DATA TABLE COMMENTARY – PRT55 COSTS (WHOLESALE) - WATER

CONTENTS

TABLE CW1 Totex analysis - water resources and water network+ (post frontier shift and real price effects)

The data in this table represents the final levels of Opex and Capex for the calculation of allowed revenue in the PWL Business Plan submission. All efficiencies and the frontier shift is included, and there are no real price increases reflected in the submission.

Principal use asset recharges are included so that each price control reflects its total cost. See summary on page 7.

There are no atypical costs reported in this table.

There are no equity issuance costs included in the costs in this table.

2022/23

The data for 2022/23 is taken directly from the Annual Performance Report (APR).
Table 4D in the APR is in exactly the same format as CW1 and was used to populate all these numbers.

2023/24 and 2024/25 Forecasts

The data for these years is in line with the Company Budget process, and this in turn aligns with Table PD8. The Past Delivery tables have already been audited by KPMG.

2025/26 – 2029/30

The numbers for this table are populated directly from the Master LTDS database. This consists of Base and Enhancement Capex as well as Enhancement Opex associated with the Enhancement Capex. The data includes adjustments for principal use asset recharges.

The costs in the model were initially built up by estimates from various sources and include contingency and overheads. A series of Investment Cases have been written to detail this process.

Subsequently, a team of senior managers and directors applied an efficiency challenge, as well as making overall decisions to either postpone or remove schemes altogether.

Finally, a frontier shift was applied to both the Capex and the Enhancement Opex, amounting to a cumulative 1% per annum. 1% frontier shift is aligned to regulatory precedent and is applied after a challenging internal efficiency challenging has been applied to investment plans and associated marginal opex. Further details is included in PRT09 Securing Value for money

Table CW1 shows the data post the efficiency challenge and frontier shift.

NB No real price effects have been reflected in Table CW1, as Portsmouth Water have decided to take the risk on these impacts. We are proposing an ex-post true-up on energy.

The Havant Thicket control (ADDN1) is a ten-year control. Updated totex allowances were agreed with Ofwat through the cost adjustment mechanism in January 2023. A bespoke indexation mechanism was agreed in principle with weightings of cost to CPIH and BCIS price indices for concrete, steel and diesel. We expect a further cost

adjustment mechanism will take place during 2024. Given the uncertainty real price effect have not been included in CW1 in relation to the bespoke indexation method as final agreement of weighting needs to be agreed. Ofwat have published a draft reconciliation model for the ten-year control. We propose they are applied through the Havant Thicket reconciliation model when finalised.

The details of the build-up and allocation of these costs are included in the commentary for CW2 and CW3.

The main significant changes in costs over the period include:

1. Enhancement opex associated with the Smart Metering, CRM, and Billing project.
2. Increase in Base capex to accommodate a restructuring of the IT department
3. Enhancement capex projects including Smart Metering, CRM, and Billing.

CW1 operating costs are reported net of asset charges and recharges reflecting assets if principal use.

These relate to existing management and general assets and new IT systems associated with the smart metering programme that support network plus activities (metering, leakage and interruptions) water resources performance commitments (per capita consumption, business demand) and retail activities.

Further detail is provided in CW1a commentary.

TABLE CW1a Totex analysis - water resources and water network+

TABLE CW1a Totex analysis – water resources and water network+

This table shows the data before the frontier shift was applied in the years 2025/26 – 2029/30.
The lines that are impacted are Base operating expenditure, Enhancement operating expenditure, Base capital expenditure and Enhancement capital expenditure.

No frontier shift was applied to Developer Services or Third-Party costs.

			WHOLESALE		
CW1	2025-26	2026-27	2027-28	2028-29	2029-30
Base operating expenditure	25.988	25.078	24.201	23.124	21.902
Enhancement operating expenditure	0.862	1.273	1.401	1.361	2.224
Developer services operating expenditure	0.907	1.036	1.055	1.008	0.975
Base capital expenditure	13.122	14.924	11.133	13.362	11.748
Enhancement capital expenditure	14.674	27.590	27.221	21.150	20.267
Developer services capital expenditure	1.336	1.566	1.029	1.059	1.348
Third Party Grants and Contributions	1.159	1.029	1.029	1.029	1.029

CW1a	2025-26	2026-27	2027-28	2028-29	2029-30
Base operating expenditure	26.248	25.580	24.913	24.029	22.970
Enhancement operating expenditure	0.871	1.298	1.443	1.415	2.333
Developer services operating expenditure	0.907	1.036	1.055	1.008	0.975
Base capital expenditure	13.260	15.238	11.491	13.931	12.382
Enhancement capital expenditure	14.822	28.151	28.054	22.017	21.312
Developer services capital expenditure	1.336	1.566	1.029	1.059	1.348
DIFFERENCES					
Base operating expenditure	-0.260	-0.502	-0.712	-0.904	-1.068
Enhancement operating expenditure	-0.009	-0.025	-0.042	-0.054	-0.109
Base capital expenditure	-0.138	-0.314	-0.358	-0.569	-0.634
Enhancement capital expenditure	-0.148	-0.561	-0.833	-0.867	-1.045
FRONTIER SHIFT					
Base operating expenditure	-1%	-2%	-3%	-4%	-5%
Enhancement operating expenditure	-1%	-2%	-3%	-4%	-5%
Base capital expenditure	-1%	-2%	-3%	-4%	-5%
Enhancement capital expenditure	-1%	-2%	-3%	-4%	-5%

Asset charge and recharges

PRICE CONTROL RECHARGES											
			FY24	FY25	FY26	FY27	FY28	FY29	FY30	AMP8	Asset Life
SMART METERING CAPEX	**Water Network+**	**Principle Use**									
Smart Metering			1,808	3,421	2,223	6,981	11,152	15,128	17,814	53,299	12
Depreciation charge					528	912	1,667	2,762	4,135	10,005	
Asset Charge	Water Network+	100%			0	0	0	0	0	0	
	Water Resources	0%								0	
	Retail	0%								0	
Smart Metering Infrastructure	**Water Network+**	**Principle Use**									
CRM Smart Metering Capability / Meter Data Management System / Meter Asset Record			4,661	1,353	43	43	43	43	43	6,227	
ERP System Smart Meter Readiness (IFS)			0	0	1,488	1,488	0	0	0	2,975	
GIS Smart Meter Readiness			0	0	0	850	850	0	0	1,700	
Smart Meter Infrastructure			4,661	1,353	1,530	2,380	893	43	43	10,902	7
Depreciation charge				763	968	1,248	1,481	1,548	1,554	7,563	
Asset Charge	Water Network+	50%		-381	-484	-624	-741	-774	-777	-3,781	
	Water Resources	20%		153	194	250	296	310	311	1,513	
	Retail	30%		229	291	374	444	464	466	2,269	
M&G (IT)	**Water Network+**	**Principle Use**									
HR System					425	0	0	0	0	425	
Mobile Workforce Devices					40	40	40	40	40	199	
Communications Transformation (Site to Site and Virtual Telephony)					323	323	323	323	323	1,615	
Cloud Transformation					340	340	340	0	0	1,020	
Technology and Cyber Security					268	268	268	0	0	803	
IT Capability Transformation					247	247	247	247	247	1,233	
Next Generation Tech (AI/ML)					0	0	0	0	0	0	
Portfolio, Programme & Project Management Tooling					26	26	26	26	26	128	
M&G					1,203	1,203	1,203	595	595	4,798	5
Depreciation charge				0	86	258	430	558	643	1,974	
Asset Charge	Water Network+	60%		0	-34	-103	-172	-223	-257	-790	
	Water Resources	20%		0	17	52	86	112	129	395	
	Retail	20%		0	17	52	86	112	129	395	
TOTAL RETAIL ASSET CHARGE				229	308	426	530	576	595	2,664	

Asset of priciple use hase been assesed by investment driver, cost drivers and histroical allocations in recent statutory accounts.

Smart metering infrastructre investments primary driver is to;

- support smarter metering roll out,
- the core meter data management system to manage meter master record
- asset data interfaces for household and non household meteres
- enhancement to our core ERP and GIS tools for field force management and asset location services.

Secondary use of the infrastructure support

- changing demand behaviour
- identification of customer side leakage supporting WRMP.

The insfrastructure will also support base retail activities around billing, cash collection and contact management as well newtork plus customer support on field force management.

The assset have been allocated to water netwrok plus but asset charge and recharges applied into the water resources and retail price controls

M&G IT expenditure has been allocated in line with regulatory accounting guideance aligned to the 2022/23 APR percentages.

TABLE CW2 Base Expenditure – water resources and water network+

CW2 Commentary requirement

5.2 Companies should include the following commentary to this table;

- An explanation for any significant changes between actual and forecast costs.
- An explanation of any material year-on-year variations in costs.
- An explanation of any changes in reporting methods / assumptions that have led to a material change in reported figures from previous reporting years.
- A breakdown of which lines and business units any equity issuance costs (from table RR4 line 72) have been included in.

2022/23

The data for 2022/23 is taken directly from the Annual Performance Report (APR).
Table 4J in the APR is in exactly the same format as CW2 and was used to populate all these numbers.

2023/24 and 2024/25 Forecasts

Operating Expenditure
The data for these forecast years is in line with the data entered into PD8 and PD9. This reflects the Budget process and the numbers approved by the Board in February 2023.

Specifically, Line 9 in Table PD8 equals Line 14 in Table CW2. These numbers were audited as part of the Early Submission at the end of July 2023.

Costs associated with Traffic Management Act
These costs are forecast to increase in the last 2 years of the AMP.

Costs associated with Lane Rental Schemes
A lane rental scheme is due to be implemented in the Portsmouth Water area in 2023/24 and expanded in 2024/25.

There are no significant changes in operating costs between 2022/23 and 2023/24, 2024/25.

Capital Expenditure
The data for these forecast years is in line with the data entered into PD8. This reflects the Budget process and the numbers approved by the Board in February 2023. The list of schemes have been allocated directly to Business Units or split on a basis agreed for the APR process. Shared assets are allocated to the Business Unit of principal use with depreciation recharges.

There are no significant changes in base capital costs between 2022/23 and 2023/24, 2024/25.

2025/26 – 2029/30

Operating Expenditure
Lines 1 – 7

The base opex for these years starts from the Company Budget position at the end of AMP7. This position was signed off by the Board in February 2023.

A complete Accounting Separation exercise was undertaken for the 2022/23 APR, and this is the basis for the allocation of opex across all the Business Units. Then, the movements for 2023/24 and 2024/25 were allocated to the cost category line items that coincide with the different allocation percentages in the APR. This is the basis of the tables in the Early Submission, and these have already been assured and submitted to Ofwat.

A separate budget exercise was carried out to identify any significant movements from the base year 2024/25. Each department head was consulted on their 'business as usual' expenditure, and how it will change in light of the core pathway selected for the PR24 Business Plan. These real cost movements have been collated in a working file and allocated to the correct lines for accounting separation. The data from this working file is used to directly populate the Operating Expenditure lines.

There have been no changes in reporting methods/assumptions that have led to a material change in reported figures from previous reporting years.

Subsequently, there were a series of efficiency challenges. These were applied to either the Direct costs line or the General Admin line, so that the efficiencies were spread across the business units. Final movements came from the Base opex in the LTDS model, and this mainly relates to additional IT expenditure in AMP8.

An overall 1% per annum Frontier shift in all Base opex was applied, but this is not reflected in Table CW2, only in CW1.

The main changes in base opex from AMP8 are as follows:

1. Increase in IT costs to reflect the restructuring of the department and the way that IT is delivered to the Company. This amounts to £1.396m of additional cost in each year.
2. Reduction in mains renewals expensed. This is due to a reduction in the overall mains renewals programme in AMP8, compared to AMP7. There is no change in the policy for the split of mains renewals between opex and capex.
3. The increase in the electricity costs is offset by a Net Zero policy to increase the amount of solar power used by the Company. In addition, there is an efficiency challenge included in other operating costs which includes the hedging of electricity contracts to reduce the cost relative to the market prices.

<u>Service Charges</u>
Line 9

The amounts in CW2 represent the final Abstraction Charges in CW1, uplifted for the 1% per annum frontier shift. Abstraction Charges are assumed to increase in line with CPIH inflation.

Location specific costs and obligations
Lines 11 – 12

These amounts are the forecast amounts for Highway permits and Lane rental schemes + the staff costs associated with administering these schemes. The 1% frontier shift is applied to the final costs reported in these lines in CW1.

Capital Expenditure
Lines CW2.15-CW2.17

The numbers for this table are populated directly from the Master LTDS database

This spreadsheet is the central investment scheme database and collates all investment scheme options considered through the PR24 and LTDS plans. This document includes Base and Enhancement Capex as well as Enhancement Opex associated with the Enhancement Capex. The data includes adjustments for principal use asset recharges.

Only expenditure relating to Base capex expenditure has been mapped to table CW2 per Ofwat guidance.
The costs in the model were initially built up by estimates from various sources and include contingency and overheads. A series of Investment Cases have been written to detail this process. Subsequently, a team of senior managers and directors applied an efficiency challenge, as well as making overall decisions to either postpone or remove schemes altogether.

Schemes have been costed on a standalone basis using existing framework pricing with appropriate company overhead or risk, supply chain partner quotations or management estimates. Further detail on costing approaches is provided in individual investment cases. Multiple solutions included for individual schemes have been prioritised through the LTDS assessment process and preferred options have been selected based on evaluation through applications of a values framework.

Efficiency rates applied were as follows.

1. 15% general minimum efficiency on AMP8 and AMP9 costs
2. Further 5% efficiency (20% total) on targeted enhancements schemes
3. Further support on efficiency challenge is reflected in investment cases and PRT support document on 'Securing Value for Money'.

Mapping capex to CW2: PR24 reviewed schemes costs to RAG2 classifications and table guidance.

a. base or enhancement classification aligned LTDS assessment.
b. CAPEX IS ALLOCATED TO PRICE CONTROL OF PRINICPLE USE (SEE BELOW)
c. Base capex classed as infra or non infra.

AMP8 annual phasing was assessed in review by PR24 team and investment plan owners to align with statutory delivery dates, risk and investment plan programming.

Asset of principle use and asset charges

PRICE CONTROL RECHARGES																		
			FY24	FY25	FY26	FY27	FY28	FY29	FY30	AMP8	Asset Life		FY26	FY27	FY28	FY29	FY30	AMP8
SMART METERING CAPEX	**Water Network+**	**Principle Use**																
Smart Metering			1,808	3,421	2,223	6,981	11,152	15,128	17,814	53,299	12		213	213	213	213	213	1,066
Depreciation charge					528	912	1,667	2,762	4,135	10,005								
Asset Charge	Water Network+	100%			0	0	0	0	0	0								
	Water Resources	0%								0								
	Retail	0%								0								
CRM & BILLING CAPEX	**Water Network+**	**Principle Use**																
CRM/Billing + Operational Model			4,661	1,353	43	43	43	43	43	6,227			1,188	1,188	1,188	1,188	1,188	5,608
ERP System Upgrade (IFS)			0	0	1,488	1,488	0	0	0	2,975			0	369	369	369	369	0
GIS Upgrade			0	0	0	850	850	0	0	1,700			0	0	316	316	326	94
Smart Meter Infrastructure			4,661	1,353	1,530	2,380	893	43	43	10,902	7		1,188	1,557	1,873	1,873	1,882	8,372
Depreciation charge				763	968	1,248	1,481	1,548	1,554	7,563			1,188	1,557	1,873	1,873	1,882	8,372
Asset Charge	Water Network+	50%		-381	-484	-624	-741	-774	-777	-3,781			-594	-778	-936	-936	-941	-4,186
	Water Resources	20%		153	194	250	296	310	311	1,513			238	311	375	375	376	1,674
	Retail	30%		229	291	374	444	464	466	2,269			356	467	562	562	565	2,512
M&G (IT)	**Water Network+**	**Principle Use**																
HR System					425	0	0	0	0	425			45	45	45	45	45	225
Mobile Workforce Devices					40	40	40	40	40	199			45	45	45	45	45	225
Communications Transformation (Site to Site and Virtual Telephony)					323	323	323	323	323	1,615			68	68	68	68	68	338
Cloud Transformation					340	340	340	0	0	1,020			360	360	360	360	360	1,800
Technology and Cyber Security					268	268	268	0	0	803			270	270	270	270	270	1,350
IT Capability Transformation					247	247	247	247	247	1,233			667	667	667	667	667	3,333
Next Generation Tech (AI/ML)					0	0	0	0	0	0			111	111	111	111	111	556
Portfolio, Programme & Project Management Tooling					26	26	26	26	26	128			23	23	23	23	23	113
M&G					1,203	1,203	1,203	595	595	4,798	5		1,498	1,498	1,498	1,498	1,498	7,489
Depreciation charge				0	86	258	430	558	643	1,974			1,498	1,498	1,498	1,498	1,498	7,489
Asset Charge	Water Network+	60%		0	-34	-103	-172	-223	-257	-790			-599	-599	-599	-599	-599	-2,996
	Water Resources	20%		0	17	52	86	112	129	395			300	300	300	300	300	1,498
	Retail	20%		0	17	52	86	112	129	395			300	300	300	300	300	1,498
TOTAL RETAIL				229	308	426	530	576	595	2,664			656	767	861	861	864	4,009

Recharges and allocation to principal use calculated with model on recharges TAB

Smart metering costs allocated 100% to network + per RAG guidelines

Smart metering infrastructure including CRM (including integrated meter data management system), IFS and GIS enhancements has been allocated between Water Network +, Water Resources and Retail to reflect;

- Smart metering contribution to leakage and meter management systems
- Demand reduction relating to PCC, business demand PCs
- Retail – provision of bills and cash collection and other retail services

M&G asset charges, recharges are applied through opex models for costs and depreciation recharges.

AMP8 vs AMP7

Table 2: AMP8 totex by price control (2022-23 prices)

Cost category	Water resources	Water Network+	AMP8 totex
Base costs	£37m	£148m	£185m
Enhancement totex	£8m	£110m	£118m
Accelerated investment	-	£11m	£11m
Developer services, 3rd party and Grants & Contributions	-	£4m	£4m
TOTAL WHOLESALE EXPENDITURE	£45m	£273m	£318m

Source: Table CW1 plus accelerated investment (post-RPE and frontier shift)

Table 3: AMP8 totex compared to AMP7 (2022-23 prices)

Cost category	AMP7	AMP8
Base costs	£156m	£185m
Enhancement totex	£26m	£129m
Developer services, 3rd party and Grants & Contributions	£7m	£4m
TOTAL WHOLESALE EXPENDITURE	£189m	£318m

Source: APR and Table CW1, plus accelerated investment (post-RPE and frontier shift)

Increase in base cost has been drive by a step change in asset maintenance as we hit a peak in our asset maintenance cycle. Further details are outline in PRT07 Out Investment Plan 2023-2030 and PRT09 Securing Value for Money

TABLE CW3 Enhancement expenditure - water resources and water network+

TABLE CW3 Enhancement Expenditure – water resources and water network+

No costs have been proportionally allocated between expenditure categories in CW3.

No additional lines have been used in this table.

The differences between CW3 and CW1 relate entirely to the Frontier shift applied to enhancement capex and opex.

CW3	2025-26	2026-27	2027-28	2028-29	2029-30
Enhancement capital expenditure	14.822	28.151	28.054	22.017	21.312
Enhancement operating expenditure	0.871	1.298	1.443	1.415	2.333
CW1					
Enhancement capital expenditure	14.674	27.590	27.221	21.150	20.267
Enhancement operating expenditure	0.862	1.273	1.401	1.361	2.224
Differences					
Enhancement capital expenditure	0.148	0.561	0.833	0.867	1.045
	1%	2%	3%	4%	5%
Enhancement operating expenditure	0.009	0.025	0.042	0.054	0.109
	1%	2%	3%	4%	5%

Detailied investment cases have been included to support the build up enahancement expediture including associated base expenditure. The enhancement cases are is section PRT07 of our investment plan.

