WSX-C01 – Step up in capital maintenance and base costs

Response to Ofwat's PR24 draft determination

Wessex Water
YTL GROUP

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Representation reference: WSX-C01

Representation title: Step up in capital maintenance and base costs

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1. Introduction and executive summary

Since receiving our draft determination, we have engaged constructively with Ofwat on the matter of base costs (i.e. through the company meetings and inbound query process). We appreciate this engagement, and looking to positively reflect it, our draft determination response includes a cost adjustment claim which reflects: the gap between our view of the efficient costs (based on our detailed bottom-up modelling); and Ofwat's view (based on its econometric models).

As part of our Business Plan, we developed considerable evidence regarding our base costs and the level of capital maintenance needed. This modelling was based on site and asset specific modelling of needs, lifespans, and efficient costs (based on market data). We also highlighted our concerns with Ofwat's approach and econometric modelling, which leads to underfunding of investment. We believe that using a bottom-up approach alongside cross-checks (including econometric models) is the most appropriate way to determine base expenditure requirements in the context of PR24. The draft determination is based on these econometric models and does not address the concerns we raised; it also largely rejects our cost adjustment claims.

In response to our query on base costs in the draft determination, Ofwat set out that: "If you consider further cost adjustment claims are required, please submit these as part of your response to our draft determination." Furthermore, in our company meeting we were asked to engage on this matter within the existing framework of econometric models and cost adjustment claims. We have introduced our new cost adjustment claim on this basis. This is consistent with the PR24 Methodology which sets out the following:

> *"In an exceptional case, where a company considers that the benchmarking models do not fit its specific circumstances, it can submit a cost adjustment claim and provide evidence as to why it is different. Companies will need to provide compelling supporting evidence for any cost adjustments. We will continue to have a high evidential bar. For PR24 we are providing greater clarity on our expectations and placing a greater emphasis on two sided adjustments for factors reflected in historical expenditure."; and*
>
> *"We are open to considering company evidence on additional exogenous factors / cost drivers that require a step change in efficient capital maintenance expenditure through the cost adjustment claim process."*

Our approach is intended to work constructively with the regulator, within its framework, to ensure base costs are set at the right level. This is necessary to ensure that we continue to provide a reliable supply of water and wastewater services to our customers in the short – and the long-term.

In the absence of perfect information, in any given price control it is hard to identify the appropriate level of capital maintenance and asset replacement activity, and therefore the efficient level of base costs to fund them. This is because the long lifespan of water assets, as well as the variation in the profile of the type and age of assets between different companies, leads to inherent uncertainty around the level of maintenance each company's assets require over time.

Previous price controls have focused on reducing customer bills, which has been achieved through a trade-off with delivering long-term investment, and has reduced companies' expenditure. Successive price controls have increasingly underfunded companies through inconsistent formulation of the notionally efficient firm; ever-stretching performance targets that are assumed to be funded through base cost allowances via efficiency improvements; and frontier shift targets that, with hindsight, has not been realised by the water industry or the UK economy as a whole over the last 20 years.

This has created a cycle of underfunding, which in turn results in underinvestment (especially in relation to capital maintenance where the negative outcomes are not immediately obvious) as companies have struggled to keep in line with their regulatory settlements, focussing on short-term outcomes while balancing pressures on costs and financeability.

In theory, econometric benchmarking can be a useful tool to help identify the efficient level of base costs because it uses the actual expenditure made by water companies to deliver their core activities, while controlling for factors that differ between the companies. However, this relies on the following key assumptions:

a) that companies are in fact making the necessary level of investment to maintain their assets;
b) that historical costs are a good basis to predict efficient costs going forward; and
c) the model captures the various drivers of efficient costs (including all differences between companies).

In practice, however, the complexity of assets in the water industry means that this is a difficult standard for *any* econometric model to achieve.

Therefore, it is important that top-down econometric modelling is seen as a useful tool and used alongside other methods (such as bottom-up approaches that can capture the detailed needs of specific assets) to arrive at a balanced view of the efficient costs required to meet the ultimate goal of funding necessary asset replacement and capital maintenance. We understand there is no perfect econometric benchmarking model that can necessarily provide the right view of efficient base costs to fund capital maintenance and asset replacement activities, and this inherent limitation points towards it being used as *one of* the tools to estimate efficient costs, and not *the only* tool.

This is particularly relevant for Ofwat's cost benchmarking models because the above assumptions on which econometric modelling could be considered to be identify efficient cost allowances on its own do not hold.

On (a), it is widely recognised (notably by the House of Lords and the National Infrastructure Commission) that the water industry has suffered from systematic underinvestment in the past, which now needs to be urgently corrected.

Furthermore, Ofwat's own assessment highlights that companies' RCV run-off rates have become disconnected from their capital maintenance / asset replacement rates.[1] While Ofwat presents this as evidence that RCV rates are too high, an alternative view is that this is instead evidence of a binding constraint on funding, with companies unable to meet short term targets while simultaneously fulfilling obligations to sufficiently invest in their depreciating assets.

Furthermore, the period that the historical data captures includes: the financial crisis and the pandemic, where investment in infrastructure was historically low, due to the uncertainty created by the macroeconomic conditions; and a period of "trough" in the lifecycle of lumpy infrastructure investment across the industry, driven by variation in the profile of assets held by different companies.

Together, this implies that the historical costs on which Ofwat's costs models rely are not reflective of efficient future costs because they bake-in, and therefore perpetuate, historical underinvestment. Fixing this historical underinvestment going forward now requires work because we not only need to 'course correct', but also catch-up on shortfalls in historical capital maintenance to ensure we are on a long-term sustainable path.

We are also concerned that, the models are not well-specified, and do not reflect efficient costs for Wessex Water. The water models show the smallest companies to consistently be at the frontier, which could suggest that the models struggle to fully account for scale. Additionally, the models do not account for drivers of capital maintenance spend, and the retail models are unlikely to be able to adequately predict the future given that economic conditions have now diverged significantly from those that prevailed during the sample period.

[1] Ofwat (Dec 2022) 'Creating tomorrow, together: Our final methodology for PR24 – Appendix 10 Aligning risk and return'; page 52

Despite being limited by the above factors, Wessex Water has a strong a track record of delivering efficiencies and high-quality outcomes for customers. However, we cannot continue delivering for our customers in the same way if we do not urgently invest in our assets in a way the industry has not in the past.

In the context of the limitations of econometric methods, as noted above, the modelled costs included in the draft determination do not reflect Wessex Water's (or, in our view, any other companies') true efficient costs, and we cannot rely solely on them to deliver for our current and future customers. Therefore, we have undertaken a detailed investigation to understand the requirements of our assets, carefully identifying the priorities to balance this against affordability and deliverability, and built-up our costs line by line using a bottom-up approach. We have market-tested and assured our bottom-up estimates with industry experts to ensure they are efficient.

We are clear that our plan does not include any investment that has already been funded. We are not asking customers to pay twice. We have, over the last two decades and more, consistently ensured that we have effectively and efficiently spent all our capital maintenance allowance.

That is, we have spent in full the investment funded by Ofwat's regulation framework for maintaining our asset base. However, as set out above we have concerns regarding the level of capital maintenance allowed by Ofwat in the PR24 draft determination; and indeed previous price controls. Specifically, our view is that a step-up in capital maintenance is necessary to make up for historical underfunding and to meet coming challenges. This is supported by views from the National Infrastructure Commission (NIC) and the House of Lords, which indicates significant additional investment is required to ensure that water assets can deliver for customers and the environment in the long-term.

Since submission we have further scrutinised the programme of works and scheduling that would be required to deliver this investment. To ensure we can deliver the necessary investment for customers, we are now proposing to profile some of this investment into AMP9, and consequently the base costs in our revised plan are reduced. We further note this now includes investment in relation to pollutions and flooding, consistent with Ofwat's view that this increase in activity should be funded from base.

Consistent with CW18/CWW18, the below table summarises the revised value of the base costs and net value of the cost adjustment claim.

Table 1 – Step up in capital maintenance / base costs

£m, 22-23 prices	WR	WN+	WWN+	BIO	Wholesale
Gross value of claim	£51	£723	£1,071	£272	£2,117
Implicit allowance	£41	£471	£952	£158	£1,622
Net value of claim	£11	£252	£118	£114	£494

It is important that we are allowed these costs for the provision of reliable water and wastewater services to our customers going forward – these are not currently reflected in the Draft Determination.

2. The current approach

The current approach to setting cost allowances is not able to identify efficient future costs to ensure a sustainable level of asset maintenance. Base cost allowances are an integral part of the price control process as they fund the core operations that water companies undertake in the day to day running of the business. This funding is critical to ensuring that companies can continue to provide a good level of service to customers, protect the environment, and maintain the health of their assets, both in the short- and long-term.

However, it is difficult to accurately identify the 'right' level of asset maintenance activity on an ongoing basis, and therefore the efficient level of base costs. Due to the long lives of assets in the water sector, there can be significant lags between capital maintenance expenditure and changes in asset performance and subsequent service levels. This is especially true after periods of significant enhancement expenditure where many new assets are introduced that do not immediately require substantial capital maintenance.

This means that the benefits of capital maintenance expenditure, or the costs of arising from insufficient capital maintenance, are difficult to monitor on an ongoing basis. While the costs are obvious when an asset fails, such events will necessarily be the result of the accumulated effects of insufficient capital maintenance over an extended period. Similarly, an increased level of capital maintenance expenditure may avert asset failure, but linking this behaviour to the probability of such an event occurring to optimise expenditure over time is very challenging. This means that, even over successive price controls, Ofwat will be unable to distinguish between whether a given company is reducing costs through improvements in efficiency (i.e. managing assets more effectively and at a lower cost) or deficits in capital maintenance that could undermine asset health over the longer term.

Top-down econometric benchmarking has been the method used to determine base cost allowances since the introduction of the totex framework at PR14. While econometric models are a useful tool to identify the efficient level of costs for a given level of activity, there are also important limitations to this type of analysis in practice which must be recognised to ensure the results are reflective of the wider aim of ensuring that a sustainable level of asset maintenance is undertaken. Certain criteria must be met for these models to yield accurate estimates of future efficient base cost allowances. These include:

1. The period from which the data is drawn from must be reflective of the efficient costs required to run the business sustainably and maintain assets over the long-term. If base costs were too low during the sample period, then any econometric model will only be able to extrapolate these into the future, yielding estimates of efficient base cost allowances that are also too low. Conversely, if base cost allowances were too high in the sample period, an econometric model would predict efficient base cost allowances that are too high.

