UUW71

RCV run-off rates

October 2023

Chapter 9 supplementary document

This document sets out and justifies the basis of calculation of our proposed RCV run-off and how this compares to historic rates & other water companies

United Utilities

Water for the North West

Contents

1. RCV run-off

1.1 Key messages

- **CCD based approach:** We have used Current Cost Depreciation (CCD) methodology to derive natural rate of run-off for each price control. This is the most appropriate methodology for each price control, consistent with previous regulatory periods and taking account of intertemporal fairness
- **Acceptable and justifiable run-off rates:** Taking account of assets lives, differences between net book value (NBV) and the RCV, and balancing affordability and financeability
- **Proposed run off rates are below historic trend levels and those set at PR19:** Application of proposed arbitrary cap has the potential to conflict with Ofwat's guidance on intertemporal fairness, with future customers potentially paying more than their fair share of bills.

1.2 Structure

1.2.1 This document is structured as follows:

- **Section 2** describes our proposed PR24 RCV run-off rates (derived from the natural rates for each price control) and how these align to Ofwat's framework plus the supporting external review completed by Frontier Economics
- **Section 3** explains the use of CCD methodology as the most appropriate basis for estimating RCV run-off
- **Section 4** sets out the derivation of our RCV run-off calculations, including the key assumptions applied
- **Section 5** compares our proposed RCV run-off rates to historic trends from Annual Performance Reports as well as those allowed at PR19
- **Section 6** reconciles our most recent CCD (2022/23) to a build-up by asset category presented by total GMEAV and standard asset lives
- **Section 7** presents the variability of RCV run-off between companies and over time and critiques the appropriateness Ofwat's proposed cap on RCV run-off

2. Proposed RCV run-off rates

2.1.1 The total RCV run-off rate of 3.96% is included within the business plan and presented by price control within data tables RR1 and RR11, with more supporting details in the table commentary to RR1. The output is broken down by price control and year as summarised in the Table 1 below. This equates to the opening RCV amortising by less than 20% over the 2025-30 period.

2.1.2 More specific values for the PAYG rates applicable to each price control are set out in the relevant table commentaries to data table *RR1*.

Table 1: Proposed RCV run-off rates

Price control	2025-26	2026-27	2027-28	2028-29	2029-30	2025-30
Water Resources	2.58%	2.71%	2.75%	2.71%	2.72%	2.70%
Water Network Plus	5.04%	5.00%	4.95%	4.99%	5.17%	5.03%
Wastewater Network Plus	3.49%	3.37%	3.24%	3.11%	3.16%	3.25%
Bioresources	11.95%	11.15%	9.99%	9.57%	9.55%	10.29%
Total	**4.21%**	**4.09%**	**3.93%**	**3.81%**	**3.86%**	**3.96%**

Source: Data table RR11; Total: UUFM 'calc_CCD' tab

2.1.3 Our business plan uses the natural RCV run-off rate for each price control, derived from the use of the current cost depreciation (CCD) methodology, as explained in section 4 below. This maps to Ofwat's framework as shown in Table 2 below. As such, we believe applying the 'natural rate' of RCV run-off is appropriate and do not see any reason to deviate from this approach in being most closely aligned to achieving intertemporal fairness. We also consider that our approach provides an appropriate balance between affordability or financeability considerations.

Table 2: Mapping to Ofwat's framework

Ofwat framework	UUW position
Intertemporal fairness such that the RCV is allocated fairly to each generation of customers in a way that represents how previous investment will provide services to the customers	Applying the natural rate of RCV run-off should be the default position for intertemporal fairness.
Affordability for customers	Proposed RCV run-off rates restricted to the natural rate to alleviate affordability impacts. These rates have been included in our customer affordability and acceptability research (see SUP14), with the majority (74 per cent) of all customers supporting the UUW business plan.
Financeability of the notional company	Proposed natural RCV run-off rates allows notional company with the application of other financeability levers (such as raising equity) to remain just financeable for AMP8. Reducing RCV run-off below the natural rate could place AMP8 financeability at risk.

Source: Ofwat framework as per PR24 final methodology Appendix 10 Aligning risk and return, section 7.3.2

2.1.4 We commissioned Frontier Economics consultancy to: provide an assessment of Ofwat's guidance and method for setting the RCV run-off rates; evaluate the suitability of a CCD based approach to setting the run-off rates; and review UUW's CCD methodology. This report is attached as Appendix A to this document.

3. Use of CCD methodology for estimating RCV run-off

3.1.1 We have developed our proposed RCV run-off applying a CCD basis (as set-out in section 4 below). We consider CCD to be the most appropriate methodology to use for estimating RCV run-off, since it corresponds to the purpose of run-off i.e. reflecting recovery of past investment and resources to maintain capability. It also reflects the modern value of assets (MEAV), taking account of the application of inflation, and is a well understood method, consistent with regulatory methodology since privatisation.

3.1.2 We note that for PR24 Ofwat has proposed a new and alternative methodology (never previously presented) based on historical cost depreciation as a "*reasonable starting point*"[1]. Specifically, Ofwat proposes that companies estimate the run-off rate using data from APR Table 2D which contains a historic cost analysis of tangible fixed assets.

3.1.3 Ofwat's method is inconsistent with previous regulatory treatment in two key respects. First, previous methodologies that had included depreciation had always focussed on CCD and not historic cost information. Second, there is no relationship between the results of Ofwat's method and the run-off decisions that Ofwat made at PR19. More information on this point is included in Frontier Economic's report (attached as Appendix A) which shows the correlation between the PR24 method and PR19 decisions is effectively zero.

3.1.4 Frontier Economics also notes that estimates based on historic cost information are likely to be biased. They do not take account of inflation (a particularly important point in the water sector with long dated assets); they do not take account of fully depreciated assets; and they ignore future depreciation on assets under construction which do not start depreciating until commissioned. It also does not correlate well to one of the core purposes of the RCV to provide the resources to maintain the capability of assets, since there is no consistent relationship between net book value (NBV) and RCV across companies.

3.1.5 Given the inherent limitations of applying a HCD approach, we believe a CCD approach is the most reasonable method on which to base proposed RCV run-off rates.

[1] Ofwat PR24 final methodology, chapter 8

4. Basis of RCV run-off calculation

4.1.1 The RCV run-off percentage in our PR24 business plan submission is calculated from our forecast of current cost depreciation (CCD). The fixed asset register, maintained in our SAP system, contains both historic cost and current cost values for each asset, providing strong support for our proposed RCV run-off rates. The CCD projections used were derived using our standard business planning process as follows:

- ***Base*** – CCD is a function of the MEAV associated with each asset and its estimated life (in years and months) held in SAP as at 28 February 2023. The MEAV is an estimated figure, updated for new additions and inflated (by RPI up to March 2020 and CPIH from following March 2020, consistent with regulatory methodology) since the last full valuation exercise was undertaken in 2008. As such, total CCD will increase for new assets and inflation, but will reduce as assets become fully depreciated;
- ***Work in progress*** – depreciation on assets not yet commissioned at 28 February 2023. The calculations were forecast applying asset class allocations for each project and asset specific forecast commissioning dates, including a provision for slippage;
- ***AMP7 Growth*** – depreciation on forecast expenditure from March 2023 to March 2025. Similar to WIP, applies asset class allocations for each project and asset specific forecast commissioning dates, including a provision for slippage.
- ***AMP8 Growth*** – depreciation on forecast capital expenditure (consistent with business plan assumptions) for AMP8. Capital expenditure is split across a range of asset life categories (e.g. short, medium, long, land etc) with each category assigned an asset life assumptions. The timing of capital commissioning is also included in the calculation;
- ***Accelerated depreciation*** – new investment can sometimes result in the reassessment of existing asset lives. Typically they shorten asset lives where new investment results in existing assets being decommissioned before they are fully depreciated, requiring the acceleration of remaining depreciation. With such a large asset base, and evolving asset management plans, it is to be expected that there will be some accelerations. These are derived from historical cost values taken from our annual Company Business Plan, adjusted for any further accelerations identified as part of the PR24 business plan. These are then uplifted to CCD applying 20 years of inflation, in line with average asset lives at disposal. In the wastewater network plus price control, with much higher projected AMP8 spend, a bottom-up build of the AMP8 WINEP programme was completed for all projects >£20m, and existing assets expected to be decommissioned identified. This was then pro-rated over the whole wastewater network plus enhancement programme;
- In water network plus, a further specific CCD acceleration has been included, associated with the Haweswater Aqueduct Resilience Programme (HARP), totalling c£255m across AMP8. This accelerated write-off provides a reasonable and logical method for apportioning spend between the maintenance of the system and enhancement that satisfies considerations of intergenerational fairness. An estimated value within the RCV for the existing tunnels running from Haweswater aqueduct scheduled to be replaced has been calculated by applying the estimated project value as a percentage of total water GMEAV and applying this percentage to Water's current RCV. This has then been accelerated over the projected construction life of the replacement assets (mainly in AMP8). This is in contrast to the new HARP additions which will only start depreciating from asset completion dates following commissioning, being recovered from future customers over the projected lives of these assets, ensuring intertemporal fairness; and
- ***Other key assumptions*** include standard asset lives for each asset class (predominantly as presented in section 6 below) and commissioning periods based on historic trends, with new RCV created over 2025-30 recovered over the whole economic lives of the investment programme that resulted in the new RCV. As required by IAS16, asset lives are reviewed annually.As part of this review, disposal

data is used to calculate the average period between commissioning and decommissioning for each asset type. In the latest review completed for financial year end March 2023, data from over 32,000 disposals was analysed. This analysis is used, together with asset strategy information from operational management, to identify accounting asset lives that require amendment. The results from this analysis are reviewed by our auditors as part of their year-end audit work. In addition, project teams are required to identify assets due to be replaced or decommissioned as part of their project. The accounting lives of these assets are updated to ensure they are fully depreciated once the project is commissioned.

4.1.2 Each asset is assigned to a price control with shared assets being assigned to the price control of principal use. Projects are allocated across price controls based on the assets expected to be constructed.

4.1.3 In section 5, we have provided analysis of historic trends in Current Cost Depreciation, which provides assurance that our submitted RCV run-off rates reflect an appropriate ‘natural’ rate.

5. Comparison to historic rates

5.1 Comparison to historic rates from Annual Performance Reports

5.1.1 The analysis of CCD from FY16 to FY23 shown in Table 3 below (as used to derive wholesale charges) and average RCV sourced from APRs, gives an average percentage of 4.2% for the total business. This is split by: water resources 3.0%; water network plus 4.4%; wastewater network plus 3.4% and Bioresources 16.8%.