PRT07.01 Security resilience and eCAF at operational sites	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**Total**
Capex	4,409	4,409	4,542	-	941	**14,301**
Opex	-	184	185	187	1,040	**1,596**
TOTEX	**4,409**	**4,593**	**4,727**	**187**	**1,981**	**15,897**

Source: Table CW3, Rows 123 and 126

PRT07.02 Raw water resilience enhancement (disinfection)	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**Total**
Capex	3,599	7,199	3,599	234	234	**14,865**
Opex	-	-	-	-	47	**47**
TOTEX	**3,599**	**7,199**	**3,599**	**234**	**281**	**14,912**

Source: Table CW3, Rows 99 and 102 (these rows in CW3 also include costs from PRT07.03)

PRT07.03 Raw water deterioration and drought capacity enhancements	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**Total**
Capex	-	4,121	4,766	4,891	665	**14,443**

Opex	91	172	174	176	202	**814**
TOTEX	**91**	**4,293**	**4,940**	**5,067**	**867**	**15,257**

Source: Table CW3, Rows 99 and 102 (these rows in CW3 also include costs from PRT07.02)

PRT07.04 The isolation and recovery of service reservoirs	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**Total**
Capex	717	717	717	717	717	**3,586**
Opex	-	-	-	-	-	-
TOTEX	**717**	**717**	**717**	**717**	**717**	**3,586**

Source: Table CW3, Rows 120 and 123

PRT07.05 WINEP and protecting the environment	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**Total**
Capex	1,445	1,445	1,485	106	-	**4,480**
Opex	-	-	-	-	45	**45**
TOTEX	**1,445**	**1,445**	**1,485**	**106**	**45**	**4,525**

Source: Table CW3, Row 40

PRT07.06 Reducing customer demand	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**Total**
Capex	4,252	9,860	12,544	15,670	18,356	**60,681**
Opex	780	942	1,084	1,052	1,000	**4,857**
TOTEX	**5,032**	**10,801**	**13,627**	**16,721**	**19,356**	**65,538**

Source: Table CW3, Rows 59 and 90

PRT07.07 Lead reduction strategy	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**Total**
Capex	400	400	400	400	400	**2,000**
Opex	-	-	-	-	-	-
TOTEX	**400**	**400**	**400**	**400**	**400**	**2,000**

Source: Table CW3, Row 109

TOTAL ENHANCEMENT CAPEX	**14,822**	**28,150**	**28,054**	**22,018**	**21,312**	**114,356**
TOTAL ENHANCEMENT OPEX	**871**	**1,297**	**1,442**	**1,414**	**2,335**	**7,360**
TOTAL ENHANCEMENT TOTEX	**15,693**	**29,448**	**29,496**	**23,432**	**23,647**	**121,715**
Check capex	-	-	-	-	-	
Check opex	-	-	-	-	-	

Methodology for assurance

CAPEX 2025-2030

Table CW3 follows same process as CW2 for capex allocations with exception that mapping is based on column CV

Spreadsheet has been checked to ensure classification between CW2 and CW3 is mutually exclusive and cost in not duplicated between base and enhancement.

Table populated using SUMIF formula based on table referencing mapping in columns CR to CW of LTDS Options TABLE tab and reconciled to pivot table on TABLE PRE FS Tab

Preferred Option	yes
Priority	(All)
Price control	(All)

CW1 Capex	CW2 Capex	CW3 Capex	Sum of Capex 24	Sum of Capex 25	Sum of CAP26	Sum of CAP27	Sum of CAP28	Sum of CAP29	Sum of CAP30
CW1.8	CW2.15	(blank)	-	-	1,557	1,557	1,557	1,557	1,642
	CW2.15 Total		-	-	1,557	1,557	1,557	1,557	1,642
	CW2.16	(blank)	-	-	12,333	14,311	10,564	13,005	11,370
	CW2.16 Total		-	-	12,333	14,311	10,564	13,005	11,370
	(blank)	(blank)	-	-	-	-	-	-	-
	(blank) Total		-	-	-	-	-	-	-
CW1.8 Total			-	-	13,890	15,868	12,121	14,562	13,012
CW1.9	(blank)	(blank)	-	-	-	-	-	-	-
		CW3.44 Demand-side improvements delivering benefits in 2025-2030 (excl leakage and metering); SDB capex	-	-	499	499	499	499	499
		CW3.25 25 year environment plan; (WINEP/NEP) water capex	-	-	1,445	1,445	1,485	106	-
		CW3.97 Addressing raw water quality deterioration (grey solutions); enhancement capex	-	-	-	-	645	836	856
		CW3.87 Smart meter infrastructure; metering capex	6,469	4,774	3,753	9,361	12,045	15,171	17,857
		CW3.109 External lead supply pipes replaced or relined; enhancement capex	-	-	400	400	400	400	400
		CW3.100 Addressing raw water quality deterioration (green solutions); enhancement capex	-	-	3,599	11,320	7,720	4,288	43
		CW3.118 Resilience; enhancement water capex	-	-	717	717	717	717	717
		CW3.121 Security - SEMD; enhancement water capex	-	-	-	-	-	-	941
		CW3.124 Security - Cyber; enhancement water capex	-	-	4,409	4,409	4,542	-	-
		CW3.16 Water Framework Directive; (WINEP/NEP) water capex	-	-	-	-	-	-	-
		CW3.47 Leakage improvements delivering benefits in 2025-2030; SDB capex	-	-	-	-	-	-	-
	(blank) Total		6,469	4,774	14,822	28,150	28,054	22,018	21,312
CW1.9 Total			6,469	4,774	14,822	28,150	28,054	22,018	21,312

Capex tables also identify accelerated AMP8 spend which will be reported in CW7a

OPEX 2025-2030

Opex enhancements spend follows mirror process to Base and Enhancement Capex in CW2 /CW3.

- Cost built up by investment case
- Prioritization review phased opex spend between AMP (column BV-CA)
- Efficiency overlay applied 10% in each AMP to manage affordability (see securing value money for support)
- Rebased programme calculated in column CJ to CP
- AMP8 enhancement opex phased in column DQ to DU using phasing apportionment in columns DL to DP

Table populated using SUMIF formula based on table referencing mapping in columns CR to CW of LTDS Options TABLE tab and reconciled to pivot table on TABLE PRE FS Tab.

TABLE CW4 Raw water transport, raw water storage and water treatment data

CW4.1 Total number of balancing reservoirs

Portsmouth Water do not have any reservoirs that meet the OFWAT definition of balancing reservoirs. There is one reservoir that holds partially treated water, Highwood Reservoir, but this holds water that has passed through a screen and therefore is not 'Raw' water.

CW4.2 Total volumetric capacity of balancing reservoirs

Portsmouth Water do not have any reservoirs that meet the OFWAT definition of balancing reservoirs.

CW4.3 Total number of raw water transport stations

Portsmouth Water do not have any raw water transport stations that meet the OFWAT definition of raw water transport stations.

CW4.4 Total installed power capacity of raw water transport pumping stations

See CW4.3.

CW4.5 Total length of raw water transport mains and other conveyors

See CW4.3.

CW4.6 Average pumping head ~ raw water transport

See CW4.3.

CW4.7 Energy consumption – raw water transport (MWh)

See CW4.3.

CW4.8 Total number of raw water transport imports

Portsmouth Water do not have any raw water transport imports that meet the OFWAT definition of raw water transport imports.

CW4.9 Water imported from 3rd parties to raw water transport systems

Portsmouth Water do not import Water from 3rd parties to raw water transport systems that meet the OFWAT definition of Water imported from 3rd parties to raw water transport systems.

CW4.10 Total number of raw water transport exports

Portsmouth Water do not have any raw water transport exports that meet the OFWAT definition of raw water transport exports.

CW4.11 Water exported to 3rd parties from raw water transport systems

See CW4.10

CW4.12 Total length of raw and pre-treated (non-potable) water transport mains for supplying customers

Portsmouth Water do not have any raw and pre-treated (non-potable) water transport mains for supplying customers that meet the OFWAT definition of raw and pre-treated (non-potable) water transport mains for supplying customers.

CW4.13 All simple disinfection works - Number of works

Portsmouth Water have 9 simple disinfection works, which are:

1. Aldingbourne WTW
2. Brickkiln WTW
3. Funtington WTW
4. Maindell WTW
5. Northbrook WTW
6. Slindon WTW
7. Walderton WTW
8. West Meon WTW
9. Worlds End WTW

CW4.14 All simple disinfection works - Water treated

The figure for 2022/23 is actual. The future years (including 2023/24) are based on 2022/23 actual pro rata against future DI figures from CW5.38.

CW4.15 W1 works - Number of works

Portsmouth Water do not have any works in the W1 category.

CW4.16 W1 works - Water treated

See CW4.15.

CW4.17 W2 works - Number of works

Portsmouth Water have 1 site in the W2 category, which is

1. Lavant

CW4.18 W2 works - Water treated

Flows from the W2 sites are actual for 2022/23 and pro rata for future years based on DI forecast from CW5.38.

CW4.19 W3 works - Number of works

Portsmouth Water do not have any works in the W3 category

CW4.20 W3 works - Water treated

See CW4.19

CW4.21 W4 works - Number of works

Portsmouth Water have 7 sites in the W4 category, which are:

1. Eastergate WTW

2. Farlington WTW
3. Fishbourne WTW
4. Lovedean WTW
5. Soberton WTW
6. West Street WTW
7. Westergate WTW

CW4.22 W4 works - Water treated

Flows from the W4 sites are actual for 2022/23 and pro rata for future years based on DI forecast from CW5.38

CW4.23 W5 works - Number of works

Portsmouth Water have 1 site in the W5 category, which is:

1. River Itchen treatment works.

CW4.24 W5 works - Water treated

Flows from the W5 site is actual for 2022/23 and pro rata for future years based on DI forecast from CW5.38.

CW4.25 W6 works - Number of works

Portsmouth Water do not have any works in the W6 category.

CW4.26 W6 works - Water treated

See CW4.25.

CW4.27 WTWs in size band 1 - Number of works

Portsmouth Water has one Band 1 WTW that is currently not in operation.

CW4.28 WTWs in size band 1 - % of total DI

See CW4.27.

CW4.29 WTWs in size band 2 - Number of works

Portsmouth Water has three band 2 sites. Two are remote borehole sites (Newtown and Lower Upham) that are currently not in operation.

CW4.30 WTWs in size band 2 - % of total DI

See CW4.29.

CW4.31 WTWs in size band 3 - Number of works

Portsmouth Water has three band 3 sites. One site (Maindell) will be brough back into operation in year 3 of AMP 8.

CW4.32 WTWs in size band 3 - % of total DI

See CW4.31.

CW4.33 WTWs in size band 4 - Number of works

Portsmouth Water has eight band 4 sites.

CW4.34 WTWs in size band 4 - % of total DI

See CW4.33.

CW4.35 WTWs in size band 5 - Number of works

Portsmouth Water has three band 5 sites.

CW4.36 WTWs in size band 5 - % of total DI

See CW4.35.

CW4.37 WTWs in size band 6 - Number of works

Portsmouth Water has one band 6 site.

CW4.38 WTWs in size band 6 - % of total DI

See CW4.37.

CW4.39 WTWs in size band 7 - Number of works

Portsmouth Water has one band 7 site.

CW4.40 WTWs in size band 7 - % of total DI

See CW4.39.

CW4.41 WTWs in size band 8 - Number of works

Portsmouth Water does not have any band 8 sites.

CW4.42 WTWs in size band 8 - % of total DI

See CW4.41.

CW4.43 Peak week production capacity

Peak week production capacity is calculated through the following steps:

1. Generate rolling 7-day averages for daily production volumes at each site
2. Take the largest 7-day average value for the last 5 financial years at each site
3. Summate the max 7-day average values to produce the Total PWPC value

Site	Peak 7d Average	2022	Comment
ALDINGBOURNE	8.96	7.68	Increased output due to high demand
BRICKKILN	6.04	6.33	
EASTERGATE	14.36	13.06	Increased output due to high demand
FARLINGTON	68.48	68.48	
FISHBOURNE	12.98	10.84	Increased output due to high demand
FUNTINGTON	6.97	6.97	
ITCHEN	42.13	42.13	
LAVANT	16.91	16.67	
LOVEDEAN	8.86	8.86	
LOWER UPHAM	0.00	0.00	Site off
MAINDELL	0.00	0.00	Site off
NEWTOWN	0.31	0.31	Site off
NORTHBROOK	22.78	22.78	
SLINDON	2.19	2.30	
SOBERTON	13.10	9.51	Increased output due to high demand
WALDERTON	30.17	30.17	
WEST MEON	0.00	0.00	Site off
WEST STREET	8.93	8.93	
WESTERGATE	12.48	11.30	Increased output due to high demand
WOODMANCOTE	0.00	0.00	River augmentation only
WORLDS END	14.86	13.96	Re-zoning of George and Nelson reservoirs has enabled higher output from Worlds End
Total (Ml/d)	290.52	280.30	

There is an increase from 2027/28 related to Maindell being brought back into operation.

CW4.44 Peak week production capacity having enhancement expenditure for grey solution improvements to address raw water quality deterioration

We have three sites that will have enhancement expenditure for grey solution improvement to address raw water quality deterioration. These sites have a peak week production capacity of 24.76 Ml/d:

1. Lovedean WTW (8.86 Ml/d)
2. West Street WTW (8.93 Ml/d)
3. Funtington WTW (6.97 Ml/d)

CW4.45 Peak week production capacity having enhancement expenditure for green solutions improvements to address raw water quality deterioration

Portsmouth Water do not have any sites that meet the OFWAT definition of enhancement expenditure for green solutions improvements to address raw water quality deterioration.

CW4.46 Total water treated at more than one type of works

Portsmouth Water do not have any water treated at more than one site

CW4.47 Number of treatment works requiring remedial action because of raw water deterioration

2023/24 River Itchen WTW and Funtington WTW will have remedial action because of raw water deterioration.

CW4.48 Zonal population receiving water treated with orthophosphate

2022/23 population receiving water treated with orthophosphate was 671,665. Future years are prorated by population forecast from SUP1A.

CW4.49 Average pumping head – water treatment

Average pumping head – water treatment remains constant at 2.09m.head.

CW4.50 Energy consumption - water treatment (MWh)

Energy is actual used for 2022/23 and prorated by forecast DI from CW5.38 for future years.

CW4.51 Total number of water treatment imports

Portsmouth Water do not have any water treatment imports.

CW4.52 Water imported from 3rd parties to water treatment works

See CW4.51.

CW4.53 Total number of water treatment exports

Portsmouth Water has 2 water treatment exports to SWS.

CW4.54 Water exported to 3rd parties from water treatment works

Our 3rd party exports are covered in CW5.

CW4.55 Total number of water treatment works effluent discharges requiring new MCERTS flow monitoring

Portsmouth Water do not have any WTWs effluent discharges requiring new MCERTS flow monitoring

Additional CW4 Commentary requirements:

An explanation of instances where water treatment works have not been used in the year but have not been decommissioned.

We have 5 WTW that have not been used in 2022/23, but are not decommissioned.

Site	Reason for Note Being Used
Maindell	Under DWI notice requiring cryptosporidium treatment planned for year 3 of AMP8.
Slindon	Returning to operation early 2024 after repairs made.
Newtown	Satellite borehole site not required to meet licence flows. Maybe recommissioned in AMP8.
Lower Upham	Satellite borehole site not required to meet licence flows. Maybe recommissioned in AMP8
West Meon	0.75 Ml/d site requiring cryptosporidium treatment or decommissioning

An explanation of any material year-on-year variations.

We have no material year on year variations.

An explanation of any changes in reporting methods / assumptions that have led to a material change in reported figures.

We have taken the opportunity to reassess reporting of all lines of CW4 and have gone through an extensive audit process, including both internal and external assurance. Any changes from previously reported numbers are due to an improved understanding of line definitions.

An indication of the quality of data provided.

With the extensive audit and assurance process, we are confident that the data provided is high quality.

TABLE CW5 Treated water distribution - assets and operations

CW5.1 - Total installed power capacity of potable water pumping stations

The total installed power capacity of potable water pumping stations is taken from our audited 2023 assessment of pump capacity. The figures include both pumped output from groundwater sites but also booster station pumping potable water around our system.

Havant Thicket Raw Water Reservoir will have a pumping station constructed at our Farlington WTWs to pump Potable water from Farlington to Nelson Reservoir. The estimated KW rating is 460kw. The station will be constructed and be on line in 2027-28. However, it is only going to be used in a drought and so no changes have been made to the lines associated with *Water Delivered* even though it can deliver an instantaneous flow rate of 32.5Ml/d.

A booster taking potable Water from Farlington Service Reservoirs and pumping it into our Racton Service Reservoir Zone will be constructed in 2025-26. It will have rated for 300Kw and will transfer up to 18Ml/day. As this is a resilience project it doesn't add to the total output delivered to our customers, will typically be used intermittently and so the lines associated with *Water Delivered* in Table CW5 have not been altered.

CW5.2 - Total volumetric capacity of service reservoirs

There is no change to 2030 in the volumetric capacity of service reservoirs. The total is taken from drawing number 80/115B which contains all our reservoir sites and totals 644.53Ml. The following sites from the table has been omitted as follows.

		Ml
Total Volume for All Sites		644.53
- Bedhampton Suction Tank	Used for raw water only	-4.00
- Canada Reservoir	Redundant	-0.09
- Farlington Reservoir No. 5	Does not hold potable water	-12.06
- Highwood Reservoir	Use for raw water storage only	-135.00
- Lovedean Reservoir	Used as contact tank for partially treated water	-13.62
- River Itchen Contact Tank	Used as contact tank for partially treated water	-9.02
- *Total of Sites Omitted*		*-173.79*
Total Potable Water Storage		**470.74**

The static nature of the number of service reservoirs on the company means 80/115 is only updated on change not reviewed annually.

CW5.3 - Total volumetric capacity of water towers

There is no volumetric change to the capacity of water towers.

CW5.4 – Water delivered (non-potable)

We do not deliver non-potable water and have no plans to do so going forward.

CW5.5 - Water delivered (potable)

Water delivered potable is calculated as the total household and non-household consumption, including supply pipe leakage, plus water taken unbilled. This aligns with the annual performance reports. This is the total of lines CW5.31 to CW5.34, CW5.37, and CW5.60 to CW5.67.

CW5.6 - Water delivered (billed measured residential properties)

Water delivered to billed measured residential properties is calculated as the total of measured household consumption (CW5.31) and measured household supply pipe losses (CW5.60 and CW5.64).

CW5.7 - Water delivered (billed measured businesses)

Water delivered to billed measured business is calculated as the total of measured non-household consumption (CW5.33) and measured household supply pipe losses (CW5.62 and CW5.66).

CW5.8 to CW5.15 – Proportion of distribution input

The proportion of distribution input between river abstractions and groundwater works aligns with table CW4 (lines 13 to 26).

CW5.16 - Total number of potable water pumping stations that pump into and within the treated water distribution system

49/8F is a drawing that graphically describes how our WTWs, boosters and Reservoirs are connected. The total number of WTW shown in pink on the drawing totals as follows:

Number of treatment works pumping into the treated water distribution system	18
Number of inline boosters pumping treated water	24
TOTAL	**42**

We have 5 raw water abstraction points not included in the figures.