2. That the model captures all the exogenous drivers of efficient costs. This is to ensure that the models account for the variation in efficient cost allowances between companies that is driven by factors that are beyond the companies' control. If factors are omitted, or included factors are not exogenous, this can lead to bias in the estimates of cost allowances produced by the models. This has the potential to lead to incorrect estimates of companies' efficient base cost allowances.

3. In the future, the requirements on companies must be expected to be similar to those that they have experienced in the past. If companies are required to improve performance, or meet new requirements, or challenges that have not applied in the past, then, as these are not reflected in the data sample, the econometric models will not be able to account for these costs in their predictions of future efficient base cost allowances.

It is our view that these criteria are not met for Ofwat's econometric benchmarking models for the following main reasons.

Firstly, there is broad recognition that there has been systematic underinvestment in the water industry (and, more broadly, on infrastructure in the UK economy) across the period on which the cost models are based.

Over the recent price controls, included in the sample period for Ofwat's cost models, Ofwat has prioritised bill reduction for customers, through a number of stretching decisions in its price control. In its Final Methodology at PR19, Ofwat stated that "*water and wastewater services must be affordable to customers*", and in its Final Determinations imposed a reduction in bills of 12% on average before inflation.[2] At PR14, Ofwat imposed a 5% reduction in bills across the price control, before inflation. In practice, this has meant that cost allowances have not necessarily been devised with long-term asset health as a central focus.

Companies have been challenged to achieve increasingly stringent targets across both costs and outcomes simultaneously, and repeatedly at successive price controls. This has created incentives for them to prioritise short-term performance (given the set of short-term performance incentives applied) at the possible expense of long-term asset health (which takes longer to deteriorate and become detrimental to performance).

These repeated mechanisms have created a worsening of underinvestment over time and, if left unchecked, will continue to accelerate the decline in long-term asset health. Given that the data used for cost modelling reflects this historical underfunding, the cost allowances predicted by these models can only perpetuate this systematic underinvestment.

Fixing this historical underinvestment going forward now requires work because we not only need to fill the gap, but also ensure that we are on a long-term sustainable path.

Secondly, PR24 is due to require additional base expenditure that has not been required in the past. This is a result of historical enhancement expenditure which will require increasing levels of maintenance over time and the requirement to maintain higher performance levels. These costs will not be captured in the historical data, so the econometric models will be unable to predict these into the future.

Finally, there are other issues with Ofwat's econometric models that lead us to believe that they are not well specified and should not be relied upon as the only tool to assess the appropriate level of future base cost allowances. These include the inclusion of small companies distorting the wholesale water models, the lack of any controls for the drivers of capital maintenance spending, and issues with the bad debt models due to a discontinuity in economic conditions leading into PR24.

Ultimately, econometric models are only as good as the data they are based on. If the data does not adequately reflect what is being predicted, the model will be biased and miss important factors that should be accounted for. Where econometric cost models are known to be systematically biased in a predictable way, they should be augmented with other approaches such as bottom-up modelling.

In light of these limitations, relying solely on econometric benchmarking to determine cost allowances at PR24 is likely to lead to insufficient cost allowances to fix the issue of systematic underinvestment and to ensure a long-term sustainable level of investment going forward. As a result, it is our view that our bottom-up modelling provides a more accurate estimate of efficient base cost allowances at PR24 and, aligned to Ofwat's request, propose an additional cost adjustment claim to account for that.

[2] Ofwat (Dec 2017) 'Delivering Water 2020: Our final methodology for the 2019 price review'; page 4

3. The modelling period

Following from the above, in this section, we set out the evidence to support each of the conceptual points above, showing that the cost assessment models at PR24 will lead to systematic underestimates of efficient base cost allowances.

3.1. The cost models are based on data from a period of systematic underinvestment

In this section, we first set out in greater detail how the PR24 methodology has led to systematic underinvestment. We then present evidence on the implications of the sample period being too short and the insufficiency of capital maintenance allowances.

3.1.1. Cycle of underfunding

Over the last few price controls, the price review framework has resulted in systematic underfunding. This is for the following reasons:

- Firstly, at each successive price control, the framework has imposed demanding targets for companies to reduce costs and improve short term performance. Where there is a shortfall in funding, companies are financially incentivised to achieve these short-term cost and outcome targets, even if this comes at the expense of long-term asset health as the effects of this behaviour are not immediately detrimental to performance.

- Secondly, within the context of this framework, Ofwat has focused on its consumer duty as reducing bills (or limiting bill increases) for current customers. This has led to a shift of focus away from the long-term, including to some extent the outcomes for future customers.

- Thirdly, these demanding targets cannot be funded through base cost allowances because Ofwat has not adopted a fully joined-up approach that accounts for the fact that higher performance is costly to achieve. This omission has meant that companies are subjected to a shortfall in funding, meaning that they face trade-offs between the costs of meeting short term targets and maintaining long term asset health. The limitations in this approach have been acknowledged in part by the CMA in its redeterminations for the water sector, as well as Ofwat in its Final Methodology at PR24.

Each of these aspects has contributed to the pressure on companies' costs and led to a worsening of underinvestment over this period. In this section, we set out in greater detail how each of these elements has influenced underinvestment.

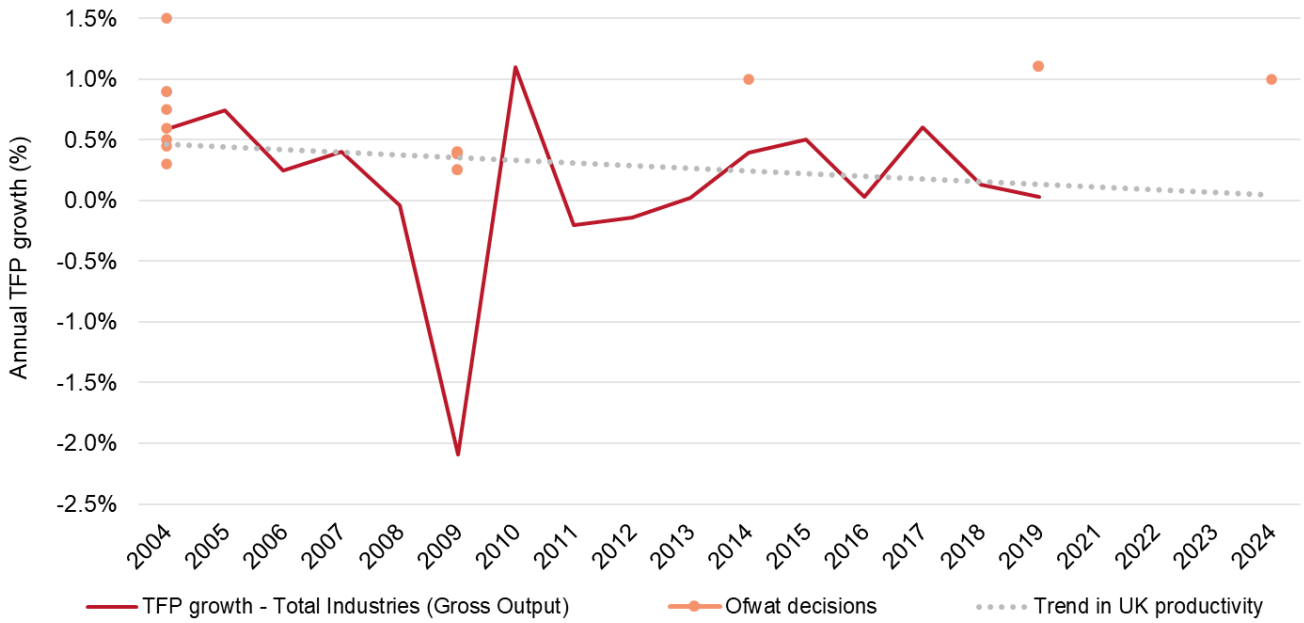
3.1.2. Simultaneous challenge across both costs and outcomes

The cycle of underfunding has been driven by changes to Ofwat's framework in relation to costs and outcomes over this period. At PR14, Ofwat implemented a 'totex framework'. Under this approach, it used econometric models to assess both opex and capex together in order to determine efficient base cost allowances for the following AMP. At PR14, efficient costs were deemed to be at the upper quartile; and at PR19 the benchmark was set to be more demanding the upper quartile.

In addition to the cost efficiency challenge (which is intended to address catch-up efficiency), Ofwat implemented a frontier shift (i.e. ongoing) efficiency challenge which further reduced base costs. Though this was intended to challenge companies to reduce costs in line with productivity improvements, productivity growth in the UK has flatlined in recent years and has even trended downwards, as can be seen from Figure 1 below. Ofwat's failure to reflect this in its frontier shift challenges has resulted in its determinations being divorced from actual UK

productivity growth at PR14 and PR19, implying that this this rate of improvement would have been unachievable for companies.

Figure 1 – UK TFP growth compared with Ofwat Frontier Shift decisions



Note: At PR04 and PR09, Ofwat set separate frontier shift challenges for different components of costs. This is why there are a range of data points for these price control determinations.
Source: Economic Insight Analysis of EU KLEMS and Ofwat data.

The outcomes framework implemented at PR14 also introduced comparative benchmarking to outcomes targets through Ofwat's 'horizontal checks'. Where data comparability allowed, companies were challenged to achieve the upper quartile of performance. At PR19, this framework was expanded in scope to cover a wider range of 'common and comparable' outcomes. Though the specific method for how each outcome was benchmarked depended on the category to which the outcome belonged as well as the company's level of performance, these were again subject to stretching targets. Ofwat described its framework at PR19 as requiring a "*step change in efficiency to provide more for customers and the environment, while reducing bills*".[3]

The structure of the costs and outcomes framework has resulted in a bias towards prioritising short-term performance. Companies are financially incentivised both to outperform cost allowances and to meet outcomes targets, meaning that there is a direct incentive to avoid penalties and achieve rewards in the immediate term. Meanwhile, asset health measures (such as mains repairs, unplanned outages, and sewer collapses) are often lagging indicators, meaning that shortfalls in capital maintenance take time to translate into reductions in performance in these metrics.

Over the course of repeated price controls, successive challenges imposed on both costs and outcomes have put companies under pressure to achieve demanding outcomes targets within base cost allowances. Where these allowances are insufficient to fulfil the requirements of both short-term performance and long-term asset health, companies are incentivised to prioritise short-term performance because the costs of such underinvestment in long-term asset health are not immediately or directly observable.

