

April 2025

PR24 redeterminations

Expenditure allowances – addressing asset health

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1. Introduction

- 1.1 The purpose of this document is to discuss our approach to asset health and capital maintenance requirements at PR24. It also sets out our response and position on some of the key concerns raised by the disputing companies in their statement of cases.
- 1.2 Water companies have a duty to develop and maintain an efficient and economical system of water supply, including maintaining good asset health.¹ Sewerage companies have a general duty to provide, improve, and extend a system of public sewers to ensure an area is effectually drained. It is therefore important that companies invest in their assets over time, and consider the long-term needs of the asset base.
- 1.3 Large scale capital investments to maintain an existing asset, for example, renewing an asset to perform its existing function, should be delivered through base expenditure allowances. The associated expenditure is referred to as capital maintenance.
- 1.4 In the final determination, we allowed a total of £60.1 billion in base expenditure. This is 5% below what companies requested in draft determination representations, but 1% higher than what companies requested in business plans. We provided additional allowances to increase asset renewals and improve asset condition, and for company specific capital maintenance requirements where there was evidence that additional investment was needed that was driven by factors outside of company control.
- 1.5 A key driver for the need to undertake capital maintenance activities is asset health. This in turn can be driven by many factors such as age, material, condition and criticality.
- 1.6 The many factors that can influence asset health mean it is undeniably complex to understand. This is particularly the case when we consider the scale of the water and wastewater network across England and Wales.
- 1.7 This is why it is important that water companies have a robust asset management framework to enable them to:
 - Understand their assets (condition, criticality, performance) underpinned by smart sensors and data driven intelligence;
 - Develop and deliver mature, well justified business plans to fund maintenance and enhancement of their assets; and
 - Deliver the right outcomes from short term serviceability to the long term (including the impact of climate change on assets)
- 1.8 From an Ofwat perspective, gaining and improving asset health understanding comes with additional challenges due to the information asymmetry that exists between water

¹ [OF-CA-194] UK Government, section 37, 94 of the Water Industry Act 1991

companies and Ofwat. This means we are reliant on information that companies provide to us in business plans, through their annual performance reports, or that we request.

- 1.9 In the lead up to PR24, we recognised the need to better understand asset health and condition. We also recognised that including more of a forward-look into our approach could help to provide reassurance to the sector that base expenditure allowances are sufficient to meet future capital maintenance needs.
- 1.10 We worked with the sector through our cost assessment working groups to develop our approach to assessing base costs.² We actively encouraged companies to engage with the process and contribute their ideas and suggestions, including additional data collection that would support consideration of additional cost drivers in the base cost models or cost adjustment claims.
- 1.11 It should not be assumed that companies have asset health data for all assets readily available in a consistent manner. Through our engagement, companies relayed the challenges associated with agreeing on suitable asset health metrics to inform our cost assessment, and being able to collect robust data in the time available.
- 1.12 We have made great progress since PR19 in collecting asset condition data for around 70 percent of assets (water mains, sewers and bioresources assets).³ We used this to inform base expenditure allowances at PR24. But we know there is more to do to better understand asset health in the water sector.
- 1.13 We were unable to collect robust and comparable asset condition data for the remaining 30 percent of assets at PR24. These largely cover civil structures (eg service reservoirs; treatment works). There is less information available from companies on how these assets deteriorate over time and the potential risk this poses to customers and the environment. This is not just a water sector problem, but more of a general problem across utilities. For example, Ofgem's Network Asset Risk Metric (NARM) does not include civil assets. We are aiming to improve the evidential base on these assets through the enhancing asset health understanding workstream ahead of PR29, including the collection of comparable asset condition information across companies.⁴ We will use this to help decide if additional capital maintenance allowances are needed during the PR24 period.
- 1.14 However, asset condition is only one element of asset health. Asset criticality, environmental factors, performance and company capability all play an important role in arriving at a holistic view of asset health. For example, it may be suboptimal to replace non-critical assets ahead of failure, which could lead to customers overpaying or investing in the wrong areas.
- 1.15 Overall, we consider we have facilitated a positive change in the understanding of asset health for the assets we have collected data on at PR24, and we intend to continue to do so

² Our working groups took place during the 2021-2022 period in advance of developing the draft methodology.

³ [OF-CA-148] Ofwat, MEAV Company analysis, April 2025

⁴ [OF-CA-011] Ofwat, Enhancing asset health understanding workstream

for other assets through our enhancing asset health understanding workstream. It is important that the asset health information we collect is robust and comparable to allow us to better understand asset health across the sector and make informed decisions that do not lead to customers paying twice for capital maintenance.

1.16 In the remainder of this document, we discuss the roadmap for enhancing asset health understanding during the PR24 period. This will build upon the progress made at PR24, and broaden our data collection to a wider range of assets. We are working collaboratively with the sector to determine what these assets will be.

1.17 We also address some of the key points raised by disputing companies in their statement of cases. In particular:

- We disagree that companies have been underfunded for capital maintenance.
- We maintain that asset condition has improved or been maintained since PR09 across water mains, rising mains and bioresources assets.
- We maintain that asset renewals have fallen and companies have not delivered the renewal rates promised in their PR19 business plans.
- We maintain that it is important to hold companies to account for delivery of asset renewals through price control deliverables so customers receive what they pay for.

1.18 This document should be read alongside our expenditure allowances – common issues document (section 2) and our expenditure allowances – cost adjustment claims appendix.

2. Our approach to assessing asset health and capital maintenance requirements at PR24

Our approach to assessing base expenditure and asset health requirements at PR24 sought to build and improve upon our PR19 approach. We engaged extensively with the sector to develop our approach at PR24, including through our cost assessment working groups and various consultation phases. As part of this, we considered several options for incorporating a forward-looking element into our approach, including additional cost drivers into the base cost models, additional asset health measures, sector wide cost adjustments, and use of business plan forecasts to set allowances.

At PR24, we made improvements to our econometric benchmarking models to better capture drivers of differences in costs between companies, and we collected asset condition data to help better understand asset health across the sector. We also applied six sector wide forward looking cost adjustments to help companies manage increasing costs over the 2025–30 period, and deliver better outcomes for customers and the environment.

We did not use business plan forecasts to estimate our base cost models as most companies considered this would introduce endogeneity into our approach and risks mistaking differences in risk appetites with differences in efficiency.

We were not able to develop a robust and comparable forward-looking asset health metric in time for PR24, nor was this considered feasible by most of the sector. We continue to work with companies outside of the price review to explore the feasibility of developing forward-looking metrics to promote better asset management practice and to better hold companies to account.

- 2.1 In the section below, we set out our approach to base expenditure and asset health at PR24. We also discuss the development of the approach, and some of the key challenges faced.
- 2.2 This chapter also responds to a key challenge of our approach raised by Anglian Water, Northumbrian Water and Southern Water in their statements of case. The companies state that base allowances at PR24 do not reflect forward-looking pressures.⁵⁶ For example, through a forward looking asset health metric.
- 2.3 In its statement of case, Southern Water states that our approach to capital maintenance at PR24 lacks a forward looking element.⁷ It states "Ofwat has not acted on the CMA recommendation to enhance its approach to capital maintenance with a forward looking element."⁸ The company goes on to discuss the use of historical costs in the econometric

⁵ [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, p.68, paragraph 217

⁶ [OF-OA-003] Southern Water, Statement of Case, March 2025. p.210, paragraphs 378–380

⁷ [OF-OA-003] Southern Water, Statement of Case, March 2025, p.202, paragraph 360

⁸ [OF-OA-003] Southern Water, Statement of Case, March 2025, p.210, paragraph 379

models used at final determination, and the potential pitfalls of doing so, particularly when "the past is not a good guide for the future."⁹

- 2.4 Northumbrian Water states "Ofwat has not developed its approach appropriately. This has meant that at PR24, Ofwat failed to adopt an approach to the assessment of the efficient levels of base costs for capital maintenance and asset risk management in AMP8 that is adequate, given the circumstances in which it is applied."¹⁰
- 2.5 We disagree with the statements above. It is important to understand our PR24 approach and how we developed it, and the undeniable challenge and complexity of understanding asset health across an entire water and wastewater network. In the following section, we discuss these points in more detail.

We engaged extensively with the sector to develop our approach to assessing base expenditure at PR24 and how we may incorporate a forward-looking element

- 2.6 At PR19, efficient base expenditure allowances were set using a suite of econometric models, supported by cost adjustment claims to capture higher efficient costs faced by companies due to unique circumstances. Besides making small changes to the econometric models, the CMA retained this approach in the PR19 water redeterminations.¹¹
- 2.7 The PR19 water redeterminations also suggested that Ofwat considers developing indicators to track forward looking maintenance requirements to enable it to enhance its analysis with a forward-looking element that will assist in triangulating results from its econometric modelling of historic costs.¹² The CMA did not expand further on this suggestion or propose options for implementing such.
- 2.8 In the build up to PR24 we knew that we needed to understand more about asset health. We needed to collect more information from companies about their assets, and work with the sector to understand what this was telling us. This required companies to collect this information. To draw conclusions from it, it needed to be robust and comparable between companies.
- 2.9 We also agreed with the suggestion that a forward-looking asset health measure could add value to our approach to setting base expenditure allowances. For example, such a measure could help to provide insight into how companies are managing risk across their asset base, and provide companies with flexibility on how to deliver asset risk reductions with base expenditure allowances. Like Ofgem's Network Asset Risk Metric.

⁹[OF-OA-003] Southern Water, Statement of Case, March 2025, p.210, paragraph 380

¹⁰[OF-OA-002] Northumbrian Water, Statement of Case, March 2025, p.68, paragraph 216

¹¹[OF-CA-013] Competition and Markets Authority, Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations: Final Report, March 2021, pp. 117 – 233.

¹² [OF-CA-013] Competition and Markets Authority, Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations: Final Report, March 2021, p.185, paragraph 4.293

2.10 In 2021, we started our formal engagement with the sector on our approach to assessing base expenditure at PR24. Over the 2021–2023 period, we engaged extensively with the sector to develop our approach. This included:

- Holding a series of cost assessment working groups with companies to discuss approaches to determining base allowances¹³;
- Welcoming companies to submit papers to our Future Ideas Lab, where companies could propose new and alternative ways of thinking to help meet the challenges faced by the water sector¹⁴;
- We welcomed companies to propose their own econometric models for consideration at PR24 in January 2023;
- Various consultations, including on our approach to assessing base expenditure, our draft methodology, and our proposed econometric models.^{15 16 17} ; and
- Commissioned CEPA to undertake an independent review of our proposed models at PR24.¹⁸

2.11 As part of this engagement, we actively encouraged water companies to contribute their views on how we could best account for forward looking pressures, including what data it may be useful to collect to inform our assessment.¹⁹

2.12 With the sector, we developed a range of options for reflecting more of a forward-look in our approach to modelling base costs. These options are discussed in our 'Approach to assessing base costs' consultation and draft methodology.²⁰ They include:

- Including forecast costs in the wholesale base econometric models
- Setting a forward-looking catch up efficiency challenge
- Using capital maintenance activity related variables in the wholesale base econometric models
- Identifying exogenous cost drivers that could better capture forward looking base cost pressures
- Using forecast cost drivers in the wholesale base econometric models
- Cost adjustment claims

2.13 In the consultation paper, we set out our key concerns with the first three options:

¹³ Workshop slides and meeting notes can be found here: [OF-CA-002] Cost Assessment Working Group – Ofwat.