The static nature of the number of service reservoirs on the company means 49/8F is only updated on change and not reviewed annually.

There are two additional boosters described in CW5.1 in which will come into service during the period shown on the data tables. Increasing the total to 44

CW5.17 - Number of potable water pumping stations delivering treated groundwater into the treated water distribution system

2022/23 aligns with our annual performance report. We expect no change in future. We only have one site that pumps treated water directly into the distribution network, which is Fishbourne WTW.

CW5.18 - Number of potable water pumping stations delivering surface water into the treated water distribution system

2022/23 aligns with our annual performance report. We expect no change in future and remains at 0.

CW5.19 - Number of potable water pumping stations that re-pump water already within the treated water distribution system

We have reviewed the categorisation of our sites to ensure an accurate representation is provided. This is based on drawing 49/8F as described in the commentary for CW5.16 there are 24 inline boosters pumping treated water 24. In

line with the commentary provided for CW5.1 we anticipate an additional booster coming online in 2025-26 and 2027-28 increasing the number by 2 by the end of the forecasting period.

CW5.20 - Number of potable water pumping stations that pump water imported from a 3rd party supply into the treated water distribution system

2022/23 aligns with our annual performance report. We expect no change in future.

CW5.21 - Total number of service reservoirs

The original figure related to the number of sites. This covers the number of service reservoirs on the site from the listed provided in drawing 80/115 minus the sites that do not store potable water as listed in the commentary CW5.2.

We have a total of 36 water storage structures, however 6 do not contain potable water. This means our total number of service reservoirs is 30.

2022/23 aligns with our annual performance report. We expect no change in future. The static nature of the number of service reservoirs on the company means 80/115 is only updated on change not reviewed annually.

CW5.22 - Number of water towers

2022/23 aligns with our annual performance report. We expect no change in future.

CW5.23 - Energy consumption – treated water distribution (MWh)

The energy consumption for treated water distribution 2022/23 aligns with our annual performance report.

The energy consumption over a 12-month period includes all sites using a combination of mains power, standby generators where applicable, solar energy consumption where applicable and fleet energy costs.

CW5.24 - Average pumping head – treated water distribution

2022/23 aligns with our annual performance report. We do not expect a change in future years mostly because the population served from service reservoirs is very high (99.7%) and as such a small volume of water is delivered directly into the distribution network where the head may change.

CW5.25 - Total number of treated water distribution imports and CW5.26 - Water imported from 3rd parties to treated water distribution systems

In alignment with our WRMP, we do not have, or expect to import water until after 2029/30.

CW5.27 - Total number of treated water distribution exports and CW5.28 - Water exported from 3rd parties to treated water distribution systems

We have 4 water exports in place. 3 to Southern Water several small NAV connections that we have grouped together.

The three Southern Water exports are as follows:

- One at Whiteways Lodge Breaktank which supplies Southern Water's Hardham WTW
- One between our Whiteways Lodge site and our Slindon WTW that supplies Southern Water's Perry Hill Reservoir.
- One at our River Itchen WTW which supplies Southern Water's Southampton Distribution Network.

These 3 bulk exports are expected to continue in future years until at least 2029/30.

We expect increased NAV activity, however we cannot be certain of the number of NAVs. For this reason, we have continued to treat NAV exports as a single export in this table.

CW5.28 Water exported to 3rd parties from treated water distribution systems

Our water exported in 2022/23 aligns with our annual performance report (Table 4A). This includes NAVs.

In future years, we expect exports from our Southern Water export to align with our WRMP assessment and sensitivity testing for a normal year. The levels included have been agreed with Southern Water. They include the average export for the past 5 years of 5.1 Ml/d (this is lower than capacity for WFD no deterioration reasons), except for 2025/26 and 2026/27, where WRMP sensitivity testing has indicated that Southern Water will need higher volumes.

We have included an increase for NAV exports, aligned to forecasted increased NAV activity. This has assumed average PCC and aligns with NAV populations calculated to inform SUP1A and SUP1B tables.

CW5.29 - Peak 7 day rolling average distribution input

2022/23 peak 7 day rolling average distribution input aligns with our annual performance report.

Future year peak 7 day rolling average distribution input aligns with our WRMP Dry Year Critical Period, adjusted for 2022/23 properties and population.

CW5.31 - Measured household consumption (excluding supply pipe leakage)

Measured household consumption is calculated by multiplying WRMP NYAA measured PCC by household measured population in table SUP1A.

CW5.32 - Unmeasured household consumption (excluding supply pipe leakage)

Unmeasured household consumption is calculated by multiplying WRMP NYAA unmeasured PCC by household unmeasured population in table SUP1A.

CW5.33 - Measured non-household consumption (excluding supply pipe leakage)

Measured non-household consumption is calculated by subtracting unmeasured non-household consumption (CW5.34) from WRMP total non-household consumption.

CW5.34 - Unmeasured non-household consumption (excluding supply pipe leakage)

Unmeasured non-household consumption is calculated as unmeasured household PCC from WRMP multiplied out by unmeasured non-household population.

Unmeasured non-household population is calculated as unmeasured non-household properties multiplied by unmeasured household occupancy.

CW5.35 – Total annual leakage

Total annual leakage aligns with the WRMP.

CW.36 - Distribution system operational use

Distribution system operational use aligns with our WRMP.

CW.37 - Water taken unbilled

Water taken unbilled aligns with our WRMP.

CW.38 – Distribution input

Distribution input is the total of CW5.31 to CW5.37.

CW5.39 - Distribution input (pre-MLE)

Distribution input (pre-MLE) for 2022/23 aligns with actual. From 2023/24 onwards, it is forecasted that distribution input will align with consumption calculations.

CW5.58 - Leakage upstream of DMA

We calculate leakage at reservoir meters, which already include leakage upstream of DMAs.

CW5.59 - Distribution main losses

Distribution mains losses is calculated as total annual leakage minus customer supply pipe losses (CW5.60 to CW5.67).

CW5.60 - Customer supply pipe losses – measured households excluding void properties

Measured household supply pipe losses are calculated by multiplying an estimated average supply pipe loss per property of 34.27 litres per property per day (l/prop/d) by the total number of measured households taken from SUP1A, then subtracting expected supply pipe loss savings from our smart metering enhancement programme.

The average supply pipe loss per property is based on 2022/23 outturn data, assessed in collaboration with external consultants and independently assured by a third party.

CW5.61 - Customer supply pipe losses – unmeasured households excluding void properties

Unmeasured household supply pipe losses are calculated by multiplying an estimated average supply pipe loss per property of 34.27 litres per property per day (l/prop/d) by the total number of unmeasured households taken from SUP1A.

CW5.62 - Customer supply pipe losses – measured non-households excluding void properties

Measured non-household supply pipe losses are calculated by multiplying an estimated average supply pipe loss per non-household of 34.27 litres per property per day (l/prop/d) by the total number of measured non-households taken from SUP1A.

CW5.63 - Customer supply pipe losses – unmeasured non-households excluding void properties

Unmeasured non-household supply pipe losses are calculated by multiplying an estimated average supply pipe loss per non-household of 34.27 litres per property per day (l/prop/d) by the total number of unmeasured non-households taken from SUP1A.

CW5.64 - Customer supply pipe losses – measured household void properties

Measured household void supply pipe losses are calculated by multiplying an estimated average supply pipe loss per property of 34.27 litres per property per day (l/prop/d) by the total number of measured void households taken from SUP1A.

CW5.65 - Customer supply pipe losses – unmeasured household void properties

Unmeasured household void supply pipe losses are calculated by multiplying an estimated average supply pipe loss per property of 34.27 litres per property per day (l/prop/d) by the total number of unmeasured void households taken from SUP1A.

CW5.66 - Customer supply pipe losses – measured non-household void properties

Measured non-household void supply pipe losses are calculated by multiplying an estimated average supply pipe loss per property of 34.27 litres per property per day (l/prop/d) by the total number of measured void non-households taken from SUP1A.

CW5.67 - Customer supply pipe losses – unmeasured non-household void properties

Unmeasured non-household void supply pipe losses are calculated by multiplying an estimated average supply pipe loss per property of 34.27 litres per property per day (l/prop/d) by the total number of unmeasured void non-households taken from SUP1A.

TABLE CW6 Water network+ - Mains, communication pipes and other data

CW6.1 - Total length of potable mains as at 31 March

Aggregated total of lines CW6.5 to CW6.8.

There are assumed to be no material length of abandoned mains in AMP8.

CW6.2 - Total length of potable mains relined

We do not perform mains relining. This has been confirmed by the Network Manager.

CW6.3 - Total length of potable mains renewed

12.5km per annum forecasted to the end of AMP7 and then approx. 41km identified for AMP 8 distributed linearly over 5 years in line with WRc assessment. No identified reason for modifying the delivery profile (i.e. supply chain).

The WRc assessment showed that 41km will maintain stable levels of bursts in AMP8. This aligns with customer priorities, where customers have stated that they wish to maintain a stable service, rather than improvements to reliability.

More information on this can be found in PRT03: Engaging and Understanding Our Customers and Communities, and PRT05: Delivering Outcomes for Our Customers.

CW6.4 - Total length of new potable mains

Numbers from Projections from DS4 Document produced by Developer Services, which is sourced from the Water \Resources Management Plan (WRMP) and council plans.

More information on the WRMP can be found in PRT17: Water Resources Management Plan.

CW6.5 - Total length of potable water mains (≤320mm)

Extrapolated using TREND() projection in Excel. The TREND function in Excel is a statistical function that computes the linear trend line based on the given linear data set. It calculates the predictive values of Y for given array values of X and uses the least square method based on the given two data series. The TREND function in Excel returns numbers in a linear trend matching known data points. That is, the existing data on which the trend in Excel predicts the values of Y dependent on values of X needs to be linear. There is no observed reason to alter this rate of change (e.g. mains upsizing (network reinforcement) and downsizing (slip lining) is occurring in the same cohort. Final figure is adjusted in proportion to the age-based calculation due to greater accuracy using abandoned mains data.

CW6.6 - Total length of potable water mains (>320mm and ≤ 450mm)

Extrapolated using TREND() projection in Excel. The TREND function in Excel is a statistical function that computes the linear trend line based on the given linear data set. It calculates the predictive values of Y for given array values of X and uses the least square method based on the given two data series. The TREND function in Excel returns numbers in a linear trend matching known data points. That is, the existing data on which the trend in Excel predicts the values of Y dependent on values of X needs to be linear. There is no observed reason to alter this rate of change (e.g. mains upsizing (network reinforcement) and downsizing (slip lining) is occurring in the same cohort. Final figure is adjusted in proportion to the age-based calculation due to greater accuracy using abandoned mains data.

CW6.7 - Total length of potable water mains (>450mm and ≤610mm)

Extrapolated using TREND() projection in Excel. The TREND function in Excel is a statistical function that computes the linear trend line based on the given linear data set. It calculates the predictive values of Y for given array values of X and uses the least square method based on the given two data series. The TREND function in Excel returns numbers in a linear trend matching known data points. That is, the existing data on which the trend in Excel predicts the values of Y dependent on values of X needs to be linear. There is no observed reason to alter this rate of change (e.g. mains upsizing (network reinforcement) and downsizing (slip lining) is occurring in the same cohort. Final figure is adjusted in proportion to the age-based calculation due to greater accuracy using abandoned mains data.

CW6.8 - Total length of potable water mains (> 610mm)

Extrapolated using TREND() projection in Excel. The TREND function in Excel is a statistical function that computes the linear trend line based on the given linear data set. It calculates the predictive values of Y for given array values of X and uses the least square method based on the given two data series. The TREND function in Excel returns numbers in a linear trend matching known data points. That is, the existing data on which the trend in Excel predicts the values of Y dependent on values of X needs to be linear. There is no observed reason to alter this rate of change (e.g. mains upsizing (network reinforcement) and downsizing (slip lining) is occurring in the same cohort. Final figure is adjusted in proportion to the age-based calculation due to greater accuracy using abandoned mains data.

CW6.9 - Total length of potable mains laid or structurally refurbished pre-1880

2022/2023 APR Abandoned Mains Spreadsheet used to indicate progression from early cohort to latest.

12.674 km of abandoned mains are of unknown size; therefore, this cohort was redistributed using the same logic as used for the APR for 2022/23. This cohort has been reduced by that calculated amount.

CW6.10 - Total length of potable mains laid or structurally refurbished between 1881 and 1900

2022/2023 APR Abandoned Mains Spreadsheet used to indicate progression from early cohort to latest.

12.674 km of abandoned mains are of unknown size; therefore, this cohort was redistributed using the same logic as used for the APR for 2022/23. This cohort has been reduced by that calculated amount.

CW6.11 - Total length of potable mains laid or structurally refurbished between 1901 and 1920

2022/2023 APR Abandoned Mains Spreadsheet used to indicate progression from early cohort to latest.

12.674 km of abandoned mains are of unknown size; therefore, this cohort was redistributed using the same logic as used for the APR for 2022/23. This cohort has been reduced by that calculated amount.

CW6.12 - Total length of potable mains laid or structurally refurbished between 1921 and 1940

2022/2023 APR Abandoned Mains Spreadsheet used to indicate progression from early cohort to latest.

12.674 km of abandoned mains are of unknown size; therefore, this cohort was redistributed using the same logic as used for the APR for 2022/23. This cohort has been reduced by that calculated amount.

CW6.13 - Total length of potable mains laid or structurally refurbished between 1941 and 1960

2022/2023 APR Abandoned Mains Spreadsheet used to indicate progression from early cohort to latest.

12.674 km of abandoned mains are of unknown size; therefore, this cohort was redistributed using the same logic as used for the APR for 2022/23. This cohort has been reduced by that calculated amount.

CW6.14 - Total length of potable mains laid or structurally refurbished between 1961 and 1980

2022/2023 APR Abandoned Mains Spreadsheet used to indicate progression from early cohort to latest.

12.674 km of abandoned mains are of unknown size; therefore, this cohort was redistributed using the same logic as used for the APR for 2022/23.This cohort has been reduced by that calculated amount.

CW6.15 - Total length of potable mains laid or structurally refurbished between 1981 and 2000

2022/2023 APR Abandoned Mains Spreadsheet used to indicate progression from early cohort to latest.

12.674 km of abandoned mains are of unknown size; therefore, this cohort was redistributed using the same logic as used for the APR for 2022/23.This cohort has been reduced by that calculated amount.

CW6.16 - Total length of potable mains laid or structurally refurbished between 2001 and 2020

2022/2023 APR Abandoned Mains Spreadsheet used to indicate progression from early cohort to latest.

12.674 km of abandoned mains are of unknown size; therefore, this cohort was redistributed using the same logic as used for the APR for 2022/23.This cohort has been reduced by that calculated amount.

CW6.17 - Total length of potable mains laid or structurally refurbished during and after 2021

This cohort is calculated differently. Previous years' data is added to new development mains and lengths of main identified for renewal.

CW6.18 - Number of lead communication pipes

Extrapolated using TREND() projection in Excel. The TREND function in Excel is a statistical function that computes the linear trend line based on the given linear data set. It calculates the predictive values of Y for given array values of X and uses the least square method based on the given two data series. The TREND function in Excel returns numbers in a linear trend matching known data points. That is, the existing data on which the trend in Excel predicts the values of Y dependent on values of X needs to be linear. There is no observed reason to alter this rate of change.

CW6.19 - Number of galvanised iron communication pipes

Extrapolated using TREND() projection in Excel. The TREND function in Excel is a statistical function that computes the linear trend line based on the given linear data set. It calculates the predictive values of Y for given array values of X and uses the least square method based on the given two data series. The TREND function in Excel returns numbers in a linear trend matching known data points. That is, the existing data on which the trend in Excel predicts the values of Y dependent on values of X needs to be linear. There is no observed reason to alter this rate of change.

CW6.20 - Number of other communication pipes

Extrapolated using TREND() projection in Excel. The TREND function in Excel is a statistical function that computes the linear trend line based on the given linear data set. It calculates the predictive values of Y for given array values of X and uses the least square method based on the given two data series. The TREND function in Excel returns numbers in a linear trend matching known data points. That is, the existing data on which the trend in Excel predicts the values of Y dependent on values of X needs to be linear. There is no observed reason to alter this rate of change.

CW6.21 - Number of lead communication pipes replaced or relined for water quality

Extrapolated using TREND() projection in Excel. The TREND function in Excel is a statistical function that computes the linear trend line based on the given linear data set. It calculates the predictive values of Y for given array values

of X and uses the least square method based on the given two data series. The TREND function in Excel returns numbers in a linear trend matching known data points. That is, the existing data on which the trend in Excel predicts the values of Y dependent on values of X needs to be linear. There is no observed reason to alter this rate of change.

CW6.22 - Number of lead communication pipes replaced for other reasons

12 replacements per year for highest risk priority cases committed for AMP8 (60 in total). These are due to our enhancement expenditure to replace lead pipes in 60 schools/nurseries over the AMP.

More information can be found in PRT07.07: Lead Strategy Implementation.

CW6.23 - Total length of lead communication pipes replaced or relined

This is a new metric that has not been ask for before, so communication pipe metadata is not available. Unit lengths of lead communication pipes have been estimated using the following logic:

1. 76.3% of Properties in the Portsmouth City area were built before 1970 and are assumed to be lead. This equates to 70,615 properties.
2. The estimated number of Lead service remaining in April 2025 is 80,059.
3. 88% of all lead mains are in the Portsmouth urban area.
4. As this area is largely dense urban an average comm pipe length of 5m has been adopted for 88% of properties.
5. An average length of 10m has been adopted for the remaining 12%.

CW6.24 - Number of external lead supply pipes replaced or relined

60 external supply pipe replacements for high-risk priority properties (schools, nurseries etc), as set out in the PRT07.07 Lead Strategy Implementation enhancement expenditure investment case.

CW6.25 - Total length of external lead supply pipes replaced or relined

The length of the supply pipe to schools/nurseries has been estimated at 30m from external stopcock to first tap. 2m of this is estimated internal and 28m is estimated external.

CW6.26 - Number of internal lead supply pipes replaced or relined

60 internal supply pipe replacements for high-risk priority properties (schools, nurseries etc), as set out in the PRT07.07 Lead Strategy Implementation enhancement expenditure investment case.

CW6.27 - Total length of internal lead supply pipes replaced or relined

The length of the supply pipe to schools/nurseries has been estimated at 30m from external stopcock to first tap. 2m of this is estimated internal and 28m is estimated external.

CW6.28 - Company area

Our Company area is currently 864 km2. We do not expect our area to change in future years.

CW6.29 - Compliance Risk Index

Whilst we aim for zero water quality compliance failures, we agree with Ofwat's position to introduce a deadband to mitigate against an unacceptable level of downside risk. For PR19, the deadband was set at 2.

As Drinking Water Safety Plans (DWSPs) drive continual improvements to water quality, we feel it is reasonable to expect the deadband to reduce. We have identified investment for the early years of AMP8 which will result in improvement to our CRI performance in 2028/29 and 2029/30. Our proposed performance commitment levels for PR24 are therefore set out below:

CRI	2025/26	2026/27	2027/28	2028/29	2029/30
Proposed PCL	0	0	0	0	0
Proposed PCL Deadband	2	2	2	1.75	1.5

A high CRI score for 2023/24 is expected due to 8 compliance failures outlined below. The WTW score has been impacted by the fact that failure was observed at our largest treatment works which has a significant impact on the CRI score. The output from Farlington is approximately 30% of the total daily volume supplied by the company. This incident did not affect any customers and mitigation has been put in place, with further mitigation as part of AMP8 expenditure.