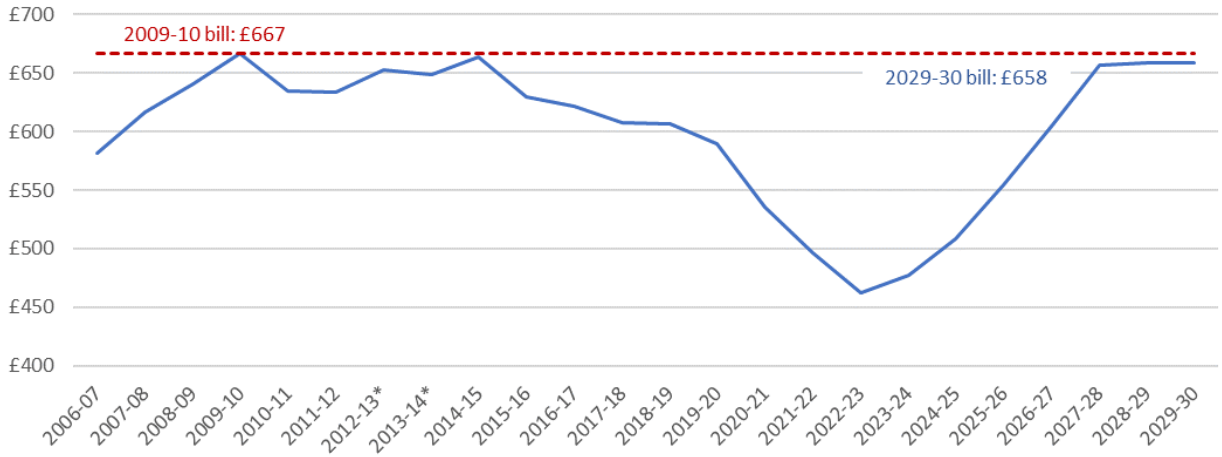
[3] Ofwat (Dec 2017) 'Delivering Water 2020: Our final methodology for the 2019 price review'; page 14

3.1.3. A focus on bill reduction

In addition to the simultaneous challenge on costs and outcomes, over multiple price controls, Ofwat has prioritised reducing customer bills. At PR09, real bills were set to remain at 2009 levels over the price control period. At the PR14 and PR19 final determinations, Ofwat stated that real bills were set to fall by 5% and 12% respectively. At PR19, Ofwat stated that it had been able to achieve this reduction by ensuring that "*customers do not pay for inefficiency*".[4] However, as set out in the previous section, it is not possible for Ofwat to observe whether the corresponding reductions in costs are the result of efficiency improvements or the accumulation of deficits in capital maintenance. It is important that the framework for cost allowances should focus on ensuring sufficient investment for long-term asset health, rather than reducing customer bills.

As can be seen from the figure below, our real bills are lower now than in 2005-06.

Figure 2 – Wessex bill profile over time



3.1.4. Disconnect between costs and outcomes

Cost allowances and outcomes targets are set independently of each other, without accounting for service levels in the econometric models used to set base cost allowances. That is, the setting of these targets has not been part of a joined-up approach which considers outcomes and costs 'in the round'. This means that high performance on outcomes does not lead to higher cost allowances to reflect that this is costly to achieve, and vice versa. Additionally, it can mean that companies who are not delivering high outcomes performance can be judged to be efficient if they report low costs, while companies that do deliver for customers at a commensurately higher cost would be considered to be inefficient.

This has arisen from Ofwat's assumption that continued performance improvement is funded through base costs. Ofwat has not explicitly attempted to estimate either the economically efficient level of performance for each company or how much performance improvement can be delivered through base cost allowances. At PR14,

[4] Ofwat (Dec 2019) 'PR19 Final Determinations Overview of companies' final determinations'; page 16

Ofwat's position was that customers had paid for upper quartile performance, while at PR19 Ofwat determined that its outcomes targets were achievable through base costs by assessing historical rates of improvement.[5, 6]

If companies are separately being held to the standards of low performing companies with correspondingly low costs on cost benchmarking, while being held to the standards of the high performing companies regardless of costs through the outcomes framework, these targets will not be possible to achieve simultaneously and will result in trade-offs having to be made between short-term performance and long-term asset health. This has led to systematic underfunding that has worsened with the incremental tightening of cost and outcome challenges at successive price controls.

As the data on which the models are based are subject to this systematic underfunding, any predictions of future cost allowances will not only continue to incorporate this underfunding, but further worsen it by applying yet another efficiency challenge alongside further stretching outcomes targets.

The CMA has acknowledged the disconnect between costs and outcomes to a certain extent in its redeterminations. At PR14, it noted that "*the theoretical basis on which ODIs were designed appears to assume that the target is set at the economic level for the metric*". However, "*for Ofwat to consider that upper quartile performance (historical or otherwise) would match economic levels appeared unlikely to us in general*".[7] In its PR19 redeterminations, the CMA investigated the link between cost and service levels in order to determine whether the improvements required would be achievable for an efficient company through base costs. In the CMA's view, Ofwat's approach to setting PCLs did not automatically result in increased expenditure that went beyond base cost allowances; however, it did note that an efficient company using optimal approaches and technology may find that the utilisation of more inputs is the only practical way to improve outcomes.[8]

Additionally, Ofwat has acknowledged the need to draw a clearer link between cost allowances and the performance levels it expects companies to deliver at PR24.[9] In its Draft Determinations, Ofwat states that it has "*improved the link between costs and service at PR24*".[10] For example, by using historical performance levels to assess the level of performance that can be delivered from base cost expenditure and considering company forecasts in setting performance improvements. However, these changes to not go far enough to address the concerns set out in this section. These changes do not account for the cycle of underfunding that we have set out, leading companies to have to make trade-offs between performance and capital maintenance. They also do not explicitly account for the relationship between costs and outcomes, or the fact that companies have to make trade-offs across their activities and that costs and outcomes should therefore be viewed 'in the round'.

3.1.5. The sample period is short, considering the lifespan of water assets, and includes periods where investment is expected to be low due to uncertain macroeconomic conditions

Ofwat's econometric benchmarking models are based on data spanning 2011-12 to 2022-23. This is a short space of time in the context of the long lifespans of assets in the water sector. For context, Table 2 sets out the asset lives for key types of assets in the water sector.

[5] Ofwat (Aug 2014) 'Draft price control determination notice: technical appendix A2 – outcomes', page 19.
[6] Ofwat (Dec 2019) 'PR19 Final Determinations – Overall stretch on costs, outcomes and cost of capital policy appendix'; page 28.
[7] CMA (Oct 2015) 'A reference under section 12(3)(a) of the Water Industry Act 1991 – Report', paragraph 9.16.
[8] CMA (March 2021) 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations Final report', paragraphs 7.94 & 7.99.
[9] Ofwat (2024) 'Creating tomorrow, together: Our final methodology for PR24'; page 81.
[10] Ofwat (July 2024) 'PR24 draft determinations: Expenditure allowances'; page 144.

Table 2 – Asset life estimates

Asset type	Lifespan (Wessex)[11]	Lifespan (WICS research)
Water mains	100 years	130-140 years[12]
Sewage pumping mains	60 years	62-88 years[13]
Combined sewer overflows	80 years	89-111 years[14]
Mechanical Plant & Machinery (Water Treatment)	30 years	19-21 years[15]

The capital maintenance requirements of these long-life assets can vary significantly over time, and between different companies (with significant variation in both the assets they hold and their respective age profiles). Given the lifespans of certain assets exceed 100 years, it is unlikely to be appropriate to take a sample period of approximately 10 years and assume that it is reflective of capital maintenance requirements on an ongoing basis. It is possible that within that period certain companies could be in a short-term trough for their capital maintenance spend, which would be misleading as to the appropriate level of capital maintenance going forward. Additionally, the sample includes periods where we would expect investment to be lower due to economic uncertainty, such as during the Covid-19 pandemic years and during the global financial crisis.

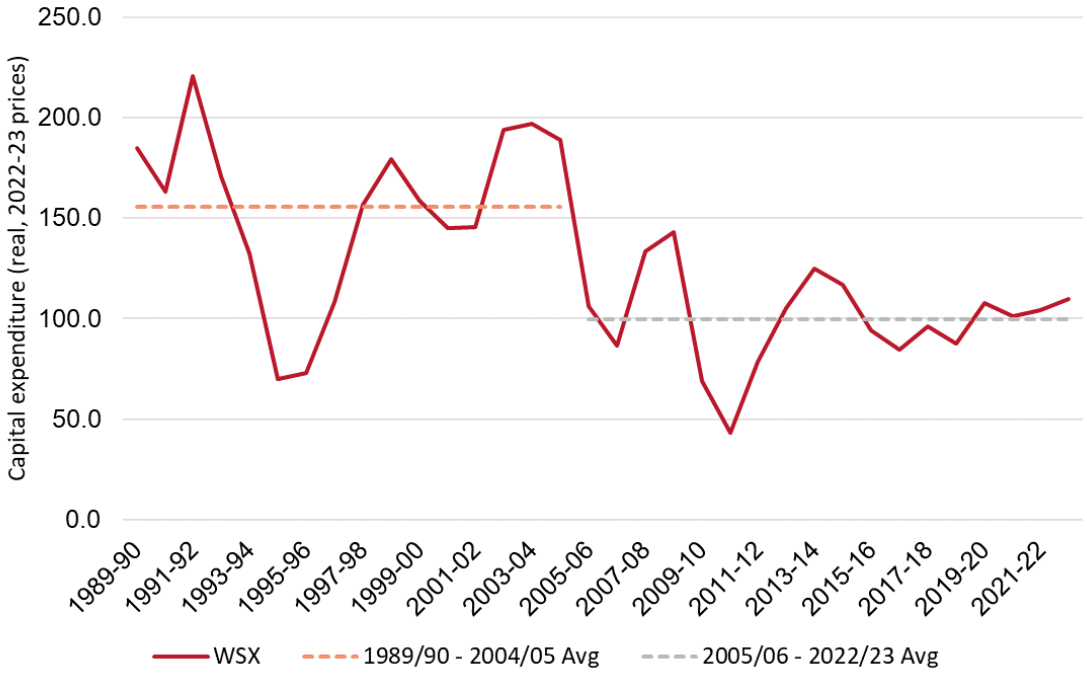
If the data is from a period where there was a capital maintenance trough, Ofwat's econometric models will project this level of capital maintenance forward, leading to companies being underfunded when efficient capital maintenance requirements are peaking.

We note that the CMA investigated this issue in its PR19 redeterminations, specifically it assessed fluctuations in the level of capital maintenance expenditure over the period 2012-2020. Ofwat also assessed capital maintenance over the same period in its Draft Determinations. However, this insufficient to determine whether companies are in a peak or trough of expenditure. Peaks and troughs within this period may be unreflective of requirements outside of this time period. Additionally, this data may not be reflective of companies' actual capital maintenance requirements, only what they have been able to spend. Therefore, when determining the capital maintenance requirements for companies, this should be grounded in information about the assets that they hold, as well as the age and condition of those assets.