Table 3 Historic trends from Annual Performance Reports

2022/23 prices £m	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Average
Water resources CCD	21.9	16.6	23.2	21.8	20.7	21.8	20.6	20.5	20.5
Water network plus CCD	177.6	158.4	177.7	169.2	179.4	180.3	180.7	177.9	176.2
Wastewater network plus CCD	286.6	286.6	267.7	271.4	264.7	258.6	258.8	264.1	269.2
Bioresources CCD	71.1	71.1	63.0	77.7	196.1	75.4	67.7	65.0	83.6
Total CCD	**557.2**	**532.7**	**531.6**	**540.1**	**660.9**	**536.1**	**527.8**	**527.5**	**549.5**
Water resources RCV	682	692	696	700	698	699	713	727	701
Water network plus RCV	3,884	3,941	3,959	3,985	3,970	3,977	4,043	4,046	3,976
Wastewater network plus RCV	7,493	7,675	7,840	7,984	8,059	7,983	8,134	8,116	7,910
Bioresources RCV	483	494	505	514	519	514	528	525	510
Total RCV [1]	**12,542**	**12,802**	**13,000**	**13,183**	**13,246**	**13,173**	**13,418**	**13,414**	**13,097**
Water resources RCV run-off	3.2%	2.4%	3.3%	3.1%	3.0%	3.1%	2.9%	2.8%	3.0%
Water network plus RCV run-off	4.6%	4.0%	4.5%	4.2%	4.5%	4.5%	4.5%	4.4%	4.4%
Wastewater network plus RCV run-off	3.8%	3.7%	3.4%	3.4%	3.3%	3.2%	3.2%	3.3%	3.4%
Bioresources RCV run-off	14.7%	14.4%	12.5%	15.1%	37.8%	14.7%	12.8%	12.4%	16.8%
Total RCV run-off	**4.4%**	**4.2%**	**4.1%**	**4.1%**	**5.0%**	**4.1%**	**3.9%**	**3.9%**	**4.2%**

Source: Ofwat closing RCV - as reported in APR tables; CCD - as presented internally for annual wholesale charges build-up

Note 1 – RCV was only split out further from water and wastewater down to the four wholesale price controls from 2020/21 onwards. As such, the RCV splits from 2015/16 to 2019/20 have been calculated in proportion to the 2020/21 RCV % splits within water and wastewater.

Note 2 – CCD was particularly high in Bioresources in 2019/20 largely due to the accelerated depreciation on the Shell Green incineration asset

5.1.2 Comparing to historic rates across 2015/16 to 2022/23. presented in Table 3 above and summarised in Table 4 below, the proposed PR24 rates are lower overall and across water resources, wastewater network plus and bioresources price controls. The proposed rate is slightly higher in water network plus, largely reflecting the HARP accelerations, described in section 4 above.

Table 4 Historic rates vs PR24 RCV run-off rates

	Water resources	Water network plus	Wastewater network plus	Bioresources
Historic rates (2015/16-2022/23 average)	3.0%	4.4%	3.4%	16.8%
PR24 RCV run-off rates	**2.7%**	**5.0%**	**3.3%**	**10.3%**

Source: PR24 RCV run-off rates - data table RR11; Historic rates as per Table 4 above

5.2 Comparison with PR19 assumptions

5.2.1 Despite a decrease in the average asset life of recent capital expenditure (which would naturally increase these rates) plus increased capital spend (with a resultant increase in accelerations), our proposed rates at PR24 (as shown in Table 5 below) are lower than their PR19 equivalent within the water resources, water network plus and bioresources price controls. The proposed rate in Bioresources is slightly higher, albeit still well below historically observed rates (as shown in Table 4).

Table 5 PR19 vs PR24 RCV run-off rates

	Water resources	Water network plus	Wastewater network plus	Bioresources
PR19 RCV run-off rates	3.26%	5.07%	4.35%	8.97%
PR24 RCV run-off rates	**2.70%**	**5.03%**	**3.25%**	**10.29%**

Source: PR24 Run-off rates - data table RR11; PR19 RCV run-off rates – Ofwat's PR24 final methodology appendix 10; table 7.3 (published in December 2022)

6. Reconciliation to our current CCD charge

6.1.1 The CCD is calculated in our SAP fixed asset register for our non-infrastructure assets. A high-level summary check of the CCD calculation is provided in Table 6 below. The GMEAV in the table below is shown by key asset class, excluding fully depreciated assets, as at March 2023. The standard asset lives are consistent with those used in our business planning processes.

Table 6 Summary reconciliation of current (2022/23) CCD charge

Asset class	GMEAV (£m)	Standard asset lives (Years)	Calculated CCD (£m)	Calculated CCD (£m)
Civils (including buildings)	9.838	60	164.0	159.1
Mechanical & Electrical	5,768	23	250.8	243.3
Instrumentation	860	15	57.3	55.6
Intangibles (including software)	302	7	43.1	41.9
Hardware	35	5	7.0	6.8
Vehicles	57	6	9.5	9.2
Non-operational	194	10	19.4	18.8
Total (high level summary check)	**17,052**		**551.0**	534.6
Total net CCD (actual - as presented in table 3)				527.5
Add back deferred income amortisation (CCA)				7.7
Total CCD (consistent with table 3)	**17,052**		**551.9**	535.2
Variance	**-**	**-**	**0.9**	**(0.6)**

Source: UUW SAP fixed assets register

6.1.2 Note that you would expect some differences as not all assets within each asset class are given the standard asset lives and so actual CCD will therefore differ per category and in total. As such, there is an expected slight difference (£0.6m) between this high-level summary check total of £534.6m and our actual CCD (adding back CCA) of £535.2m (as presented in Table 3).

7. Ofwat's proposed cap in RCV run-off and comparison with other companies

7.1.1 As Ofwat noted in its final methodology[2], UUW has a higher than sector average RCV run-off at PR19 for both Water Network Plus (5.07% vs 4.64%) and Bioresources (8.97% vs 7.81%) although below sector average for Water Resources (3.26% vs 5.00% average) and Wastewater Network Plus (4.35% vs 4.50% average).

7.1.2 Despite fluctuations in companies 'natural rates' over time and between companies, Ofwat proposes the potential application of an arbitrary cap for each price control's RCV run-off, being the lower of the PR19 run-off rate or 4.5% (water resources, water network plus, wastewater network plus) / 8% (Bioresources).

7.1.3 It is to be expected that the 'natural rate' of run-off for a company will vary over time, reflecting investment levels in recent controls, changes in the types of assets, their lives and changing expectations on the cost of maintaining and replacing assets. Restricting the run-off rate to being no higher than the rate at PR19 risks introducing a downward bias in the run-off as it will penalise companies where the natural run-off rate is increasing.

7.1.4 It is also expected that the 'natural rate' of run-off will vary between companies. Company asset bases are clearly not identical, and reflect:

- Regional operating circumstances (e.g. different topographies and mixture of infrastructure and non-infra assets);
- Historic investment requirements (e.g. differences in environmental sensitivity, leading to more/less additional treatment assets); and,
- Management choices in how best to achieve outcomes (e.g. make versus buy decisions).

7.1.5 It can be clearly seen that companies PR19 run-off rates vary significantly across companies (see Frontier Economics RCV run-off report, Appendix A, annex B)and that there are wide variations between companies' relative RCV to historical cost NBVs for each price control (see Frontier Economic's RCV run-off report, Appendix A, annex A).

7.1.6 Given the variations over time for individual companies as well as inherent differences between companies, we believe the application on an arbitrary cap to all companies is not appropriate and could cause companies to deviate from their natural RCV run-off rates. This has the potential to conflict with Ofwat's guidance on intertemporal fairness with future customers potentially paying more than their fair share of bills.

[2] Ofwat final methodology appendix 10; table 7.3 (published in December 2022)

Appendix A Frontier Report RCV Run off rate

PR24 RCV RUN-OFF RATE

A REPORT PREPARED FOR UNITED UTILITIES

25 AUGUST 2023

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Contents

frontier economics

Executive summary

United Utilities (UU) has commissioned Frontier Economics to support in its calculation of RCV run-off rates for the PR24 business plan. The scope of our work is as follows:

- Provide an assessment of Ofwat's guidance and method for setting run-off rates; and
- Evaluate the suitability of a CCD (current cost depreciation) based approach to setting run-off rates – and to review UU's CCD methodology.

The main findings of our analysis are summarised below.

Ofwat's guidance and method

Ofwat is proposing a method to calculate run-off which is based on average remaining asset lives. Ofwat's estimate of average remaining asset lives is sourced from historic cost accounts (the net book value divided by the annual depreciation charge). While an approach based on the average remaining asset lives is consistent with the broad purpose of RCV run-off, there are some material drawbacks with Ofwat's approach.

- The estimates based on historic cost information are biased, for three reasons:
  - first, the historic cost information does not account for the impact of inflation over time on asset values. This is particularly important in a sector with such reliance on assets with long asset lives;
  - second, the figures do not take account of assets that are fully depreciated; and
  - third, the data for net book values includes assets under construction – which do not have a corresponding depreciation amount until complete.
- To the extent that a core purpose of the run-off is to provide the resources to maintain the capability of asset, Ofwat's method would need to rely on a consistent relationship between NBV and RCV across companies. As we show in Annex A to this paper, this assumption does not hold and there is significant variation between companies in the relationship between NBV and RCV.
- Furthermore, Ofwat's method is inconsistent with previous regulatory treatment in two key respects. First, previous methodologies that had included depreciation had always focussed on CCD and not historic cost information. Second, there is no relationship between the results of Ofwat's method and the run-off decisions that Ofwat made at PR19. As Annex B shows, the correlation between the PR24 method and PR19 decisions is effectively zero.

In addition, Ofwat's guidance states that the run-off rate for three controls (water resources, water network-plus and wastewater network-plus) should be the lower of either the PR19 figure or 4.5%. There does not appear to be a good justification for this guidance.