¹⁴ Link to online webpage: [OF-CA-271] Future Ideas Lab – Ofwat.

¹⁵[OF-CA-003] Ofwat, Assessing base costs at PR24, December 2021.

¹⁶[OF-OA-031] Ofwat, Creating tomorrow, together: consulting on our methodology for PR24, July 2022.

¹⁷[OF-CA-006] Ofwat, Econometric base cost models for PR24, April 2023.

¹⁸[OF-CA-102] CEPA, PR24 Wholesale Base Cost Modelling, April 2023.

¹⁹ All of our cost assessment working group materials can be found here: [OF-CA-002] Cost Assessment Working Group – Ofwat.

²⁰ [OF-OA-031] Ofwat, Creating tomorrow, together: consulting on our methodology for PR24, July 2022, page 72.

- Creation of perverse incentives by including forecast costs in our approach. Risks companies inflating their business plan cost proposals to generate higher allowances than required.
- Risk of double funding by including activity based variables in the models. This could lead to companies receiving cost allowances to deliver outputs they should have delivered with previous efficient cost allowances.
- Inconsistency with the totex framework. The framework encourages companies to deliver outcomes using an optimal mix of opex and capex solutions. The inclusion of activity based variables may therefore introduce capex bias.

2.14 Companies in particular were not supportive of using forecast business plan costs to estimate the econometric models or set the catch-up efficiency challenge.²¹ For example, the disputing companies disagreed with including forecast costs for the following reasons:

- Anglian Water raised concerns with endogeneity.²²
- Northumbrian Water raised concerns that it could lead to customers paying twice for capital maintenance.²³ However, the company does not reflect this view in its statement of case when discussing the approach.²⁴
- Southern Water did not consider consistent data would be readily achievable in the time available.²⁵ However, the company does not reflect this view in its statement of case, where it refers to the inclusion of forecast costs as common regulatory practice that Ofwat has not decided to use.²⁶

2.15 As a result of the feedback received, we focused on options four to six at final determination.

2.16 We also worked with the sector to develop options for forward-looking asset health measures that could be used outside of the models, and consulted on these at the same time. This included a range of metrics relating to performance and maintenance, alongside United Utilities' proposed 'base asset health (BAH)' metric.²⁷

2.17 While the sector broadly supported the idea of implementing a forward looking metric, the general feedback was that this would not be easy to develop and implement at PR24. Most companies felt it would be challenging to agree and develop metric(s) that companies would be able to report on consistently and robustly in time for PR24 business plan submissions. Subsequently we were not able to develop metrics to inform our assessment of base costs at PR24, so relied more on collecting comparable and robust asset condition data from companies.

²¹ We note that our analysis suggests that using business plan forecasts to estimate the base cost econometric models may not have led to higher allowances after accounting for our forward looking cost adjustments.

²² [OF-CA-103] Anglian Water, Assessing base costs consultation response, February 2022, p.2

²³ [OF-CA-104], Northumbrian Water, Assessing base costs consultation response, February 2022, p.16

²⁴ [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, page 64, paragraph 203.

²⁵ [OF-CA-105] Southern Water, Assessing base costs consultation response, February 2022, p.4

²⁶ [OF-OA-003] Southern Water, Statement of Case, March 2025, page 210, paragraph 380

²⁷ [OF-CA-003] Ofwat, Assessing base costs at PR24, December 2021, pp.61-62

- 2.18 We collected asset condition data for water distribution mains, sewage pumping mains, gravity sewers and bioresources assets to help inform our assessment of costs at PR24. We estimate that this equates to approximately 70% of net Modern Equivalent Asset Value (NMEAV) based on 2013-14 asset values.

Our approach to setting base expenditure allowances at PR24 signals positive change and accounts for forward-looking asset health and capital maintenance requirements

- 2.19 Following our engagement with the sector, our approach to assessing base costs at PR24 focused on the econometric models, cost adjustment claims, and asset condition data.
- 2.20 Our base cost econometric models were the starting point for assessing base expenditure requirements at PR24. The models are estimated using historical outturn costs and key cost drivers that explain differences in efficient costs across the sector. We engaged with companies through the cost assessment working group (CAWG) to explore alternative or additional cost drivers and explanatory variables that may better explain forward looking cost pressures. We also welcomed companies to submit their own proposals for econometric models to use at PR24. This led to the inclusion of urban rainfall in the wastewater network plus models, which helps to better capture the impact of climate change on sewage collection base expenditure.
- 2.21 We acknowledged that these models cannot capture all company specific drivers. Nor can they easily capture factors that mean future costs may be different to the past. We therefore encouraged companies to submit cost adjustment claims where they considered our models may not provide sufficient funding to deliver the required capital maintenance over the 2025-30 period.
- 2.22 We introduced sector wide adjustments across six cost areas to capture forward looking cost pressures in base expenditure allowances: mains renewals, meter renewals, network reinforcement, phosphorus removal opex, energy costs, and net zero. Cost adjustments allowed at PR24 totalled £3.9 billion. The water mains and meter renewals cost adjustments totalled £1.2 billion.
- 2.23 Through our mains renewal cost adjustment, we wanted to improve asset health across the sector by moving towards a more sustainable mains renewal rate, which in turn ensures assets are more resilient to climate change. We also accounted for company evidence of future circumstances that require an increase in renewals now. For example, we accepted Anglian Water's cost adjustment claim to renew mains that are in poor asset health and are more susceptible to accelerated deterioration and climate change due to soil condition and material type (eg asbestos cement mains).
- 2.24 Through our meter replacement adjustment, we ensured companies are sufficiently funded to deliver the required meter replacements to deliver their enhancement smart metering programmes. This programme will help companies to deliver improvements in leakage and reduce per capita consumption.

2.25 In addition to the sector wide adjustments, we allowed 10 company specific cost adjustment claims, with a total value of £207 million.²⁸

We continue to explore forward-looking asset health metrics that will support water company decision making related to asset management

2.26 While developing a forward-looking asset health metric proved too challenging to deliver in the time available at PR24, we are still working with the sector to consider what these metrics could be for future use.

2.27 We published an operational resilience discussion paper in 2022, which reflected on the feedback received to our 'Assessing base costs at PR24' consultation.²⁹ This paper set out our proposal to use an iterative three stage process to achieve our long-term ambition to develop an integrated monitoring framework for operational resilience. The aim is to form a holistic and more complete view of asset health and wider operational resilience in the sector.

2.28 As part of stage one, we collected wider asset health information through two information requests. The first looked at legacy measures of asset health; namely, unplanned maintenance of water and wastewater treatment works and equipment failures on the sewer network. The second looked at the condition of water and wastewater treatment works.

2.29 Our analysis of companies' replies to both requests highlighted key challenges and barriers to the development of comparable and standardised measures of asset health across the sector.³⁰ We therefore set out a plan to engage further with the sector on this through our Operational Resilience Working Group.

2.30 Alongside this, we are still open to considering proposed approaches to developing such metrics. We welcome companies to work in a collaborative manner to help find a suitable and supported option for consideration at PR29. One example of this is the jointly commissioned Jacobs report (2024), which sets out options for forward looking asset health metrics.^{31 32 33}

2.31 Moving forward, we are increasing our oversight of companies' asset management approaches and enhancing asset condition understanding, and this could inform our approach to future price controls. To support companies' focus on asset management:

²⁸ Includes conditional £99.8 million allowance for Thames Water's sludge powered generator replacement at Beckton sludge treatment centre.

²⁹ [OF-CA-121] Ofwat, Operational resilience discussion paper, April 2022

³⁰ [OF-CA-011] Ofwat, Roadmap for enhancing asset health understanding in the water sector, December 2024, pp.6-7

³¹ This report was commissioned by Anglian Water, Northumbrian Water, Wessex Water and Affinity Water.

³² [OF-CA-209] Jacobs, Improvements to the regulatory framework for asset health and operational resilience report, July 2024

³³ [OF-CA-210] Jacobs, Improvements to the regulatory framework for asset health and operational resilience metrics workbook, July 2024

- we will conduct a new asset management maturity assessment, building on our previous assessment and aligning to an industry-tested model;
- we are working with companies and the wider sector to develop better asset health measures through our industry Operational Resilience Working Group; and
- we are defining key capital maintenance interventions so we can better track delivery of capital maintenance work over time.

3. Our response to the disputing companies' concerns

Some of the disputing companies have raised concerns with our approach to assessing asset health and capital maintenance requirements in their statements of case. Some of the key concerns relate to historical underfunding of capital maintenance through base expenditure allowances and holding companies to account for capital maintenance activities.

We do not agree that companies have been underfunded historically for capital maintenance through base expenditure allowances. There has been an increase in capital maintenance allowances since privatisation alongside stable or improving trends for key asset health metrics. The overspend in the most recent price control period has been driven by unforeseen cost pressures by all parties. This includes unexpected energy price increases, the leakage performance challenge and Southern Water's additional investment at water and wastewater treatment works, as well as the Ukraine War and Covid-19.

We consider it is appropriate to hold companies to account for capital maintenance activities delivered through base expenditure allowances. This is important to incentivise delivery where there is limited overlap with performance commitments, to ensure customers do not pay for something they do not receive, and there may be long term implications of failure to deliver for customers and the environment. This is particularly pertinent given the historic failure of companies to meet their forecast renewal rates and the decrease in renewal rates.

- 3.1 Asset health is complex. Companies are the appropriate owners of long term asset stewardship. They are accountable through their existing duties to effectively manage their assets, and we expect companies to have a robust asset management framework to enable them to meet this duty.³⁴
- 3.2 This complexity does make it challenging for the regulator to come to a holistic view of asset health across the sector, particularly when faced with information asymmetry between water companies and Ofwat. That is why at PR24 we have sought to tackle key areas of concern by:
 - collecting robust and comparable asset condition data for water mains, sewers and bioresources assets. Overall, we have collected asset condition data for around 70 percent of water and wastewater assets at PR24;
 - funding companies to increase mains renewal rates to improve asset condition;
 - holding companies to account for delivering mains and meter renewals using price control deliverables; and
 - ensuring that customers do not pay twice.