The figure below shows Wessex Water's historical capital expenditure on enhancement, with renewals expensed in the year added to base in 2022-23 prices. This series shows that prior to the data period for Ofwat's econometric models, enhancement capital expenditure was substantially higher. Peaks in enhancement expenditure will translate into higher capital maintenance requirements in the future as these assets age. This demonstrates that the question of whether a company is in a capital expenditure peak or trough is also dependent on the wider historical context, and that a narrow investigation of historical capital maintenance expenditure is unlikely to be sufficient to determine future requirements.

[11] Wessex asset type classifications
[12] WICS (2019) '2019 Decision Paper - Strategic Review of Charges 2021-2027 – Asset replacement'
[13] WICS (2019) '2019 Decision Paper - Strategic Review of Charges 2021-2027 – Asset replacement'
[14] WICS (2019) '2019 Decision Paper - Strategic Review of Charges 2021-2027 – Asset replacement'
[15] WICS (2019) '2019 Decision Paper - Strategic Review of Charges 2021-2027 – Asset replacement'

Figure 3 – Wessex historical enhancement capital expenditure



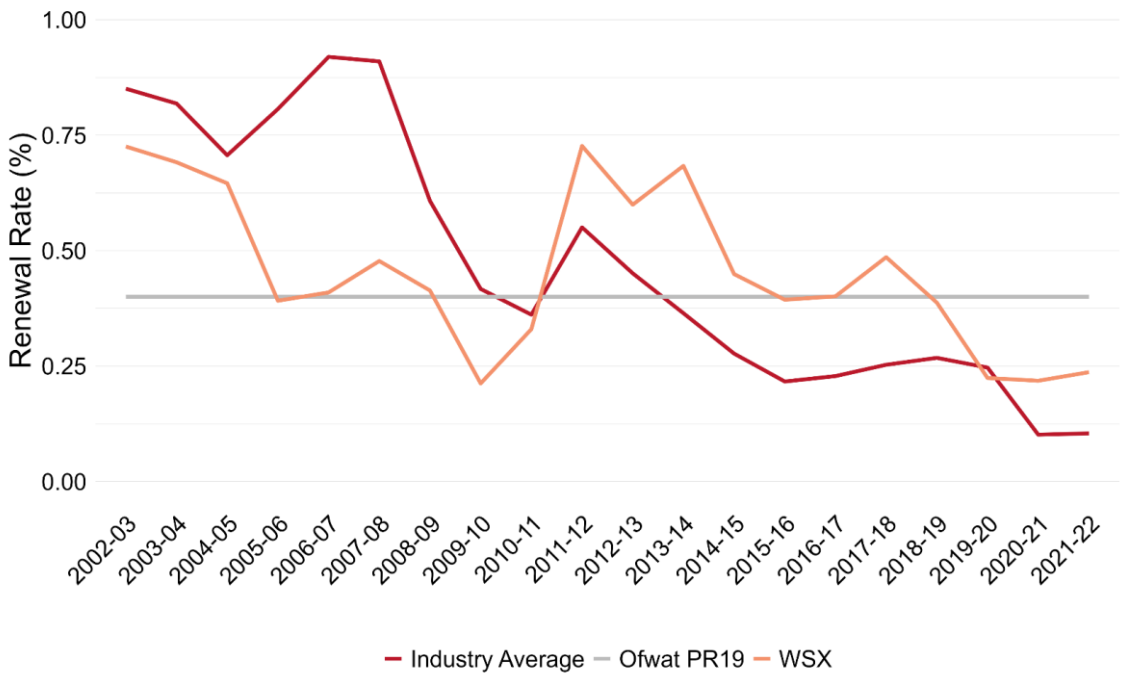
3.1.6. Evidence on the insufficiency of capital maintenance allowances

We have always spent in full the investment funded by Ofwat's regulatory framework for maintaining our asset base. However, we do have serious concerns about the level of capital maintenance allowed by Ofwat in the PR24 draft determination and in previous price controls. Specifically, our view is that a step-up in capital maintenance is necessary to make up for historical underfunding and to meet coming challenges. This is supported by views from the National Infrastructure Commission (NIC) and the House of Lords, which indicate significant additional investment is required to ensure that assets are resilient and can deliver for customers and the environment in the long-term.[16] The need for higher investment and capital maintenance was reiterated in its National Infrastructure Assessment. In its report on the water sector, the House of Lords highlighted that investment had not kept pace with the demand to meet pressures on the sewer network as well as ensuring future supply.[17] A more detailed assessment of asset maintenance and replacement is set out in Economic Insight's report for Water UK.[18]

We can see evidence of the insufficiency of cost allowances, particularly of capital maintenance, in asset replacement rates. Mains replacement rates are a leading indicator, showing the rate at which the company is updating its infrastructure with direct implications for the duration of asset lives. Figure 4, below, shows the water mains replacement rate over time. The downward trend in this metric over this time period is clear both for Wessex and at the industry level.

16 https://nic.org.uk/app/uploads/Letter-to-Ofwat-on-asset-management-18-May-2023.pdf
17 House of Lords (March 2023) 'The affluent and the effluent: cleaning up failures in water and sewage regulation'
18 Economic Insight (June 2022) 'Options for a Sustainable Approach to asset Maintenance and Replacement'

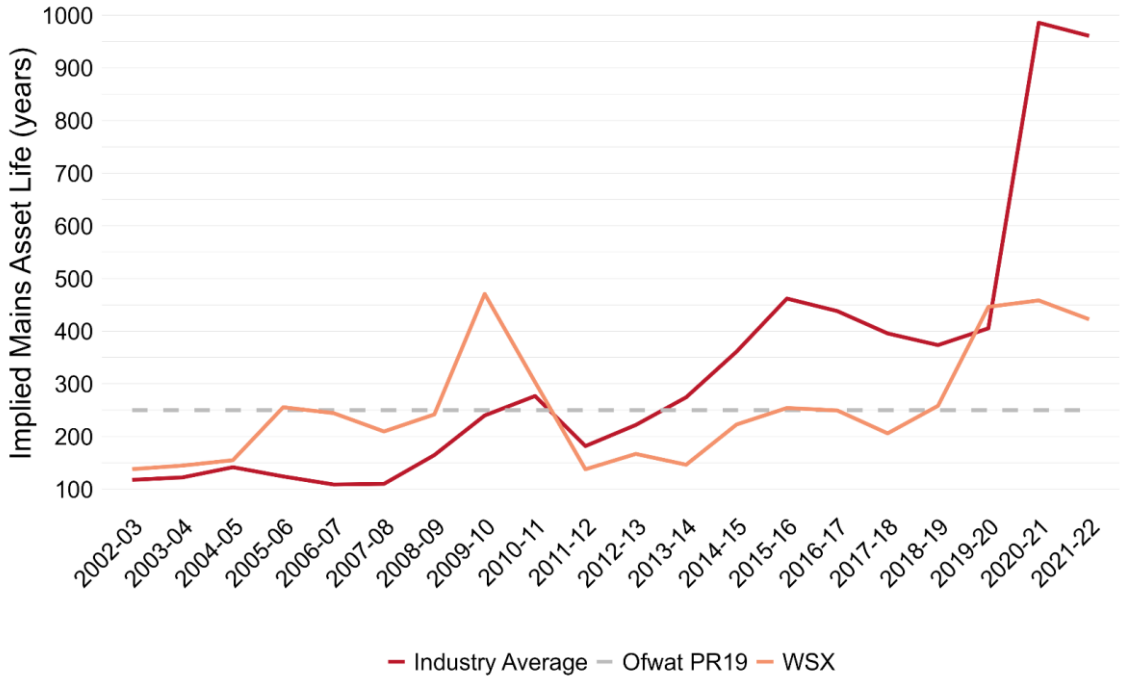
Figure 4 – Mains replacement rate over time



Source: Economic Insight Analysis of APR and cost assessment datasets

The implication of this downward trend is that asset lives should be increasing. The figure below shows the asset lives implied by the point estimates of asset replacement rates in Figure 4. As can be seen, especially at the industry level, the required asset lives have been increasing dramatically in recent years. If the replacement rates remained constant at 2021-22 levels, new mains would have asset lives in excess of 900 years.

Figure 5 – Asset lives implied by mains replacement rates



The PR24 methodology noted that "a*t PR19 companies were funded on the basis of plans to renew an average of 0.4% of water mains per year*". We have previously highlighted our contention with this principle but also note that the National Infrastructure Commission called out this figure in its letter to Ofwat, stating that "*if maintained across assets of a uniform age and considering the rates of renewal seen since the 1990s, would imply asset lives of up to 180 years*". Similarly, if this renewal rate were maintained in the long-term, it would imply a lifespan for new assets of 250 years. The draft determination set Wessex a target mains renewal rate of 0.48%, which translates into an asset life of over 200 years if sustained across the life of a new asset.[19]

Both values are still significantly higher than the 130-140 years estimated by WICS, and 100 years estimated by Wessex Water. While WICS notes that these estimates are uncertain, we believe it is important that the sector gets back on a solid footing for this kind of capital maintenance.

3.1.7. Evidence from Ofwat's assessment of RCV run-off

In its draft methodology for PR24, Ofwat expressed concern that PR19 and PR14 RCV run-off was too high, which, if sustained, could lead to significant real terms reduction in the RCV over price review periods. Ofwat highlighted that, over the longer term, they would expect the amount of revenue generated from customers from RCV run-off to be close to the amount of investment in new or replacement regulatory assets.[20] This is the principle of broad equivalence, which is a measure of the sustainability of the asset base over the long term. In principle, the spend on capital maintenance should be broadly equivalent to RCV run-off as the RCV run-off should be linked to depreciation, which should result in the RCV being maintained at a similar size.

Ofwat, however, identified the problem to be that RCV run-off is too high, and suggested dealing with this issue by limiting the RCV run-off to a narrow range for each wholesale control that it considers represents a reasonable balance of cost recovery between current and future customers.

We agree that Ofwat has identified an issue here in that RCV run-off is higher than capital maintenance, however we come to the opposite conclusion; that it is being caused by capital maintenance allowances that are too low.

3.2. At PR24, companies will face new demands that have not applied historically

Even if the historical data wasn't based on a period of systematic underfunding, as set out in the previous section, Ofwat's econometric models would still underestimate efficient cost allowance for companies. This is because, at PR24, companies will face new demands that have not applied historically.

Firstly, historical enhancement spend leads to new assets being added to the asset base over time. This incrementally increases the capital maintenance requirements over time and therefore the level of efficient base cost allowances due to the requirement to maintain and replace an ever-increasing capital base. This effect will not be captured in econometric benchmarking models as historical expenditure will be based on historical costs which will only reflect the capital maintenance requirements at the time, not the future requirements for asset maintenance and replacement.