- First, we would expect that the 'natural rate' of run-off will vary over time, with changes in the investment programmes and changing expectations on the cost of maintaining and replacing assets. Restricting the run-off rate to being no higher than the rate at PR19 risks introducing a downward bias in the run-off as it will penalise companies where the natural run-off rate is increasing.
- Second, Ofwat's reference to the fact that maintenance expenditures have been below the PR19 run-off levels should not be given material weight. Expenditure levels will vary over time and comparisons of expenditure to run-off need to be made over much longer periods than a single AMP (Asset Management Period).
- Third, there is no good case to apply the same cap of 4.5% to all companies. The natural rate could vary materially across companies, for example as companies have different operating structures with differing reliance on asset types and companies will be at different points in their maintenance cycles.
- Fourth, the relationship between RCV and the size of the asset base will vary across companies, for historic reasons. As highlighted above there is significant variation in the ratio to NBV to RCV across companies.

Use of CCD methodology

UU has developed estimates of the run-off rate based on a CCD methodology. We consider that a CCD approach is the most appropriate of the methods for estimating the run-off rate. It best corresponds to the purpose of run-off, i.e. reflecting recovery of past investment and resources to maintain capability. In addition, it reflects the modern value of assets and it is also a well understood method, consistent with regulatory methodology since privatisation.

For example, Ofwat has previously stated that:

> *"For regulatory purposes, current cost accounting (CCA) is used. CCA ensures that assets are valued at their cost today. This is important where assets have very long (or in the case of infrastructure assets – indefinite) lives. Because of inflation, the original cost of the assets is substantially less than their value today. Both non-infrastructure assets and infrastructure assets are valued at the cost of replacing them today."* [1]

We have reviewed the specific methodology of UU's CCD calculation. The findings of our review are as follows:

- Overall, we understand the approach to CCD taken by UU and have no significant comments on how it has been implemented from a methodological perspective. We also find that where price control specific assumptions have been made that these are evidence based.
- We note a key assumption driving the base CCD figures is that RPI/CPIH represent broadly accurate measures of changes in MEAV over time. As the last valuation exercise

1 Ofwat:, The approach to depreciation for the Periodic Review 2004, March 2002, page 8.

was undertaken in 2008, it is hard to say how much higher or lower the current cost of replacement may be versus inflation index estimates. However, UU's approach to inflation mirrors Ofwat's own approach – and therefore aligns to regulatory practice.

- Another overarching comment relates to intertemporal fairness, affordability and financeability. Our review has focused on the methodology specific to CCD. CCD is a robust estimator of the natural run-off rate. Nevertheless, the scope of our review does not extend to these further factors that have a bearing on what is an appropriate run-off rate. Therefore it would be reasonable for UU to consider whether any departure from the natural rate estimated by their CCD estimate is warranted once these broader factors have been considered.

1 Purpose of RCV run-off

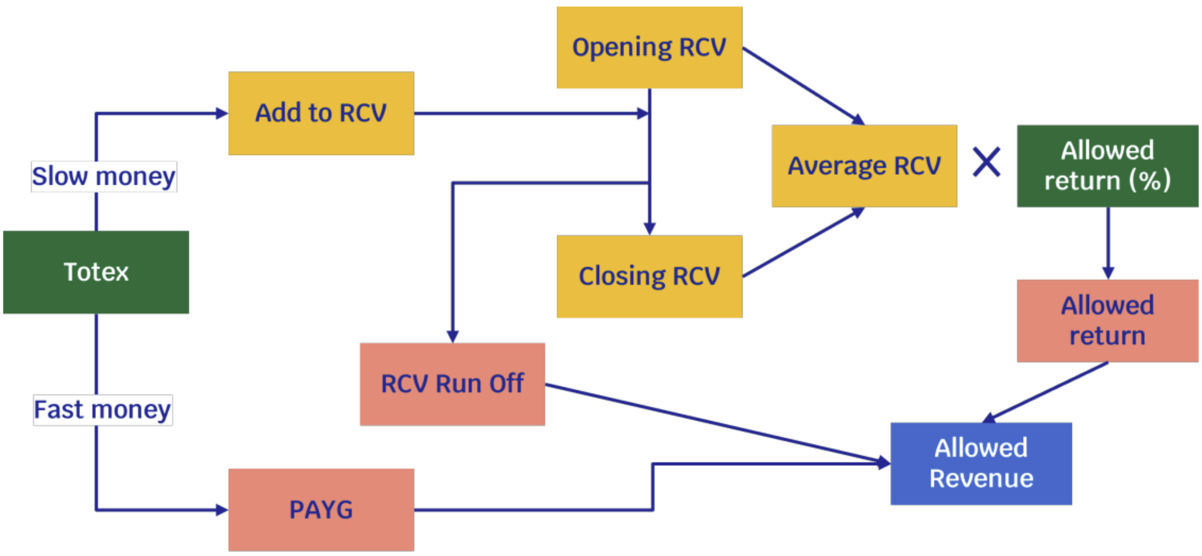
This section explains the concept of RCV run-off and its role within the price control methodology.

1.1 RCV run-off is an important component of the price control methodology

A significant proportion of the expenditure on wholesale water and wastewater services relates to assets that have long asset lives; much longer than the five years of a price control. Therefore the question of 'cost recovery', i.e. how expenditure is recovered from customers over time is a fundamental part of the price control methodology.

Figure 1 shows Ofwat's methodology for cost recovery, as set out in chapter 8 of the Final Methodology for the PR24 price control.

Figure 1 Ofwat's methodology for cost recovery



- PAYG represents totex expensed in the year
- Totex not expensed is added to the RCV
- Each control has a separate RCV
- The return on RCV compensates for the investment that is in the RCV
- RCV run-off represents the amortisation of RCV

Source: Ofwat, Creating tomorrow, together: Our final methodology for PR24, Figure 8.1

The approach operates as follows:

- Expenditure (Totex) by the wholesale business is either recovered in the same year through customer bills or it is added to the Regulatory Capital Value (RCV) and then recovered over time.
- The proportion that is recovered in the year is set by the Pay-As-You-Go rate (PAYG). The proportion that is added to the RCV is one minus the PAYG rate.[2]
- The RCV measures the outstanding capital provided by financial investors (debt and equity investors). It is indexed annually by the rate of consumer inflation.[3]
- The run-off rate of the RCV is the percentage of the RCV that is amortised (i.e. depreciated) each year. This is added to the amount that is allowed to be recovered through customer bills.
- Therefore the RCV at the end of a year is equal to:
  - the RCV at the start of the year (the opening RCV);
  - plus expenditure that is added to the RCV (Totex multiplied by 1-PAYG rate);
  - minus the amortisation of RCV (opening RCV multiplied by RCV run-off rate); and
  - finally an adjustment for the change in consumer inflation is applied.
- The third major component of the allowed revenue is the return on RCV. A percentage return on capital (set to reflect the cost of capital) is applied to the year average RCV.[4] This covers the financing costs to debt and equity investors and reflects the risks in providing wholesale services.

Therefore, the run-off of the RCV is one of the important building blocks of the price control methodology in water.

It is also important to note that the RCV is a financial concept, it is the measure of the financial investment in the wholesale business. There is no direct link between the RCV and specific assets of the water company.

1.2 What is the aim of the RCV run-off rate?

There are two broad aims for the RCV run-off. These aims are related but distinct.

- The **first aim** is that the run-off of the RCV provides the return of the financial capital that has been invested in a profile that matches the lives of the assets it has been invested in. This has the effect of matching the timescale of the recovery through customer bills with the timescale of the benefits received by customers. This is a depreciation concept, similar to that applied to the depreciation of fixed assets in a statutory accounting framework.

2 The PAYG rate (%) in a given time period is the value of PAYG (£) divided by the relevant value of Totex (£).

3 For the 2025-2030 period it will be fully indexed to the CPIH index.

4 We note some specific aspects of this part of the approach are currently subject to consultation.

- The **second aim** is that the run-off of the RCV should also match the expenditure likely to be incurred by the company in maintaining the system of assets. This is a renewals concept, i.e. the run-off provides the funding for the expenditure to maintain the capability of existing assets.

For an industry in steady-state these two aims should broadly align over the medium to long term, i.e. that the depreciation should be equivalent to the renewals expenditure. Over shorter time periods the two concepts may differ given that maintenance expenditure profiles can be lumpy and cyclical, and that innovation or changing technology can affect future expenditure relative to past investment.

Combining these two aims there is the notion of a '*natural rate*' of run-off that would maintain the level of the real RCV in a steady-state (absent any enhancement of services).

Ofwat's methodology documents for PR24 make clear that both aims are relevant to the RCV run-off rate:

> *"The RCV run-off allowance represents the recovery of previous investment by investors held in the RCV. Historically it has provided funding for companies to maintain the capability of the networks and other non-infrastructure assets."* [5]

> *"Typically, over the longer term we would expect the amount of revenue generated from customers in respect of the RCV run-off to be close to that required to be reinvested in new or replacement regulatory assets. But where it is not reinvested in the growth of the asset base, this revenue can be considered to be a return of capital to investors.*
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> *…*
>
> *At PR24, we are minded to set a narrow range for RCV run-off rates for each wholesale control that we consider represents a reasonable balance of cost recovery between current and future customers. We consider this range is best informed by a consideration of average remaining lives of the assets utilised in each control to provide the services to customers, while ensuring that companies have sufficient resources to maintain the capability of their assets."* [6]

This is also consistent with Ofwat's approach to earlier price controls. Prior to PR14, Ofwat applied a method that considered evidence on both depreciation (CCD estimates) and expenditure (historic and projected maintenance expenditure). Ofwat expected these two to be broadly equivalent and would adjust companies' current cost depreciation estimates if there

5 Ofwat, Creating tomorrow, together: Our final methodology for PR24, Appendix 10, page 52.

6 Ofwat, Creating tomorrow, together: Our draft methodology for PR24, Chapter 8.

was a divergence between depreciation estimates and the estimate of long-term maintenance expenditure.[7]

The fact that Ofwat's methodology focussed on CCD estimates was linked to the long-lived nature of in the sector.

