each supporting customer (SUP15.8 divided by SUP15.3) and this is what we would compare against the value that customers have stated that they are willing to provide.

SUP15.10 Total revenue forgone by company to subsidise social tariffs

There is a non-zero value in 2022-23 that reflects the topping up of £9.3m that Severn Trent made that year to fund the Big Difference Scheme social tariff.

SUP15.11 Level of support for social tariff customers reflected in charges

In the forecast period the amount of cross subsidy reflected in charges is set to increase as the coverage of the Big Difference Scheme social tariff increases.

SUP15.12 Maximum contribution to social tariffs supported by customer engagement

The maximum contribution comes from customer research carried out in April 2023 (see Appendix 3b on Affordability for more detail).

SUP15.13 - PSR reach

We have quadrupled the number of customers on the PSR in AMP7 and expect the growth to be slower in AMP8 as we expect most people who should be on the PSR to be on it by 2024-25.

SUP15.14 - Customers receiving services through the SAR/PSR: (a) support with communication

No commentary.

SUP15.15 - Customers receiving services through the SAR/PSR: (b) support with mobility and access restrictions

No commentary.

SUP15.16 - Customers receiving services through the SAR/PSR: (c) support with supply interruption

No commentary.

SUP15.17 - Customers receiving services through the SAR/PSR: (d) support with security

No commentary.

SUP15.18 - Customers receiving services through the SAR/PSR: (e) support with 'other needs'

No commentary.

SUP15.19 - Attempted contacts

Our target is currently 90% attempted contacts for customers who are on the PSR list for two years and we plan to keep the target the same for AMP8. The target will be more challenging in AMP8 because of the large increase in the number of customers on the PSR in AMP7.

SUP15.20 - Actual contacts

Our target is currently 35% actual contacts for customers who are on the PSR list for two years and we plan to keep the target the same for AMP8. The target will be more challenging in AMP8 because of the large increase in the number of customers on the PSR in AMP7.

SUP15.21 IMD score (proportion of income deprived households)

The number for this line comes from Ofwat through the cost modelling dataset.

SUP15.22 Number of income deprived customers

No commentary. This line is calculated internally within the table.

SUP15.23 Number of income-deprived customers on innovative charges

We are proposing to run a tariff trial with 3,000 customers per year in AMP8. We apply the proportion of income deprived customers from line SUP15.21 to calculate this line. Our trial will aim to sample a broad cross-section of the customer base, so it is reasonable to assume that the number of deprived customers will be proportional to the rest of the area. We expect to target the Coventry area because we have a significant number of smart meters installed through our Green Recovery programme – hence all customers will be dual service as reflected in the data table.

SUP15.24 Number of non-income-deprived customers on innovative charges

We are proposing to run a tariff trial with 3,000 customers per year in AMP8. We apply the proportion of non-income deprived customers (1 – the proportion from line SUP15.21) to calculate this line.

SUP15.25 Average bill reduction for income-deprived customers as a result of innovative charges

We assume that the tariff trial will be some form of Rising Block Tariff (RBT). Most RBTs will benefit households with fewer occupants (1 or 2 people) because they use less than the average volume of water. The ONS has statistics on the characteristics of households in the bottom income decile. This sets out the proportion of such households with 1, 2 and 3 or more occupants. Based on this it is possible to calculate the proportion of bottom decile households that would benefit from RBTs, using the Affinity Water tariff trial as an example.

SUP15.26 - Total bill reduction for income-deprived customers as a result of innovative charges

No commentary. This line is calculated internally within the table.

SUP15.27 - Number of income-deprived customers provided with water efficiency advice

Severn Trent provides water efficiency advice to all 4.3 million of its customers, for example through text messages during hot weather periods. However, Ofwat's response to query 150 (https://www.ofwat.gov.uk/wp-content/uploads/2023/02/PR24_FM_queries.pdf) clarified what this line is specifically referring to: "We can confirm at this stage that installation of water efficiency devices, fixing leaks free of charge (where customers are responsible for the pipes) over and above what compliance with licence condition H would require, and water audits are all relevant examples." We have therefore only included activities in this line that meet the query 150 response definition.

To calculate the number of income-deprived customers provided with water efficiency advice we mapped the customers' postcodes to the IMD (Index of Multiple Deprivation) score for that postcode.