The requirements at PR24 will be driven by the new assets created in the years following privatisation. Many of these assets will start coming up for renewal for the first time in PR24 and therefore will not be reflected in historical cost data. As illustrated in Figure 3 above, Wessex Water's capital expenditure peaks shortly following the privatisation of the industry, as well as between 1997-98 and 2004-05, before falling to a lower level thereafter. This

[19] Ofwat (July 2024) 'PR24 draft determinations: Expenditure allowances'; page 36.
[20] Ofwat (July 2022) 'Creating tomorrow, together: consulting on out methodology for PR24'; pages 102-103

trend suggests that a significant number of assets were created following the privatisation of the industry, and given average asset lives, these assets are now approaching the end of their lifespans. Consequently, there is an increased need for higher capital maintenance allowances to renew these aging assets.

The other driver of increased efficient base cost requirements at PR24 is historical improvements in performance. As set out in the Section 3.1, Ofwat has historically required companies to improve performance without additional funding, assuming that this is possible through base costs alone. We have argued that Ofwat's approach to funding these improvements misses important factors that should be accounted for, however. So too, does its approach to funding the maintenance of these improvements. Maintaining a higher level of performance is also costly as the technological solutions or improved processes that have led to the ability to achieve a higher level of performance must also be maintained going forward. Ofwat has not evidenced that these improvements in performance could be achieved and maintained through efficiency improvements alone. At PR19, it assumed that stretching targets it set could be achieved by assuming that historical trends would be able to continue. This is not based on economic fundamentals and therefore it is not clear that this is funded through base costs. In any case, it is clear that the historical rate of improvement cannot be maintained forever.

Both factors mean that PR24 will look different to historical price controls in a way that cannot be adequately captured by backward-looking models. This means that, even if the underfunding issue from historical price controls set out in Section 3.1 could be corrected for, the models would still yield systematic underestimates of efficient cost allowances. Again, this points to bottom-up modelling being the method for assessing efficient base costs at PR24 on which most weight should be placed.

3.3. We have other concerns about Ofwat's cost models

In addition to the main issues with Ofwat's models outlined in the preceding sections, there are several other important concerns that warrant attention.

Firstly, across the wholesale water models, the two smallest companies (Portsmouth and South Staffs Water) are consistently included in the upper quartile. Additionally, there is a large range in the efficiency scores produced by these models in Ofwat's Draft Determinations compared with the wastewater models which do not contain these smaller companies (1.70 compared with 0.78). This calls into question the accuracy of the models and suggests that they may not be adequately accounting for scale. Small companies could be included in the upper quartile even if they are not efficient, if the model is mis-specified. For example, if the model omits an important variable, or if the relationship between costs and scale is non-linear but the model does not account for this.

Secondly, Ofwat's econometric models do not attempt to account for the drivers of capital maintenance spend. While this may be difficult to achieve, its omission guarantees that the models will not be able to predict cost allowances that account for changes in capital maintenance requirements over time.

4. Historically, Wessex has not been provided sufficient allowances to maintain asset health

4.1. Ofwat has not provided Wessex the allowances it has required

While we acknowledge that Wessex has largely been granted the cost allowances that it 'asked for' through Ofwat's previous price control processes, this has not been reflective of the cost allowances that Wessex has required to meet its obligations. At PR19, companies were incentivised by the price review framework to align with Ofwat's view of efficient totex expenditure, as they were likely to be penalised if they did not. So, if companies did not believe that they could influence Ofwat to change its view on the level of efficient cost allowances, they were incentivised to submit a low request to avoid penalties. This remains the case and, as a result, company proposals in their

business plans should not be interpreted as their best view of their efficient costs for the upcoming price control. Rather, these proposals must represent a balancing act, aiming to achieve the most favourable outcome for the company based on their expectations of how Ofwat was likely to respond to their submitted cost proposals.

At PR19, Ofwat's framework for the Initial Assessment of Plans introduced a mechanism whereby cost sharing rates served not only as a risk sharing mechanism, but also to incentivise companies to submit efficient cost proposals in their business plans. Companies were evaluated across various test areas, including 'securing cost efficiency'. Those that achieved 'exceptional' or 'fast track' status were rewarded financially, with benefits specified in terms of Return on Regulated Equity (RoRE) and beneficial cost-sharing rates. These companies also enjoyed procedural advantages, such as receiving an early Draft Determination. Conversely, companies requiring 'significant scrutiny' faced penalties, such as reduced cost sharing rates and potentially capped Outcome Delivery Incentive (ODI) outperformance payments. Additionally, the companies that were in selected for 'fast track' status were required to adjust their cost proposals to align with Ofwat's view in order to receive this designation. Companies designated as 'slow track' were provided with a list of actions to align their plans with Ofwat's requirements.

Given uncertainty around what other companies would submit in their business plans, or how Ofwat would assess them across the different categories it was evaluating, companies were incentivised to align with Ofwat's view to avoid being categorised as requiring 'significant scrutiny', even if they disagreed with Ofwat's perspective on efficient costs. This was particularly true if companies did not think it likely that Ofwat would be influenced by representations on this matter. Given that Ofwat emphasised affordability as a key theme in its methodology, companies may have anticipated that challenging Ofwat on this point would be unproductive, leading them to conform to Ofwat's expected position in their Business Plans.

Despite aligning with Ofwat's view of efficient base costs at PR19, Wessex noted on several occasions that this was unlikely to be sufficient and that higher allowances would be required to deliver the stretching performance commitments that Ofwat set as part of its determinations. For example, we stated that "*while we accept there may be evidence that in some areas the base cost allowances include sufficient allowance for historical upper quartile levels of performance commitments there is no evidence that they are sufficient to meet future upper quartile levels of performance commitment levels up to 2025"*.[21]

This trend of insufficient allowances looks set to continue. In its Draft Determinations, Ofwat stated that "*PR24 base allowances are 14% higher than our base expenditure allowances in PR19 final determinations, and 3% more than what companies have spent in the past 5 years*".[22]

However, this doesn't account for frontier shift, or population change (i.e. the main scaling variable in Ofwat's models). When this is reflected, the base cost allowances in the draft determination are only 6% above PR19 levels. Furthermore, when one considers timing adjustments and energy indexation, the sector overspend is actually 19%. This is further evidence of a funding gap. We also highlight that the draft determination base cost allowances for Wessex Water are 1% lower than our base expenditure over the last five years.[23]

Additionally, incorporating 2023-24 data, is also likely to yield results different to that presented by Ofwat in its Draft Determinations. Using Ofwat's econometric benchmarking datasets, updated for 2023-24 data, we find that spending on 'modelled base costs' over the most recent five years (2019-20 to 2023-24) has increased by 2% relative to Ofwat's calculations over 2018-19 to 2022-23. If this relationship were to hold true for base costs in

[21] Wessex Water (April 2019) 'Our response to Ofwat's initial assessment of plans'; page 2
[22] Ofwat (July 2024) 'PR24 draft determinations: Expenditure allowances'; page 16.
[23] These figures are based on like-for-like analysis compared with Ofwat's Draft Determinations. They therefore do not include 2023/24 data which was not released at the time of publishing.

totality, updating for the most recent year of data would mean that Ofwat's PR24 base cost allowances are in fact only 1% higher than what companies have spent in the past five years.

4.2. Wessex has performed efficiently in the round across costs and outcomes despite limited funding

As discussed in Section 3.1, Ofwat set companies' cost targets at PR19 separately from their performance targets, rather than using a joined-up approach considering outcomes and costs 'in the round'. Such an approach could have involved, among other methods, accounting for service levels in the econometric models used to set base cost allowances. In practice, this means that high performance on outcomes does not lead to higher cost allowances to reflect that this is costly to achieve, and vice versa.

This creates a scenario where companies that reach spending targets through cutting performance can act as the costs benchmark for other companies, despite their less good performance. Conversely, companies that spend heavily to perform well can act as the benchmark of performance, despite appearing inefficient in the cost models.

Our analysis shows that:

- our customers are satisfied with the level of service that we provide;
- we are performing well in our performance commitments; and
- we are also notably cost efficient, given the level of service we provide, despite the inherent limitations in the modelling approach outlined in previous sections.

4.2.1. Our customers are satisfied with the level of service that we provide

At PR19, Ofwat introduced the C-MeX measure of customer experience to incentivise companies to provide an excellent customer experience for residential customers, across both the retail and wholesale parts of the value chain. In the three years that this measure has been in place (2020-21-2022-23), on average, Wessex Water has ranked as the second highest in the delivery of customer satisfaction. This demonstrates that our customers are happy with the level of service that we provide, in the context of the price that we charge (and by extension the costs we incur).

4.2.2. We are performing well on our performance commitments

Across the majority of our performance commitments in AMP7, we have consistently performed above the above the industry upper quartile. The table below reports the median and upper quartile of the companies' average performance in the period 2020-21-2022-23. (Dark green represents performance at or above the upper quartile; green, at or above the median, and; red, below the median).

Table 3 – Wessex performs well in its average outcomes in the period 2020-21-2022-23

Performance Commitment (* = Higher is better)	Median	Upper Quartile	Wessex Performance
Water and wastewater			
Leakage	6.70	3.91	8.08
Mains Repairs	131.74	114.06	153.90
Per Capita Consumption	-3.17	-4.79	-3.81
Treatment Works Compliance*	98.93	99.36	99.37
Unplanned Outage	1.59	1.11	1.11
Water Quality Compliance (CRI)	3.80	2.83	0.99
Water Supply Interruptions	00:09:38	00:06:17	00:04:37
Wastewater only			
Internal Sewer Flooding Incidents	1.75	1.47	1.42
Pollution Incidents	28.33	22.64	28.33
Sewer Collapses	7.47	5.70	5.70