> *"In the water industry, the average life of non-infrastructure assets is long. It is estimated to be over 30 years for both the water and sewerage services. Some assets such as computer software and some light mobile plant have short lives (around 5 years) while others like water and sewerage treatment works and service reservoirs are much longer (around 60 years).*
>
> *…*
>
> *For regulatory purposes, current cost accounting (CCA) is used. CCA ensures that assets are valued at their cost today. This is important where assets have very long (or in the case of infrastructure assets – indefinite) lives. Because of inflation, the original cost of the assets is substantially less than their value today. Both non-infrastructure assets and infrastructure assets are valued at the cost of replacing them today."* [8]

1.3 Ofwat's guidance on RCV run-off for PR24

In addition, Ofwat's methodology for PR24 sets out four components of a framework that companies should use when proposing RCV run-off rates:

- *"Intertemporal fairness such that the RCV is allocated fairly to each generation of customers in a way that represents how previous investment will provide services to the customers. We consider run-off rates that are based on average remaining asset lives that can be derived from published 2021-22 accounts to be a reasonable starting point.*
- *Affordability for customers. RCV run-off represents a significant element of allowed revenue and therefore customer bills. Companies will need to provide evidence that they have considered the impact of their proposals on customers both now and in the longer term and they should provide evidence of customer views on the chosen bill profile incorporating both the PAYG and RCV run-off proposals.*
- *Our guidance on acceptable upper limits. Reflecting expected levels of enhancement spend and pressures on customer affordability, we would not expect companies to propose RCV run-off rates that are higher than those allowed at PR19 or that are above the guidance set out in table 8.1.*

7 For example see Ofwat:, The approach to depreciation for the Periodic Review 2004, March 2002. *"Our hypothesis was that, over the long term, for a pool of assets which is neither growing or declining in terms of outputs generated, the CCD charged should be comparable to the capital expenditure required to maintain and replace the assets. (In the water industry this is called MNI expenditure).*" (para 1.2.7)

8 Ofwat:, The approach to depreciation for the Periodic Review 2004, March 2002, page 8.

- *Financeability of the notional company, such that the choice of RCV run-off rate balances the need to manage financeability in both the short and the long term."* [9]

In our interpretation, this framework is consistent with the broad aims described above. We consider that the two broad aims (depreciation and expenditure) determine a range for the 'natural rate' of RCV run-off (i.e. a stable RCV in real terms before any enhancement of services).

At the same time, there may be reasons to deviate from the 'natural rate', and this is where the issues of affordability and financeability are relevant. For example, if the population being served by the assets was increasing over time (or the real income levels were expected to increase in the future) then there could be an argument to reduce the run-off rate from the natural rate to recover more of the costs from future generations.[10]

That said, we would argue that the best approach is to start by identifying the range for the 'natural rate' of RCV run-off and then consider whether there is a reason to deviate from this range, due to reasons of affordability or financeability.

The other elements of the framework, i.e. the reference to remaining asset lives and the guidance on acceptable upper limits, relate to the methods for estimating the RCV run-off. These are discussed in the next section.

9 Ofwat, Creating tomorrow, together: Our final methodology for PR24, Chapter 8, pages 117-118.

10 For example, this has been applied in situations where new networks are being rolled out and slowly adopted by a population. Conversely run-off rates have been sometimes been increased above the natural rate where there is a risk that the system will not operate in perpetuity (e.g. gas networks).

2 Methods for estimating run-off

As set out in Section 1, the starting point for assessing the run-off rate is an estimate of the natural rate. There are several methods available for calculating the natural rate. Each of these has advantages and disadvantages.

In this section we outline four approaches that can be used to estimate the natural rate. These are:

- historical cost depreciation (HCD) estimates;
- current cost depreciation (CCD) estimates;
- expenditure based estimates; and
- approaches that combine the three methods listed above.

In Table 1 below we provide a summary of each method and its advantages and disadvantages. Detailed discussion follows in Sections 2.1 to 2.4 below.

Table 1 Summary of methods for estimating run-off

Method	Advantages	Disadvantages
Historical cost estimates	■ Estimate of remaining asset life links to the core purpose of run-off ■ Simple method based on verifiable data	■ Estimate is biased due to fully depreciated assets and impact of inflation ■ Assumes consistent relationship between NBV and RCV that does not hold ■ Inconsistent with previous regulatory treatment: both historic focus on CCD and also run-off decisions at PR19
Current cost estimates	■ Method that best corresponds to purpose of run-off – reflecting recovery of past investment and resources to maintain capability ■ Reflects modern value of assets ■ Well understood method, consistent with regulatory	■ MEA valuations are resource intensive and many were last updated 15 years ago ■ Can be sensitive to asset life assumptions

Method	Advantages	Disadvantages
	methodology since privatisation	
Expenditure based estimates	■ Consistent with one element of purpose for run-off (resources to maintain future capability) ■ Historic expenditure data is consistent and verifiable across companies ■ Not sensitive to accounting assumptions	■ Expenditure varies over time and across companies ■ Need for long time series can require expenditure projections that are less reliable ■ Less suitable method if company or industry is not in steady-state

Overall, we find that there are a number of disadvantages with the main method proposed by Ofwat in their Final Methodology and that there are merits to considering a wider range of evidence – namely that from current cost depreciation estimates.

2.1 Historical cost depreciation estimates

We begin with the historical cost depreciation method as this is the one that Ofwat considers to be, "*a reasonable starting point*."[11] Specifically, Ofwat proposes that companies estimate the run-off rate using data from APR (Annual Performance Report) Table 2D. This table contains historic cost analysis of tangible fixed assets.[12]

Ofwat proposes estimating the natural rate, in percentage points, in two stages:

- Calculating the average remaining asset life by price control as:

$$Average\ remaining\ asset\ life = \frac{Net\ book\ value}{Depreciation\ charge}$$

- Taking the reciprocal of the average remaining asset life by price control to derive a run-off rate (%) that is then applied to the RCV.

$$Run - off\ rate\ (\%) = \frac{1}{Average\ remaining\ asset\ life}$$

11 Ofwat, Creating tomorrow, together: Our final methodology for PR24, Chapter 8

12 As this table is part of the APR it is updated each financial year.

We note the run-off rate is equivalent to simply expressing the depreciation charge for the year by the net book value of the assets. The step of expressing the figures as an average remaining asset life is a presentational one.

In Figure 2 below we show an extract from Ofwat's Final Methodology document which demonstrates these steps for the Water Network plus price control.

Figure 2 Ofwat Final Methodology demonstration

	Net book value at 31 March 2022 £m	Depreciation charge £m	Average remaining life years	Depreciation rate %
Anglian Water	4,365.9	117.9	37.0	2.70%
Dŵr Cymru	1,785.8	101.1	17.7	5.66%
Hafren Dyfrdwy	152.0	5.0	30.3	3.30%
Northumbrian Water	2,162.9	65.6	33.0	3.03%
Severn Trent Water	4,163.5	152.8	27.2	3.67%
South West Water	1,443.7	47.3	30.5	3.28%
Southern Water	1,465.6	64.8	22.6	4.42%
Thames Water	7,671.2	323.7	23.7	4.22%
United Utilities	4,362.2	125.3	34.8	2.87%
Wessex Water	1,101.6	36.8	30.0	3.34%
Yorkshire Water	3,487.4	114.4	30.5	3.28%
Affinity Water	1,486.3	61.4	24.2	4.13%
Bristol Water	644.3	22.6	28.5	3.51%
Portsmouth Water	137.9	5.4	25.5	3.92%
SES Water Water	341.2	11.4	30.0	3.33%
South East Water	1,525.0	51.2	29.8	3.36%
South Staffs Water	571.5	23.7	24.1	4.14%
Average			28.2	3.66%
Median			29.8	3.36%

Source: Companies annual performance reports for the year ended 31 March 2022.

Source: Final Methodology, Appendix 10, Table B.2
Note: Water network plus figures shown

Ofwat then proposes that to estimate a (£m) value for RCV run-off, when calculating allowed revenues, the percentage point run-off rate calculated from the above method (see right-hand column of the figure above) can be applied directly to the RCV balance for the relevant price control.

Ofwat uses the outputs from this approach to support their proposed ceiling on RCV run-off of the lower of the PR19 rate or 4.5% for water resource, water network plus and wastewater network plus controls. In Box 1 below we consider the justification for Ofwat's expectations and guidance in this area.

Box 1: Ofwat proposed cap on RCV run-off rates for PR24

In addition to its guidance on the use of the HC average remaining asset life approach as the starting point for estimating the run-off, Ofwat's final methodology for PR24 includes the further guidance that the run-off should be the lower of either the PR19 run-off rate or 4.5% (8.0% in the case of Bioresources). This applies to the water resource, water network plus and wastewater network plus controls.

This policy does not appear to be well justified. It is perfectly reasonable to expect that the 'natural rate' of run-off will vary over time. It will vary to reflect investment levels in recent controls, changes in the types of assets, their lives and changing expectations on the cost of maintaining and replacing assets. Restricting the run-off rate to being no higher than the rate at PR19 risks introducing a downward bias in the run-off as it will penalise companies where the natural run-off rate is increasing.

Ofwat's reference to the fact that maintenance expenditures have been below the PR19 run-off levels should not been given material weight. Expenditure levels will vary over time and comparisons of expenditure to run-off need to be made over much longer periods. For example, Ofwat's broad equivalence test compared expenditure and depreciations over periods of 25 years or more.

Neither is there a good case to apply the same cap of 4.5% to all companies. There are a number of reasons why the natural rate could vary materially across companies. First, companies have different operating structures with differing reliance on asset types, some companies utilise a greater proportion of very long life assets while other have a greater reliance on medium life assets. Second, companies will be at different points in their maintenance cycles. These factors also vary between price controls.

Third, the relationship between RCV and the size of the asset base will vary across companies, for historic reasons. This is illustrated in Annex A which shows that there is significant variation in the ratio to NBV (net book value) to RCV across companies. Finally, the range in run-off rates from the PR19 determinations (see Annex B) highlights the lack of suitability of imposing a single cap across all companies. For example, the PR19 run-off rate for water network-plus varied between 3.3% and 7.1%.

Overall, it is not clear whether how strictly Ofwat intends to apply this policy. However, it is clear that a strict application of this policy would have adverse consequences, particularly if it was applied over subsequent price controls.

2.1.1 Advantages of historical cost

The main advantage of this approach is that it is an estimate of the remaining asset life of existing assets and therefore it is consistent with the broad purpose of the run-off as described above. It is also has the advantage that the method is simple and transparent, based on data that is readily available and verifiable – and prepared on a consistent basis across companies. As historical cost data tables are refreshed annually for APRs, this figure can be refreshed annually for all companies.

Nevertheless there are a number of material and profound disadvantages with this method. These are outlined below.