For the forecast data we used the values in our WRMP, which are 55,208 per year in AMP8. This is significantly lower than in 2022-23, but that year had a very warm summer and we increased water

efficiency checks above their normal levels. For the forecast, to calculate the number of income-deprived customers provided with water efficiency advice we used the 15,000 social housing customers we plan to provide water efficiency advice to each year from our WRMP.

We allocated the SUP15.27 data between dual and water-only customers in proportion to the total number of dual and water-only customers each year.

SUP15.28 - Average bill reduction from water efficiency advice provided to income-deprived customers

We do not directly measure the average bill reduction from water efficiency provided to income-deprived customers.

The UKWIR calculator of assumed savings for water efficiency measures uses 24.4 litres per property per day for the outcome of home water efficiency conversations (HWECs).

We calculate the savings for a metered customer through the volumetric charges in our scheme of charges for periods up to and including 2023/24[1]:

- For water this is £1.7587 per m^3 (for Zones 1-8).
- For wastewater, this is £1.2333 per m^3

The annual water saving per customer is 24.4l x 365 = 8,906 or 8.906m^3. There is also a saving on wastewater, where our charging scheme assumes that 95% of the volume is returned to sewer (before 2023/24 we charged on the basis of "water out = water in").

The annual bill reduction for Severn Trent customers is therefore:

- 8.906m3 x £1.7587 per m^3 water +
- 8.906 x 95% x £1.2333 per m^3 wastewater =
- £26.10 in 2023/24 prices.

For periods up to and including 2023/24 we adjust this to 22/23 prices using the lagged November rate of inflation (which is what is applied for charging purposes). We have assumed the water savings from water efficiency measures stay the same throughout the period, but we adjust the saving for the forecast change in the bill.

Most of Severn Trent's single-service water customers are in Chester and receive a wastewater bill from United Utilities. When calculating the savings for this group we have therefore scaled the wastewater benefits to take account of the difference between UU's bills and our own. We do not have sight of UU's projected bill for AMP8 so this assumes that the real growth in other company bills is broadly similar to Severn Trent.

We do not include anything for wastewater-only customers because the activity will be delivered by the water providing company.

SUP15.29 Number of income-deprived customers moved from unmeasured to measured billing

The total number of meter switchers is calculated as:

- Increase in total number of metered household customers; less

[1] https://www.stwater.co.uk/content/dam/stw/regulatory-library/Final-Scheme-of-charges-2023-24.pdf

- New household connections.

We assume that the number of meter switchers from income-deprived households is proportional to the general population (i.e. switchers x percentage from line SUP15.21).

SUP15.30 Average bill reduction from meter provision to income-deprived customers

We assume that income-deprived customers who switch will (on average) move from an average unmetered bill to an average metered bill.

As with 15.28, we take account of the difference between a UU bill and a Severn Trent bill for our calculation of benefits for water-only customers. We include nothing for wastewater-only customers because the activity will be delivered by the water providing company.

SUP15.31 Total bill reduction for income-deprived customers as a result of targeted demand side support

No commentary. This line is calculated internally within the table.

SUP15.32 - Number of customers provided with affordability support from financial hardship funds

The data for 2020-21 to 2022-23 come from Auriga, which is the company that administers the current Severn Trent Trust Fund. We are reforming the trust fund roughly halfway through 2023-24, but intend to maintain the financial hardship scheme. This will reduce the number of customers helped to around 400 per year in AMP8. The funding saved from this reform is being used to massively expand debt repayment matching in AMP8, which is picked up in line SUP15.36.

We allocated the SUP15.32 data between dual and water-only customers in proportion to the total number of dual and water-only customers each year.

SUP15.33 - Average affordability support payment

The data for 2020-21 to 2022-23 come from Auriga, which is the company that administers the current Severn Trent Trust Fund.

We are reforming the trust fund roughly halfway through 2023-24, but intend to maintain the financial hardship scheme. We are also streamlining the range of products available through the programme down to three essential products: cooker, fridge and washing machine. From 2023-24 onwards the average support will be around £250 per customer.

The Trust Fund makes payments to Severn Trent Water billed customers. We have assumed the average affordability support payment is the same for dual and water-only customers because the Trust Fund does not base its assessment of need based on whether a customer is dual or water-only.