³⁴ [OF-CA-194] UK Government, section 37, 94 of the Water Industry Act 1991

3.3 In this section, we respond to the key concerns raised by the disputing companies on our approach and findings:

- **Capital maintenance has been historically underfunded through base expenditure allowances.** Raised by Anglian Water, Northumbrian Water, Southern Water and Wessex Water.^{35 36 37 38}
- **Disagreement with holding companies to account for capital maintenance activities delivered through base expenditure allowances.** Raised by all five disputing companies.³⁹
40 41 42 43

We disagree that companies have been underfunded for capital maintenance

- 3.4 Capital maintenance within base expenditure allowances has increased by 3% per year in real terms (ie after adjusting for general inflation) since privatisation. This increase over time is shown in Figure 1 below.
- 3.5 Over this time, we have also seen increases in base expenditure allowances, with companies receiving close to their business plan requests in PR14 and PR19. Base expenditure allowances were only 0.4% less than companies requested at PR19, and wholesale total expenditure allowances were only one percent less than companies requested at PR14.⁴⁴
- 3.6 We have also seen stable or improving trends for key asset health metrics (eg mains repairs; unplanned outage; sewer collapses; asset condition). This evidence does not support the view that companies have not been sufficiently funded over time.

³⁵ [OF-OA-001] Anglian Water, Statement of Case, March 2025, pp.82-87

³⁶ [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, pp.68-70

³⁷ [OF-OA-003] Southern Water, Statement of Case, March 2025, pp.200-202

³⁸ [OF-OA-004] Wessex Water, Statement of Case, March 2025, pp.48-51

³⁹ [OF-OA-001] Anglian Water, Statement of Case, March 2025, p.89, paragraph 342

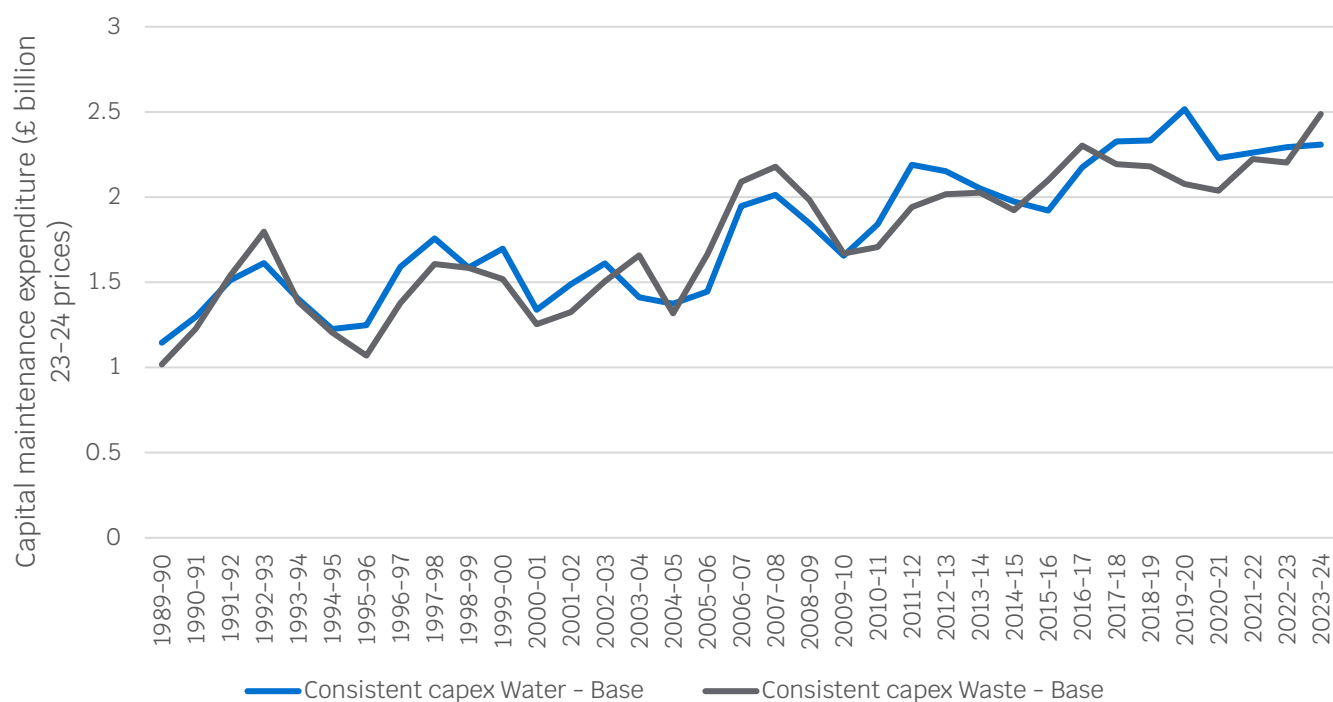
⁴⁰ [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, p.66, paragraph 207

⁴¹ [OF-OA-003] Southern Water, Statement of Case, March 2025, pp.345-348

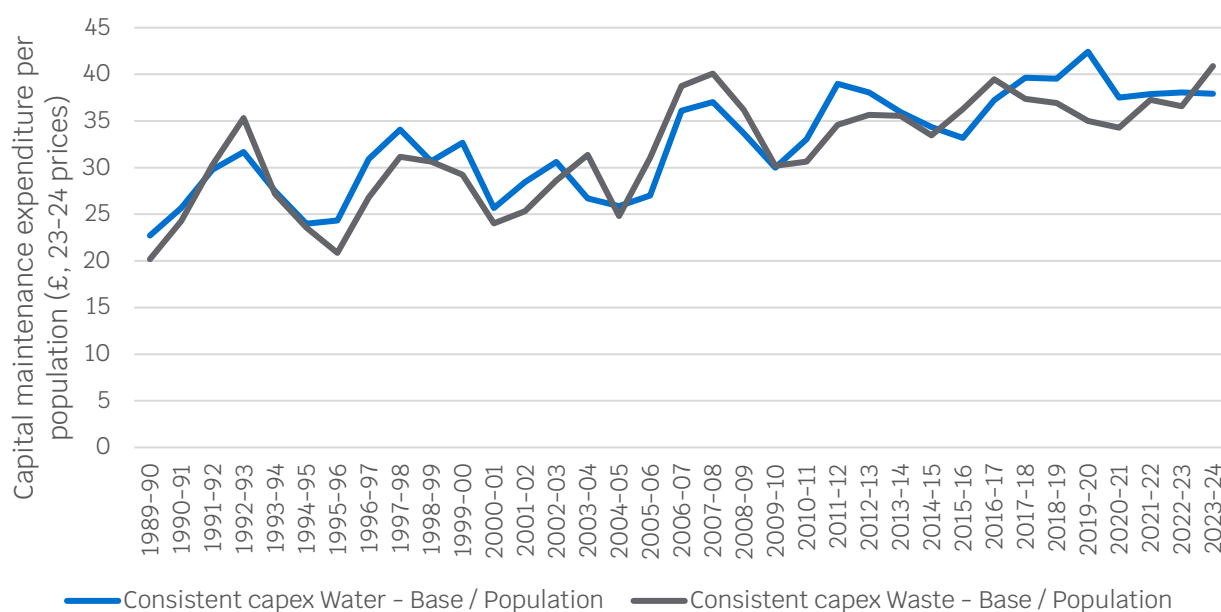
⁴² [OF-OA-004] Wessex Water, Statement of Case, March 2025, pp.54-55, paragraphs 8.38-8.41.

⁴³ [OF-OA-005] South East Water, Statement of Case, March 2025, page 36, paragraph 4.14(c)

⁴⁴ [OF-OA-022] Ofwat, PR24 final determinations: Expenditure allowances, December 2024, p.84

Figure 1: Capital maintenance expenditure

- 3.7 Anglian Water states that this increase over time is not evidence that capital maintenance expenditure has kept pace with the growth in the asset base, and is not relevant when not controlling for population growth.⁴⁵
- 3.8 Figure two below illustrates the increase in capital maintenance expenditure over time relative to growth in population. This also demonstrates growth over time. This translates to an average increase of 2% per year for water and 3% per year for wastewater.

Figure 2: Capital maintenance expenditure per population

⁴⁵ [OF-CA-001] Anglian Water, Statement of Case, March 2025, p.88, paragraph 338.

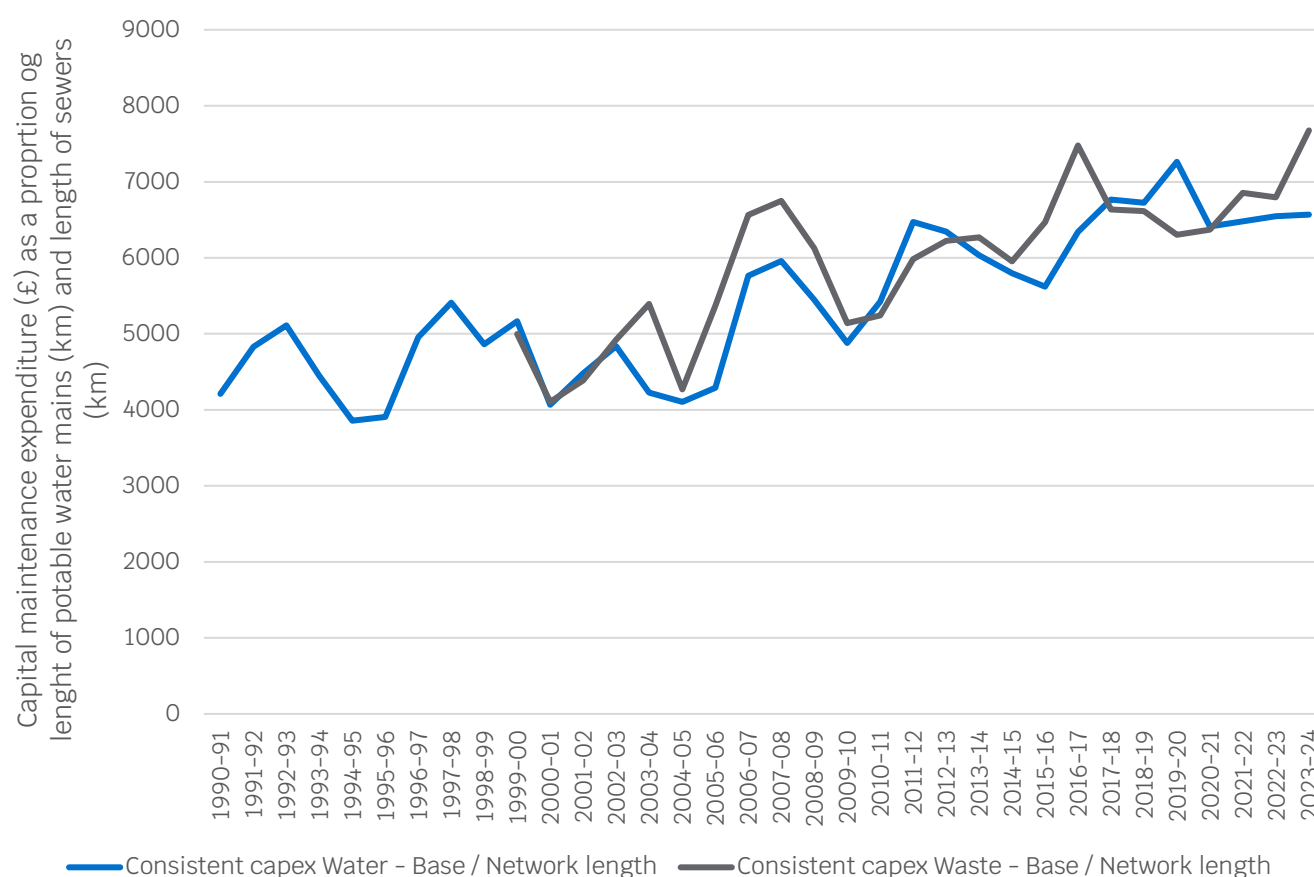
- 3.9 To capture growth in the asset base, some of the disputing companies suggest comparing growth in capital maintenance expenditure to change in the sector's regulatory capital value (RCV).^{46 47 48} We do not consider this comparison appropriate. The RCV is not a measure of the asset base. It is a measure of the value of historic investment. It is also influenced by other factors such as discounts applied at the time of privatisation.⁴⁹ There are also adjustments made to delay recovery in overspend. This means that the RCV is not a direct proxy for the growth in the asset base.
- 3.10 As an alternative, we have looked at the increase in base capital maintenance expenditure over time relative to the growth in the network length. This is a more appropriate comparison as it factors in the size of the network, and how that has changed in response to population growth and investment in the asset base. We draw the same conclusions from this analysis as when we look at total expenditure over time.
- 3.11 Figure 3 demonstrates that base capital maintenance expenditure has increased as a proportion of network length. This translates to an average increase of 2% per year for water and 3% per year for wastewater.