Portsmouth Water	CRI Score	Details
Zonal	1.08	Hoads Hill North Supply Zone (Coliform) Hoads Hill North Supply Zone (E. coli) Hoads Hill North Supply Zone (Lead) Lavant South Supply Zone (Coliform) Walderton Supply Zone (Coliform) Littleheath Supply Zone (Coliform)
WTW	4.56	Farlington Treated (Turbidity) Eastergate Treated (Turbidity)
Reservoir	0.00	
Total CRI	**5.64**	

CW6.30 - Event Risk Index

For PR24, a performance of 100 is forecasted going forward. Since the metric was introduced in 2018, on average we report four events per year with an average ERI figure of 105.9, against an industry average of 524.7. Therefore, we expect to maintain our strong performance in this metric and will strive to better our current average over the AMP of 105.9.

In 2023 to date the Company has notified 7 events to the DWI. The ERI score has mainly been impacted by the two Cryptosporidium events seen at Funtington and Soberton. Due to the resilience of the Portsmouth Water network, where we can feed customers from multiple reservoirs through interconnecting mains to avoid interruptions to supply, the population impacted by these events is high.

Portsmouth Water	Area Affected	ERI Score	Details
2023 8894 TWFUN2 Crypto	Funtington WTW	255.868	Population of 161,832 Duration of 74 hours Inspector's assessment of 4 Seriousness score of 4

2023 8917 TWSOB2 Crypto	Soberton WTW	125.573	Population of 270,221 Duration of 29 hours Inspector's assessment of 3 Seriousness score of 4
2023 8920 ZZHH1 E. coli	Hoads Hill 1 Supply Zone	0	Assessed as a compliance failure (CRI)
2023 8927 TWFARL Turbidity	Farlington WTW	0	Assessed as a compliance failure (CRI)
2023 8937 TWEGT Turbidity	Eastergate WTW	0	Assessed as a compliance failure (CRI)
2023 9003 Gosport LOS (PRV)	Hoads Hill 2 Supply Zone	1.842	Population of 98,510 Duration of 7 hours Inspector's assessment of 1 Seriousness score of 2
2023 9189 ZZHH3 Do Not Use	Hoads Hill 3 Supply Zone	0.001	Population of 2 Duration of 72 hours Inspector's assessment of 1 Seriousness score of 3
	Total CRI	**383.28**	

TABLE CW7 Demand management - Metering activities

Introduction

It is our understanding that the data in CW7 and CW8 should be comparable to the data provided within the Water Resources Management Plan 2024 (WRMP24), submitted in a 'Revised Draft' status at the end of August 2023. The WRMP24 data has been used to populate meter numbers in CW7. However, it is important to note that the meter numbers quoted here are different to those elsewhere in the business plan tables and the current smart metering business case. The reasons for this are explained below.

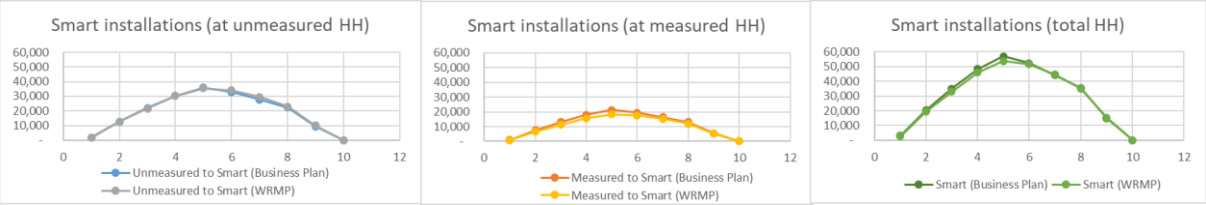
Household meter installation numbers in the WRMP and Smart Metering Business Case

The current smart metering business case identifies the number of meters to be installed in a given financial year, with forecasts constructed using a 2022/23 base year and the most up-to-date assumptions.

	Financial Year	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	Total
Business Case	Unmeasured to Smart	1,914	12,739	22,069	30,382	35,884	32,894	27,810	22,248	9,370	-	195,310
Business Case	Measured to Smart	1,131	7,529	13,043	17,956	21,209	19,441	16,437	13,149	5,539	-	115,434
Business Case	Smart installs	3,045	20,268	35,112	48,338	57,093	52,335	44,247	35,397	14,909	-	310,744
Business Case	Smart installs (Cumulative)	3,045	23,313	58,425	106,763	163,856	216,191	260,438	295,835	310,744		

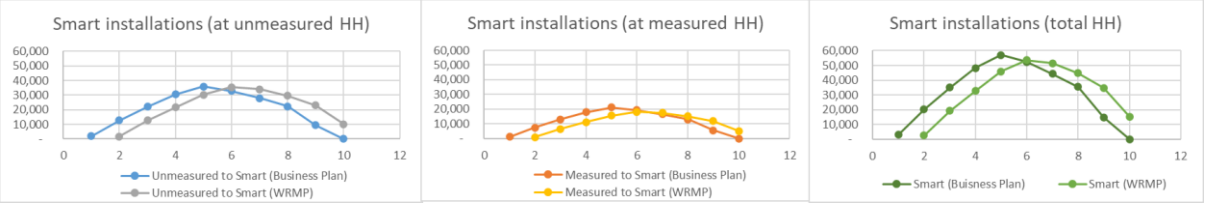
The starting point for the WRMP24 options was a previous version of the business case with forecasts constructed using a 2021/22 base year. This has resulted in a discrepancy of around 10,017 smart meters, although the roll-out profiles are similar as shown by the graphs below.

	Financial Year	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	Total
WRMP starting point	Unmeasured to Smart	1,691	12,746	21,671	30,315	35,388	34,010	29,500	23,049	10,110	-	198,480
WRMP starting point	Measured to Smart	871	6,566	11,164	15,617	18,230	17,520	15,197	11,874	5,208	-	102,247
WRMP starting point	Smart installs	2,562	19,312	32,835	45,931	53,618	51,530	44,698	34,923	15,318	-	300,727
WRMP starting point	Smart installs (Cumulative)	2,562	21,874	54,709	100,641	154,259	205,789	250,486	285,409	300,727		



The next step for the WRMP24 was to apply a 1 year lag to the smart metering installations relative to the business case. This is because it is assumed that the full annual average benefit of installing a smart meter will not occur until the financial year after the meter has been installed. This lag is shown in the table and graphs below, noting that there is no impact on the total number of meters installed.

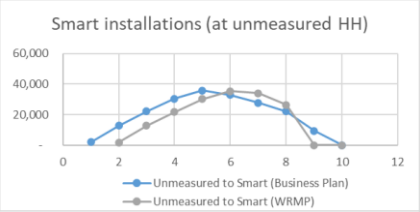
	Financial Year	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	Total
WRMP 1 year shift	Unmeasured to Smart		1,691	12,746	21,671	30,315	35,388	34,010	29,500	23,049	10,110	198,480
WRMP 1 year shift	Measured to Smart		871	6,566	11,164	15,617	18,230	17,520	15,197	11,874	5,208	102,247
WRMP 1 year shift	Smart installs		2,562	19,312	32,835	45,931	53,618	51,530	44,698	34,923	15,318	300,727
WRMP 1 year shift	Smart installs (Cumulative)	-	2,562	21,874	54,709	100,641	154,259	205,789	250,486	285,409	300,727	

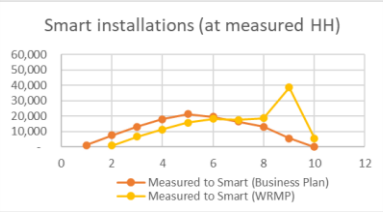


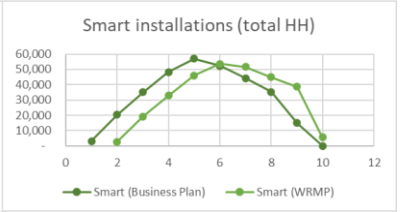
The final step for the WRMP24 was to cap the number of 'Unmeasured to Smart' meters that can be installed to 90% (ninety per cent) of the forecast number of unmeasured properties in 2024/25. This was a conservative WRMP24 assumption to avoid over-estimating the benefit of the smart metering programme on the supply demand balance, because it may not be possible to install a meter at every unmeasured property. However, as per the business case, we will set out to try and achieve 100% (one hundred per cent) smart meter penetration.

Once the 'Unmeasured to Smart' meters cap is reached in the WRMP24 model, installations are applied to the 'Measured to Smart' population instead (as long as the number of measured properties in 2024/25 is not exceeded). Towards the end of the smart metering programme this results in an uptick in 'Measured to Smart' installations and a reduction in 'Unmeasured to Smart' installations, with an overall reduction in the total number of smart meters installed (see table and graphs below).

	Financial Year	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	Total
WRMP 90% assumption	Unmeasured to Smart		1,691	12,746	21,671	30,315	35,388	34,010	26,429	-	-	162,250
WRMP 90% assumption	Measured to Smart		871	6,566	11,164	15,617	18,230	17,520	18,582	38,558	5,557	132,665
WRMP 90% assumption	Smart installs		2,562	19,312	32,835	45,931	53,618	51,530	45,011	38,558	5,557	294,915
WRMP 90% assumption	Smart installs (Cumulative)	-	2,562	21,874	54,709	100,641	154,259	205,789	250,800	289,358	294,915	







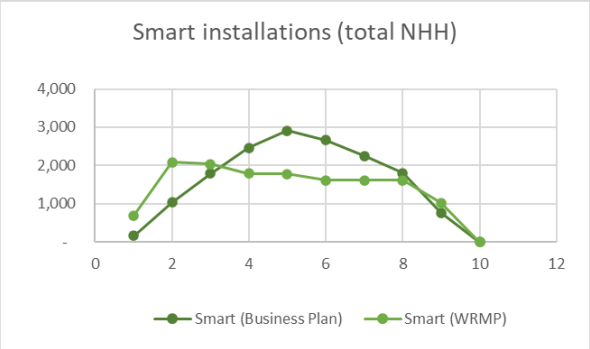
Non-Household meter installation numbers in the WRMP and Smart Metering Business Case

The current smart metering business case identifies the number of meters to be installed in a given financial year, with forecasts constructed using a 2022/23 base year and the most up-to-date assumptions.

	FY	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	Total
Business Case	Unmeasured to Smart	19	126	218	300	355	325	275	220	92	-	1,930
Business Case	Measured to Smart	136	906	1,570	2,161	2,553	2,340	1,978	1,583	667	-	13,894
Business Case	Smart installs	155	1,032	1,788	2,461	2,908	2,665	2,253	1,803	759	-	15,824
Business Case	Smart installs (Cumulative)	155	1,187	2,975	5,436	8,344	11,009	13,262	15,065	15,824		

The starting point for the WRMP24 option was a previous version of the business case with forecasts constructed using a 2021/22 base year. This has resulted in a discrepancy of around 1,584 smart meters. The current business plan also assumes a revised installation profile that is more aligned with the 'bell curve' for household metering. Finally, it is also noted that the business case assumes a small number of 'Unmeasured to Smart' installations, although the WRMP24 only assumes 'Measured to Smart' installations.

	Financial Year	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	Total
WRMP	Target top 10%	160	480	430	180	174						1,930
WRMP	Target bottom 90%	536	1,608	1,608	1,608	1,608	1,608	1,608	1,608	1,024	-	13,894
WRMP	Total Measured to Smart	696	2,088	2,038	1,788	1,782	1,608	1,608	1,608	1,024	-	14,240
WRMP	Smart installs (Cumulative)	696	2,784	4,822	6,610	8,392	10,000	11,608	13,216	14,240		



CW7.1 New optant meter installation for existing customers

CW7.2 New selective meter installation for existing customers

The PR24 investment case on smart metering assumes 102,988 new HH smart meters are installed in AMP8 @ a unit cost of £328 per meter. This is the cost of the meter and the installation costs but does not include the smart metering programme overheads and infrastructure costs, These are reported separately on CW3.87 and CW3.88.

FY	25/26	26/27	27/28	28/29	29/30
Unmeasured to Smart	1914	12739	22069	30382	35884

Metering	AMP 8	Meters	Unit cost
New meters introduced by companies for existing customers; metering totex	£33,775,773	102,988	£328
New meters for existing customers - business; metering totex	£847,790	1,018	£833
Replacement of existing basic meters with AMI meters for residential customers; metering totex	£6,534,154	60,868	£107
Replacement of existing basic meters with AMI meters for business customers; metering totex	£1,834,809	7,326	£250

	HH	25/26	26/27	27/28	28/29	29/30
CW3.63	Unmeasured to Smart	£627,712	£4,177,861	£7,237,712	£9,964,030	£11,768,457

The costs have been apportioned between new optant meters and new selective meters in line with number of optant meters reported in CW7. The investment case does not distinguish between optants and selective meters. We assume all new meters installed are AMI metres

CW7.3 New business meter installation for existing customers

The PR24 investment case on smart metering assumes 1018 new NHH smart meters are installed in AMP8 @ a unit cost of £833 per meter. This is the cost of the meter and the installation costs but does not include the smart metering programme overheads and infrastructure costs, These are reported separately on CW3.87 and CW3.88.

FY	25/26	26/27	27/28	28/29	29/30
Unmeasured to Smart	19	126	218	300	355

Metering	AMP 8	Meters	Unit cost
New meters introduced by companies for existing customers; metering totex	£33,775,773	102,988	£328
New meters for existing customers - business; metering totex	£847,790	1,018	£833
Replacement of existing basic meters with AMI meters for residential customers; metering totex	£6,534,154	60,868	£107
Replacement of existing basic meters with AMI meters for business customers; metering totex	£1,834,809	7,326	£250

	NHH	25/26	26/27	27/28	28/29	29/30
CW3.66	Unmeasured to Smart	£113,260.75	£754,516.44	£1,307,495.38	£1,799,679.95	£2,126,137.40

CW.7.4 Residential meters renewed

The PR24 investment case on smart metering assumes 60,868 new HH smart meters replace basic meters in AMP8 @ a unit cost of £107 per meter. This is the cost of the meter and the installation costs but does not include the smart metering programme overheads and infrastructure costs, These are reported separately on CW3.87 and CW3.88

FY	25/26	26/27	27/28	28/29	29/30
Measured to Smart	1131	7529	13043	17956	21209

Metering	AMP 8	Meters	Unit cost
New meters introduced by companies for existing customers; metering totex	£33,775,773	102,988	£328
New meters for existing customers - business; metering totex	£847,790	1,018	£833
Replacement of existing basic meters with AMI meters for residential customers; metering totex	£6,534,154	60,868	£107
Replacement of existing basic meters with AMI meters for business customers; metering totex	£1,834,809	7,326	£250

HH	25/26	26/27	27/28	28/29	29/30
Measured to Smart	£121,412	£808,235	£1,400,161	£1,927,569	£2,276,777

CW.7.5 Business meters renewed

The PR24 investment case on smart metering assumes 60,868 new NHH smart meters replace basic meters in AMP8 @ a unit cost of £107 per meter. This is the cost of the meter and the installation costs but does not include the smart metering programme overheads and infrastructure costs, These are reported separately on CW3.87 and CW3.88

FY	25/26	26/27	27/28	28/29	29/30
Measured to Smart	136	906	1570	2161	2553

Metering	AMP 8	Meters	Unit cost
New meters introduced by companies for existing customers; metering totex	£33,775,773	102,988	£328
New meters for existing customers - business; metering totex	£847,790	1,018	£833
Replacement of existing basic meters with AMI meters for residential customers; metering totex	£6,534,154	60,868	£107
Replacement of existing basic meters with AMI meters for business customers; metering totex	£1,834,809	7,326	£250

	NHH	25/26	26/27	27/28	28/29	29/30
CW3.81	Measured to Smart	£34,061.43	£226,909.22	£393,209.14	£541,226.08	£639,403.14

CW.7.6 New optant meters installed for existing customers

All optant meters are assumed to be Basic (non-automated) meter installations (household), hence zero values for AMI and AMR meters.

Outturn data for 2022/23 is taken from the **Annual Performance Report Data Tables 2023** (6D.6). The 2022/23 outturn and the forecast data for 2023/24 and 2024/25 matches that in Table 1 **Appendix 10B** of the Revised Draft WRMP24 (Water Efficiency Strategy). The forecast data for 2023/24 and 2024/25 (and up to 2029/30) reflects that within the Portsmouth Water demand model v230, which was used to inform the Revised Draft WRMP24.

WRMP data (including demand model v230) was subject to an assurance process prior to submission of the Revised Draft WRMP24 tables to regulators in August 2023. No material issues were remaining at the time of submission.

CW.7.7 New selective meters installed for existing customers

This data line includes our 'Not for Revenue' and 'Change of Occupier' metering in AMP7. These meters are assumed to be Basic (non-automated) meter installations (household), hence zero values for AMI and AMR meters. Outturn data for 2022/23 is taken from the **Annual Performance Report Data Tables 2023** (6D.7). Forecast data for 2023/24 and 2024/25 matches that in **Appendix 10B** of the Revised Draft WRMP24 (Water Efficiency Strategy). We are not planning 'Not for Revenue' or 'Change of Occupier' metering in AMP8 with a focus on rolling out smart metering instead.

Where we have fitted a not for revenue meter to a customer's premise, we will work with that customer to see if they are better off to change to a metered bill and agree to being switched to such an arrangement straight away. Notwithstanding this work, we will also prepare with the customer for the transition to a metered bill on the 1st April 2025, should our WRMP24 be approved by the Secretary of State, and we are legally able to do so. Throughout this journey we will take into account the vulnerabilities of individuals and support everyone through this process to the best of our ability.

The Revised Draft WRMP24 also includes compulsory metering of customers in unmeasured properties with smart (AMI) meters from 2025/26. Data for CW.7.7 in AMP8 has been populated using data from Table 3c of the Revised Draft WRMP24 (*reference 34.3FP: Compulsory metering - properties*).

WRMP data (including demand model v230) was subject to an assurance process prior to submission of the Revised Draft WRMP24 tables to regulators in August 2023. No material issues were remaining at the time of submission.

CW.7.8 New business meters installed for existing customers

Outturn data for 2022/23 is taken from the **Annual Performance Report Data Tables 2023** (6D.8).

For the WRMP forecast it is assumed that there are no meters installed at existing business properties that do not have an existing meter installation. For this reason, all forecast values beyond 2022/23 are zero.

CW.7.9 Residential meters renewed

Outturn data for 2022/23 is taken from the **Annual Performance Report Data Tables 2023** (6D.9) i.e. no meters renewed. It is assumed that no meters will be renewed in 2023/24 or 2024/25.

The Revised Draft WRMP24 includes the replacement of basic meters with smart (AMI) meters from 2025/26. Data for CW.7.9 has been populated using data from Table 2c of the Revised Draft WRMP24 (reference *1.32FPM: Automated Meter Infrastructure (AMI) - upgrades from basic or AMR meters (household)*).

CW.7.10 Business meters renewed

Outturn data for 2022/23 is taken from the **Annual Performance Report Data Tables 2023** (6D.10) i.e. no meters renewed. It is assumed that no meters will be renewed in 2023/24 or 2024/25.

The Revised Draft WRMP24 includes the replacement of basic meters with smart (AMI) meters from 2025/26. Data for CW.7.10 has been populated based on Table 2c of the Revised Draft WRMP24 (reference *2.3FPM: Automated Meter Infrastructure (AMI) - installations (non-household)*). The numbers are reduced by 0.17 in CW7.10 to remove the WRMP assumption of 0.17 thousand per year new businesses.