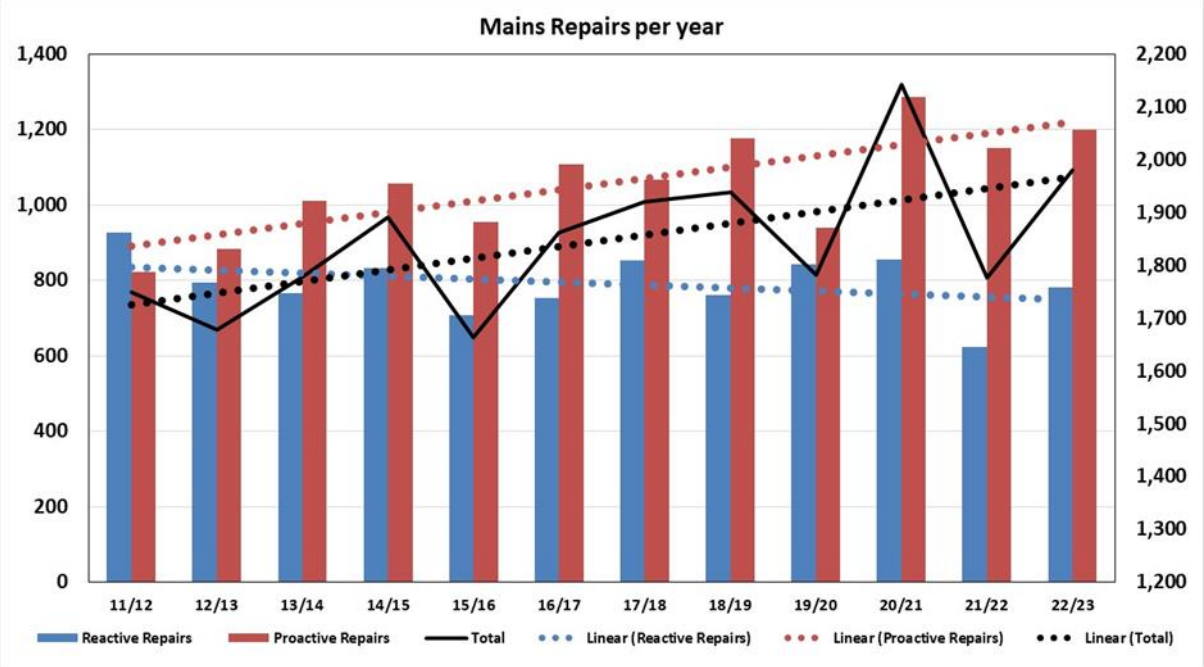
Our performance has only been below the industry median in two performance commitments, leakage and mains repairs. However, we consider that our low recorded level of service on these two commitments is not reflective of our actual (high) quality of service because:

- The **Leakage** performance commitment is scaled by the number of properties served by the company. This method of measurement favours networks where the sources of water are close to where it is delivered to customers, such as in networks operating in an urban setting. Wessex Water, by contrast, operates in a more rural setting with one of the fewest properties per km of mains. We consider that, given the differences in geography, in particular the distance from water sources to customers, it is more informative of company performance to also compare leakage performance per km of main. Wessex ranks sixth on leakage performance when it is scaled by length of mains rather than number of properties. This shows Wessex Water performs better than Table 3 suggests, in line with our (overall) high level of service quality.

- **Mains repairs** (i.e. mains bursts) is not an good performance commitment, as we have previously argued at PR19[24]. This is because mains repairs can be undertaken proactively (as a means to prevent leakage) as well as reactively (as pipes deteriorate and burst). As shown in *Figure 6* below, as we have increased our use of proactive repairs as a least-cost short term way to reduce leakage, our need for reactive repairs has fallen. However, since our net repairs have gone up (proactive repairs and reactive repairs combined) our performance on mains repairs appears to have deteriorated. Thus, our apparent underperformance on mains repairs is not solely attributable to a deterioration in asset health, rather it is also a result of our efforts to reduce leakage.

[24] Wessex Water PR19 Business Plan Appendix 14

Figure 6 – Proactive repairs drive down the need for reactive repairs, to the detriment of mains repairs as a whole



4.2.3. We are notably cost efficient, given the level of service that we provide

As part of its draft determinations on expenditure allowances[25], Ofwat has conducted some simple analysis of the relationship between the level of service companies provide and the cost efficiency they achieve at this level of service. In order to measure the level of service that companies provide, Ofwat calculates a "*performance efficiency score*", which records the ratio of company performance to their performance commitment (averaged across PCs). To this extent, 'lower is better' for both cost assessment efficiency scores and Ofwat's new performance efficiency score.

We consider two aspects of Ofwat's analysis:

- **The assessment of cost efficiency and performance**. At face value, Ofwat's own analysis shows that we are relatively cost efficient, given the high level of service that we provide.

- **The associated conclusions**. Ofwat has concluded that *"[i]t is possible to be efficient on cost and high performing on service*"[26] because "*there is no clear relationship between base cost efficiency rankings and performance rankings"* and that "*[t]here are cases where cost efficient companies are also among the best performing companies on performance commitment levels*[27]". However, Ofwat's analysis is incomplete and cannot be used to conclude that companies can be "*efficient on cost and high performing on service*". This is for the following reasons: (i) it ignores the relationship between cost and quality, (ii) it does not account for other trade-offs that companies have to make; (iii) Ofwat's efficiency scores do not account for historical underfunding or cost adjustment claims; and (iv) these correlations do not establish a causal relationship between these factors. We explore these issues in greater detail in section 4.2.5.

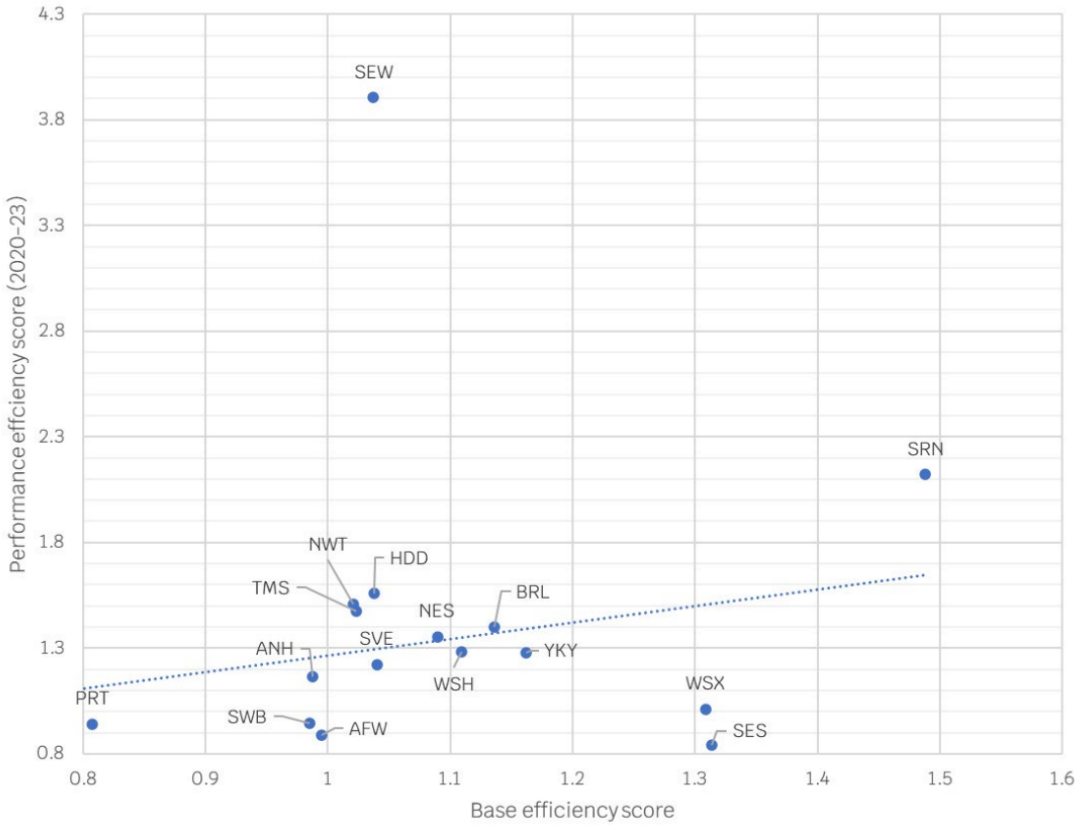
[25] PR24 Draft Determinations: Expenditure allowances, Section 4.2.1.
[26] PR24 Draft Determinations: Expenditure allowances, Section 4.2.1, page 144.
[27] PR24 Draft Determinations: Expenditure allowances, Section 4.2.1, page 145.

4.2.4. Ofwat's assessment

Ofwat produce scatter plots showing the association between performance efficiency scores and cost efficiency scores for: (i) wholesale water; (ii) wastewater; and (iii) residential retail, where CMeX scores are used in place of performance efficiency scores.[28] In the figures presented below, more cost-efficient companies and higher performing companies are reflected by a lower score. Therefore, companies that perform well on both costs and performance are located to the bottom left of the figures.

Ofwat's analysis shows that we are a top performer on wholesale water; however, we must spend more to achieve this level of performance. We note that, as discussed above, the definitions of the leakage and mains repairs performance commitments gives the impression that we are delivering a lower level of service for customers than we are. If this was accounted for, we would be shown to have a lower (better) performance efficiency score.

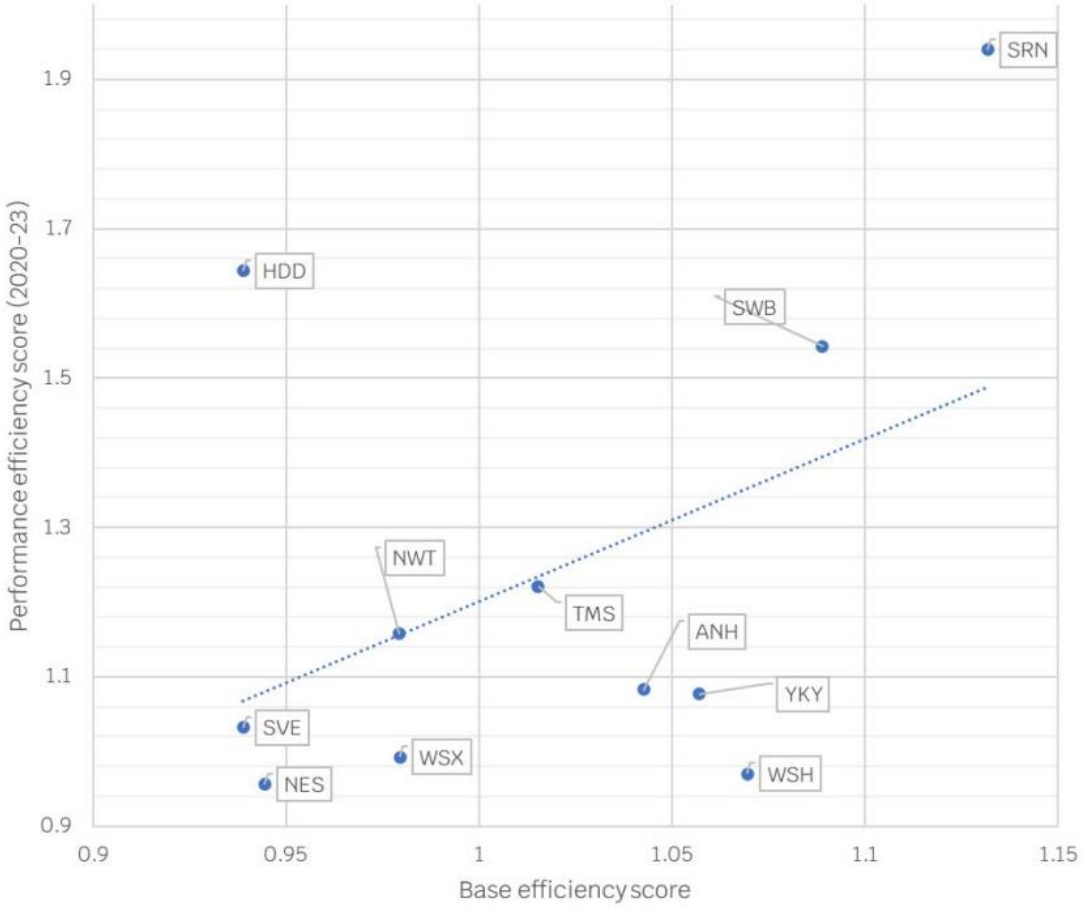
Figure 7 – Wholesale water base cost efficiency versus service performance (Expenditure allowances, Figure 10)



Ofwat's wastewater assessment also demonstrates that we are delivering a high level of service at an efficient cost.