SUP15.34 - Number of customers whose charges are written off [during application period for Universal Credit]

We estimate only around 200 customers per year apply for the Big Difference Scheme while during the application period for Universal Credit, which is five weeks according to the DWP website[2]. The approval process for our Big Difference Scheme can be a matter of days, so we do not consider there

[2] https://www.understandinguniversalcredit.gov.uk/new-to-universal-credit/how-and-when-youll-be-paid/#:~:text=The%20assessment%20period%20will%20last,end%20of%20your%20assessment%20period.

is any need for us to introduce this policy which only has a small effect on a small number of customers.

SUP15.35 - Average amount of charges written off during application period for Universal Credit

We are not proposing to write charges off during the application period for Universal Credit (see the commentary for SUP15.34).

SUP15.36 - Number of customers supported through matched payment schemes

We are expanding our matched payment scheme significantly through our new BDS Plus scheme[3]. This provides a budget for matched payments for up to 50,000 customers each year. For the forecast data we anticipate full roll out in 2024-25 with partial rollout in 2023-24 (from August 2023). In the data the numbers on matched payments are lower than 50,000 because our modelling suggests fewer than 50,000 customers will be eligible.

The BDS plus scheme is in addition to the 600 customers on the current matched payments scheme.

We allocated the SUP15.36 data between dual and water-only customers in proportion to the total number of dual and water-only customers each year.

SUP15.37 - Average amount of matched payments

We estimate 9.0% of the BDS customers will qualify for the BDS plus scheme, with a small percentage rolling off the scheme each year. The total funding available for BDS Plus is £1.5m in FY24 then £3m for FY25 onwards. This allows us to calculate the average payment. The figures are slightly uplifted by the 600 customers on the existing scheme.

As mentioned above in the commentary for SUP15.36 the numbers on matched payments are lower than 50,000 because our modelling suggests fewer than 50,000 customers will be eligible. This enables us to make double and triple matched payments for those customers who are eligible. This is reflected in line 15.37 with matched payments higher than the £60 they would be if 50,000 customers were on BDS plus matched payments.

We used the same values for dual and water-only customers because the scheme is based on a customer making minimum payments in a calendar month and isn't linked to the size of the bill or arrears amount.

SUP15.38 - Number of customers supported through other measures

This line contains the number of vulnerability write offs. These are cases running where we write off the customers' charges due to an exceptional vulnerability. We expect to keep this emergency tool available in AMP8 and to hold numbers steady at around 150 per year.

We allocated the SUP15.38 data between dual, water-only and waste-only customers in proportion to the total number of dual, water-only and waste-only customers each year.

SUP15.39 - Average bill reduction through other support measures

This line contains the average bill reduction for the vulnerability write offs described in SUP15.38 above. We forecast the average payments will hold steady at around £700 in AMP8.

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[3] https://www.stwater.co.uk/news/news-releases/severn-trent-creates-1-000-new-jobs-for-the-midlands-and-gears-u/

We allocated the SUP15.39 data between dual, water-only and waste-only customers in proportion to bill size.

SUP15.40 Total bill reduction for customers struggling to pay as a result of other affordability support measures

No commentary. This line is calculated internally within the table.

SUP15.41 - Number of customers assisted with advice on income maximisation and managing debts

An independent company provides advice on income maximisation to customers we refer. We forecast the number of customers helped will remain steady at around 3,000 customers per year.

In April 2023 we went live with a self-service income maximisation tool on our website. We are not yet tracking the number of site visitors using the tool, but once data is available this could be added to line SUP15.41. Eventually we could make the income maximisation tool part of applying for the BDS social tariff, which could boost numbers to 10,000s per year.

An independent company provides advice on managing debts to customers we refer. We forecast the number of customers helped will remain steady at around 130 customers per year.

We allocated the SUP15.41 data between dual and water-only customers in proportion to the total number of dual and water-only customers each year.

SUP15.42 - Number of customers granted payment breaks / deferrals

The jump in the data between 2020-21 to 2021-22 reflects that we only started collecting this data part way through 2020-21.

For the forecast there are factors that could reduce the number of payment breaks needed such as the increase in the number of customers on the Big Difference Scheme increasing significantly and factors that could increase the number of payment breaks needed such as the increase in water bills in AMP8. In practice, during AMP8, we will flex the number of customers on payment breaks to reflect the needs of our customers. For the forecast we assume that number of customers on payment breaks is around 60,000 per year, which is slightly higher than the average of the last two years (57,346) on the basis that it is better to plan on the high side.