⁴⁶ [OF-OA-001] Anglian Water, Statement of Case, March 2025, p.88, paragraph 339

⁴⁷ [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, p.67, paragraph 209

⁴⁸ [OF-OA-003] Southern Water, Statement of Case, March 2025, p.10

⁴⁹ [OF-CA-122] Severn Trent, Options for future treatment of the regulatory capital value, March 2015. The ratio of total industry RCV to MEAV is around 15%.

Figure 3: Base capital maintenance expenditure relative to total network length

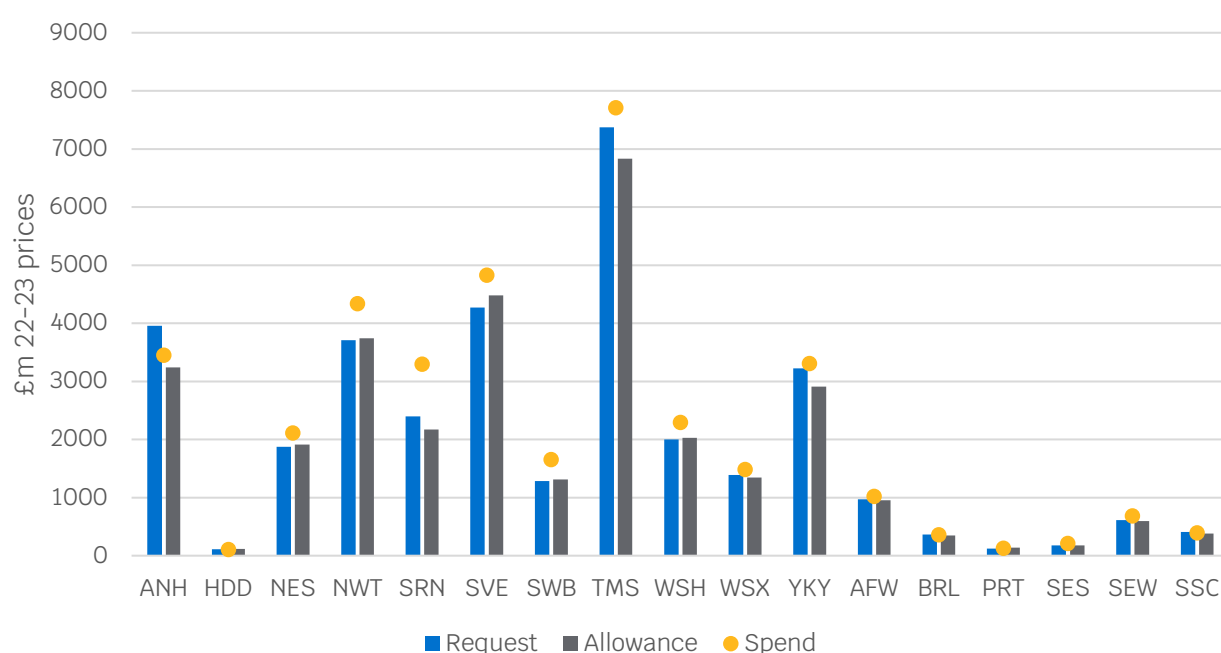
- 3.12 Figure 3 also helps to contextualise the statement made by Anglian Water that the upper quartile companies have been in a capital maintenance trough since pre-2008.⁵⁰ The company's analysis focuses solely on mains renewals, but its assertion is spread across the wider asset base. As illustrated above, capital maintenance has increased over time, and the historical trends do not indicate that the sector has been in a capital maintenance trough since 2008. Rather, base capital maintenance expenditure has increased by 25% between 2008-09 to 2023-24. However, it does illustrate that there are peaks and troughs over time.
- 3.13 We provide long-term base allowances to companies that enable them to manage these peaks and troughs over time. This may mean that a company overspends its base allowance in certain periods, and underspends in others. Over the long-term, as evidenced above, we consider companies have been sufficiently funded to maintain good asset health.
- 3.14 Despite this, companies state they are overspending on base expenditure and have been underfunded. To understand these concerns, we have looked back at the PR19 period, as well as across the totex envelope.
- 3.15 It is true that 16 out of 17 companies are overspending their PR19 allowances. However, at the time of setting PR19 allowances, there was a base sector wide cost gap of just 0.4%. This

⁵⁰ [OF-OA-001] Anglian Water, Statement of Case, March 2025, p.90, paragraph 343

means that, on average, our view of allowances was very closely aligned to the costs proposed by the companies in their PR19 business plans. This can be seen in figure 4 below.

3.16 In most cases, outturn expenditure has been in excess of what both we, and the companies, forecast. This demonstrates that these cost pressures were unforeseen by all parties. Our assessment of costs is based on the information companies provide to us in their business plans. Companies did not predict these unforeseen cost pressures, or include these in their business plans.

Figure 4: PR19 business plan request vs. PR19 allowance vs. outturn expenditure, 2020-24 period ^{51 52}



3.17 For example, there have been several unprecedented events that have occurred throughout the PR19 period, including the Ukraine war and the coronavirus pandemic (Covid-19). The UK has also experienced extreme weather conditions in recent years associated with climate change impacts.⁵³ These events have contributed to the unexpected increases in outturn expenditure.

3.18 In addition to the above, we consider the overspend is likely to be driven by three main factors:

- **Unexpected energy price increases.** We estimate the overspend reduces at an industry level from 14% to 12% when this is accounted for. Figure 5 illustrates the sharp increase in energy costs in recent years.

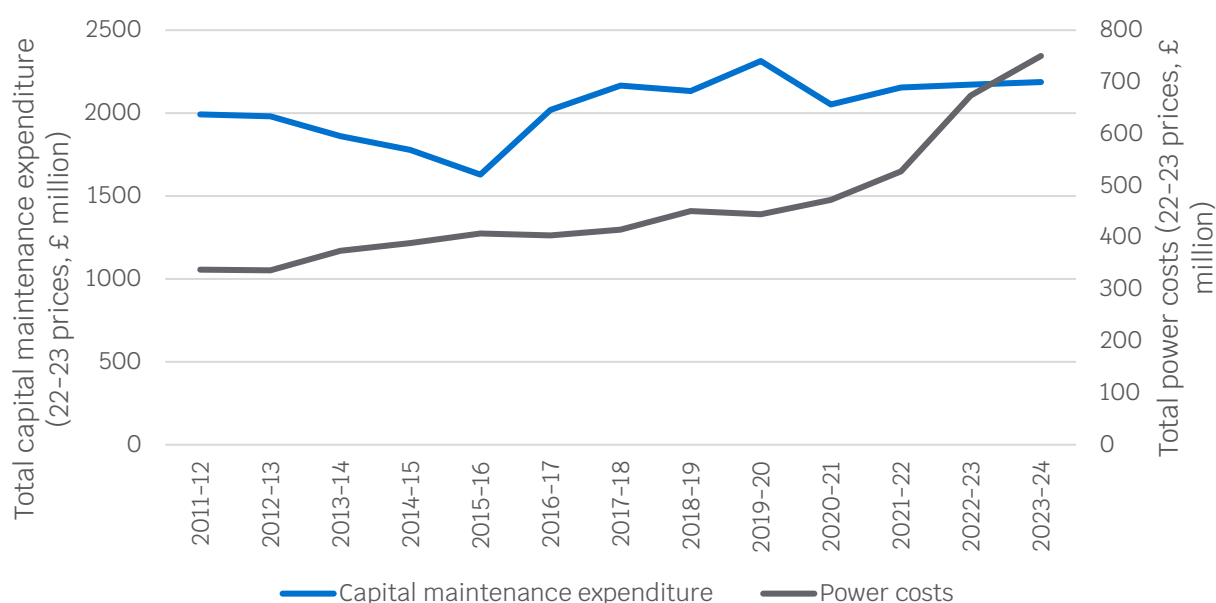
⁵¹ PR19 allowances are post-PR19 water redetermination, and do not include Thames Water's gated allowance.

⁵² [OF-CA-081] Ofwat, PR19 spend versus allowance energy uplift, April 2025

⁵³ [OF-CA-123] Ofwat, Water Company Performance Report, September 2023

- **Leakage performance challenge at PR19**, which required most companies to reduce leakage by 15% with base expenditure allowances. The level of stretch has been reduced at PR24.
- **Southern Water additional investment at water and wastewater treatment works** to address water quality risks and improve wastewater treatment works compliance.⁵⁴ This distorts the level of overspend at the sector level. The company has received a significant enhancement allowance at PR24 for enhancement water treatment works.