2.1.2 Disadvantages of historical cost

There are a number of drawbacks with a historical cost approach:

- **Fully depreciated assets** – there may be assets that are still in operation that are fully depreciated in the historic accounts but still require expenditure to maintain. This can create a gap between expenditure required and revenue that would be generated under this approach – without adjustment.
- **Inflation and long-lived assets** – as highlighted above the water industry has, on average, long-lived assets. Historical costs do not capture changing costs of maintaining or replacing these assets. Over extended time periods these changes can accumulate and be large. This means that a measure based on historical costs may not provide a meaningful reference point for AMP8 expenditures. It also creates a bias within the method as the discrepancy between historic cost and the (appropriate) current cost value will be more pronounced from longer lived assets than shorter lived assets.
- **Relationship between net book value and RCV** – Ofwat's method generates a percentage point output. This is then applied directly to the RCV. However, there is not a consistent relationship between net book value from the historical cost accounts and RCV by company. In Annex A we show this relationship and the extent of variation by price control.
- **Divergence from previous regulatory treatment** - there are two elements to this:
    - First, Ofwat's regulatory methodology since privatisation focussed on current cost accounting data as the benchmark for capital recovery (for above ground assets). This is illustrated by the references in the previous section.
    - Second, this method for calculating RCV run-off has virtually no correlation with the run-off rates used at PR19 (prior to adjustments).[13] This indicates there has been a

13 For example, adjustments were made for CPIH transition and financeability.

significant change of regulatory approach between PR19 and PR24 (many of the underlying assets will remain the same across AMP7 and AMP8). The evidence for this lack of relationship are set out in clearly in Annex B.

In addition to these disadvantages, we also note there are some limitations with the historic cost data source (APR Table 2D) that Ofwat are utilising.[14] We highlight two key limitations below:

1. **Bias from assets under construction** – UU has highlighted to us that the NBV figures in Table 2D contain 'assets under construction'. While assets are under construction they do not have an associated depreciation amount in Table 2D. This means that where assets under construction represent a material proportion of total NBV, then Ofwat's proposed method may be biased downwards. The extent of this bias will vary by company and year depending on their expenditure programme. It is therefore important to understand whether the data for any given company in a given period can be considered representative over the longer-term or not.

2. **'Tangible asset only' focus** – APR Table 2D is named, 'Historic cost analysis of tangible fixed assets'. As this name suggests, the data is specific to tangible assets. As intangible assets can tend have shorter asset lives, this focus on tangibles may lead to lower estimates than consideration of tangible and intangible together. Information on intangible assets is available on an equivalent basis in APR Table 2O, named, 'Historic cost analysis of intangible fixed assets'. Ofwat has not articulated why they have not considered data from both tables.

2.2 Current cost depreciation estimates

There are different ways in which current cost depreciation (CCD) methods can be implemented. One approach takes the historic cost value of assets and adjusts this to reflect the change in a general price index (e.g. RPI or CPI) between the time of construction and the valuation point.

An alternative approach is to periodically revalue each asset (or each type of asset) based on an estimate of the cost of a modern equivalent. This modern equivalent asset valuation (MEAV) form of CCD differs from the other approach in that it takes account of differing inflation levels for each asset. It also takes account of changes in technology and asset obsolescence. On the other hand it is a more resource intensive exercise.

Ofwat's early price control methodology was based on the MEAV version of CCD, with revaluations every five years as part of the price control process. This method was amended after PR09 and therefore the last MEAV revaluation was in 2007/08.

14 An additional complexity is associated with the interaction of this data, PAYG rates and RCV run-off, in terms of how infrastructure related expenditures are treated.

As a result, implementing a CCD method now requires a hybrid version of these two approaches, with valuations since the last MEAV revaluations in 2007/08 updated with a general inflation index.

Current cost depreciation (CCD) estimates are formed from two key inputs. These are:

- an estimate of the current cost asset value of the regulated business assets (e.g. MEAV); and
- an estimate of asset lives.

Given these inputs, a depreciation value (£m) by price control per annum can be calculated. CCD figures are often calculated at the level of specific assets, and then grouped into a total CCD figure by price control by summing the individual amounts.

This value is then expressed relative to RCV for the relevant price control to produce a percentage per annum figure for run-off.

2.2.1 Advantages of current cost

- Current cost based approaches are more reflective of the costs to replace assets with modern-equivalents, taking into account changes in general price levels, technologies, and specific cost trends over time.
- CCD as a method reflects the expenditure needed to maintain water company systems without the issues of relying on expenditure data directly – which can be lumpy and cyclical in nature. This may support bill stability for customers.

2.2.2 Disadvantages of current cost

- As explained above, assessing Modern Equivalent Asset Values across the value chain is an exercise that has not been undertaken for some time, due to changes in Ofwat's requirements. This means that to generate an up to date value assumptions are required. In other words, the hybrid approach outlined above where MEA values need to be rolled-forward to account for investments and inflation that have taken place since the last exercise was undertaken. These rolled-forward estimates may diverge from what a completely updated MEA valuation may show. That said the results from this hybrid CCD approach will be much truer to MEAV values than estimates based on historic costs.
- Assessing asset lives requires a degree of judgement, and may be revised as more information on assets is gained over time. Overall CCD outputs are sensitive to the assumptions on asset lives applied. There may also be differences between accounting asset lives and actual asset lives that need to be addressed.

2.3 Expenditure based estimates

While the two methods set out above are based around depreciation estimates, an alternative method is to focus on the expenditure on maintaining assets.

This methodology estimates a steady state expenditure level in monetary terms, and then that monetary value is expressed as a percentage of RCV to reach a natural run-off rate for each control.

Previously, this approach was part of what was referred to as the 'broad equivalence test'.

Where expenditure data is reviewed over many years, assuming that a company has not been systematically over or under-investing in assets, then this should provide a guide as to what efficient 'steady state' expenditure is. This is because the data looks through year-on-year specific variations and through management plans that are specific to any given 5-year asset management period (AMP).

Given that run-off determines how fast expenditure that has been 'capitalised' is recovered, for consistency, this approach is focused on expenditure categories that were capitalised initially. In other words, if expenditure was recovered 'in year' through PAYG then it was not capitalised in the first place, and so the expenditure data used to estimated run-off should be consistent with that.

2.3.1 Advantages of expenditure based

- This method is consistent with the broad purpose of the RCV run-off and it is specifically focussed on the objective of providing the company with the resources to maintain the capability of the assets and services.
- Where long-run data is used, estimates from this approach avoid getting biased by short-to-medium term expenditure trends, focusing on the level of expenditure required to maintain a stable service level.
- There are fewer assumptions required with this approach compared to some other approaches to estimating run-off. Data on expenditure is available on a relatively consistent basis across companies and years.

2.3.2 Disadvantages of expenditure based

- The challenges with expenditure approaches is that maintenance expenditure can be both lumpy and cyclical and therefore should be applied over an extended timeframe. If this includes projections of future maintenance then uncertainty over these projections is also an issue.
- This approach is less well adapted to situations where there is an expectation that future expenditure will diverge significantly from historic expenditure – for example, through

step-changes in output targets, re-focusing of asset management plans or responses to evolving environmental challenges. In these cases it does not perform well in terms of the other element of the broad purpose of RCV, i.e. the return of capital invested over the life of those assets.[15]

2.4 Combined estimates

While this is not a separate method in its own right it is worth highlighting that the methods above can be combined together. An example of this was the early method adopted by Ofwat after privatisation where a CCD approach was applied to 'above ground' assets and an expenditure approach was applied to the 'below ground' assets.

15 For UU in AMP8, there are reasons to suspect that this steady state condition will not hold. On the water side of the business there are major resilience programmes ongoing, and on the wastewater side of the business significant investment is required to improve environmental outcomes

3 Review of UU CCD estimates

In this section we review UU's CCD estimates for the four wholesale controls. This review has focused on the methodological aspects of UU's estimates. We have not undertaken detailed review and assurance of the underlying calculations. For example, we have not reviewed data inputs or the functionality of individual calculations.

3.1 Overview of the CCD estimates

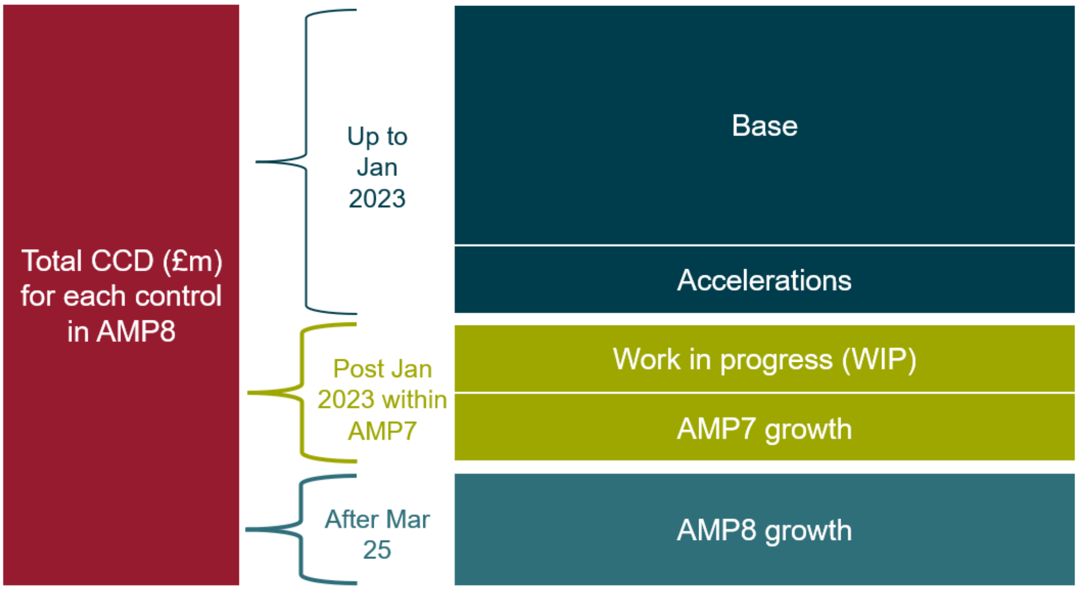
UU estimates a CCD figure (£m) per annum for each wholesale control in AMP8. This CCD figure can then be expressed relative to the RCV figure (£m) to derive a run-off rate per annum in percentage points.[16]

In Figure 3 below we show the component parts of the total CCD figure. The composition can be summarised as follows:

- **CCD on assets commissioned prior to January 2023 –** this captures CCD on assets that are currently deployed up to the end of financial year 2022/23. This has two components:
  - Base – this is the largest component of total CCD and is estimated using rolled forward MEAV values and assumed asset lives across UU's asset register using assets existing at 31 January 2023, focusing on non-infrastructure assets.
  - Accelerations – where current asset life assumptions on particular assets are expected to be shortened largely due to forecast construction activity.
- **CCD on assets not yet commissioned prior to January 2023** this captures CCD on Work in Progress (WIP). Depreciation is calculated using forecast commissioning dates and asset lives depending on which categories the assets fall into.
- **AMP7 Growth** – this is the smallest category of total CCD being depreciation on forecast expenditure between 1 February 2023 and 31 March 2025. Depreciation is estimated using forecast commissioning dates and expected asset lives.
- **AMP8 Growth** – this captures CCD on forecast expenditure between April 2025 and March 2030. These CCD estimates are a function of the category the capital expenditure falls into, the expected commissioning dates and the assumed asset life associated with that category.