We allocated the SUP15.42 data between dual and water-only customers in proportion to the total number of dual and water-only customers each year.

SUP15.43 - Number of customers struggling to pay their bills assisted through other measures that do not reduce their bills

This line consists of customers on payment plans to help them manage their bill payments. The data for this line in 2020-21 to 2022-23 comes from our retail business records of customers on payment plans.

For the forecast there are factors that could reduce the number of payment plans needed such as the increase in the number of customers on the Big Difference Scheme increasing significantly and factors that could increase the number of payment plans needed such as the increase in water bills in AMP8. In practice, during AMP8, we will flex the number of customers on payment plans to reflect the needs of our customers. For the forecast we assume that number of customers on payment plans is around 60,000 per year, which is slightly higher than the average of the last three years (55,894) on the basis that it is better to plan on the high side.

We allocated the SUP15.43 data between dual and water-only customers in proportion to the total number of dual and water-only customers each year.

SUP15.44 - Total net bill reductions for customers struggling to pay

No commentary. This line is calculated internally within the table.

SUP15.45 - Average household bill

The average bill calculation is in line with the numbers submitted to Ofwat in December of each charging year rather than the Ofwat financial model. We consider the method used for annual charges provides a value that is more representative and relevant for the purpose of estimating water poverty. It is also in line with the bill actually charged to WaterSure customers.

SUP15.46 - Average net bill reduction per income-deprived household

No commentary. This line is calculated internally within the table.

SUP15.47 - Net reduction (%) in average bill per income-deprived household

No commentary. This line is calculated internally within the table.

SUP15.48 - Number of households below the water affordability threshold before affordability support measures

Water poverty is defined in CCW's affordability review as households who spend more than 5% of their income, after housing costs, on water. However, CCW, Ofwat and the water companies do not have information on all households' individual incomes after housing costs that can be matched with their water bills. Therefore, we have to make estimates based on the data available. Ofwat has not specified a methodology for making the estimates and said in its query response 155 that it would consider further if it needed to make any changes to lines SUP15.47 and SUP15.48[4].

We used as our starting point the CEPA report[5] on water poverty. We then estimated future incomes and used our proposal water bill profile to calculate the number of customers in water poverty in the forecast period. The number of customers in water poverty in AMP8, before affordability support measures are taken into account, would increase considerably because of the increase in real water bills in AMP8.

When assessing the impact of bill growth on water poverty for single-service customers, we have combined our charge with the other water company bill that these customers are most likely to pay. For water-only customers (mostly in Chester) we have used a United Utilities wastewater bill; for wastewater-only customers we've combined our charge with a South Staffs Water bill. We've assumed real growth in other company bills is broadly similar to Severn Trent.

SUP15.49 - Number of households below the water affordability threshold after affordability support measures

This is calculated as the number of customers in water poverty before affordability support measures (SUP15.48) less the number of customers on social tariffs and WaterSure (SUP15.1 and SUP15.2).

[4] Page 46 of https://www.ofwat.gov.uk/wp-content/uploads/2023/02/PR24_FM_queries.pdf
[5] https://www.water.org.uk/publication/water-poverty-analysis/

SUP15.50 - Total revenue foregone by company to fund social tariffs

No commentary. This line copies another line within the SUP15 table (line SUP15.10).

SUP15.51 - Total revenue forgone by company to fund other measures to support affordability for customers struggling to pay

Line SUP15.50 consists of two main elements: (1) the Severn Trent Community Fund; and (2) the Severn Trent Trust Fund and its replacement.

	2020-21	2021-22	2022-23	2023-24 to 2029-30
(1) Community Fund and associated schemes	3.500	1.963	2.037	2.000
(2) Trust Fund and replacement	2.749	2.905	2.886	3.000
Total company revenue foregone	6.249	4.868	4.923	5.000

Community Fund and associated schemes

We have included in this line the revenue we forgo through our Covid-19 support, our Community Fund and our water saving charity challenge. For the forecast data we expect to donate around £2m per year to our Community Fund for the rest of AMP7 and AMP8. The peak in the data in 2020-21 reflects the Covid-19 support we provided to charities and community groups.