Figure 5: Capital maintenance expenditure relative to power costs



Asset condition has improved or been maintained since PR09 across water mains, rising mains and bioresources assets

- 3.19 At PR24, we collected condition grade data for water mains, gravity sewers, rising mains and bioresources assets to help better understand the health of these assets. This covers around 70 percent of water and wastewater assets.
- 3.20 Using this data, we were able to assess whether asset condition for water distribution mains, sewage pumping mains, and bioresources assets has been maintained since PR09. We were not able to draw direct comparison with PR09 data for gravity sewers due to a change in reporting requirements at PR24.⁵⁵
- 3.21 For water distribution mains and rising mains, condition grade is based on the average number of bursts. Where low burst rates indicates good asset condition. This scale ranges from condition grade 1 (very good, low burst rates) to condition grade 5 (very poor, high burst

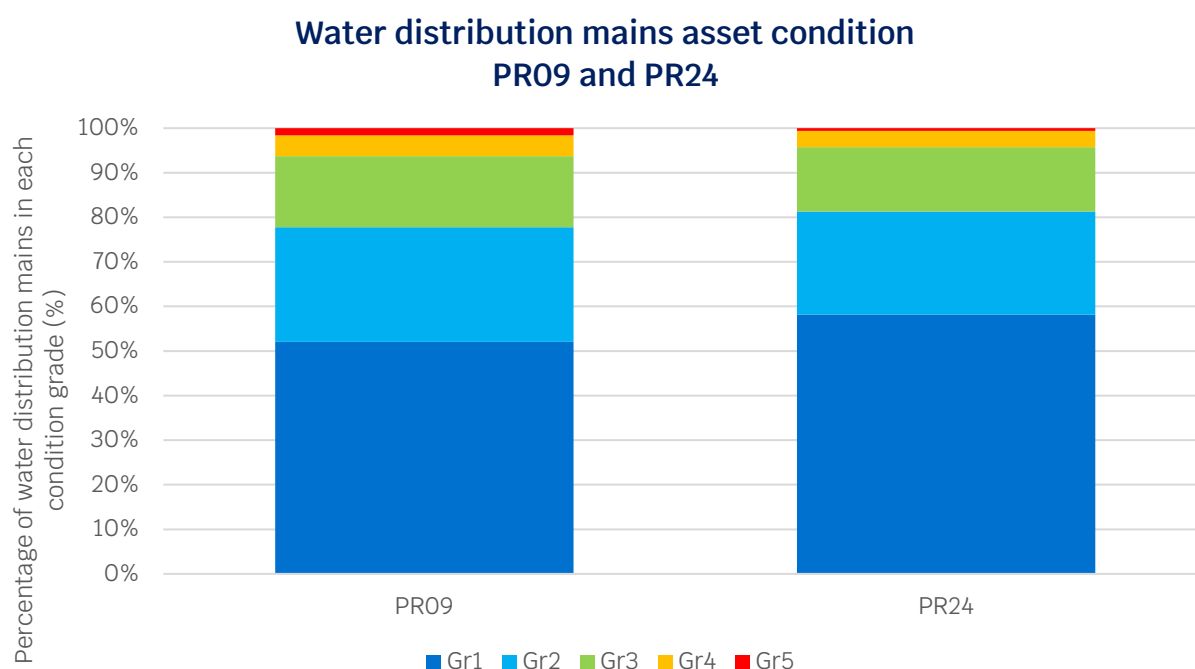
⁵⁴ [OF-CA-123] Ofwat, 'Water Company Performance Report', September 2023, pp.27-29

⁵⁵ At PR24, condition grade was based on sewer collapses reported in the annual performance report. At PR09, condition grade was based on closed circuit television survey data.

rates). The same logic applies to gravity sewers, but is based on sewer collapses instead of bursts. For bioresources assets, companies undertook visual condition grade assessments at a site level.

- 3.22 Our analysis of the data collected indicated that, at a sector level, asset condition has improved or been maintained over time for these assets. This suggests that base expenditure allowances have been sufficient to improve and/or maintain asset condition over time.
- 3.23 The figures below illustrate our findings. A decrease in the proportion of condition grade 4 (poor) and 5 (very poor) assets indicates an improvement in asset condition between PR09 and PR24. This is true for water mains, sewage pumping mains and bioresources assets based on the methodology employed. This suggests that base expenditure allowances have been sufficient to improve and/or maintain asset condition over time.
- 3.24 In some cases, there were condition issues at a company level, which companies must address over the 2025–30 period. We will hold companies to account through a price control deliverable. This applies to our mains renewals sector wide adjustment, and to sewage pumping mains for Dŵr Cymru and United Utilities.
- 3.25 Although we couldn't compare the gravity sewers condition data to PR09, we concluded that gravity sewers appeared to be in reasonable condition at PR24.

Figure 6: Water distribution mains asset condition, PR09 vs. PR24⁵⁶



⁵⁶ [OF-CA-037] Ofwat, CW20 Distribution mains condition analysis, February 2025.

Figure 7: Sewage pumping mains asset condition, PR09 vs. PR24

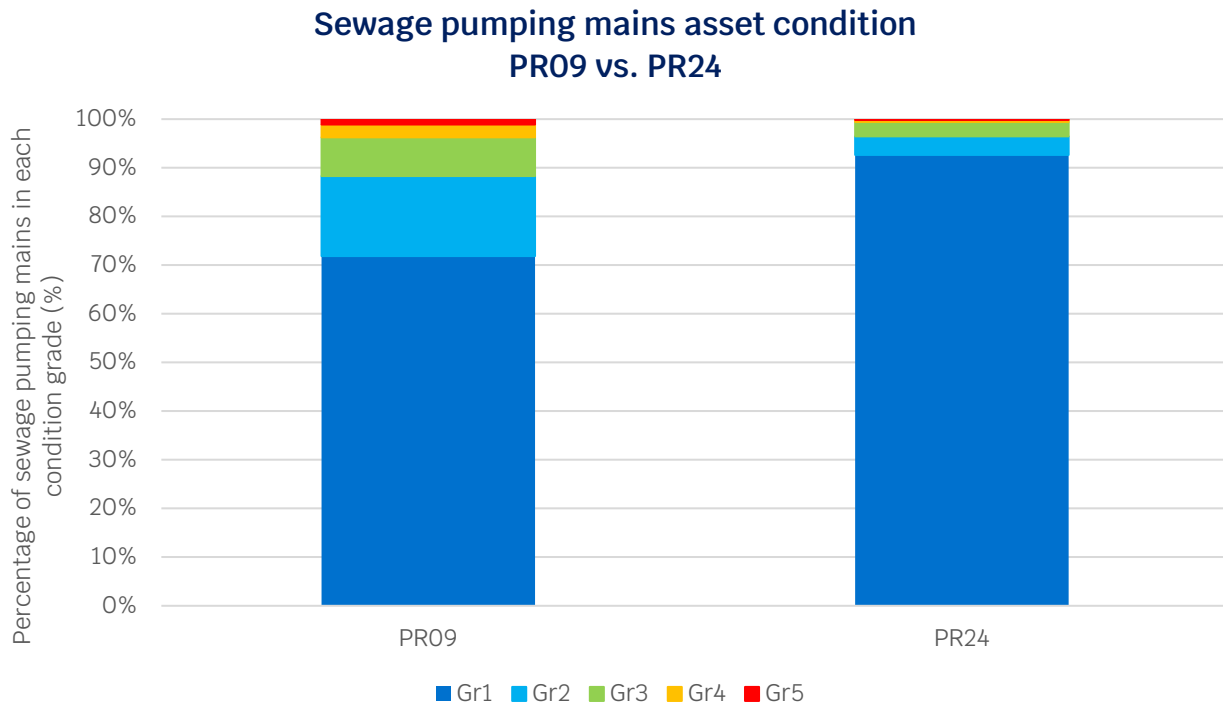
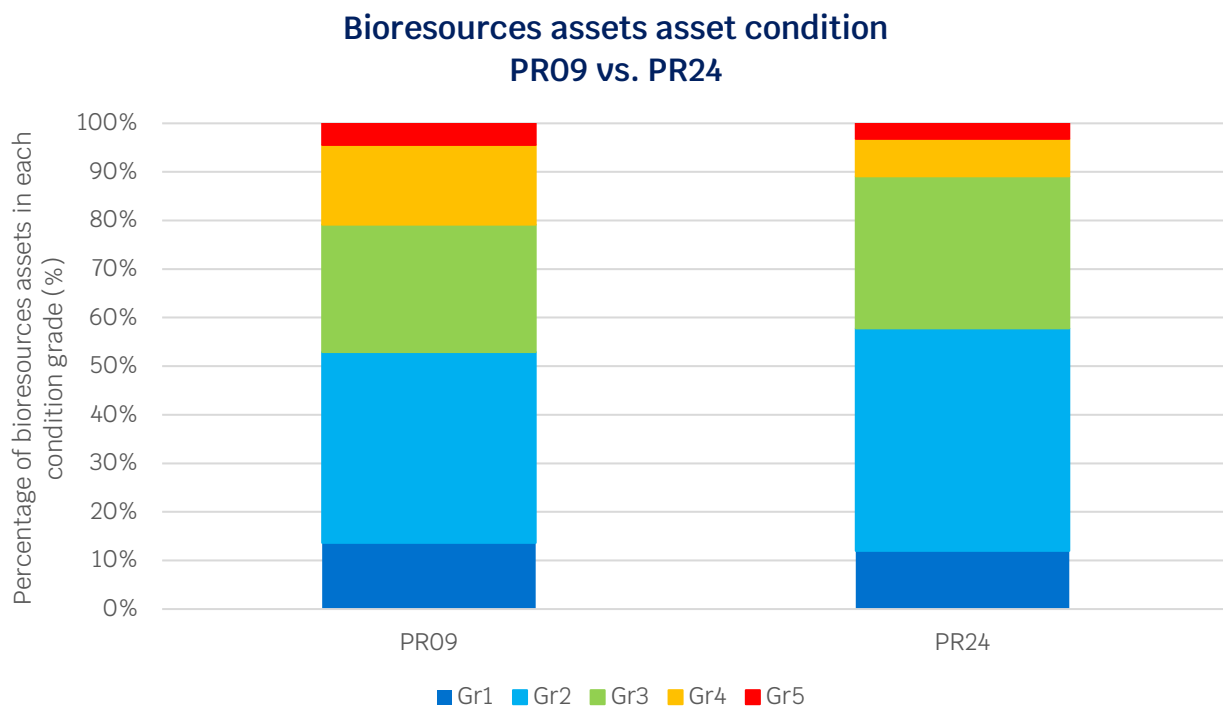


Figure 8: Bioresources assets asset condition, PR09 vs. PR24⁵⁷

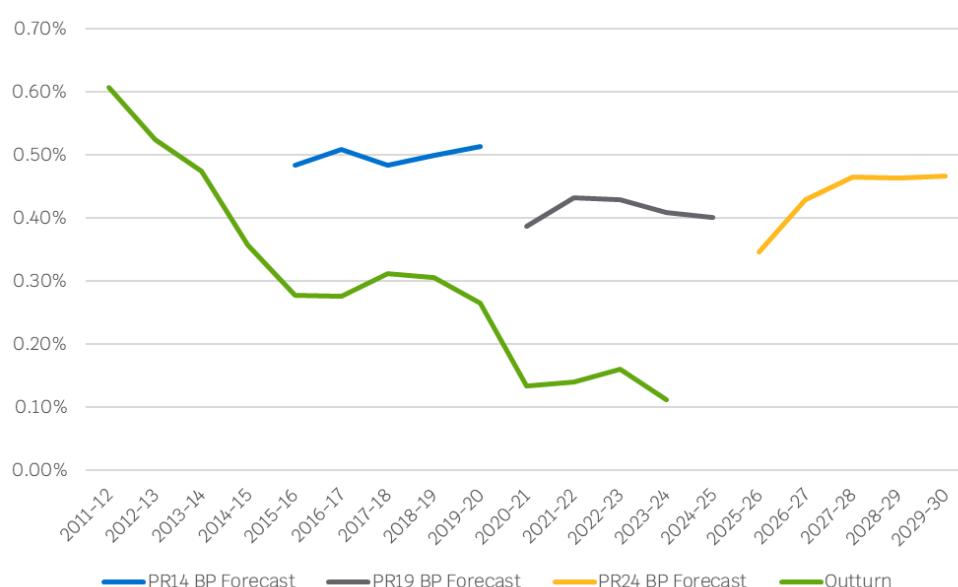


⁵⁷ [OF-CA-151] Ofwat, PR24 draft determination – Bioresources condition assessment, July 2024.