16 In this section we review UU's CCD estimates, we do not review RCV figures provided by UU. CCA figures, associated with Grants and Contributions, are also deducted before the run-off rate are calculated by UU.

Figure 3 Composition of UU's CCD estimate



Source: Frontier illustration of UU's CCD figures

3.2 Key assumptions and methodology used

In Table 2 below we review the methodology and key assumptions used by UU for each of the components of CCD described in Section 3.1 above. For each category, we:

- Describe the approach used, focusing on key assumptions and methodological choices; and
- Provide comments on those assumptions and choices.

Table 2 Methodological summary and review comments

CCD category	Key assumptions and methodology	Comments
Base	■ Base CCD is a function of the MEAV value associated with each asset and its estimated asset life (in years and months) held in SAP. CCD is extracted from a SAP report which details the annual depreciation value until the asset becomes life expired. ■ The MEAV value is an estimated figure that has been rolled forward from an original valuation exercise undertaken in 2008 for PR09. This roll forward has taken account of net additions and inflation since 2008. Specifically, for inflation, RPI is used up until, and including, FY2020, and CPIH is used thereafter. ■ Base CCD estimates are specific to non-infrastructure assets. ■ CCD estimates are calculated to the asset level (of which there are over half a million assets in the figures we were provided) and then summed across wholesale controls depending on which control the assets have been assigned to.	■ We have not reviewed the asset life assumptions that UU has assigned each asset. ■ We have no concerns regarding the inflation index choice utilised by UU and we note that it reflects the general inflation indices applied in the regulatory methodology. At the same time, we note that there is uncertainty over how representative a general inflation index (such as RPI or CPIH) is of inflation in specific water assets. The presence of real price effects at the individual asset level could mean the MEAV estimate is above or below the level estimated if a new valuation exercise where to take place. ■ The focus on non-infrastructure assets is consistent with the assumption that infrastructure assets effectively have an infinite asset life – and therefore do not contribute to CCD.
Accelerations	■ Accelerations within total CCD capture CCD amounts that are associated with the re-	Our comments are in two parts, those on the general approach to accelerations, including the WWN+ specific, and those on HARP.

CCD category	Key assumptions and methodology	Comments
	assessment of asset lives. Specifically, they largely capture the shortening of asset lives associated with project activity which is expected to result in the decommissioning of assets before their depreciation end date. Below we consider the general approach to accelerations and two specific points. ■ **In general**, the accelerations UU estimates are calculated from the historical cost value for accelerations taken from the Company Business Plan (CBP). These have then been adjusted for any further accelerations identified post-CBP. ■ These figures expressed on a historical cost basis are uplifted to a current cost estimate by applying an inflation factor. This inflation factor aims to reflect the period of inflation since commissioning of the asset. UU estimates that the average asset is disposed of 20 years into its life. On this basis a 20-year inflation factor is applied. This 20-year inflation factor uses RPI until the end of March 2020, and CPIH thereafter. ■ In addition to the general approach, UU also apply some **specific treatment for WWN+**.[17] Here, UU	**General – including WWN+ specifics** ■ Within a large asset base such as UU's it's reasonable to expect that not all estimated asset lives will be accurate in practice. Making updates for new information and evolving asset management plans, such as new investment replacing existing assets not fully depreciated, is to be expected. ■ As the RCV is a financial concept, and there is no direct link between the RCV and specific assets, an approach for estimating the impact on RCV is required. We also note that a reassessment of current cost depreciation should not affect the present value of future cash flows as depreciation charges directly link to the roll-forward of the regulatory capital value.[18] ■ UU's **general approach** which uses historical cost figures (as this is the basis of the source data in the CBP), and then applies an evidence based inflation adjustment to bring figures forward to 'current' estimates, is logical. ■ A key assumption within the estimation is the time period used for the inflation factor (20 years). This is an area where further sensitivity analysis could be undertaken depending on the distribution of asset disposals around the 20 year average. ■ Regarding the **WWN+ specifics**, We understand the rationale for making an adjustment where there is expected to be a step-change in write-offs associated with replacements and

17 For WR, WN+ and Bio, accelerations are forecast to continue at current levels.

18 The timing of revenues is affected, but the not the overall remuneration (as higher run-off leads to a lower return on capital over time).

CCD category	Key assumptions and methodology	Comments
	has also considered additional accelerations associated with WINEP. Specifically, UU undertook a bottom up review of all WINEP projects larger than £20m to identify any potential decommissioned assets within the CCD register. The total write-off's from these large projects were then pro-rated across the whole WINEP programme. ■ UU also makes a **further specific adjustment** associated with the Haweswater Aqueduct Resilience Programme **(HARP)** for AMP8. This adjustment feeds through to the CCD estimate for the Water Network+ control. The estimated £m run-off figure associated with HARP is calculated by: □ Calculating the current cost of the replacements under the programme as a percentage of the current GMEAV estimate of water assets. □ Applying that percentage to the value of the water RCV to derive a £m figure. □ Allocating that £m figure over several years (linked to the scheduling of the programme) to calculate the amount to adjust run-off by per annum.	improvements in a particular area of the asset base – in this case driven by WINEP. However, we have not reviewed the bottom-review undertaken by UU used to identify the relevant assets in the register. ■ Overall, the acceleration process has the effect of increasing CCD. However, some level of accelerations is logically expected in a market where there are evolving challenges (environmental, demographic) that cannot be perfectly foreseen. Correspondingly, water company plans are dynamic – being regularly refreshed – and we find is appropriate that accelerations have been increased in targeted areas where plans are evolving more rapidly and replacements are faster. **HARP** ■ HARP is a major programme of work being undertaken by UU. It involves a significant amount of replacement work on the aqueduct. ■ While the aqueduct assets are categorised as infrastructure, the introduction of RCV run-off and PAYG as price control tools was to provide more flexibility to companies in how costs were recovered. We therefore do not see a reason see why the recovery of costs associated with these assets could not be added to run-off in a fashion similar to non-infrastructure assets so long as broader factors are considered (intertemporal fairness, affordability, financeability). ■ The present value of cash flows should be not affected as recovering the element of RCV associated with HARP via run-

CCD category	Key assumptions and methodology	Comments
	■ This adjustment for HARP is an additional item as the assets are 'infrastructure' in contrast to the non-infrastructure focus of other CCD amounts.	off should be balanced against the overall return on RCV element being smaller in periods thereafter. ■ With regards to timing of recovery, it is outside the scope of this report to review overall business plan affordability and financeability. However, we do note the following with respect to intertemporal fairness: □ As the assets are being replaced early, there may be a case for inclusion as the company is incurring expenditure in order to maintain the capability of the system. Often the replacement is linked to an enhancement activity and the level of expenditure is greater than the write-off. In this case the accelerated write-off provides a reasonable and logical method for apportioning the spend between maintenance of the system and enhancement that satisfies considerations of intergenerational fairness. □ More generally, it would be reasonable to consider how the new expenditure on HARP is being recovered and how that interacts with intertemporal fairness.
WIP (work in progress)	■ WIP is one of the CCD categories that covers assets not yet commissioned at 31 January 2023. The calculations take into account asset specific forecast commissioning, including a provision for slippage. ■ When estimating CCD, asset lives are assigned to a range of categories. Projects are then split	■ We have no material comments on the methodology or assumptions used for WIP. ■ As with the base calculations, the focus on non-infrastructure assets is consistent with the assumption that infrastructure assets effectively have an infinite asset life – and therefore do not contribute to CCD.

CCD category	Key assumptions and methodology	Comments
	across those categories, depending on their specific composition. ■ CCD is then grouped by wholesale control by summing CCD figure across the assets assigned to each control. Positive CCD values are only assigned to non-infrastructure assets.	
AMP7 growth	■ Growth covers depreciation on forecast expenditure between February 2023 and March 2025. It makes the smallest contribution to total CCD on average across the wholesale controls. ■ Growth CCD works in a broadly similar fashion to WIP.	■ As with WIP, we have no material comments on the methodology or assumptions used for WIP.
AMP8 growth	■ New additions consist of the depreciation of projects planned for AMP8 (after March 2025). ■ The input data for calculating this depreciation is capital expenditure that is incurred. This is split across a range of asset life categories. These categories are: □ Very short, short, medium, medium-long, long, land, and infrastructure. □ Each is assigned an asset life assumption. ■ The timing of capex commissioning is also taken into account.	■ We have no material comments on the methodology or assumptions used for AMP8 growth (new additions).

CCD category	Key assumptions and methodology	Comments
	■ As the stock of new additions builds over time, the overall contribution to CCD grows (assuming the assets from the preceding years continue to remain within their asset life).	

3.3 Summary and overarching comments

One key assumption driving the base CCD figures is that RPI/CPIH represent broadly accurate measures of changes in MEAV over time. As the last valuation exercise was undertaken in 2008, it is hard to say how much higher or lower the current cost of replacement may be versus inflation index estimates. However, we note that the use of RPI until the end of AMP6, followed by CPIH after, mirrors Ofwat's own approach on which inflation indices are appropriate.[19] We also consider that UU's methodology, which also include tracking net additions, is a reasonable approach to estimating MEAV values today.

Another overarching comment relates to intertemporal fairness, affordability and financeability. Our review in this section has focused on the methodology specific to CCD. CCD is a robust estimator of the natural run-off rate, nevertheless, the scope of our review does not extend to these further factors that have a bearing on what is an appropriate run-off rate. It is challenging to consider these in isolation as they relate to the other elements that comprise total allowed revenues. Therefore it would be reasonable for UU to consider whether any departure from the natural rate estimated by their CCD estimate is warranted once these broader factors have been considered.