CW.7.11 Replacement of basic meters with smart meters for residential customers

The Revised Draft WRMP24 includes the replacement of basic meters with smart (AMI) meters. Data for CW.7.11 has been populated using data from Table 2c of the Revised Draft WRMP24 (reference *1.32FPM: Automated Meter Infrastructure (AMI) - upgrades from basic or AMR meters (household)*).

CW.7.12 Replacement of AMR meter with AMI meters for residential customers

Portsmouth Water does not have AMR meters. Therefore this line is zero.

CW.7.13 Replacement of basic meters with smart meters for business customers

The Revised Draft WRMP24 includes the replacement of basic meters with smart (AMI) meters. Data for CW.7.13 has been populated based on Table 2c of the Revised Draft WRMP24 (reference *2.3FPM: Automated Meter Infrastructure (AMI) - installations (non-household)*). The numbers are reduced by 0.17 in CW7.13 to remove the WRMP assumption of 0.17 thousand per year new businesses.

CW.7.14 Replacement of AMR meter with AMI meters for business customers

Portsmouth Water does not have AMR meters for business customers (they are all basic meters). Therefore this line is zero.

CW.7.15 New residential meters installed for existing customers – supply-demand balance benefit

The Revised Draft WRMP24 includes the benefit associated with change of occupier and optant (basic) metering in the baseline (up to 2024/25) and also the benefit of optant (basic) metering and compulsory (smart) metering as options from 2025/26. In the WRMP tables the benefit is expressed for the Dry Year condition.

The values in CW7.15 reflect those within the Portsmouth Water demand model v230 for a Dry Year condition and on a cumulative basis to maintain consistency with table CW8; this is the model used to inform the Revised Draft WRMP24.

WRMP data (including demand model v230) was subject to an assurance process prior to submission of the Revised Draft WRMP24 tables to regulators in August 2023. No material issues were remaining at the time of submission.

CW.7.16 New business meters installed for existing customers – supply-demand balance benefit

Outturn data for 2022/23 is taken from the **Annual Performance Report Data Tables 2023** (6D.16) i.e. no meters installed and therefore no benefits.

For the WRMP forecast it is assumed that there are no meters installed at existing business properties that do not have an existing meter installation. For this reason, all forecast values beyond 2022/23 are zero.

CW.7.17 Replacement of basic meter with smart meters for residential customers – supply-demand balance benefit

The Revised Draft WRMP24 includes the benefit of replacement of basic meters with smart (AMI) meters for a Dry Year condition.

The values in CW7.17 reflect those in the Revised Draft WRMP24 for the Dry Year condition and on a cumulative basis to maintain consistency with table CW8. The relevant option is 'AMI / Smart metering - Household - Company - High+' on the 'Table 5. Option Benefits' tab of the Revised Draft WRMP24 tables.

WRMP data (including demand model v230) was subject to an assurance process prior to submission of the Revised Draft WRMP24 tables to regulators in August 2023. No material issues were remaining at the time of submission.

CW.7.18 Replacement of AMR meter with AMI meter for residential customers– supply-demand balance benefit

Portsmouth Water does not have AMR meters. Therefore this line is zero.

CW.7.19 Replacement of basic meter with smart meters for business customers – supply-demand balance benefit

The Revised Draft WRMP24 includes the replacement of basic meters with smart (AMI) meters for the Dry Year condition.

The values in CW7.19 reflect those in the Revised Draft WRMP24 for the Dry Year condition and on a cumulative basis to maintain consistency with table CW8. The relevant option is 'AMI / Smart metering - Non-Household - Company - High+' on the 'Table 5. Option Benefits' tab of the Revised Draft WRMP24 tables.

WRMP data (including demand model v230) was subject to an assurance process prior to submission of the Revised Draft WRMP24 tables to regulators in August 2023. No material issues were remaining at the time of submission.

CW.7.20 Replacement of AMR meter with AMI meter for business customers– supply-demand balance benefit

Portsmouth Water does not have AMR meters. Therefore this line is zero.

CW.7.21 Residential properties - meter penetration

The Revised Draft WRMP24 includes meter penetration data on Table 3c of the Revised Draft WRMP24 (reference *43FP: Total Household Metering penetration (excl. voids)*). However for CW.7.21 the WRMP property data has been rebased using 2022/23 outturn data. Furthermore, WRMP assumed that all new builds would be supplied by Portsmouth Water, whereas CW.7.21 assumes a proportion of new builds in a year will be supplied by NAVs (20% in 2023-24 rising to 50% by 2032-33).

The data on CW.7.21 is derived from 'SUP1A and SUP1B – Supportive Workings_for_CW7.xlsx'. The cumulative number of smart meters is calculated based on 'New build properties – properties' (from 2025-26), 'Compulsory metering – properties' and 'Automated Meter Infrastructure (AMI) - upgrades from basic or AMR meters (household)'. This is compared to the total number of household properties (excl. voids) to derive the % of smart meter penetration.

The % of basic meter penetration compares the number of measured household properties (excl. voids) excluding the cumulative number of smart meter installations, with the total number of household properties (excl. voids).

CW.7.22 Per capita consumption (measured)

Measured Per Capita Consumption (PCC) is calculated based on 'Measured household consumption (excluding supply pipe leakage)' and 'Measured Household – Population'. Similarly unmeasured PCC is calculated using the equivalent figures for unmeasured households.

The Revised Draft WRMP24 data has been rebased to 2022-23 (from 2021-22) for the purpose of completing tables such as CW5 and SUP1A. The rebased data from 'CW5 Workings v2.xlsx' ('Calculated Household Measured NYAA based on Actual' and 'Calculated Household Unmeasured NYAA based on Actual' has been used to populate CW.7.22 and CW.7.23. The data represent PCC for the normal year condition.

CW.7.23 Per capita consumption (unmeasured)

Measured Per Capita Consumption (PCC) is calculated based on 'Measured household consumption (excluding supply pipe leakage)' and 'Measured Household – Population'. Similarly unmeasured PCC is calculated using the equivalent figures for unmeasured households.

The Revised Draft WRMP24 data has been rebased to 2022-23 (from 2021-22) for the purpose of completing tables such as CW5 and SUP1A. The rebased data from 'CW5 Workings v2.xlsx' ('Calculated Household Measured NYAA based on Actual' and 'Calculated Household Unmeasured NYAA based on Actual' has been used to populate CW.7.22 and CW.7.23. The data represent PCC for the normal year condition.

CW.7.24 New meter installation - residential property - cost per property

AMI meters only fitted from AMP8

Metering	AMP 8	Meters	Unit cost	
New meters introduced by companies for existing customers; metering totex	£33,775,773	102,988	£328	CW3.63

CW.7.25 New meter installation - business property - cost per property

AMI meters only fitted from AMP8

Metering	AMP 8	Meters	Unit cost
New meters for existing customers - business; metering totex	£847,790	1,018	£833

CW.7.26 Replacement of existing basic meter - residential property - cost per property - total cost

AMI meters only fitted from AMP8

Metering	AMP 8	Meters	Unit cost
New meters for existing customers - business; metering totex	£847,790	1,018	£833

CW.7.27 Replacement of existing basic meter - residential property - enhancement element of total cost

AMI meters only fitted from AMP8, assumes 100% enhancement as basic meter only replaced upon fault

Metering	AMP 8	Meters	Unit cost	
Replacement of existing basic meters with AMI meters for residential customers; metering totex	£6,534,154	60,868	£107	CW3.72

CW.7.28 Replacement of existing basic meter - business property - cost per property - total cost

AMI meters only fitted from AMP8

Metering	AMP 8	Meters	Unit cost	
Replacement of existing basic meters with AMI meters for business customers; metering totex	£1,834,809	7,326	£250	CW3.81

CW.7.29 Replacement of existing basic meter - business property - enhancement element of total cost

AMI meters only fitted from AMP8, assumes 100% enhancement as basic meter only replaced upon fault

Metering	AMP 8	Meters	Unit cost	
Replacement of existing basic meters with AMI meters for business customers; metering totex	£1,834,809	7,326	£250	CW3.81

CW.7.30 Replacement of existing AMR meter - residential property - cost per property - total cost

NA – PW have no AMR meters

CW.7.31 Replacement of existing AMR meter - residential property - enhancement element of total cost

NA – PW have no AMR meters

CW.7.32 Replacement of existing AMR meter - business property - cost per property - total cost

NA – PW have no AMR meters

CW.7.33 Replacement of existing AMR meter - business property - enhancement element of total cost

NA – PW have no AMR meters

CW.7.34 Upgrade of existing basic meter - residential property - cost per property - total cost

NA – Investment case assumes meters replaced when upgrading to AMI

CW.7.35 Upgrade of existing basic meter - residential property - enhancement element of total cost

NA – Investment case assumes meters replaced when upgrading to AMI

CW.7.36 Upgrade of existing basic meter - business property - cost per property - total cost

NA – Investment case assumes meters replaced when upgrading to AMI

CW.7.37 Upgrade of existing basic meter - business property - enhancement element of total cost

NA – Investment case assumes meters replaced when upgrading to AMI

CW.7.38 Upgrade of existing AMR meter - residential property - cost per property - total cost

NA – Investment case assumes meters replaced when upgrading to AMI

CW.7.39 Upgrade of existing AMR meter - residential property - enhancement element of total cost

NA – Investment case assumes meters replaced when upgrading to AMI

CW.7.40 Upgrade of existing AMR meter - business property - cost per property - total cost

NA – Investment case assumes meters replaced when upgrading to AMI

CW.7.41 Upgrade of existing AMR meter - business property - enhancement element of total cost

NA – Investment case assumes meters replaced when upgrading to AMI

CW.7.42 New meter installation - residential property - benefits per meter installation

The benefit is derived from the Portsmouth Water demand model v230 and assumed savings for Universal metering (Smart AMI) and optants (Basic). For the Revised Draft WRMP24 the behavioural consumption benefits of smart AMI metering were assumed to be 61.57 l/prop/d. The behavioural consumption benefits of basic metering for optants were assumed to be 20.92 l/prop/d. There were no leakage related benefits associated with the behavioural impact of metering for the WRMP.

The data from smart metering unlocks further savings (both consumption and leakage) under the Revised Draft WRMP24 option ‘Metering CSL - Company - High+’. This is through improved targeting of plumbing losses and supply pipe leaks. The consumption benefits for this option (20.51 l/prop/d) and the leakage benefits for this option (13.67 l/prop/d) are dependent on smart metering data and therefore included in CW7.42.

WRMP data (including demand model v230) was subject to an assurance process prior to submission of the Revised Draft WRMP24 tables to regulators in August 2023. No material issues were remaining at the time of submission.

CW.7.43 New meter installation - business property - benefits per meter installation

The WRMP does not forecast installation of new meters for business properties and therefore the benefit is entered as zero.

CW.7.44 Replacement of existing basic meter - residential property - benefits per meter installation

The benefit is derived from the Portsmouth Water demand model v230 and assumed savings for the switch of existing basic meters to smart AMI meters. For the Revised Draft WRMP24 the behavioural consumption benefits were assumed to be 25.65 l/prop/d. There were no leakage related benefits associated with the behavioural impact of metering for the WRMP.

The data from smart metering unlocks further savings (both consumption and leakage) under the Revised Draft WRMP24 option 'Metering CSL - Company - High+'. This is through improved targeting of plumbing losses and supply pipe leaks. The consumption benefits for this option (20.51 l/prop/d) and the leakage benefits for this option (13.67 l/prop/d) are dependent on smart metering data and therefore included in CW7.44.

WRMP data (including demand model v230) was subject to an assurance process prior to submission of the Revised Draft WRMP24 tables to regulators in August 2023. No material issues were remaining at the time of submission.

CW.7.45 Replacement of existing basic meter - business property - benefits per meter installation

The benefit is derived from the Portsmouth Water demand model v230 and assumed savings for the switch of existing basic meters to smart AMI meters.

The model assumes a 13% saving (3,122,483 litres per day) for businesses contributing to the top 10% of daily consumption (24,019,101 litres per day); with 1,424 businesses, this equates to a 2,192.76 l/business/day saving. The model also assumes a 10% saving (554,627 litres per day) for businesses contributing to the bottom 90% of daily consumption (5,546,274 litres per day); with 12,816 businesses, this equates to a 43.28 l/business/day saving. Therefore the saving across all businesses is 258.22 litres per day on average, although not all meter replacements will occur in AMP8.

During AMP8 we assume smart AMI metering of all 1,424 businesses contributing to the top 10% of daily consumption, but only 6,968 businesses contributing to the bottom 90% of daily consumption. Therefore the AMP8 savings for the bottom 90% are 301,548 litres. Therefore the saving across all businesses is 408.01 litres per day on average during AMP8.

WRMP data (including demand model v230) was subject to an assurance process prior to submission of the Revised Draft WRMP24 tables to regulators in August 2023. No material issues were remaining at the time of submission.

CW.7.46 Replacement of existing AMR meter - residential property - benefits per meter installation

Portsmouth Water has no AMR meters and therefore the benefit is entered as zero.

CW.7.47 Replacement of existing AMR meter - business property - benefits per meter installation

Portsmouth Water has no AMR meters and therefore the benefit is entered as zero.

CW.7.48 Upgrade of existing basic meter - residential property - benefits per meter installation

We are assuming meter replacement rather than upgrade. Therefore the benefit is entered as zero.

CW.7.49 Upgrade of existing basic meter - business property - benefits per meter installation

We are assuming meter replacement rather than upgrade. Therefore the benefit is entered as zero.

CW.7.50 Upgrade of existing AMR meter - residential property - benefits per meter installation

We are assuming meter replacement rather than upgrade. Therefore the benefit is entered as zero.

CW.7.51 Upgrade of existing AMR meter - business property - benefits per meter installation

We are assuming meter replacement rather than upgrade. Therefore the benefit is entered as zero.

TABLE CW8 WRMP schemes (excluding leakage and metering activities)

Overarching Commentary

Schemes Names and Year of First Use:

- Schemes are listed based on 'Portsmouth Water WRMP24Tables_v6.xlsx', submitted to regulators as part of the Revised Draft WRMP24 submission on 31st August 2023.
- Tab '5. Options Benefits' was filtered using column H for 'Preferred (most likely) programme' and then data in column D ('Option ID') and column C ('Option name') has been extracted for use in CW8. The column for 'Delivery Year (in use)' in CW8 is set to the first year where an option demonstrates a benefit on the '5. Options Benefits' tab.
- Certain WRMP options are excluded because they fall within the 'leakage and metering activities'. These are:
    - AMI / Smart metering - Infrastructure - Company - High+
    - AMI / Smart metering - Household - Company - High+
    - AMI / Smart metering - Non-Household - Company - High+
    - Compulsory metering – Household - Company - High+
    - Optant metering - Company - High+
    - Leakage reduction - Active Leakage Control - Company - High+
    - Leakage reduction - Customer engagement / education / incentives - Non-Household - Company - High+
- Other options listed on Tab '5. Options Benefits' of the WRMP24 tables are excluded because they are Southern Water options. These are:
    - Havant Thicket To Pulborough WTW: 50Ml/d
    - Bulk import (HSE): PWC Source A to Otterbourne (21Ml/d)
    - Import: Havant Thicket - Otterbourne direct raw water transfer (90Ml/d)
    - Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP (60Ml/d)
    - Havant Thicket To Pulborough WTW: 50Ml/d WTW Phase 2
    - Import from Portsmouth Water (additional 30Ml/d)
    - Import: PWC at Pulborough (15Ml/d)
    - Import: PWC at Pulborough extension (15Ml/d)
    - Additional import from Portsmouth Water (Additional 21Ml/d)
- Please note that option 'Metering CSL - Company - High+' is included in table CW8, but only the consumption related benefits are identified. The leakage reduction benefits are excluded as per the guidance for CW8.
- Please note that Havant Thicket Reservoir is not an option in the WRMP24 tables. The scheme is approved and under construction and therefore it is treated as baseline.

Benefits Commentary

CW8.1 Resilience change from 1 in 500 to 1 in 200 for PWSPRT

This option was included in WRMP at the request of our regulators (there are no costs associated with the option). It captures the dry year benefit associated with a 1 in 200 year level of resilience relative to a 1 in 500 year level of resilience. The option benefits cease from 2039-40. The value in the 'After 2029-30' column reflects the average annual benefit from 2030-31 to 2038-39.

CW8.2 Pressure control device - Company - High+

The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.3 Government-led Demand Reduction - Profile C+ (Portsmouth Water)

There are no costs associated with the option as it is Government led. The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.4 Household audit - Company - High+

The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.5 Non-household audit - Company - High+

The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.6 Awareness campaign: community - Company - High+

The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.7 Multi- channel proactive coms - Company - High+

The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.8 Education programme - Company - High+

The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.9 Retrofit Gadgets - Company - High+

The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.10 Introduce innovative tariffs - Company - High+

The WRMP assumes this option cannot be deployed fairly until the roll out of smart metering is completed. Therefore benefits commence in 2035-36. The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.11 Leak Alarm - Company - High+
The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.12 Community Reward (Waterfit platform) - Company - High+

The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.13 Vulnerability - Company - High+

The value in the 'After 2029-30' column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

CW8.14 Upgrade Source O Booster to 25Mld

The value in the 'After 2029-30' column reflects the dry year benefit once the option is first utilised in 2039-40. The annual benefit remains constant post 2039-40 for the WRMP reported pathway (situation 4). The benefit reflects the unlocking of conjunctive use benefit associated with the Havant Thicket Reservoir.

CW8.15 HT 20 Ml/d to Service Reservoir B via Works A: Phase 1 10Ml/d WTW

All benefits in Tab '5. Option Benefits' of the WRMP24 are zero. This is because the deployable output / WAFU comes from a Southern Water option (*Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP (60Ml/d)*). The 'HT 20 Ml/d to Service Reservoir B via Works A: Phase 1 10Ml/d WTW' option allows 10Ml/d of additional water to be abstracted from Havant Thicket reservoir (supported by Budds Farm), treated, and used to supply Portsmouth Water customers. Therefore the benefit in CW8 is stated as 10Ml/d. The option is not treated as an interconnector.

CW8.16 HT 20 Ml/d to Service Reservoir B via Works A: Phase 2 10Ml/d WTW

All benefits in Tab '5. Option Benefits' of the WRMP24 are zero. This is because the deployable output / WAFU comes from a Southern Water option (*Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP (60Ml/d)*). The 'HT 20 Ml/d to Service Reservoir B via Works A: Phase 2 10Ml/d WTW' option allows 10Ml/d of additional water to be abstracted from Havant Thicket reservoir (supported by Budds Farm), treated, and used to supply Portsmouth Water customers. Therefore the benefit in CW8 is stated as 10Ml/d. The option is not treated as an interconnector.

CW8.17 HT to SRN Otterbourne WSW spur to Service Reservoir C: 10Ml/d

All benefits in Tab '5. Option Benefits' of the WRMP24 are zero. This is because the deployable output / WAFU comes from a Southern Water option (*Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP (60Ml/d)*). The 'HT to SRN Otterbourne WSW spur to Service Reservoir C: 10Ml/d' option allows 10Ml/d of additional water to be abstracted from Havant Thicket reservoir (supported by Budds Farm), treated, and used to supply Portsmouth Water customers. Therefore the benefit in CW8 is stated as 10Ml/d. The option is not treated as an interconnector.

CW8.18 Drought Permit: Source S (to 2041)

This is a drought permit option that ceases to be used beyond 2040-41. The value in the 'After 2029-30' column reflects the maximum dry year benefit up until 2040-41 for the WRMP reported pathway (situation 4).

CW8.19 Non-essential use bans

There are assumed to be negligible costs associated with the option. The value in the 'After 2029-30' column reflects the maximum dry year benefit for the WRMP reported pathway (situation 4).