Despite this, asset renewals have fallen and companies have not delivered the renewal rates promised in their PR19 business plans

- 3.26 While capital maintenance expenditure has increased over time, and asset condition does not appear to have deteriorated at a sector level for the assets considered at PR24, renewal rates for some assets have reached unsustainably low levels in recent years. This means that companies are extending the life of these assets far beyond the average expected asset life. This increases the likelihood of failure for these assets, and subsequently creates risk to both customers and the environment.
- 3.27 Stable or improving asset condition despite low renewal rates may indicate that companies are investing in other, potentially shorter term fixes to maintain the life of the asset or to meet performance commitments. For example, Anglian Water states in its statement of case that "sewer collapses performance commitments can be met with short-termist operational improvements, and therefore mask longer-term deteriorations in asset health."⁵⁸ As Anglian Water highlights, this maintenance strategy could have long-term consequences.
- 3.28 Short-term approaches may help to explain companies' under-delivery against the renewal rates set out in PR19 business plans. For example:
- 3.29 Water companies forecast to renew water mains at an average rate of 0.4% per year. Mains are currently being renewed at an average rate of 0.15% per year. All companies are underdelivering against PR19 plans.

Figure 9: Mains renewals rates over time, business plan forecast vs. outturn⁵⁹

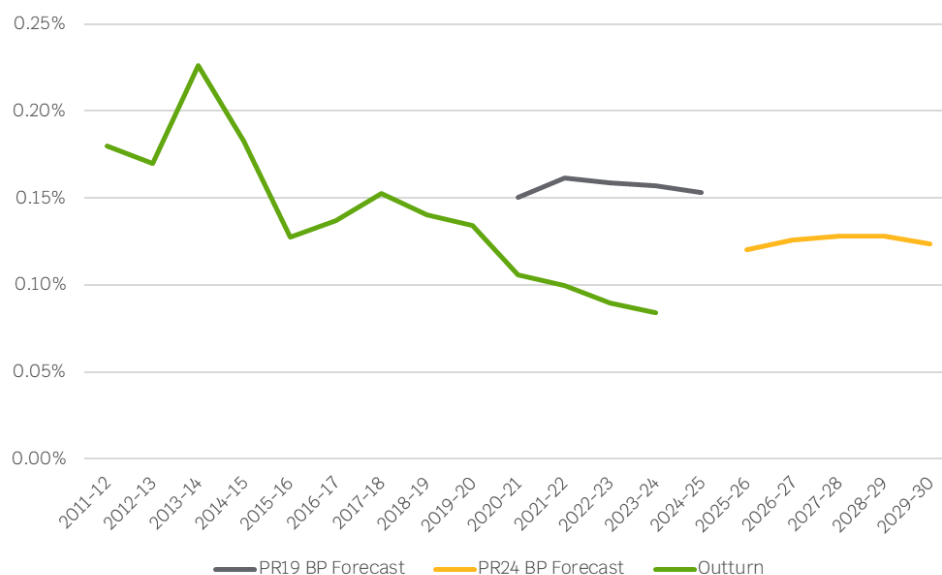


⁵⁸ [OF-CA-001] Anglian Water, Statement of Case, March 2025, p.91, section 4.1.

⁵⁹ [OF-CA-051] Ofwat, Asset renewals, April 2025.

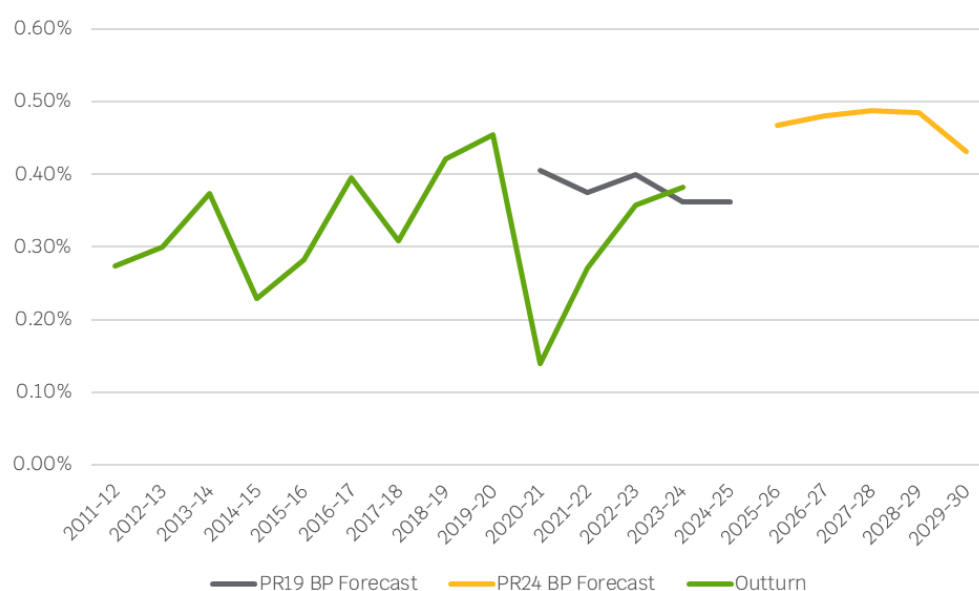
3.30 Water companies forecast to rehabilitate gravity sewers at a rate of 0.16% per year. Gravity sewers are currently being rehabilitated at an average rate of 0.09% per year. Nine out of twelve companies are underdelivering against PR19 plans.

Figure 10: Gravity sewers rehabilitation rates over time, business plans vs. outturn⁶⁰



3.31 Seven out of nine wastewater companies are underdelivering against sewage pumping mains renewals compared to PR19 business plan forecasts.

Figure 11: Sewage pumping mains renewal rates over time, business plan forecast vs. outturn⁶¹



⁶⁰ [OF-CA-051] Ofwat, Asset renewals, April 2025.

⁶¹ [OF-CA-051] Ofwat, Asset renewals, April 2025.

3.32 In addition, despite overall meter replacement rates increasing, 12 companies are underdelivering against the replacement rate set out in their PR19 business plans.

3.33 We are concerned with reduced renewal rates and under-delivery for three main reasons:

- We expect asset renewals set out in business plans are informed by companies' asset deterioration models. These models indicate when an asset needs to be replaced based on a range of factors such as age, material, condition, criticality and failure rate. Outturn renewal rates evidences that most companies are not delivering against these plans, which in turn could be leading to increased risk for customers and the environment.
- Companies have commented that they are incentivised to meet performance targets, which can lead to less costly, short-fixes being more favourable. This leads to companies not investing in the long-term health of the assets. Deferring investment impacts not only the health of an asset, but also has impacts on intergenerational fairness, ie sharing of costs between current and future generations.
- In their PR24 business plans, companies stated that they need to do more renewals, despite not delivering against PR19 plans. It is therefore unclear whether companies will deliver the renewals set out, or whether they will continue to choose short-term fixes.

3.34 Northumbrian Water, Southern Water and South East Water discuss historical under-delivery in their statements of case.^{62 63 64} The companies broadly state they were not funded for specific activities at PR19, they have spent their PR19 allowances in full, and therefore this should not be considered as under-delivery. However, we do not see this as sound reasoning for not investing in the network as required, particularly when the companies do not state that the forecast investment was no longer needed during the PR19 period.

3.35 As discussed above, companies are overspending their PR19 base expenditure allowances. But this is due to unforeseen cost pressures, by both Ofwat and the water companies. There is cost sharing and other uncertainty mechanisms in place to help mitigate the risk of unexpected cost pressures. Companies should not divert money away from required asset renewals. As a result of doing so, companies have failed to deliver what they committed to for customers and the environment.

3.36 At PR24, we wanted to incentivise companies to focus more on long-term asset health. We have:

- Applied adjustments to allowances where there was compelling evidence of a need to increase the rate of renewals;
- Established a minimum average renewal rate for both meters and mains as part of our sector wide adjustments;

⁶² [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, p.115, section 5.4.2.

⁶³ [OF-OA-003] Southern Water, Statement of Case, March 2025, p.276, section 7.1.12.

⁶⁴ [OF-CA-048] South East Water, Oxera, Base cost adjustments and cost adjustment claims, March 2025, pp.20-21

- Held companies to account for delivering the required renewal rate over the 2025-30 period, and delivering an improvement in asset health; and
- Set clear expectations that customers should not pay twice for companies not investing sufficiently in their assets, and subsequent asset deterioration.

It is important to hold companies to account for delivery of asset renewals through price control deliverables so customers receive what they pay for

3.37 Price control deliverables (PCDs) are needed to ensure delivery when:

- there is limited overlap with performance commitments to incentivise delivery; and/or
- failure to deliver risks customers paying for something they do not receive; and/or
- failure to deliver may have long term implications for customers and the environment.

3.38 Applying PCDs is also in line with our duties to further the consumer objective to protect the interests of customers, and to further the resilience objective to secure long-term resilience of water companies' water supply and wastewater systems. Having these checks and balances on delivery in place will secure that allowances are appropriately targeted over the 2025-30 period.

3.39 PCDs apply to the most material areas of spend at PR24. In general that is enhancement expenditure. However we also considered it was necessary to apply PCDs to base expenditure for delivery of asset renewals as there is a heightened need for customer protection at PR24. This includes where we had accepted the need for investment for additional allowances, and where we considered there was risk of under-delivery. This means we applied PCDs to allowances for mains renewals, meter replacements and network reinforcement, alongside other accepted company specific cost adjustment claims.

3.40 In response to our draft determination proposal, several water companies raised concerns with applying PCDs to base expenditure. Companies stated this goes against the flexible nature of base allowances, leads to ringfencing of base allowances, and risks unintended consequences elsewhere across the asset base as the associated financial rewards and penalties reduce companies' ability to redirect spend to other assets when required. The five disputing companies raise these concerns in their statements of case in relation to mains renewals.

3.41 While it is true that base allowances are to be invested flexibly, we consider it is appropriate to apply PCDs where companies have been allowed to recover additional costs from customers through our acceptance of cost adjustment claims or application of sector wide adjustments. Performance commitments alone are not enough to incentivise delivery of important asset renewals, as past experience has shown. In these instances, we have accepted the need for an adjustment for a specific reason, and applied an adjustment to allow the company to deliver specific outputs. For example, additional allowances to increase the rate of meter replacements should be used to deliver these replacements. This spend should not be reallocated flexibly to other areas of base expenditure.