19 We note that RCV indexation for AMP7 was a blended approach.

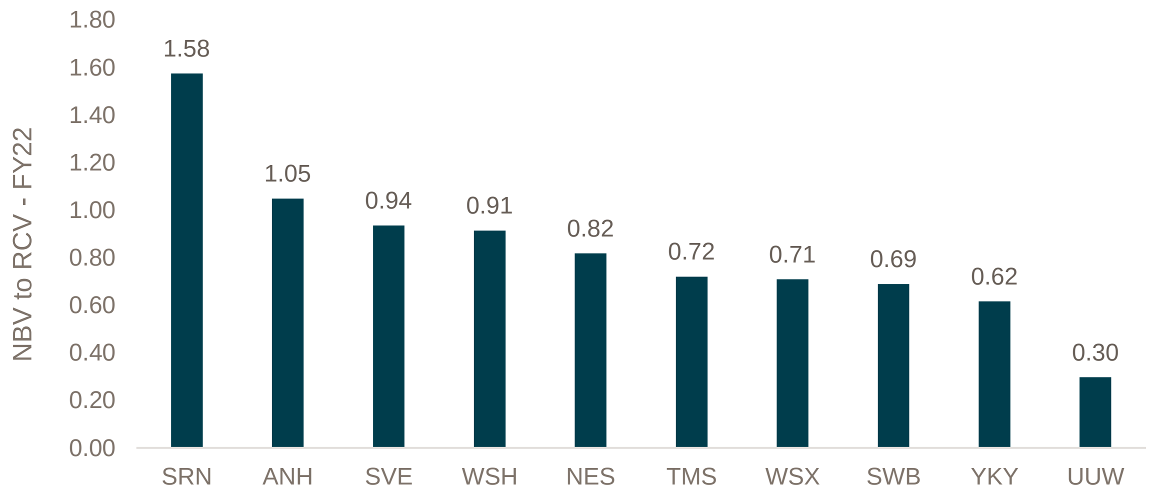
Annex A - Cross-sector relationship between RCV and NBV

In this annex we set out some examples of the relationship between Net Book Value (NBV) and RCV.[20] High amounts of variation in this relationship can create complications for the application for Ofwat's 'starting point' approach. Higher variation suggests that a single approach, applied to all companies, may not capture important nuances and company-specific factors. This is because Ofwat's approach uses NBV to derive run-off rates (in percentage points) that are then applied directly to the RCV.

To constrain the breadth of comparisons we focus on WaSCs in the diagrams below.

Figure 4 shows how the NBV to RCV ratios varied for the **Water Resources** price control in FY2022. The highest ratio, for Southern Water, was over 1.5x the RCV, while the lowest ratio, for United Utilities, was 0.3x the RCV.

Figure 4 Water resources

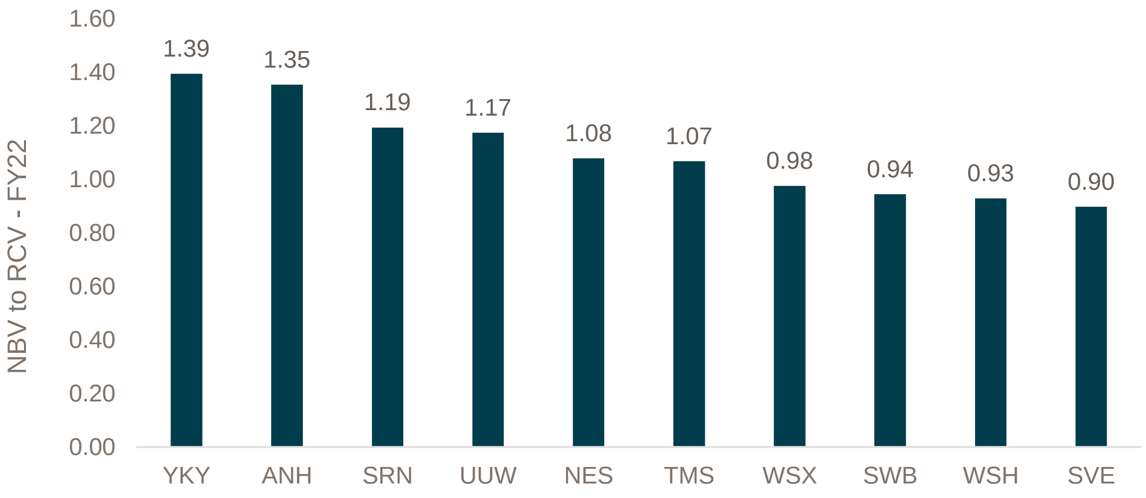


Source: Annual Performance Reports Table 2D and 4C, FY2022
Note: Water Resources figures

Figure 5 shows how the NBV to RCV ratios varied for the **Water Network plus** price control in FY2022. Overall, the range is narrower than for Water Resources, but there is still significant variation within the group. The highest ratio, for Yorkshire Water, was around 1.4x the RCV, while the lowest ratio, for Severn Trent, was 0.9x the RCV.

20 RCV figures are those corresponding to FY2022 from the PR19 Final Determinations.

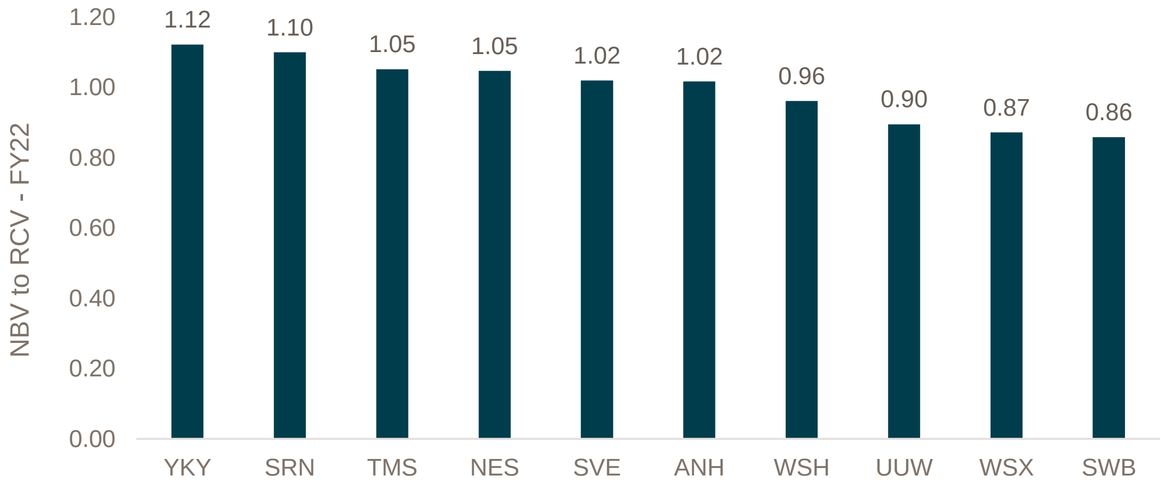
Figure 5 Water Network +



Source: Annual Performance Reports Table 2D and 4C, FY2022
Note: Water Network plus figures

Figure 6 shows how the NBV to RCV ratios varied for the **Wastewater Network plus** price control in FY2022. Out of the price controls reviewed in this annex this range is the narrowest. The highest ratio, for Yorkshire Water, was 1.12x the RCV, while the lowest ratio, for South West Water, was 0.86x the RCV.

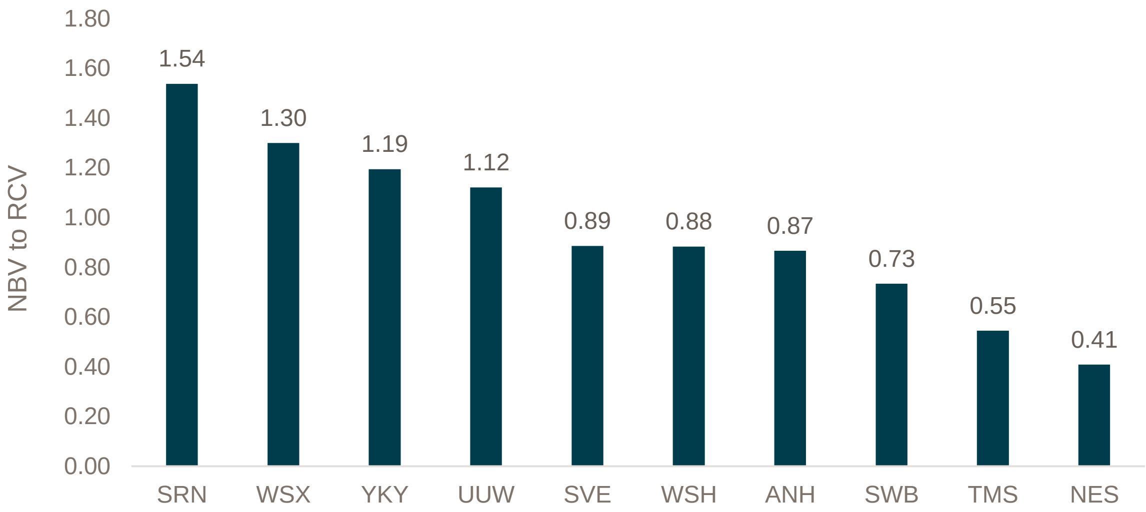
Figure 6 Wastewater Network +



Source: Annual Performance Reports Table 2D and 4C, FY2022
Note: Wastewater Network plus figures

Figure 7 shows how the NBV to RCV ratios varied for the **Bioresources** price control in FY2022. The highest ratio, for Southern Water, was over 1.5x the RCV, while the lowest ratio, for Northumbrian Water, was 0.4x the RCV.