CW8.20 Temporary use bans

There are assumed to be negligible costs associated with the option. The value in the 'After 2029-30' column reflects the maximum dry year benefit for the WRMP reported pathway (situation 4).

CW8.21 SRN Otterbourne WSW to Source A

The value in the 'After 2029-30' column reflects the maximum benefit in a dry year for the WRMP reported pathway (situation 4).

CW8.22 Metering CSL - Company - High+

Option ‘Metering CSL - Company - High+’ is included in table CW8, but only the consumption related benefits are identified. The leakage reduction benefits are excluded as per the guidance for CW8. The value in the ‘After 2029-30’ column reflects the dry year maximum cumulative benefit post 2029-30 for the WRMP reported pathway (situation 4).

Cost Commentary

The schemes presented in CW8 are consistent with that of the rdWRMP ‘preferred’ pathway (situation 4). The options selected in Situation 4 have been determined using the best value planning investment model developed alongside the WRSE group along with other member water companies. This best value planning process is outlined in both our rdWRMP and LTDS documents and supports the decisions we make to ensure we provide best value to our customers and benefit our environment.

The scheme reference provided in C8 is consistent with the WRMP24 reference in column B of the WRMP24 Tables 4 and 5.

Price Base

The investment model used by the WRSE, requires all member companies to provide data using input data sheets. These data sheets require the owner to provide a range of data for the investment options of which they have available. This includes the CAPEX and OPEX costs of each option and the price base that the data is in. The investment model is able to identify the price base of the data and inflate and deflate appropriately to the 2020/21 price base required of the WRMP24.

Option ID	Metric	Sub-Metric	FixedV	Scenario	Percent	Comment	Confidence	Year 1	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
PRT_ALL_EF-VEF_ALL_ALL_innovative tariffs hig	Capex	Profiled Non-Aanalticed	Fixed					2026	0	0	0	0	0	0	0	0	0	500000
PRT_ALL_EF-VEF_ALL_ALL_innovative tariffs hig	Opex	Cost	Fixed					2026	0	0	0	0	0	0	0	0	0	0
PRT_PRT_EF-CRE_ALL_ALL_uni_infrs high+	Capex	Profiled Non-Aanalticed	Fixed					2026	£3,700	£79,900	£260,050	£524,100	£960,200	£1,220,700	£1,517,700	£1,769,850	£1,935,820	£1,959,400	£0
PRT_PRT_EF-CRE_ALL_ALL_uni_infrs high+	Opex	Cost	Fixed					2026	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	########
PRT_PRT_EF-CRE_ALL_ALL_uni_innrt_m_hh high	Capex	Profiled Non-Aanalticed	Fixed					2026	£792,217	£5,023,630	£6,702,215	£11,360,384	£14,150,604	£12,371,106	£10,366,736	£8,773,432	£3,635,283	£0	£0
PRT_PRT_EF-CRE_ALL_ALL_uni_innrt_m_hh high	Opex	Cost	Fixed					2026	0	0	0	0	0	0	0	0	0	0	0
PRT_PRT_EF-CRE_ALL_ALL_uni_innrt_m_nhh hig	Capex	Profiled Non-Aanalticed	Fixed					2026	£255,706	£534,382	£758,437	£972,123	£1,114,458	£1,037,367	£905,072	£762,203	£282,065	£50,000	£0
PRT_PRT_EF-CRE_ALL_ALL_uni_innrt_m_nhh hig	Opex	Cost	Fixed					2026	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -
PRT_PRT_EF-CRE_ALL_ALL_comp metering high+	Capex	Profiled Non-Aanalticed	Fixed					2026	£14,696,287	£5,421,076	£4,573,267	£4,726,706	£5,502,723	£5,756,104	£5,048,453	£4,274,125	£1,726,413	£372,345	£640,000
PRT_PRT_EF-CRE_ALL_ALL_comp metering high+	Opex	Cost	Fixed					2026	£2,139,450	£2,520,400	£2,482,075	£2,482,075	£2,482,075	£2,421,675	£2,421,675	£2,421,675	£2,421,675	£2,421,675	£2,766,362
PRT_PRT_EF-CRE_ALL_ALL_hh_pressure high+	Capex	Profiled Non-Aanalticed	Fixed					2026	0	0	0	0	0	0	0	0	0	0	0
PRT_PRT_EF-CRE_ALL_ALL_hh_pressure high+	Opex	Cost	Fixed					2026	6365.00	6365.00	6365.00	6365.00	6365.00	83632.00	83632.00	83632.00	83632.00	83632.00	203550.00
PRT_PRT_EF-CRE_ALL_ALL_optsat_meter high+	Capex	Profiled Non-Aanalticed	Fixed					2026	£502,562	£402,065	£321,652	£257,322	£205,857	£164,686	£131,749	£0	£0	£0	£0
PRT_PRT_EF-LKR_ALL_ALL_leakage_alc high+	Capex	Profiled Non-Aanalticed	Fixed					2026	£920,926	£926,420	£913,730	£1,065,730	£1,075,200	£1,215,730	£1,065,730	£1,082,240	£1,011,730	£1,011,730	£1,138,500
PRT_PRT_EF-LKR_ALL_ALL_leakage_alc high+	Opex	Cost	Fixed					2026	£ 1,363,356	£ 1,480,436	£ 1,266,145	£ 1,266,145	£ 1,380,436	£ 1,321,820	£ 1,264,320	£ 1,534,347	£ 1,264,320	£ 1,264,320	£ 1,701,374
PRT_PRT_EF-LKR_ALL_ALL_leakage_costm high+	Capex	Profiled Non-Aanalticed	Fixed					2026	0	0	0	0	0	0	0	0	0	0	0
PRT_PRT_EF-LKR_ALL_ALL_leakage_costm high+	Opex	Cost	Fixed					2026	0.00	0.00	0.00	0.00	0.00	4800.00	4800.00	4800.00	4800.00	4800.00	4800.00
PRT_PRT_EF-VEF_ALL_ALL_audit_hh high+	Opex	Cost	Fixed					2026	£ 120,000	£ 120,000	£ 120,000	£ 108,000	£ 96,000	£ 84,000	£ 72,000	£ 60,000	£ 48,000	£ 2,400	£ 2,400
PRT_PRT_EF-VEF_ALL_ALL_audit_nhh high+	Opex	Cost	Fixed					2026	£ 45,200	£ 45,200	£ 45,200	£ 45,200	£ 45,200	£ 45,200	£ 45,200	£ 45,200	£ 45,200	£ 45,200	£ 45,200
PRT_PRT_EF-VEF_ALL_ALL_awareness high+	Capex	Profiled Non-Aanalticed	Fixed					2026	0	0	0	0	0	0	0	0	0	0	0
PRT_PRT_EF-VEF_ALL_ALL_awareness high+	Opex	Cost	Fixed					2026	£ 30,000	£ 30,000	£ 30,000	£ 30,000	£ 30,000	£ 30,000	£ 30,000	£ 30,000	£ 30,000	£ 30,000	£ 3,000
PRT_PRT_EF-VEF_ALL_ALL_comm high+	Capex	Profiled Non-Aanalticed	Fixed					2026	0	0	0	0	0	0	0	0	0	0	0
PRT_PRT_EF-VEF_ALL_ALL_comm high+	Opex	Cost	Fixed					2026	£ 50,400	£ 50,400	£ 50,400	£ 50,400	£ 50,400	£ 50,400	£ 50,400	£ 50,400	£ 50,400	£ 50,400	£ 50,400
PRT_PRT_EF-VEF_ALL_ALL_education high+	Opex	Cost	Fixed					2026	£ 5,000	£ 5,000	£ 5,000	£ 5,000	£ 5,000	£ 5,000	£ 5,000	£ 5,000	£ 5,000	£ 5,000	£ 5,000
PRT_PRT_EF-VEF_ALL_ALL_gadgets high+	Capex	Profiled Non-Aanalticed	Fixed					2026	0	0	0	0	0	0	0	0	0	0	0

All demand side improvements delivering benefits in 2025-30 were provided in 2022/23 price base and deflated to 2020/21 for the purposes of WRMP24. We have taken the original numbers in 2022/23 price base and used them for our business planning purposes.

All supply demand balance improvements delivering benefits had been provided in 2020/21 price base to the PR24 team. These have been inflated using the latest CPIH numbers and entered into the business planning model. These numbers have been used for our business planning purposes.

All numbers were subject to an efficiency challenge to our enhancement programme. This has been through an internal assurance process and signed off by our board.

Scheme Selection

The schemes identified are consistent with that present in our ‘preferred’ plan for our rdWRMP. We acknowledge that the supply demand balance improvement options are part of our alternative adaptive plans. The delivery of these options may vary depending on the future we are on, and require us to either accelerate, defer or remove altogether should we be in a more benign future than our ‘preferred’ plan represents. This may adjust delivery year however this will be reviewed as part of our future business planning processes.

We do not have any green recovery schemes and all accelerated programmes for our WRMP are included with our smart metering programme.

Annual Operating Costs

All schemes presented have had their annual average operating cost determined by the expected ling-term average TOTEX expenditure per annum. This is consistent with the data presented in our WRMP24 table 4 and 5.

We have not identified any scheme where operating costs are incurred prior to scheme delivery.

TABLE CW9 Enhancement Expenditure (cumulative)

2022/23

The data for 2022/23 is taken directly from the Annual Performance Report (APR).
Table 4L in the APR is in the same format as CW2 and was used to populate all these numbers.

The numbers required in CW9 are cumulative, that is, AMP to date amounts. The Company total actual cumulative amounts can be found in column R of table 4L. However, table CW9 requires this data to be split by Business Unit and this information is in columns F to J of Table 4L. All of the enhancement schemes are included in only one Business Unit.

2023/24 and 2024/25

The Budget in February 2023 included a schedule of capital schemes planned for the rest of the AMP. These have been categorised into Base and Enhancement schemes. Within the Enhancement category, there is a further classification which matches the categories in Table CW9.

NB The expenditure associated with the Accelerated Programme is excluded from this table, as it is included in Table CW17.

2025/26 – 2029/30

The numbers in these columns are the AMP8 to date numbers. So, 2025/26 is just that year's data, but 2026/27 is the sum of the first 2 years of the AMP etc etc

TABLE CW10 Wholesale water local authority rates

2022/23

This is actual data from the year end reports.

2023/24 and 2024/25

These are budget/forecast numbers from the Budget process and were approved at the Board in February 2023. This was based on a combination of the provisional RV listing and the higher RV amount awarded by the Valuation Office for our 2017 retrospective claim.

Below is the working which shows the calculation of the total amounts and the weighted average RV.

Outturn prices	RV	Unit rate	Bill Amount	Months	Budget 23/24		
Bill 2023/24	2,800,000	51.2	1,433,600	3	358,400		
*Revised Bill 2023/24	4,200,000	51.2	2,150,400	9	1,612,800		
					1,971,200		
Weighted average RV	3,850,000					22/23 prices	
			Wholesale		1,819,000	1,741,007	Table CW10.2
			Retail		152,200	145,674	
*Based on RV assessment from VO for retrospective claim							

2025/26 – 2029/30

The same amount is assumed in these years, as for 2024/25. These amounts are in 2022/23 prices, so an uplift for inflation is included.

The RV assessment from the VO was only provisional at the beginning of 2023/24, and we have assumed that this will increase in the final assessment. It is therefore difficult to assess the future RV values.

TABLE CW11 Third Party costs by business unit for the wholesale water service

2022/23 – 2024/25

WATER NETWORK+	2022/23	2023/24	2024/25	
THIRD PARTY - Bulk Supply	-0.272	-0.353	-0.353	Non-price control
THIRD PARTY - other	-0.026	0.000	0.000	Price Control
THIRD PARTY - non s185 diversions	-0.159	-2.100	-2.120	Price Control
THIRD PARTY - s185 diversions	-0.009	0.000	0.000	Price Control
	-0.194	-2.100	-2.120	

The costs for 2022/23 tie back to the APR for that year and the costs for 2023/24 and 2024/25 are from the Company budget process. There is some large expenditure forecast for non-s185 diversions, but this is offset by income from Third Party income of similar magnitude. This is in Other Income in the P&L in RR18.5.

2025/26 – 2029/30

Third party costs for AMP8 consist of an average amount of s185 diversions of £0.236m, and an average amount of non-s185 diversion of £0.400m.

In addition, there is an amount for bulk supplies costs of £0.393m, which is similar to the current level of cost, as there is no new bulk supply forecast.

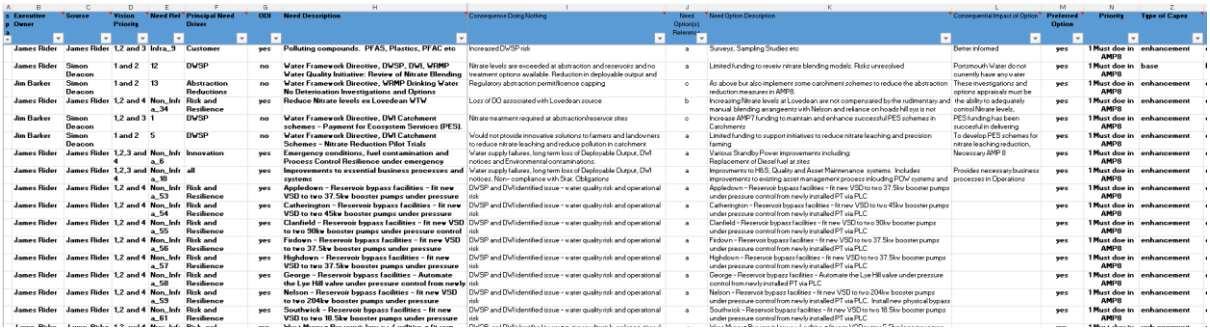
TABLE CW12 Transitional spending in the wholesale water service

There is no Transitional spend to report in this table.

TABLES CW13, CW14, CW15 CW16 Method Statement

Creating the Adaptive Plan

The data used to populate CW13 has been derived from PLATINUM REVIEW_LTDS OPTIONS MASTER_V2.2_ADDWINEP_MED TOTEX as the primary worksheet.



Executive p	Owner	Source	Vision Priority	Need Ref	Principal Need Driver	OER	Need Description	Consequence Doing Nothing	Need Option(s) Reference	Need Option Description	Consequential Impact of Option	Preferred Option	Priority	Type of Capex
James Rider	James Rider		1,2 and 3	Infra_3	Customer	yes	Polluting compounds. PFAS, Plastics, PFAC etc	Increased DWSP risk	a	Surveys, Sampling Studies etc	Better informed	yes	1 Must doe in AMP8	enhancement
James Rider	Simon Deacon		1 and 2	12	DWSP	no	Water Framework Directive, DWSP, DWI, WRMP Water Quality Initiative: Review of Nitrate Blending	Nitrate levels are exceeded at abstraction and reservoirs and no treatment options available. Reduction in deployable output and	a	Limited funding to revelv nitrate blending models: Risks unresolved	Portsmouth Water do not currently have any water	yes	1 Must doe in AMP8	base
Jim Barker	Simon Deacon		1 and 2	13	Abstraction Reductions	no	Water Framework Directive, WRMP Drinking Water No Deterioation Investigations and Options	Regulatory abstraction permit/licence capping	c	As above but also implement some catchment schemes to reduce the abstraction reduction measures in AMP8	These investigations and options appraisals must be	yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2 and 4	Non_Infra_34	Risk and Resilience	yes	Reduce Nitrate levels ex Lovedean WTW	Loss of DO associated with Lovedean source	b	Increasing Nitrate levels at Lovedean are not compensated by the rudimentary and manual blending arrangements with Nelson and reliance on hoads hill syst is not	the ability to adequately control Nitrate levels.	yes	1 Must doe in AMP8	enhancement
Jim Barker	Simon Deacon		1,2 and 3	1	DWSP	no	Water Framework Directive, DWI Catchment schemes - Payment for Ecosystem Services (PES).	Nitrate treatment required at abstraction/reservoir sites	c	Increase AMP7 funding to maintain and enhance successful PES schemes in Catchments	PES funding has been successfulm delivering	yes	1 Must doe in AMP8	enhancement
Jim Barker	Simon Deacon		1 and 2	5	DWSP	no	Water Framework Directive, DWI Catchment Schemes - Nitrate Reduction Pilot Trials	Would not provide innovative solutions to farmers and landowners to reduce nitrate leaching and reduce pollution in catchment	a	Limited funding to support initiatives to reduce nitrate leaching and precision farming	To develop PES schemes for nitrate leaching reduction,	yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2,3 and 4	Non_Infra_6	Innovation	yes	Emergency conditions, fuel contamination and Process Control Resilience under emergency	Water supply failures, long term loss of Deployable Output, DWI notices and Environmental contaminations.	a	Various Standby Power improvements including: Replacement of Diesel fuel at sites	Necessary AMP 8	yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2,3 and 4	Non_Infra_18	all	yes	Improvements to essential business processes and systems	Water supply failures, long term loss of Deployable Output, DWI notices. Non- compliance with Stat. Obligations	a	Improvements to HSS, Quality and Asset Maintenance systems. Includes improvements to existing asset management process including POW systems and	Provides necessary business processes in Operations	yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2 and 4	Non_Infra_53	Risk and Resilience	yes	Appledown - Reservoir bypass facilities - fit new VSD to two 37.5kw booster pumps under pressure	DWSP and DWIidentified issue - water quality risk and operational risk	a	Appledown - Reservoir bypass facilities - fit new VSD to two 37.5kw booster pumps under pressure control from newly installed PT via PLC		yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2 and 4	Non_Infra_54	Risk and Resilience	yes	Catherington - Reservoir bypass facilities - fit new VSD to two 45kw booster pumps under pressure	DWSP and DWIidentified issue - water quality risk and operational risk	a	Catherington - Reservoir bypass facilities - fit new VSD to two 45kw booster pumps under pressure control from newly installed PT via PLC		yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2 and 4	Non_Infra_55	Risk and Resilience	yes	Clanfield - Reservoir bypass facilities - fit new VSD to two 90kw booster pumps under pressure control	DWSP and DWIidentified issue - water quality risk and operational risk	a	Clanfield - Reservoir bypass facilities - fit new VSD to two 90kw booster pumps under pressure control from newly installed PT via PLC		yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2 and 4	Non_Infra_56	Risk and Resilience	yes	Findrum - Reservoir bypass facilities - fit new VSD to two 37.5kw booster pumps under pressure	DWSP and DWIidentified issue - water quality risk and operational risk	a	Findrum - Reservoir bypass facilities - fit new VSD to two 37.5kw booster pumps under pressure control from newly installed PT via PLC		yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2 and 4	Non_Infra_57	Risk and Resilience	yes	Highdown - Reservoir bypass facilities - fit new VSD to two 37.5kw booster pumps under pressure	DWSP and DWIidentified issue - water quality risk and operational risk	a	Highdown - Reservoir bypass facilities - fit new VSD to two 37.5kw booster pumps under pressure control from newly installed PT via PLC		yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2 and 4	Non_Infra_58	Risk and Resilience	yes	George - Reservoir bypass facilities - Automate the Lye Hill valve under pressure control from newly	DWSP and DWIidentified issue - water quality risk and operational risk	a	George - Reservoir bypass facilities - Automate the Lye Hill valve under pressure control from newly installed PT via PLC		yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2 and 4	Non_Infra_59	Risk and Resilience	yes	Nelson - Reservoir bypass facilities - fit new VSD to two 20Hkw booster pumps under pressure	DWSP and DWIidentified issue - water quality risk and operational risk	a	Nelson - Reservoir bypass facilities - fit new VSD to two 20Hkw booster pumps under pressure control from newly installed PT via PLC. Install new physical bypass		yes	1 Must doe in AMP8	enhancement
James Rider	James Rider		1,2 and 4	Non_Infra_61	Risk and Resilience	yes	Southwick - Reservoir bypass facilities - fit new VSD to two 18.5kw booster pumps under pressure	DWSP and DWIidentified issue - water quality risk and operational risk	a	Southwick - Reservoir bypass facilities - fit new VSD to two 18.5kw booster pumps under pressure control from newly installed PT via PLC		yes	1 Must doe in AMP8	enhancement

This data table represents the compiled list of investment options Portsmouth Water have identified as part of their PR24 and LTDS submission. This list has been populated by engaging with various stakeholders and subject matter experts from across the organisation.