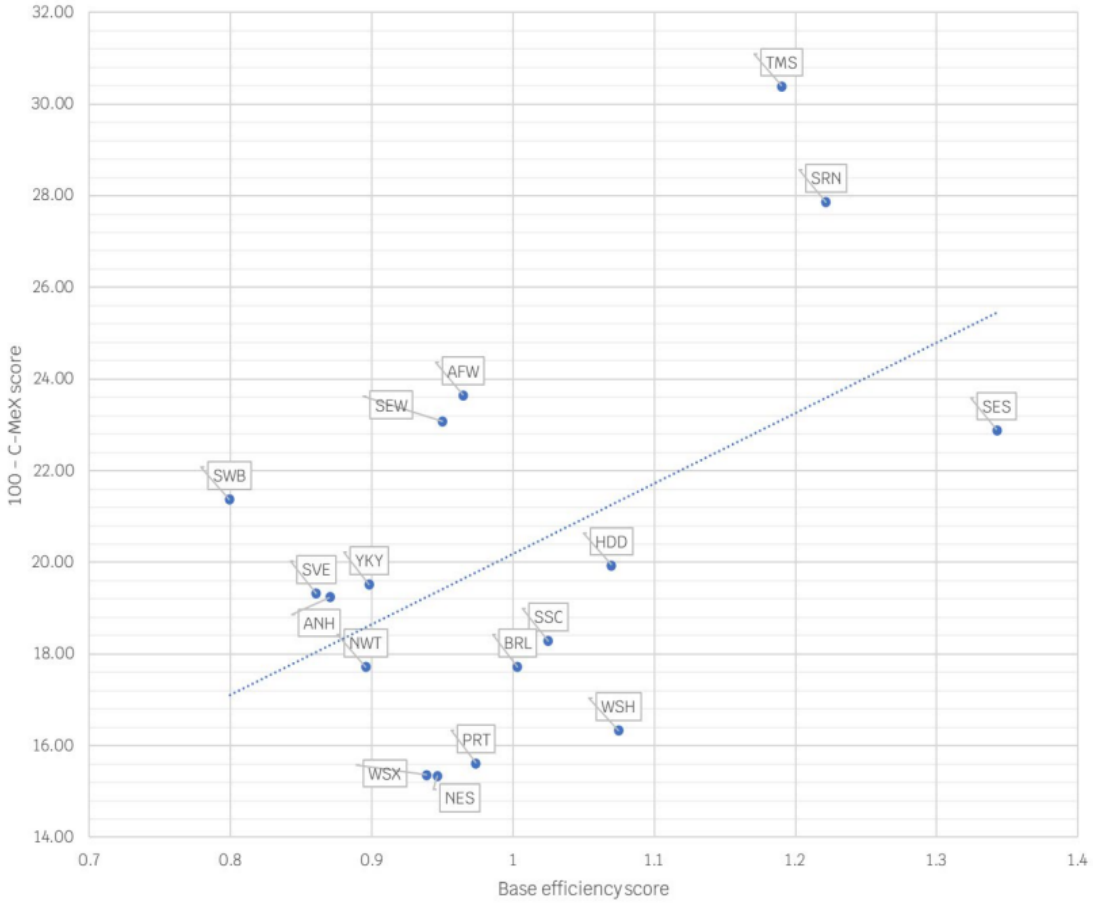
[28] Ofwat (July 2024) 'PR24 draft determinations Expenditure allowances'; Section 4.2.1

Figure 8 – Wastewater base cost efficiency versus wastewater service performance (Expenditure allowances, Figure 11)



We are also delivering a level of service that customers are very satisfied with at efficient cost in residential retail.

Figure 9 – Residential retail base cost efficiency versus C-MeX performance (Expenditure allowances, Figure 11)



4.2.5. Ofwat's conclusions

One of the conclusions that Ofwat draws is that it should be possible for all companies to be "*efficient on cost and high performing on service*". Whilst the analysis shows that it is possible for some companies, including Wessex Water, we are not convinced that it follows for all companies.

We would expect the common economic theory that producing higher quality outputs leads to higher costs to be an appropriate starting point for a balanced analysis. This is because higher quality outputs require: (i) higher quality inputs, which attract a greater price on the market; and/or (ii) a greater number of inputs, which increases purchase costs both through higher volume and through the (positive) effect of the increase in demand on the price. Additionally, there are diminishing marginal returns in production and costs cannot be substituted for performance (and vice versa) indefinitely.

The analysis currently offers an incomplete picture of the goals of individual companies and the factors that they trade off against each other (i.e. the 'opportunity costs' to increasing quality and reducing costs). For example, beyond cost efficiency and high-quality outputs, companies must also ensure that service can be delivered sustainably in the long run. Companies that appear "*efficient on cost and high performing on service*" may only be able to do so by sacrificing other goals, such as long-term asset health or the health of the natural environment. This wider pool of factors cannot be considered without a more complex analysis. Thus, it may appear that companies are able to make further progress on their costs or performance but, in reality, they may not be able to if, for example, they wish to maintain a certain level of asset health.

Ofwat notes that we observe a 'cloud' of data points and that this may be because some companies have scope to make 'free' gains in outcomes performance or cost efficiency. However, this may equally represent a missing variable which might help to explain this variation and we encourage Ofwat to consider this possibility.

It is also important to note that the efficiency scores calculated by the cost modelling do not present a valid x-axis in this analysis. They also show efficiency scores calculated based on efficient costs calculated *prior* to cost adjustment claims. Ofwat notes that the cost models "*cannot account for all relevant factors that affect costs*"[29] due to company specific barriers to cost efficiency. This is likely to mean that the efficiency scores do not provide a strong basis upon which to assess relative cost efficiency in this analysis. The potential error in this case is sizeable with cost adjustment claims worth £1.5bn (c.3% of base costs)[30] having been accepted to date.

When presenting the results of this analysis, we believe it is important not to imply a causal (or associative) relationship between performance and cost based on the line of best fit. The nature of using relative assessments of company performance and cost means that companies are only shown relative to each other, not relative to where they 'should' be. Were the plots created on a wider x and y axis scale, we expect the companies would appear to be performing at a far more similar level.

5. A bottom-up approach is likely to be most appropriate at PR24

5.1. Our approach to bottom-up estimates

As a result of our concerns with Ofwat's econometric benchmarking models, as set out above, we do not consider that these cost estimates are reflective of Wessex Water's efficient costs over PR24. We have undertaken a detailed investigation of our efficient costs at PR24 using a range of approaches, including a bottom-up assessment. In this section, we set out the approach we have taken to estimating our efficient costs. We have taken different overarching approaches for capital maintenance and operating expenditure.

To calculate our capital maintenance requirements, we have assessed each asset group individually and built up these costs line-by-line using a bottom-up approach. We have also carefully prioritised required expenditure while balancing these requirements against affordability and deliverability constraints across the AMP.

Our capital maintenance planning process has been guided by the UKWIR Framework for Expenditure Decision Making. This framework sets out a comprehensive process for underpinning expenditure decisions. The framework begins with the development of the overarching strategy; then it assesses current and future risk, costs, and service levels; before agreeing and ensuring the delivery of expenditure plans. In determining our strategy, we have accounted for key customer and stakeholder priorities and our performance commitments, as both of these factors will drive our maintenance planning and investment decisions over the coming AMP.

While we have assessed each asset group individually, our approach to estimating the costs in each group has been tailored to the characteristics of the asset in question. We have divided our assets into three main categories, with differing overarching approaches for each:

- Long life assets: These assets consist of our 'below ground' network of assets, such as water mains and sewers. Due to the nature and large quantity of these assets it is impractical to inspect these assets

[29] PR24 Draft Determinations: Expenditure allowances, Section 4.2.1, page 30.
[30] Base costs are calculated as £56.4bn.

frequently, therefore cost estimates are derived using deterioration modelling, which is an objective way of assessing the likelihood of failure and therefore the level of investment required over the short and the long term.

- Short life assets: These assets consist of our civil, mechanical, electrical and instrumentation assets at 'above ground' sites. To assess the required capital maintenance on these assets, where possible, we rely on both deterioration modelling and bottom-up assessments. Using more than one assessment approach enables us to triangulate the results, leading to higher confidence in these estimates.
- Management and General: This category includes assets such as IT, transport, property, and the laboratory. Due to the varied nature of these assets, we have used a range of approaches to estimate our efficient costs for this category, tailored based on the individual characteristics of each asset type.

Our deterioration modelling is a predictive method used to assess the future condition and performance of assets over the long-term. This modelling is based on historical data, incorporating factors such as the asset's characteristics, condition assessments, and environmental factors to calculate when we would expect to be required to refurbish or replace the asset. By contrast, our bottom-up analysis takes a short- to medium-term view of the asset's condition and lifespan based on a range of company data and information sources that are more specific to the individual asset.

To estimate our efficient operating expenditure for AMP8, we have used our historical operating expenditure as a starting point and made adjustments for expected changes in this expenditure over the current AMP that are driven by relatively exogenous factors. These adjustments include the incorporation of new enhancement from previous AMPs, statutory requirements (such as permitting and health and safety), and where additional maintenance derived from deterioration modelling is not categorised as capital expenditure. Further adjustments are also made for expected efficiencies and real price effects. We have assessed operating expenditure separately for each individual price control.