Figure 7 Bioresources



Source: Annual Performance Reports Table 2D and 4C, FY2022
Note: Bioresources figures

Annex B – Relationship between Ofwat PR24 proposed run-off and PR19 run-off

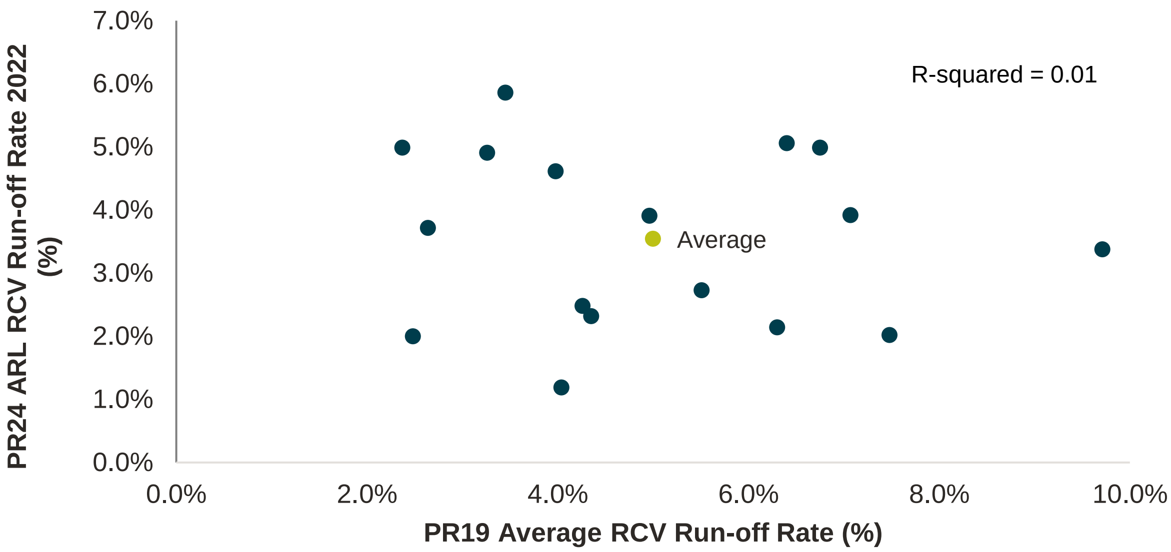
In this Annex we present evidence on the relationship between the RCV run-off rates from the PR19 FD (before adjustments), and the run-off rates produced by Ofwat's proposed method for PR24.

Specifically, we review the relationship between the run-off rates generated by Ofwat's PR24 methodology and those at PR19. For all four controls there is no relationship or correlation between the PR19 run-off rates and the Ofwat method for PR24.

In Figure 8 below, we show that for **Water Resources** there is no relationship between the PR19 FD and Ofwat's proposed method for PR24. This is shown visually, and supported by:

- A regression of the outputs from the updated method on the PR19 outputs – producing an R-squared value of 0.01.
- A correlation coefficient of -0.11.

Figure 8 Water Resources - Relationship between Ofwat proposed PR24 measure and PR19 average run-off



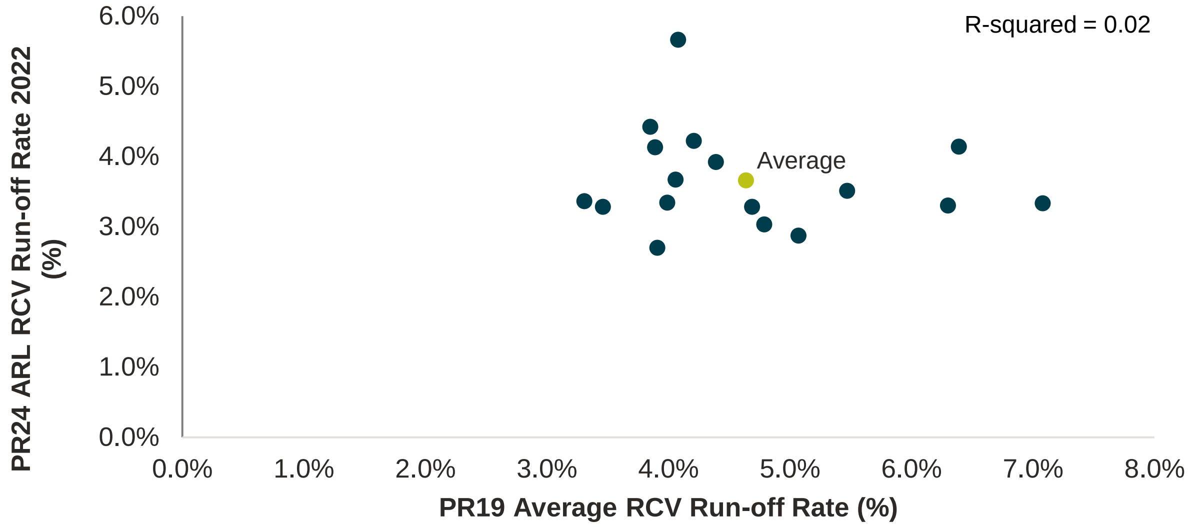
Source: Ofwat PR24 Final Methodology Appendix 10 (Table 7.3 and Annex B)

Note: ARL = Average Remaining Life, PR19 Run-off prior to adjustments, such as for CPIH transition and financeability.

In Figure 9 below, we show that for **Water Network plus** there is also no relationship between the PR19 FD and Ofwat's proposed method for PR24. This is also shown visually, and supported by:

- A regression of the outputs from the updated method on the PR19 outputs – producing an R-squared value of 0.02.
- A correlation coefficient of -0.14.

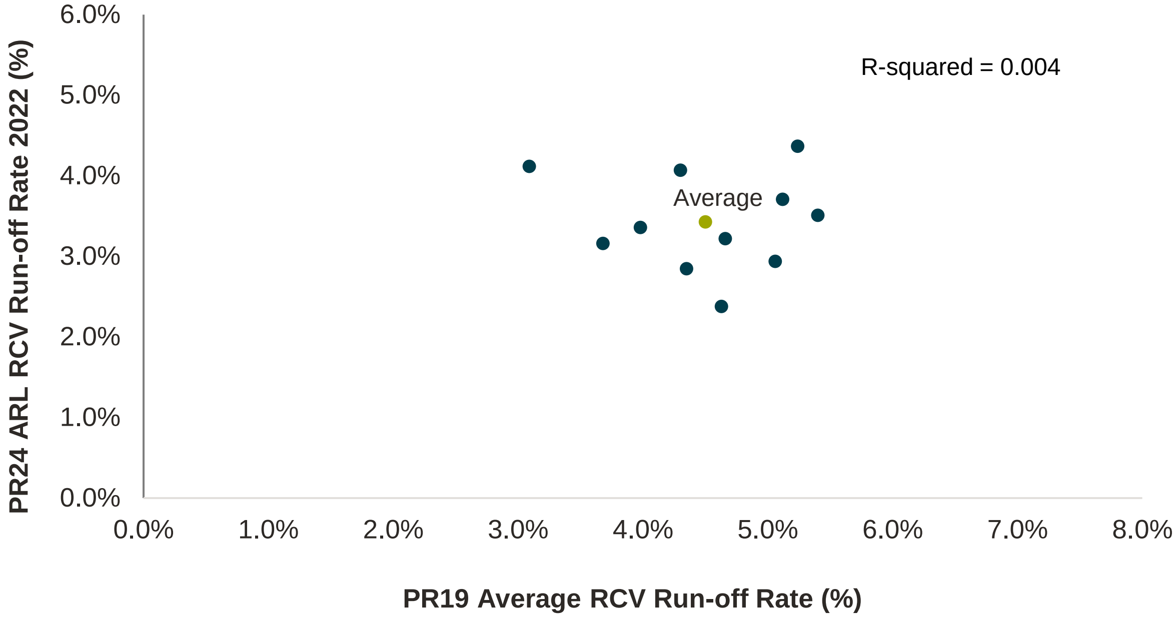
Figure 9 Water Network Plus - Relationship between Ofwat proposed PR24 measure and PR19 average run-off



Source: Ofwat PR24 Final Methodology Appendix 10 (Table 7.3 and Annex B)
Note: ARL = Average Remaining Life, PR19 Run-off prior to adjustments, such as for CPIH transition and financeability

In Figure 10 below, we show the result for **Wastewater Network plus**. The regression of the outputs from the updated method on the PR19 outputs – produces an R-squared value of 0.004. The correlation coefficient is -0.06.

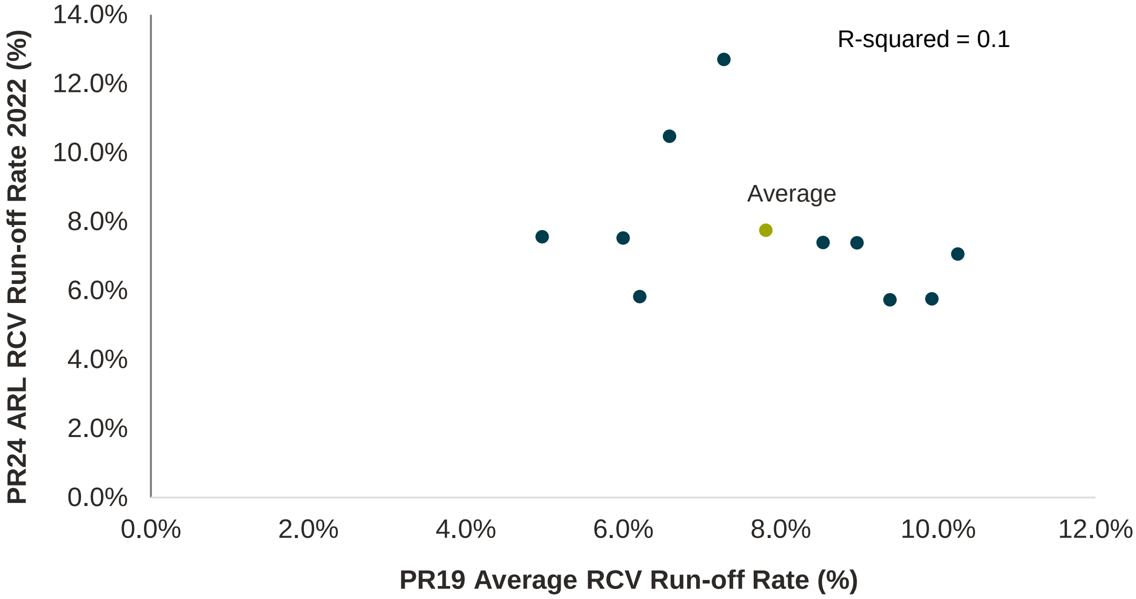
Figure 10 Wastewater Network Plus – Relationship between Ofwat proposed PR24 measure and PR19 average run-off



Source: Ofwat PR24 Final Methodology Appendix 10 (Table 7.3 and Annex B)
Note: ARL = Average Remaining Life, PR19 Run-off prior to adjustments, such as for CPIH transitions and financeability

In Figure 11 below, we show the results for **Bioresources**. The regression of the outputs from the updated method on the PR19 outputs produces an R-squared value of 0.01. The correlation coefficient is -0.32.

Figure 11 Bioresources – Relationship between Ofwat proposed PR24 measure and PR19 average run-off



Source: Ofwat PR24 Final Methodology Appendix 10 (Table 7.3 and Annex B)
Note: ARL = Average Remaining Life, PR19 Run-off prior to adjustments, such as for CPIH transitions and financeability

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