Each row details an individual investment option that is proposed to address a risk, a performance commitment, a strategic goal or achieve Portsmouth Waters ambition. This includes information such as:

- Investment owner
- Need Description
- Need Option Description
- Base or Enhancement
- Preferred Option
- CAPEX (£k)
- OPEX (£k)
- Business Driver
- CW3 Capex (reference used for tables CW3, 13, 14, 15 and 16)

The proposed CAPEX and OPEX costs for each option have been provided by the investment owners and subject matter experts. They have been determined by using either historically evidence, obtaining quotes from consultants and suppliers as well as engaging with those from the sector to understand current prices. These estimates are provided in columns AM:AQ for CAPEX and BP:BT for OPEX, separated into cost per AMP.

These costs have then been assessed by Portsmouth Waters's strategy team together with the relevant investment owners, to then phase these expenditures in accordance with statutory dates, customer preference and affordability. An efficiency is then applied to these costs in accordance with the challenge Portsmouth Water has applied to all its investment options. These revised estimates are provided in columns BI:BM for CAPEX and BP:BT for OPEX.

The AMP8 CAPEX and OPEX estimates are then profiled annually, estimating the costs that would be incurred for each year and an initial proposal for the timing of the delivery of these activities.

For Portsmouth Water, the 'preferred' or 'selected' investment option that has been carried through into the business plan and LTDS can be determined by column M. The investment option has also been assigned whether it is investment that relates to enhancement CAPEX or base by column AR. Finally, each investment option has been assigned a CW3 reference, identified in column CW. This is used for mapping the investment types to tables CW3, 13, 14, 15 and 16.

Please note that there is a further adjustment to the CAPEX numbers that has occurred after the population of this data. This is the Frontier Shift and only applies to the annual expenditure for AMP8. This data can be found in columns EB:EK. As agreed with Portsmouth Water, the

CopperLeaf Mapping

This data has been entered into Portsmouth Water's CopperLeaf system so that a unique reference code and be assigned to each investment option. This enables easy option identification as part of the business planning process. CopperLeaf has only been recently implemented into Portsmouth Water however it has been used to assign benefits, consistent with Portsmouth Water performance commitments, and several constants that represent fixed data points used for APR (such as property count, population and peak week production capacity).

To provide consistency and ensure a consistent approach to investment option identification through this process, the CopperLeaf unique reference is combined with the LTDS Options Master data. This is achieved by exporting the data from within CopperLeaf and cross referencing this with the LTDS Options Master data. This is brought together in the excel sheet **LTDS Iteration 3**.

This provides the user with a unique reference number for every investment options in the LTDS Options Master table. This also establishes a relationship between the LTDS Options Master sheet, where the forecasted expenditure is captured, and CopperLeaf, where the benefit of each option is provided. This data is located on the **Combined Tab** of LTDS Iteration 3.

To profile the CAPEX and OPEX expenditure annually, columns BI:BM for CAPEX and BP:BT for OPEX is copied into the **Combined Tab** to provide the AMP8 expenditure. Columns AL:AQ, representing the CAPEX expenditure for AMP9, 10, 11 and 12, and columns BQ:BT representing the OPEX expenditure for AMP9, 10, 11 and 12, are divided equally between the five-year periods they represent. This profiles the CAPEX and OPEX for each investment option annually, with AMP8 consistent with the annual profile derived by the strategy team and investment owners, and AMP9 – 12 having an even profile of expenditure.

This data is then transposed into the **Processed Tab**, creating 26 rows for each investment options to cover the 24 performance commitments identified in CopperLeaf and the CAPEX and OPEX Costs from the LTDS Options Master.

Investment Name	Option	AMP7		AMP8					AMP9					AMP10						
Investment Name	Option	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Water Framework Directive, WRMP Drinking Water No Deterioation I c		0.00	0.00	106.25	106.25	106.25	106.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water Framework Directive, WRMP Drinking Water No Deterioation I c		0.00	0.00	180.64	180.64	186.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water Framework Directive, WRMP Drinking Water No Deterioation I c		0.00	0.00	140.25	140.25	144.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water Framework Directive, WRMP Drinking Water No Deterioation I c		0.00	0.00	175.87	175.87	181.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water Framework Directive, WRMP Drinking Water No Deterioation I c		0.00	0.00	0.00	0.00	0.00	0.00	0.00	85.00	85.00	85.00	85.00	85.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water Framework Directive, WRMP Drinking Water No Deterioation I c		0.00	0.00	140.25	140.25	144.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water Framework Directive, DWI Groundwater Water Quality Networ a		0.00	0.00	0.00	0.00	0.00	0.00	0.00	85.00	85.00	85.00	85.00	85.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	5
Water Framework Directive, WRMP Drinking Water No Deterioation I c		0.00	0.00	140.25	140.25	144.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
WRMP Slindon and Madehurst Drought Permits:Investigations and erb		0.00	0.00	140.25	140.25	144.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water Framework Directive, WRMP Drinking Water No Deterioation I c		0.00	0.00	140.25	140.25	144.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water Framework Directive, WRMP Drinking Water No Deterioation I c		0.00	0.00	140.25	140.25	144.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water Framework Directive, WRMP Habitat Directive (HD) Investigat c		0.00	0.00	140.25	140.25	144.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Please note that to create the adaptive planning, the data is pasted as a unit and is no longer linked directly to the LTDS Options Master or Copperleaf data set. **Should any adjustments occur, this data will need to be repopulated from the Processed Tab, reinserting the alternative options listed below.**

Adaptive Pathways

The data in the LTDS Options Master represents all options available to Portsmouth Waters LTDS. As described in the LTDS Business Case, the core and alternative pathways differ with respect to the option selection and timing of option delivery. In the case of option selection, the following options can be chosen in different futures:

- HT 20 Ml/d to Reservoir B via Works A: Phase 1 10Ml/d WTW
- HT 20 Ml/d to Reservoir B via Works A: Phase 2 10Ml/d WTW
- PRT_PRT_HI-TFR_HTE_ALL_ht to Reservoir C 10_p1
- Reduction in Lead to 'no detectable levels by end 2050 (prior to AMP13) or
- Reduction in Lead to 'no detectable levels by end 2070 (prior to AMP13)

In the case of option timing, the following options delivery times vary depending on the pathway chosen:

- SRN Source A to Source A (Southern Water Transfer)
- Increase in available DO from current system (Lavant Booster)

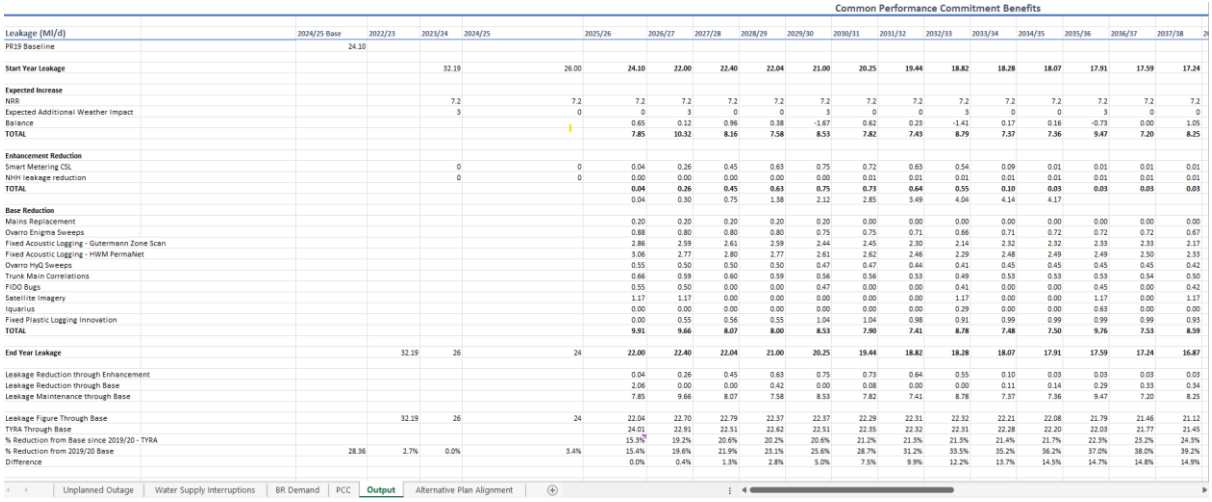
To create the adaptive pathways, individual rows were created for the timings of each option. These can be identified on the **Processed (Adaptive) Tab**. Column I in this tab determines and informs the user which future these options are selected in.

Pathway	Code	Comment
Core	Yes	Enhancement outside of WRMP and includes lead replacement for vulnerable customers
Adverse Climate Change	ACC	Extra Plan 8
Adverse Abstraction Reduction	AAR	Extra Plan 3
Adverse Demand	AD	Extra Plan 2
Adverse Lead	AL	Only relevant for Reduction to Lead ‘no detectable levels’
Benign Lead	BL	Only relevant for Reduction to Lead ‘no detectable levels’
Adverse Climate Change and Abstraction Reduction	ACCAAR	Extra Plan 5
Adverse Climate Change and Demand	ACCAD	Extra Plan 4
Adverse Abstraction Reduction and Demand	AARAD	Extra Plan 6
Adverse Climate Change, Abstraction Reduction and Demand	ACCAARAD	Extra Plan 7
WRMP Preferred	WRMP Preferred	Situation 4
WRMP Core	WRMP Core	Situation 8
Benign Climate Change, Abstraction Reduction and Demand	Ofwat Core	Extra Plan 1

Performance Benefits

The performance benefits, whilst identified and populated in CopperLeaf, have been generated through several processes that are inconsistent. It has been recognised that the development of this tool is in progress and will be updated as Portsmouth Water improve their maturity in this area. Data captured however Is used in some cases to determine Portsmouth Waters outturn. This data was assured with subject matter experts in Portsmouth Water, however, could not be validated for all data.

The performance benefits for each investment option were identified in a separate excel sheet known as Performance Commitments V3. This document has been developed in conjunction with Jamie Jones, combining the historical performance of Portsmouth Water with the expected increase for many of the commitments over the 25-year period and reducing the benefit of the investment options proposed. The data sources for this information are included and referenced relative to the OUT tables for the respective performance commitments.



Common Performance Commitment Benefits

Leakage (Ml/d)	2024/25 Base	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38
PR19 Baseline	24.10																
Start Year Leakage			32.19	26.00	**24.10**	**22.00**	**22.40**	**22.04**	**21.00**	**20.25**	**19.44**	**18.82**	**18.28**	**18.07**	**17.91**	**17.59**	**17.24**
Expected Increase																	
NRR			7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Expected Additional Weather Impact			3	0	0	3	0	0	3	0	0	3	0	0	3	0	0
Balance					0.65	0.12	0.96	0.38	-1.67	0.62	0.23	-1.41	0.17	0.16	-0.73	0.00	1.05
TOTAL					**7.85**	**10.32**	**8.16**	**7.58**	**8.53**	**7.82**	**7.43**	**8.79**	**7.37**	**7.36**	**9.47**	**7.20**	**8.25**
Enhancement Reduction																	
Smart Metering CSL			0	0	0.04	0.26	0.45	0.63	0.75	0.72	0.63	0.54	0.09	0.01	0.01	0.01	0.01
NHH leakage reduction			0	0	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
TOTAL					**0.04**	**0.26**	**0.45**	**0.63**	**0.75**	**0.73**	**0.64**	**0.55**	**0.10**	**0.03**	**0.03**	**0.03**	**0.03**
					0.04	0.30	0.75	1.38	2.12	2.85	3.49	4.04	4.14	4.17			
Base Reduction																	
Mains Replacement					0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ovarro Enigma Sweeps					0.88	0.80	0.80	0.80	0.75	0.75	0.71	0.66	0.71	0.72	0.72	0.72	0.67
Fixed Acoustic Logging - Gutermann Zone Scan					2.86	2.59	2.61	2.59	2.44	2.45	2.30	2.14	2.32	2.32	2.33	2.33	2.17
Fixed Acoustic Logging - HWM PermaNet					3.06	2.77	2.80	2.77	2.61	2.62	2.46	2.29	2.48	2.49	2.49	2.50	2.33
Ovarro HyQ Sweeps					0.55	0.50	0.50	0.50	0.47	0.47	0.44	0.41	0.45	0.45	0.45	0.45	0.42
Trunk Main Correlations					0.66	0.59	0.60	0.59	0.56	0.56	0.53	0.49	0.53	0.53	0.53	0.54	0.50
FIDO Bugs					0.55	0.50	0.00	0.00	0.47	0.00	0.00	0.41	0.00	0.00	0.45	0.00	0.42
Satellite Imagery					1.17	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	1.17	0.00	1.17
Iquarius					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.63	0.00	0.00
Fixed Plastic Logging Innovation					0.00	0.55	0.56	0.55	1.04	1.04	0.98	0.91	0.99	0.99	0.99	0.99	0.93
TOTAL					**9.91**	**9.66**	**8.07**	**8.00**	**8.53**	**7.90**	**7.41**	**8.78**	**7.48**	**7.50**	**9.76**	**7.53**	**8.59**
End Year Leakage		32.19	26	24	**22.00**	**22.40**	**22.04**	**21.00**	**20.25**	**19.44**	**18.82**	**18.28**	**18.07**	**17.91**	**17.59**	**17.24**	**16.87**
Leakage Reduction through Enhancement					0.04	0.26	0.45	0.63	0.75	0.73	0.64	0.55	0.10	0.03	0.03	0.03	0.03
Leakage Reduction through Base					2.06	0.00	0.00	0.42	0.00	0.08	0.00	0.00	0.11	0.14	0.29	0.33	0.34
Leakage Maintenance through Base					7.85	9.66	8.07	7.58	8.53	7.82	7.41	8.78	7.37	7.36	9.47	7.20	8.25
Leakage Figure Through Base		32.19	26	24	22.04	22.70	22.79	22.37	22.37	22.29	22.31	22.32	22.21	22.08	21.79	21.46	21.12
TYRA Through Base					24.01	22.91	22.51	22.62	22.51	22.35	22.32	22.31	22.28	22.20	22.03	21.77	21.49
% Reduction from Base since 2019/20 - TYRA					15.3%	19.2%	20.6%	20.2%	20.6%	21.2%	21.3%	21.3%	21.4%	21.7%	22.3%	23.2%	24.3%
% Reduction from 2019/20 Base	28.36	2.7%	0.0%	3.4%	15.4%	19.6%	21.9%	23.1%	25.6%	28.7%	31.2%	33.5%	35.2%	36.2%	37.0%	38.0%	39.2%
Difference					0.0%	0.4%	1.3%	2.8%	5.0%	7.5%	9.9%	12.2%	13.7%	14.5%	14.7%	14.8%	14.9%

Unplanned Outage | Water Supply Interruptions | BR Demand | PCC | Output | Alternative Plan Alignment

This excel sheet details each performance commitment for Portsmouth Water, the starting or baseline position, the expected deterioration of that performance (where applicable) and the benefit provided by each of their investment options (base or enhancement) to ensure that they are able to achieve their performance commitments.

Each investment option can be determined by Column A, and the benefit that it would provide annually in columns G:AE.

In the case of WRMP, PCC and BR Demand performance commitments have been determined from NYAA Situation 4 data and reflect the options and benefits that they would provide in this future. The determination and calculation of these benefits can be found on additional tabs in this spreadsheet.

The values are provided in Ml/d from WRMP, and converted into litres per person per day and follow the methodology supplied by the WRMP.

This data is further converted into % reduction however instead of using the three-year average, the % reduction is calculated by subtracting the expected performance outturn from 2024/25 forecast (159.8lpd). Portsmouth Water are forecasting a penalty and deficit to PCC for the first 12 years of their business plan. However, to demonstrate the benefits of the schemes proposed, the incremental benefit year on year is used.

The PCC % reduction from 2024/25 forecast is then split between the base and enhancement contribution, determining the benefit contribution provided by each investment option in the required format. This process is replicated for all common performance commitments for Portsmouth Water, annualising the benefit each investment option would provide over a 25-year period.

Populating the Tables

CW13

The investment options presented in CW13, represent the WRMP ‘preferred’ pathway (situation 4) as well as a delivery profile to replace lead in customer supply pipes by 2050. This represents Portsmouth Waters Alternative Pathway 9.

Alternative Pathway 9 and the associated benefits have been presented to align with both Water Resource Planning Guidance and ensure consistency with the other member companies as part of WRSE. The options identified in the WRMP preferred pathway were determined and selected through a rigorous option appraisal process followed by a best value prioritisation in accordance with agreed upon processes established by the WRSE. A detailed explanation of this process can be found in our rdWRMP, our PR18 Long-Term Delivery Strategy and the WRSE Regional Plan and supporting documentation.

This data is populated using the CAPEX and OPEX profiles of the Core, Adverse Lead and WRMP Preferred pathways (Table 1), translating these numbers through SUMIFS into the rows of CW13. The alignment of each row is determined by the "CW3 Capex" assignment from the original LTDS Options Master column CW. This information is divided by 1000 to convert £k to £m.

The table requires the demand-side improvements and leakage improvements to be separated between 2025-30 and beyond. The investment options provided by Portsmouth Water are not separated into individual profiles for AMP8 and beyond. Therefore, the data from cells K71:O72 and K75:O75, representing the demand side and leakage improvements beyond AMP8, are manually added into rows K83:O84 into supply-demand balance improvements delivering benefits starting from 2031.

Present Value of Costs

The NPV CAPEX and OPEX are determined using the inbuilt NPV formula in excel using a WACC of 3.37%. Portsmouth Water have chosen to use the value to align with their business planning processes. The justification and level of uncertainty of which can be found in PRT13: Aligning Risk and Reward.

CW14

The process outlined above is repeated, however using the Core, Benign Lead and WRMP Core pathways (Table 1). This represents Portsmouth Waters core pathway and the least cost plan, those options that would be pursued in a low and no-regrets future. This information is divided by 1000 to convert £k to £m.

CW15

Benefits of Projects Starting in AMP8

The benefits populated in columns H:R are determined using the CW3 CAPEX code, using the corresponding performance commitment data identified in the "Performance Commitments" section above.

Total Benefit Value Generated

These values are monetised using the Portsmouth Water marginal benefit figures. The justification of this use can be found in PRT52 Outcomes. The level of uncertainty in these figures and the sensitivity of these benefits is not quantified however to provide assurance we have performed several sensitivity tests as part of our WRMP and LTDS. These assurance tests identify the additional actions we must take to ensure that we can achieve our supply demand balance targets for each of our proposed futures.

Present Value of Benefits

Once the total benefit value for each performance commitment and each group options has been identified, the NPV Benefit is determined by using the inbuilt NPV formula in excel using a WACC of 3.37% as described above. Present Value figures do not exceed beyond 30 years.

Populating CW16

The process outlined above is repeated, however using the Core, Benign Lead and WRMP Core pathways (Table 1). The benefits provided are identical to that shown in CW15, as despite the lower cost of the core pathway, the excludes the benefit from the additional supply options and benefit that would be provided by the lead supply pipe replacement programme.