- 3.42 We also consider it appropriate to apply PCDs where there is a perceived risk of under-delivery. This applies to holding companies to account for what base buys for mains renewals and meter replacements. The sector identified both of these asset groups as a PR24 priority through our cost assessment working group, signalling the need to increase renewal rates over the 2025–30 period.
- 3.43 As discussed above, mains renewal rates have reduced materially in recent years and companies have not delivered the renewals set out in their PR19 business plans. Additionally, twelve companies are underdelivering meter replacements. This is despite base expenditure allowances increasing over time, and there being a sector wide cost gap of 0.4% at PR19. This heightens the perceived risk of companies under-delivering. PCDs therefore increase incentives on companies to deliver asset renewals, and reduce short-termism interventions. This will lead to a more sustainable asset renewal rate that prevents asset deterioration over the long-term and protects the long term interests of customers and the environment.
- 3.44 We do not consider the application of PCDs to be ringfencing of base allowances. Rather, companies propose different investment plans, which are supported by their customers. PCD coverage therefore reflects what individual companies need to deliver over the period, in line with their business plan, and customer expectations.
- 3.45 The table below summarises PCD coverage on base.

Table 1: Base PCD coverage⁶⁵

Company	Proportion of modelled base allowances associated with PCDs
Anglian Water	10%
Dŵr Cymru	7%
Hafren Dyfrdwy	15%
Northumbrian Water	7%
United Utilities	6%
Southern Water	7%
Severn Trent Water	7%
South West Water	8%
Thames Water	7%
Wessex Water	5%
Yorkshire Water	11%
Affinity Water	9%
Bristol Water	11%
Portsmouth Water	11%
South East Water	15%
South Staffs Water	12%

⁶⁵ Total modelled base allowances (post-frontier shift and real price effects).

SES Water	16%
Sector average	8%

- 3.46 We do not consider it appropriate to apply a use it or lose it cost adjustment and PCD as proposed by Wessex Water in its statement of case.⁶⁶ This was also proposed by Reckon in response to our draft determination.⁶⁷ As set out in our final determination, we disagree with the application of a use-it-or-lose-it capital maintenance allowance, and therefore an accompanying PCD.⁶⁸
- 3.47 It would be challenging to determine what the 'use-it-or-lose-it' allowance would be for each company given the absence of robust asset condition and workload information. This means it would not be possible to determine 'what base buys' so that customers do not pay twice. Once through the modelled base cost allowance, and again through the additional allowance. It would also be difficult to hold companies to account and protect customers from under delivery. Without identified outputs of investment, we cannot hold companies to account through a PCD mechanism. This risks customers paying for investment that does not lead to improvements in long-term asset health.
- 3.48 In addition, we do not consider it is appropriate to give companies additional allowances because they have not maintained their assets properly. This could be viewed as a failure to hold companies to account and customers paying twice (ie once through base cost models and again through the cost adjustment).

⁶⁶ [OF-OA-004] Wessex Water, Statement of Case, March 2025, p.55, paragraph 8.41

⁶⁷ [OF-CA-139] Water UK, Reckon, Opportunities for improving Ofwat's approach to asset health, p.24

⁶⁸ [OF-OA-022] Ofwat, PR24 final determinations: Expenditure allowances, December 2024, p.91

4. Our approach to base expenditure and asset health

Moving forward, we will continue to work with the sector to improve asset health understanding.

We support the sector's view that Ofwat and water companies, can do more to understand asset health. As part of this, we set out a plan to enhance asset health understanding in the water sector at final determination. Initially this will focus on a subset of priority assets during the 2025–27 period.

We are open to considering alternative approaches to assessing base at future price reviews, such as through more bottom-up approaches to assessing costs. Like at PR24, this will require a collaborative effort from the sector. It is important to note that a bottom-up approach should be informed by a wide range of drivers (eg asset condition, installation date, environmental factors, criticality, performance) and not only asset age.

- 4.1 In this section, we discuss our plan to enhance asset health understanding in the water sector as set out in the final determination. We also reflect on other ongoing work to improve the sector's understanding of asset health, and alternative approaches to assessing base expenditure.
- 4.2 We provide a response to the key concerns raised by the disputing companies relating to:
- **Concerns relating to the enhancing asset health understanding roadmap.** Including a lack of certainty over availability of allowances, assessing what base buys, and accounting for company specific factors driving investment needs^{69 70 71};
 - **Concern that Ofwat's approach fails to account for the company's bottom-up view of costs⁷²**; and
 - **Comparison to other regulatory approaches** which have acknowledged the need for a step-up in capital maintenance to improve asset health, or have made changes to better reflect asset risk in their regulatory frameworks.^{73 74} For example, Ofgem's Network Asset Risk Metric (NARM) approach or Water Industry Commission for Scotland (WICS)' capital maintenance assessment approach.

⁶⁹ [OF-OA-001] Anglian Water, Statement of Case, March 2025, p.95, paragraph 355

⁷⁰ [OF-OA-003] Southern Water, Statement of Case, March 2025, p.201, paragraph 354

⁷¹ [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, p.22, paragraph 29

⁷² [OF-OA-004] Wessex Water, Statement of Case, March 2025, pp.2–3, paragraph 2.6

⁷³ [OF-OA-001] Anglian Water, Statement of Case, March 2025, p.83, paragraphs 327–330

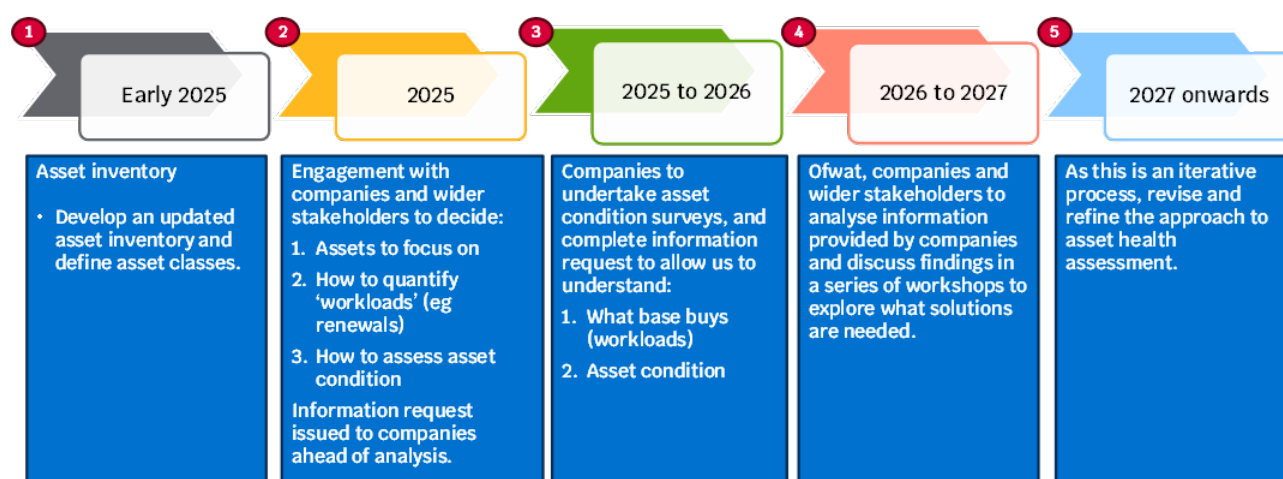
⁷⁴ [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, p.62, paragraph 198

We are working towards an enhanced understanding of asset condition ahead of PR29 and will provide additional capital maintenance allowances if needed

Our final determination

- 4.3 In our final determination, we set out a plan to work with the sector to enhance asset health understanding in the water sector.⁷⁵
- 4.4 Our plan focuses on the 2025–27 period, where we will work with the sector to establish a priority list of assets to collect further workload (ie refurbishment and replacement) and expenditure data, and condition grade and asset health data on. Our plan seeks to build on the assets assessed in our final determination, and to produce a sector wide condition and workload dataset for the selected priority assets.

Figure 12: Plan to better understand asset condition in the water sector



- 4.5 As part of this, we will also assess if there are any sector wide issues that need to, and can be, addressed before the next price review period (PR29). We intend to work with the sector to find the most appropriate solution to address any issues identified. We proposed two options for consideration in our final determination:
- Provide additional base expenditure allowances either in-period or through the PR24 end-of-period reconciliation if any sector wide asset condition issues identified are material and can be resolved by 31st March 2030.
 - Allow companies to accelerate 2030–35 capital maintenance into the last two to three years of the 2025–30 period. We expect this option is likely to be most appropriate for most asset classes given the time required to plan and deliver work.
- 4.6 In addition to the above, we set out our initial thinking on evidential requirements for companies that request additional allowances. This included demonstrating efficient

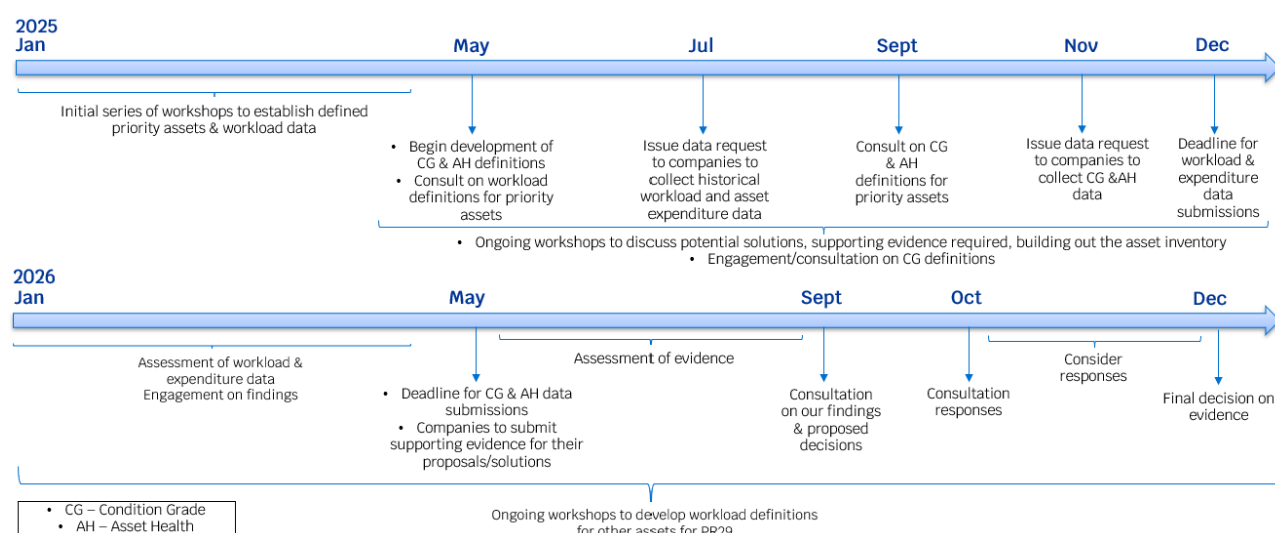
⁷⁵ [OF-OA-022] Ofwat, PR24 final determinations: Expenditure allowances, December 2024, pp.91–94

investment of historical allowances, and evidence that PR24 allowances have been invested efficiently to deliver outcomes for customers and the environment.