Our plans have been subjected to several stages of review and consultation during their development. At each of these stages they have been scrutinised and challenged to ensure that they represent the most efficient way to balance risk, performance, and expenditure, and deliver the outcomes that are a priority for customers. We set out further details on how we have challenged the scope and efficiency of these costs in the next section.

5.2. We have rigorously ensured that our bottom-up cost estimates are efficient

5.2.1. Capital Maintenance

In this section, we will set out how we have determined the efficiency of our estimates of capital maintenance costs for AMP8. Ensuring efficiency involves two key aspects: selecting the appropriate areas of our asset base on which to focus our efforts, and calculating maintenance costs that are competitive relative to other companies in the industry. In the remainder of this section, will detail how we have achieved efficiency in both the scope of our capital maintenance as well as overall cost efficiency within the selected areas.

Scope of capital maintenance

With a view to developing our Business Plan, in 2021 we worked with Accent to identify customer and stakeholder priorities to support the development of our updated Strategic Direction Statement that was published in early 2022. We have also completed further customer engagement activities (detailed in WSX04) that provided additional insights on the expectations of our customers and allowed us to align our plans with the identified priorities. This work has been central to our prioritisation process for determining which areas on which to focus our capital maintenance expenditure to ensure that our investment plans contribute to the delivery of the outcomes that have been identified as high priority for customers. A high-level summary of our key customer insights that contributed to the development of our investment plan at PR24 can be found in Table 1 in WSX10 from our Business Plan.

In general, for the areas that we have identified that capital maintenance is required, the scope of the maintenance required is generally like-for-like replacement of assets that are nearing the end of their life, such that the replacement is capable of delivering the same level of output. In areas such as bioresources, the work is required to re-design systems and sites to address process safety concerns that were not understood at the time of their construction, so the scope of the capital maintenance goes beyond like-for-like replacement.

In the first instance, we have developed a view of the investment that we would ideally like to achieve over the course of AMP8. We note that our modelling activities for above ground assets have identified significantly higher levels of required investment over AMP8 than we have included in our plan. Our modelling indicates that we would require £1.8bn rather than the £1.1bn requested in our plan. However, due to the size of the enhancement programme, and the consequent impact on bills if this were to be implemented during AMP8, we have taken a risk-based approach to constrain the overall investment to a deliverable and affordable level by deferring some of this expenditure to AMP9. Therefore, we have already curtailed the scope of our plan to ensure that it meets the objective of affordability for customers. This demonstrates that we have carefully considered the efficiency of scope for our capital maintenance costs at PR24.

We have also compared our modelled costs with Ofwat's position in its Draft Determinations. While our views are relatively well aligned on wastewater network plus, with Ofwat's proposed allowances only 2% below our Business Plan submission, the differences are significantly more substantial for wholesale water and bioresources. Ofwat's proposed allowances for these areas are 37% and 64% lower than our submissions, respectively. While this is relatively expected in the context of the limitations of Ofwat's econometric models set out in the previous sections, we have undertaken further prioritisation.

We note that the scope of our required bioresources investment has been driven by a number of factors. Firstly, as set out in previous sections, the cycle of underfunding has required us to make short-term, less efficient whole life decisions to maintain assets beyond design lives. As we have not been provided sufficient allowances historically there is now a need to replace a large number of assets. By the end of AMP8, 29% (33,000) of our above-ground installed assets will be life expired. The cost of replacing these assets is £498m.

Secondly, part of the required investment for bioresources is driven by new health and safety requirements following the Avonmouth incident. This incident has changed our risk tolerance, leading to additional required expenditure to bring our sites up to the required standard.

Finally, Industrial Emissions Directive (IED) compliance requires a step change in asset condition. Uncertainty around the scope of required expenditure has meant that most companies did not submit costs associated with this compliance at PR19, and over the course of AMP7 there have been instances of the scope of these requirements increasing. It is also important to note that these costs are arising from new statutory requirements and insufficient historical allowances, so these higher estimates for costs at AMP8 and beyond are not reflective of customers paying twice. More detail on this is set out in our Business Plan annex WSX09 on cost adjustment claims.

None of the factors set out above reflect optional expenditure for us, so it is critical that we are funded to achieve these objectives. These factors have resulted in a step-change increase in our required base costs for bioresources that will not be adequately captured by backwards looking models. In light of the scale of the expenditure required, we have undertaken an extensive prioritisation process to balance this expenditure over several AMPs to reduce the impact on customer bills.

In our business plan, we proposed a cost adjustment claim requesting that Ofwat make an allowance for these additional costs, however we note that Ofwat has not assessed our cost adjustment claim in its Draft Determinations. We urge them to review this information, and we have set out our representation on this issue in the document WSX-C18 – Bioresources and Industrial Emissions Directive (IED).

Cost efficiency

We have worked closely with Chandler KBS to ensure that the bottom-up cost estimates feeding into our plan are efficient relative to the rest of the industry. As part of this process, Chandler KBS are updating our cost models to be more reflective of the individual characteristics of the capital maintenance projects that are required at AMP8. Chandler KBS is also updating our cost estimates to be reflective of current industry average rates for comparable projects. This will ensure that the resulting estimates are representative of wider market rates and are therefore efficient.

The scope of our work with Chandler KBS encompasses all our above ground asset deterioration modelling, which accounts for approximately 50% of the capital maintenance costs in our plan. Currently, Chandler KBS has updated 40% of the costs included in our deterioration modelling. However, this work is still ongoing and is due to be completed in January 2025.

Within the process of updating our models, Chandler KBS has also benchmarked our labour rates relative to the industry. Figure 10 shows the main results of this benchmarking exercise. As can be seen, our costs are in the middle of the range in most cases.

Figure 10 – Wessex labour rates benchmarking results

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As described previously, asset deterioration modelling was not used for all elements of our plan, in some cases this is because the expenditure is relatively standard and we have examples of recently delivered projects on which to base the costs. In other instances, this is because there is a less mechanically prescriptive way of modelling these costs. This includes areas such as bioresources where health and safety requirements are being adapted to our new understanding of risk.

We have also worked with Chandler KBS to benchmark our mains replacement construction costs. They performed this assessment by applying their water sector cost models to a defined scope of work for a selection of recently completed schemes. Mains replacement expenditure relates to £86m worth of our investment expenditure at AMP8, which is approximately 8% of our proposed capital maintenance investment at AMP8. Chandler KBS's results showed that Wessex's internal delivery team's cost estimates were 18.8% lower than those produced by Chandler KBS, indicating that Wessex's costs in this area are likely to be efficient.

In addition to the external benchmarking we have undertaken with consultants, cost efficiency is supported by our supply chain frameworks and supplier/hub arrangements. All expenditure exceeding £20k must be competitively tendered from a list of prequalified providers unless it qualifies as 'single source'.[31] This process ensures that the costs that are incurred for such work is reflective of market prices and therefore efficient.

Additionally, our internal delivery team has a mature and proven track record for delivering efficiently and innovatively and constantly challenges itself to use new construction methods to deliver projects safely, and to time, cost and quality requirements.

5.2.2. Operating Expenditure

To ensure that our estimates for operating expenditure are efficient, we continually undertake benchmarking on energy and salary costs relative to the industry. We also participated in independent studies carried out by the

[31] There are a tightly defined set of exclusions under which competitive tender is not required as these exclusions render it uneconomic to do so.

Water Services Association of Australia. This not only benchmarked the operating expenditure of water companies from England & Wales but also their counterparts in Australia.

The WSAA benchmarking exercise required the company to supply a breakdown of its operating costs, reconciled back to the Annual Performance Report. These were than allocated to categories based on pre-determined cost headings supplied by WSAA to ensure each company was being treated in the same manner.

The table below sets out Wessex's position in the benchmarking exercise relative to the nine other UK water companies that participated. In each of these areas, Wessex is below the median for the companies assessed in all cost categories, and at or below the upper quartile in seven out of nine of the cost categories. This evidence shows that Wessex is efficient relative to the industry in these key areas of operating expenditure. Though this analysis does not cover the entirety of operating costs, it should provide some reassurance that the operating costs included in our Business Plan are efficient.

Table 4 – Results of WSAA benchmarking

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We have also undertaken further analysis to verify that our estimates of operating expenditure are efficient. We have re-run Ofwat's benchmarking models on operating expenditure only to calculate the efficient level for these costs. While this deviates from Ofwat's totex approach, it should provide a useful cross check of Wessex's efficiency. However, this analysis will still be subject to the limitations we have set out in the previous sections with regard to historical underfunding and the inability to account for differences in performance.

Table 5 – Comparison of Wessex operating expenditure with econometric benchmarking results

£m	Wessex Business Plan	Ofwat DD models (opex only)
Base operating expenditure	£2168m	£922m

Note: These figures relate to base opex, consistent in scope to the DD econometric base models, less the capital maintenance lines. Prices are n 22/23 prices pre RPE/frontier shift adjustment

While Wessex can be seen to be middle of the pack relative to the efficient operating costs implied by these econometric benchmarking models, we highlight that these models still do not account for performance (i.e quality). Given that Wessex is the highest performer in C-Mex across the industry, it would be expected that we would incur higher unit costs on operating expenditure to maintain this industry leading level of performance. Without incorporating performance into the modelling, it is not possible to determine whether these higher costs are due to inefficiency or, as we would expect, simply consistent with delivering high performance for customers.

Additionally, our customers have highlighted that they value excellent customer service and that they want to ensure that there is no deterioration in the level of service provided. This indicates that it would not be appropriate to allow our industry leading performance to deteriorate to bring us back into line with the rest of the industry. While this could solve the discrepancy between our costs and other companies in the industry, it would be contrary to the wishes of our customers.

5.3. This investment is necessary to make up for historic underspend and get back to a sustainable level of investment for the future.

At PR24, it is of critical importance that Ofwat breaks the historical cycle of underfunding and ensures that companies can invest sufficiently in capital maintenance. The additional funding is required to both 'course correct' and to ensure that asset health is able to catch up to where it should have been absent this historical deficit in funding. It is important that assets are able to recover to the optimal level to ensure that they can meet the increasing demands on them going forward as a result of population growth and climate change.

The consequences of ignoring this issue and continuing to ratchet costs and performance targets simultaneously could be severe. Companies will be forced to make trade-offs between short-term performance and long-term asset health, which will necessarily lead to further deterioration in asset health, placing assets at even greater risk of failure.

As we have previously set out, assets deteriorate slowly, so the negative effects of this shortfall in capital maintenance take time to become apparent. However, when assets do fail it can be catastrophic. We have seen recent example of such events, which can be very disruptive, having severe consequences for the level of service, surrounding infrastructure, and the environment. It is critical that we are able to invest sufficiently in this coming AMP to undo the cycle of historical underfunding and ensure that our assets are able to be maintained optimally going forwards.