TABLE CW17 Accelerated programme expenditure – water resources and water network+

Ofwat Accelerated infrastructure delivery project: final decisions June 2023

https://www.ofwat.gov.uk/wp-content/uploads/2023/04/A0-accelerated-process-final-decisions.pdf

Portsmouth Water will invest a potential £12 million over 2023-25 and £64 million in total to accelerate their universal smart metering programme in Hampshire and West Sussex.

The scheme will focus initially on accelerating investment on supporting infrastructure which will enable the use of smart meters early in the 2025-30 period. This supporting infrastructure includes a meter data management system, cloud storage infrastructure, software purchasing and system implementation and integration. It will also include the implementation of a smart metering trial which will involve the installation of 500 smart meters. The investment will enable an additional 43,300 smart meters to be installed in the 2025-30 period. These additional meters are expected to deliver water savings of 2.5 Ml/d by March 2030.

Table 4.2: Final decisions breakdown of individual schemes for acceleration

	Company	Scheme	Potential expenditure in 2023-25 (£m)	Total potential expenditure (£m)
Water Resilience (supply and demand)	Affinity Water	Raw Water Deterioration - Broome Nitrate	0.40	5.00
	Affinity Water	Raw Water Deterioration - Holywell PFOS	0.25	0.45
	Affinity Water	Raw Water Deterioration - Kingsdown Nitrate	0.40	5.00
	Affinity Water	Raw Water Deterioration - Stortford water quality - Nitrate & Resilience	1.94	1.94
	Affinity Water	Smart Metering	9.00	9.00
	Anglian Water	Colchester re-use	1.84	15.33
	Anglian Water	Smart Metering	9.09	27.26
	Bristol Water	Bristol Area lead free supplies	1.72	1.72
	Bristol Water	Bristol Area supply pipe leak replacements	0.98	0.98
	Northumbrian Water (Essex and Suffolk)	New Linford WTWs and Borehole	1.50	12.74
	Northumbrian Water (Essex and Suffolk)	Suffolk Strategic Network and Storage Enhancements	7.49	12.49
	Northumbrian Water (Essex and Suffolk)	North Suffolk Winter Storage Reservoir	9.05	15.08
	Northumbrian Water (Essex and Suffolk)	Lowestoft Reuse	4.68	7.79
	Portsmouth Water	Accelerated universal smart metering programme	11.55	64.36
	Severn Trent Water	Draycote raise	1.31	2.62
	Severn Trent Water	Smart metering acceleration	40.66	66.52
	South West Water	Colliford smart metering and water efficiency	5.65	20.99

CW17.84 Smart meter infrastructure; metering capex

- An explanation as to which approved scheme the expenditure relates to
  - The approved transition funding is relating to readiness activity for the delivery of the Smart Meters from 2025.
  - The transition expenditure will prepare our business for the delivery of smart meters from 2025 including procurement of contracts, development of the required infrastructure and systems and designing a customer journey and communications programme.
- An explanation of why it is efficient to bring the investment forward
  - It allows PW to secure the contracts and associated supply chains in readiness for AMP 8 smart meter deployment
  - It will allow for the data generated by the Smart Meters to be associated with customers accurately. The data presented to the customers will allow them to better understand their water usage and proactively tackle leakage.
  - It allows PW to develop and embed systems and processes ahead of a mass rollout of smart meters
  - It allows PW to design a comprehensive customer experience and customer journey ahead of the smart meter rollout
- An explanation as to which Defra priority the expenditure aims to tackle
  - Reducing Demand
  - Reducing PCC
- Where costs differ to those proposed through the acceleration process, for both 2023-25 and the entire scheme, an explanation as to why this is the case
  - Forecasted transition funding expenditure costs (23-25) are slightly less (£11.465m) than the approved transition funding expenditure (£11.55m) over the AMP 7 period, primarily due to efficiencies found in delivering the programme in 23/24 primarily and anticipated efficiencies next financial year, primarily through reduced personnel costs and a better understanding of IT/system costs and requirements.

TABLE CW19 Demand management - Leakage expenditure and activities

Table CW19 builds upon data collected for leakage data request IN22/02 from April 2022, and all methodologies used to complete CW19 align with methodologies used previously.

Forecast data in underpinned by our WRMP and Reducing Customer Side Demand investment case.

CW19.1 - Maintain expenditure

We have set out our leakage strategy as part of water resources planning and have aligned leakage expenditure to what has been included within our WRMP.

Expenditure to maintain leakage is focused on awareness of leaks as they occur and locating and repairing those leaks as quickly as possible.

Awareness expenditure is on maintaining logging and monitoring equipment, with expenditure profile until 2029/30 including replacement of loggers that are used for monitoring flows and pressures required in 2023/24 and 2025/26. Logging equipment also includes pulse units and pressure hoses, which are subject to harsh weather conditions. A provision for replacement is included in each year.

Locate costs include costs associated with proactively finding leaks, otherwise known as Active Leakage Control (ALC). This includes the cost of technicians and office staff associated with ALC, as well as equipment that the team require. The costs also include costs for the latest innovative technology that has been adopted up to 2022/23, but not new technology to be utilised from 2023/24 (which is classed as reducing leakage expenditure).

Mend costs are associated with the repair of all leaks located through ALC.

There are no indirect costs associated with maintaining leakage.

CW19.2 - Reduce expenditure

Expenditure to reduce leakage is focused on new innovative technologies that have not been utilised up until 2022/23. These include costs for:

- Our mains renewal programme which has identified an additional 1 Ml/d saving,
- Our whole company Digital Twin that will result in improved network optimisation and prevent leakage from occurring,
- Additional DMA's to improve awareness of leaks as they break out, and
- New technology to assist in locating leaks, including satellite imagery and fixed acoustic logging on plastic mains.

There are no mend or indirect costs associated with reducing leakage.

CW19.10 - Mend supply pipe costs

Expenditure on supply pipe repairs was £0.255m in 2022/23, at a cost of £649 per repair.

In future years, it is expected that the cost per repair will not change, with total cost aligned to total number of supply pipe repairs in CW19.109.

CW19.13 to 16 - Prevent activities and attributes

Over 67% of properties are currently covered by pressure control. The majority of these are active pressure control which optimises pressures to reduce bursts on the network and always provide adequate pressure to customers. In some circumstances active pressure management is not financially viable, and instead fixed pressure control is used. We have 14,190 customers currently on fixed pressure control and expect this to remain the same through AMP8.

We have over 200,000 properties on active pressure control and expect that to increase through AMP8. We expect that all new properties will be on active pressure control, as they will be within areas already pressure managed, or will be new sites which will include a PRV as part of development.

We also have plans to install 3 new PRVs each year in areas that are not currently under pressure control as part of our plans to increase our number of DMAs. We estimate that this will increase properties on pressure control by 846 per year.

CW19.25 to 29 - DMA characteristics

We currently have 177 fully operating DMAs. Our DMA numbers are lower than other water companies, as we have historically balanced the benefit of DMAs for leakage awareness against the disbenefit of increased interruptions to supply and increased water quality contacts. This means that the size of our DMAs is higher than what is optimal for leak awareness.

More DMAs mean more properties fed by a single feeder main, which means a greater impact to customers should that main burst. More DMAs also mean more closed valves on the network. Appearance of water is worse at closed valves. We do aim to increase our DMAs by 20 per year, aligned with network optimisation work to minimise additional closed valves and ensure most properties continue to be fed by more than one feeder main. The increase in DMAs will result in a reduction in the mean, 25th percentile and 75th percentile.

Our DMA availability for 2022/23 was 94%. We expect to improve this to 95% in 2023/24 and then maintain this performance going forward. It is difficult to achieve 100% due to the harsh environments that the DMA loggers are in. Meters are in underground pits, which can be flooded during periods of high rainfall and can get cold during winter periods. This means that the logger and pulse unit that record flow, or the meter itself, can become faulty without warning. Whilst replacing a logger and/or pulse unit can be done quickly, replacing a meter requires significant planning to ensure no interruption of supply to customers.

CW19.40 to 42 – Trunk mains balances

We calculate leakage at the reservoir level, and therefore do not need trunk mains balances for the leakage calculation.

However, through assessing the difference in flow between the reservoir meter and DMAs, we do monitor usage and leakage on our trunk main network for leakage reduction purposes. However, these calculations are not used to estimate network leakage at the end of the report year.

We also routinely monitor trunk mains for condition and leakage as part of network activities.

We do not expect an increase in trunk mains in AMP8.

CW19.49 - Smart networks coverage - permanent acoustic/noise loggers

We have installed a significant number of fixed acoustic noise loggers on our metallic network since evidencing the technology as more cost-effective than alternative ALC methods in 2017/18. We have now reached a total of 90% of all metallic mains covered by fixed acoustic logger, utilising a mixture of different communication networks that are available including NB-IoT.

There is a small amount of our metallic network that is not cost effective, and this tends to be either small lengths of metallic main within an area that is predominantly with plastic mains, or metallic mains in areas with no communication signal. We expect to be able to increase coverage during AMP8 through discussions with communication providers and as some most metallic mains in predominantly plastic areas will be covered through our plastic main fixed acoustic logging programme.

Currently, we do not have a cost-effective fixed acoustic logger solution for plastic mains. We have trialled the latest technology available but have found high numbers of false positives that has resulted in the solution being more costly than ALC alternatives such as lift and shift logging. However, we are working collaboratively with logger manufacturers to improve logger capabilities and expect to be in a position implement a new plastic main fixed acoustic logging solution in AMP8. We therefore expect that by 2028/29, we will reach 94% of plastic mains also covered through fixed acoustic logging.

CW19.52 - Hours on ALC activity per annum

We have increased our ALC team in 2023/24 to reduce leakage after a harsh 2022/23 summer and winter. This will result in almost a doubling of hours of ALC in 2023/24 compared to 2022/23. We will then reduce ALC effort to align with WRMP requirements, but this is still significantly higher than 2022/23.

Our ALC team includes:

- Detection technicians finding leaks or following up on points of interests identified through fixed acoustic logging or satellite imagery,
- Fixed acoustic maintenance technicians who will maintain and optimise our fixed logger equipment to maximise their productivity,
- Analysts and schedulers ensuring that leakage detection technicians are searching for leaks in the right place and are performing in an efficient manner,
- Team leaders, a supervisor, and a manager to ensure maximum efficiency of the ALC team.

The leakage team aligns with what we have set out our leakage strategy as part of water resources planning and have aligns to what has been included within our WRMP.

CW19.55 to 58, 67 to 70 and 79 to 82 – Repairs

Our repairs from 2022/23 have been calculated through work completed on our asset management system, using the same methodology used to complete the IN22/02 data request. Future years are aligned to the leakage strategy, with the proportion of leaks between different types of repairs kept consistent with 2022/23 actuals.

Leak run times for 2022/23 are also calculated from our asset management system and are taken from the date of location until date of repair. Improvements are assumed across a range repair types as we continue to collaborate with our leak repair contractor to fix leaks faster.

CW19.91 to 97 – Supply Pipe Repairs

Supply pipe repairs from 2022/23 have been calculated through work completed on our asset management system. As we have increased ALC effort, we expect a change in company found supply pipe leaks in line with the leakage strategy.

For 2025/26 onwards, the number of supply pipe leaks align with our Reducing Customer Side Demand enhancement investment case and the associated leakage saving included within the leakage strategy.

The assumption, which aligns with he WRMP, is that for every 1 in 5 smart meter installations, a continuous flow will be identified. It is then assumed that 50% of these continuous flows will be fixed, and that of these continuous flows, 40% are customer side leaks (the other 60% are plumbing losses).

All supply pipe leaks on household properties will be undertaken free of charge, in line with our current policy.

CW19.112 - Historical minimum achieved level of leakage

The historical minimum achieved level of leakage has been calculated based on weekly leakage figures going back to 2015/16, reported using the PR24 methodology.

To assess the future minimum achieved level of leakage, the percentage difference between the weekly minimum and the year average leakage for the lowest year on record was assessed and then applied to future year targets.

CW.19.113 - Volume of leakage that needs to be saved to maintain current level

Volume of leakage to be saved is taken from the leakage strategy. It includes a NRR of 7.2 Ml/d and a further increase of 3 Ml/d in every third year to account for a harsh winter.

TABLE CW20 Water mains - asset condition

CW20.1 Potable mains (up to 320mm)

Portable mains up to 320mm align with actual as of 31st March 2023.

The split between grades has been determined by cohort analysis, with results shown in CW20.3.

CW20.2 Potable mains (greater than 320mm)

Portable mains up to 320mm align with actual as of 31st March 2023.

The split between grades has been determined by cohort analysis, with results shown in CW20.3.

CW20.3 Analysed cohort potable mains (up to 320mm)

Cohort analysis has been conducted in line with cohort guidance set out by Ofwat. It has used information directly from our GIS system, including both bursts and mains lengths. This allows us to assign each burst directly to a main. The GIS records the year the main was installed, but not month, and therefore cohort analysis is based on mains up to December 2017, rather than March 2018.

The following different pipe materials were assessed:

- Blutop
- Cast Iron
- Ductile Iron
- Fibre Reinforced Concrete
- HPPE
- MDPE
- Pre-Stressed Concrete
- Polyethylene Barrier
- PVC
- Unknown

The following year categories were assessed against the different pipe materials:

- Pre 1881
- 1881 – 1900
- 1901 – 1920
- 1921 – 1940
- 1941 – 1960
- 1961 – 1980
- 1981 – 2000
- 2021 – 2017

There were no further categories used, such as soil corrosivity or soil fracture potential. As part of improvements to our mains assessment processes, other categories will be explored in future years.

This created a total of 99 cohorts, however due to engineering reasons, only 44 cohorts included mains. Only pipes with a diameter of up to 320mm, and that were installed pre-March 2018, were used in the cohort, as required in Ofwat guidance. There were no cohorts where it was not considered practical to arrange their size to fall within the defined tolerance, meaning that Ofwat guidance was followed completely.

Annual burst rate tolerance was not practicable for most cohorts due to low burst numbers and instead aligning to age guidance was deemed more appropriate.

There was 32 out of 44 cohorts that were deemed to be in excellent condition, with 7 good, 1 adequate and 3 poor. No cohorts were considered in very poor condition.

68% of mains within the cohort analysis were assessed as in excellent condition, with a further 31% in good condition. Mains in excellent condition increase to 70% when also considered new and renewed mains post March 2017.

There is only a small amount of mains length in cohorts considered in poor condition, at 1.64km, where there in local unique circumstances for not being replaced to date. The same can be said for mains in adequate condition, with only 14.9km of Fibre Reinforced Concrete.

Results from the cohort analysis are aligned against previous mains condition assessments undertaken by both WRc and Portsmouth Water using bespoke categories chosen to reflect known local circumstances. This provides a level of confidence that the mains condition assessment is of high quality.

We have completed the Cohort Analysis template, which provided as an appendix to this commentary.

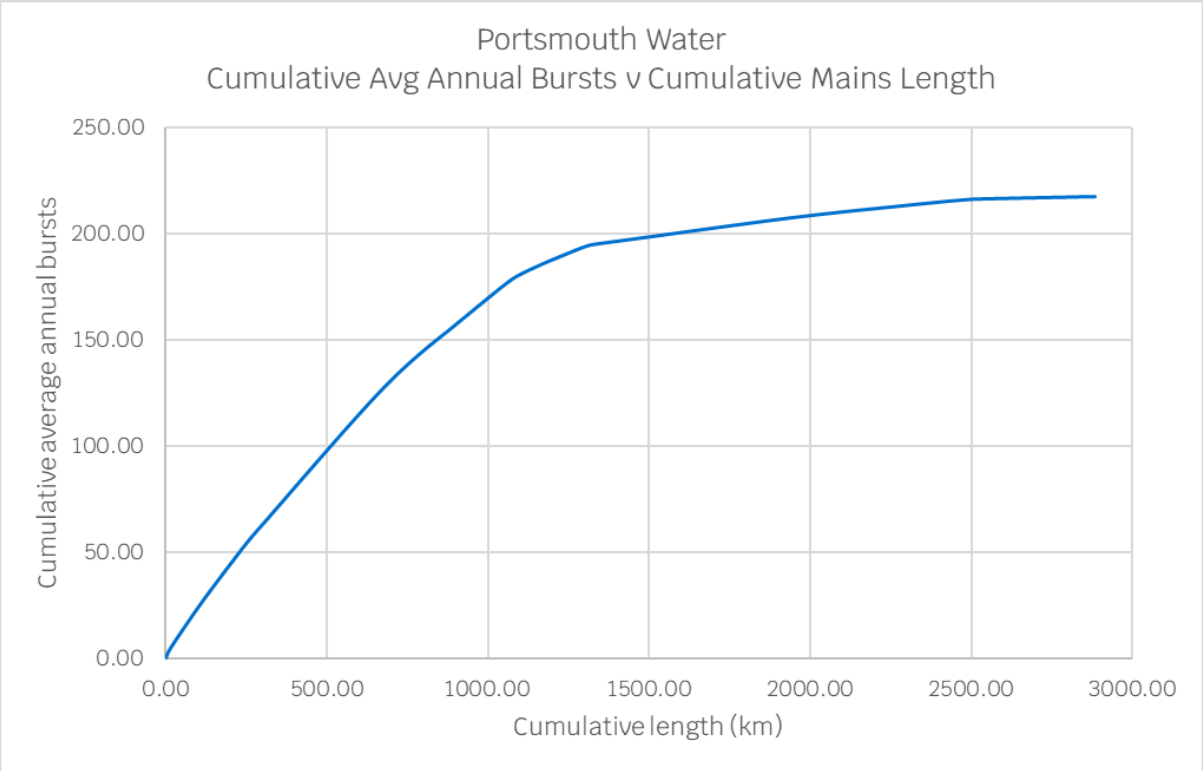
CW20.4 - Annual average bursts from cohort analysis (5 year average) potable mains (up to 320mm), CW20.7 - Annual average bursts on replaced potable mains (5 year average) up to 320mm, CW20.8 - Annual average bursts (5 year average) on potable mains up to 320mm, CW20.11 - Annual bursts on mains (5 year average) greater than 320mm and other mains and CW20.12 - Annual bursts on mains (5 year average) on potable and other mains reported in APR 2019-2023

All bursts align back to our 5-year average from 2018/19 to 2022/23 and reported in OUT4.93. This is an annual average of 221 bursts.

Annual average bursts on mains with a diameter greater than 320mm, and on new/replaced mains installed post 2017, were calculated. All other bursts are included within the cohort analysis.

Total annual average bursts	221	CW20.12
- Annual average bursts on mains greater than 320mm	- 3.0	CW20.11
- Annual average bursts on new mains installed post March 2017	- 0.4	
- Annual average bursts on replaced mains installed post March 2017	- 0.2	CW20.7
Total annual average bursts used in cohort analysis	**217.4**	**CW20.4**

The graph below shows a comparison of cumulative average bursts versus cumulative mains length, as outlined in the Ofwat graph. The graph highlights that around half of mains assessed as part of cohort analysis have experienced very low levels of bursts over the past five year, with over half of bursts associated with just 500km of mains length.



CW20.6 - Replaced and/or relined mains length

Mains replacement align with the last five annual performance reports.

CW20.9 - Current annual bursts on potable mains (up to 320mm)

Current annual bursts align with total bursts reported in 2022/23. 275 bursts are on mains with a diameter up to 320mm, with 7 on mains >320mm.

Bursts recorded in GIS are lower than actual bursts due to GIS backlog on 2022/23 information, with 223 bursts recorded on GIS. 52 remaining bursts are proportioned across cohorts, rounded to the nearest burst.

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