We have only included £2m per year for the Community Fund in line SUP15.51. However, the actual amounts we donate could be larger. In AMP8 we propose to donate 5% of our (net, after tax) ODI payments to the Community Fund to share our outperformance with customers. In 2021-22 this would have resulted in funding of £2.7m for the Fund. For line SUP15.51 we are using our minimum guaranteed donation of £2m each year.

Severn Trent Trust Fund and its replacement

In the past we have provided an annual charitable donation to the Severn Trent Trust Fund of over £2.5m. We are disbanding the Trust Fund in 2023-24 but are continuing to make a larger annual charitable donation of £3m to fund various schemes, primarily debt payment matching for our customers on the Big Difference Scheme (called BDS Plus).

SUP15.52 - Total revenue forgone by company to fund all measures to support affordability for customers struggling to pay

No commentary. This line is calculated internally within the table.

SUP15.53 - Total revenue from customers to fund social tariffs

No commentary. This line copies another line within the SUP15 table (line SUP15.8).

SUP15.54 - Total revenue from customers to fund other measures to support affordability for customers struggling to pay

We do not use revenue from customers to fund other measures to support affordability for customers struggling to pay.

SUP15.55 - Total revenue from customers to fund all measures to support affordability for customers struggling to pay

No commentary. This line is calculated internally within the table.

SUP15.56 - Total contributions from charitable trusts to fund all measures to support affordability for customers struggling to pay

Nil return.

SUP15.57 - Total contributions from other third parties to fund all measures to support affordability for customers struggling to pay

We currently support two Local Authorities by administering part of their government Household Support Fund for them by using the funding to reduce bills for customers who are struggling to pay. Forecasting the Household Support Fund payments in the future is difficult because the scheme was originally only meant to run to 31 March 2022. However, it has now been extended three times to 31 March 2024. We've assumed the scheme continues for the duration of AMP7 and AMP8 or that something similar replaces it. We are gradually increasing the amount of Household Support Fund we provide to our customers as we expand the number of Local Authorities we work with. A plausible forecast is that we could expand the scheme by a factor of four to £0.6m per year by working with more Local Authorities.

We allocated the SUP15.57 data between dual and water-only customers in proportion to the total number of dual and water-only customers each year.

SUP15.58 - Total revenue from all third parties to fund measures to support affordability for customers struggling to pay

No commentary. This line is calculated internally within the table.

SUP15.59 - Doubtful debt in absence of affordability support measures

Line SUP15.59 is a counterfactual line about what would have happened if affordability support measures were not in place.

To increase the robustness of the data for lines SUP15.59 to SUP15.61 we have used our audited bad debt data for line SUP15.61 and estimated the reduction in doubtful debt due to affordability support measures (SUP15.60) to calculate line SUP15.59.

For 2020-21 to 2022-23, line SUP15.61 ties back to existing submissions on bad debt. For 2023-24 and 2024-25, these tie to our latest business plan submission. For AMP8, we are proposing to hold bad debt at 1.8% of revenue (including inflationary uplifts) – this is roughly where we expect to outturn at the end of AMP7 and is significantly better than sector average – despite underlying affordability worsening due to bill increases.

SUP15.60 - Reduction in doubtful debt due to affordability support measures

The main driver of SUP15.60 is the bad debt which would arise on the discounted element of the Big Difference Scheme ('BDS') and WaterSure social tariffs, should the customers be asked to pay the undiscounted bill.

Using BDS customers' payment data from our Target billing system, we calculated the average proportion of unpaid bills on the BDS scheme in FY23. This represents the bad debt factor which we have applied to the average social tariff discounts in FY21-FY23 to determine the additional bad debt charge that would arise in the absence of the social tariff discounts.

The number of customers in water poverty (before support measures are applied) is likely to increase as water bills increase, however we consider that these latter customers moving into water poverty who are not currently in water poverty are likely to need proportionally less support than

those currently supported by BDS and, consequently, have a higher underlying propensity to pay. Therefore, the bad debt factor has been reduced on a sliding scale until FY30, where we apply a 2.3% bad debt factor to the average social tariff discount. This bad debt factor is slightly higher than our assumed terminal bad debt charge of c.1.8% and supports our assumption that customers on-boarded in FY30 should have a propensity to pay closer to our underlying customers.

SUP15.61 - Doubtful debt after application of affordability support measures

This line is calculated internally within the table, but please see our commentary for line SUP15.59 about how we have calculated line SUP15.59 from the audited bad debt data we have used for this line.