Progress against our plan

- 4.7 We began our engagement with the sector on 31st January 2025, and have since held two workshops, with a third scheduled for 30th April 2025. All our workshop materials and meeting notes are published on the Ofwat website, and we will shortly be publishing an update paper.⁷⁶
- 4.8 During our introductory session on 31st January 2025, we presented a more detailed workplan that spans the 2025–27 period.⁷⁷ This includes key deliverables and milestones. This workplan sets out our initial thinking on the timeline to reach a decision by December 2026. We expect there will be a need to iterate and adapt this over time. We include this timeline below for reference.

Figure 13: Our proposed workplan timeline to reach a decision by December 2026



- 4.9 We are pleased with the progress we are making, and with the level of engagement that we have had from the sector. Water companies have expressed their support for the workstream, and for collecting information on a sector wide basis to better understand asset health.
- 4.10 The table below presents an overview of what we have discussed with the sector so far.

⁷⁶ [OF-CA-011] Ofwat, Enhancing Asset Health Understanding Workstream – Ofwat.

⁷⁷ [OF-CA-124] Ofwat, Enhancing asset health – intro session slides, January 2025, slide 6.

Table 2: Enhancing asset health understanding workshops

Workshop	Objectives	Topics discussed
Introductory session (31 January 2025)	<ul style="list-style-type: none"> • Seek initial feedback from the sector on our final determinations proposal, and answer any related questions • Provide more detail on the expected timeline, and how we expect the workstream to run • Set out our plan for future workshops 	<ul style="list-style-type: none"> • Our final determination 2025–27 roadmap • Proposal for timeline for delivering the plan • Plan for upcoming workshops • Our expectations • Q&A
Workshop 1 (14 February 2025)	<ul style="list-style-type: none"> • Seek company views on the preferred approach to developing an asset hierarchy • Seek company views on our proposed principles to be used for prioritisation • Provide further clarity on the funding mechanisms discussed in our final determinations 	<ul style="list-style-type: none"> • Approach to developing an asset hierarchy • Prioritisation principles • Funding mechanisms
Workshop 2 (18 March 2025)	<ul style="list-style-type: none"> • Develop the rationale for the selection of priority assets • Understand different types of interventions for the priority assets, and how these may be defined 	<ul style="list-style-type: none"> • Emerging priority assets • Defining capital maintenance interventions • Building out the asset hierarchy

4.11 We have also engaged with water companies on a bilateral basis, providing the opportunity for them to feedback independently of the wider group. We have asked companies to share their bespoke asset inventories, undertake an initial asset prioritisation exercise, and provide feedback on the workshops.

4.12 We have now developed an initial proposal for the priority assets for further consideration. These assets were commonly selected by companies as a priority, and meet our principles for consideration. We will provide more detail on the rationale for the selected assets in our update paper we intend to publish in May 2025.

4.13 These proposed assets are:

- Water network storage, including service reservoirs and water towers
- Water treatment filtration, focusing on long-life civil structures
- Water boreholes, focusing on civils
- Wastewater treatment sludge/settlement tanks, focusing on long-life civils
- Wastewater treatment screening, focusing on long-life civils
- Wastewater sewers

4.14 This is not a final list of priority assets. We will discuss our proposal further with the sector at our upcoming workshop, focusing on the feasibility of collecting data consistently on these assets, including discussion on sample sizes for assessing condition grade.

Our response to concerns raised

4.15 Although the sector is in support of the plan, some companies have raised concerns on the following areas. We summarise the key concerns raised in our discussions with the sector below, some of which are also reflected in the disputing companies' statements of case:

- Our assessment of what base buys at PR24, and how this will be applied in when assessing the need for any additional allowances⁷⁸;
- Holding companies to account through a PCD;
- Uncertainty over funding routes^{79 80 81}; and
- Risk of not accounting for company specific factors.⁸²

4.16 Our aim is to be transparent and clear in our communication with the sector. However, it is important to acknowledge that not every question can be answered upfront. This work is collaborative between us and the sector, and there is a need to collect the information needed to allow us and companies to make informed decisions.

4.17 Where possible, we have provided assurance to water companies. For transparency, we set out our position on the above concerns below.

We will assess what base buys before applying any additional adjustments through this workstream, but we intend to work with the sector to develop our approach for a wider range of assets

4.18 As set out in our 'Expenditure allowances – common issues' document, before we apply any adjustments to companies' allowances we must first assess what companies are able to deliver through their modelled base allowance to ensure that customers do not pay twice.

4.19 As discussed in our final determination, one of the issues we faced when assessing additional capital maintenance requirements at PR24 is data availability. This restricts our ability to understand what companies have delivered through their base allowances historically.

4.20 Therefore, as part of our work on the priority assets, we will collect workload (refurbishment/replacement) and expenditure data to understand what companies have been able to deliver through their base allowances historically. This will inform our view of what base buys when deciding on whether additional allowances are needed. This ensures that customers do not pay twice through existing base expenditure allowances, and again through the cost adjustment. It also helps to ensure that companies are appropriately incentivized to refurbish and renew assets with base expenditure allowances.

⁷⁸ [OF-OA-001] Anglian Water, Statement of Case, March 2025, p.95, paragraph 357

⁷⁹ [OF-OA-001] Anglian Water, Statement of Case, March 2025, p.95, paragraph 355

⁸⁰ [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, pp.73-74, paragraph 234

⁸¹ [OF-OA-003] Southern Water, Statement of Case, March 2025, p.211, paragraph 388

⁸² [OF-OA-002] Northumbrian Water, Statement of Case, March 2025, pp.71-72, paragraph 231

- 4.21 We recognise our PR24 approach to determining what base buys for mains and meter renewals may not be directly applicable to all assets, such as, long-life civil assets. We will work with the sector to find the right approach to determining what base buys across the wider asset base.

We will hold companies to account for any additional adjustments made to allowances to ensure that money is returned to customers if companies do not deliver the investment

- 4.22 As discussed above, we consider it important to hold companies to account for additional investment delivered through base allowances. This provides certainty that if a company does not deliver as expected, money will be returned to customers.
- 4.23 We therefore intend to apply a PCD to any additional allowances provided through this workstream to ensure that companies deliver the required investment, and customers do not pay twice at future price reviews. We intend to discuss PCDs at a future workshop.

We have discussed the funding mechanisms set out in our final determination with the sector, but it is unlikely that the best option will become clear until we know what the priority assets are and the potential scale of work required

- 4.24 We proposed two options for providing additional funding for consideration in our final determinations:
- Provide additional base expenditure allowances either in-period or through the PR24 end-of-period reconciliation if any sector wide asset condition issues identified are material and can be resolved by 31st March 2030.
 - Allow companies to accelerate 2030-35 capital maintenance into the last two to three years of the 2025-30 period. We expect this option is likely to be most appropriate for most asset classes given the time required to plan and deliver work.
- 4.25 We have since discussed these options at our first workshop, and welcomed companies to provide views on how they consider this could best work, and what is preferable to them.^{83 84}
- 4.26 We sought to provide further clarity on both options and how these may work in practice. We clarified that accelerating AMP9 funding would not impact modelled base allowances at PR29. Rather, we expect this to work as an additional sector wide adjustment that would be applied to PR29 allowances.
- 4.27 We also said that we would consider how to ensure companies can access funding in-period if required. This includes considering whether asset health should form part of the cost

⁸³ [OF-CA-125] Ofwat, Enhancing asset health – workshop 1 slides, February 2025

⁸⁴ [OF-CA-126] Ofwat, Enhancing asset health – workshop 1 meeting notes, February 2025

change process which, once license modifications have been made, could allow companies to access additional allowances in-period.

- 4.28 We will continue to work with the sector to find the best solution. We understand that this is not a one size fits all exercise, and we expect that different assets, and potentially companies, may require different routes to access funding depending on the scale and timing of required investment.

We will take account of company specific factors and requirements when we assess the evidence put forward by companies to support their proposals

- 4.29 In our final determination, we expressed our preference for collecting robust and comparable data to assess the need for additional capital maintenance allowances. This ensures we:

- Avoid biasing any one specific company;
- Provide greater visibility of potential sector wide issues;
- Provide allowances where there is evidence that base allowances may be insufficient;
- Avoid providing allowances where sector wide evidence indicates underinvestment from any one specific company. This ensures that individual companies are not rewarded for not maintaining the capability of assets, and avoids customers paying twice for renewals that companies should have delivered in the past.

- 4.30 It is our intention to use the information collected to improve asset health understanding, but also to assess whether there are any sector wide issues that need to be, and can be, addressed ahead of PR29. Where we find evidence of this, our intention is to retain our sector wide adjustment approach applied in our final determination.

- 4.31 However, this does not mean that we will treat all companies the same. Where companies are able to provide evidence of company specific factors, or demonstrate that they need to and can do more in the period, we will consider this in our decision.

- 4.32 This is consistent with the approach we took to the mains renewals adjustment where we assumed 0.43% per year as a starting point for an increase in renewals to improve asset health. Where companies were able to demonstrate company specific factors we reflected this in our assessment. For example, we accepted Anglian Water and Yorkshire Water's cost adjustment claims to increase their renewal rate beyond 0.43% (0.54% and 0.66% respectively).

- 4.33 Over the coming months we will develop an assessment framework that will set out the evidential requirements for requests for additional allowances made through this workstream.

Other ongoing work related to asset health

We are working with the sector to update our Asset Management Maturity Assessment

(AMMA). This assessment provides Ofwat and water companies with a shared understanding of the range of asset management maturity in the sector. This relates to how mature the processes, teams, technologies and cultures are within companies for monitoring and managing asset health and operational resilience. This assessment was last undertaken in 2021.

We are working towards refreshing this assessment for an up-to-date view of companies asset management maturity in 2026. We are in the process of developing our methodology and how we can best align to existing good practices such as the Institute of Asset Management's Self-Assessment Methodology (SAM+). Developing this approach will be undertaken in collaboration with the sector via the Operational Resilience Working Group and will help to understand where companies and the sector has improved / regressed since 2021. The AMMA sits within a wider programme of work (the Company Asset Management maturity programme) that acts as a multi-tier approach to uplifting maturity across all water companies.

In the last asset management maturity assessment (AMMA) in 2021, companies were assessed across five areas. These were asset information, decision-making, organisation and people, risk and review and strategy and planning. The areas were scored out of six with each score having an associated category.

1 – unaware, 2 – aware, 3 – developing, 4 – competent, 5 – optimising, 6 – leading.

Northumbrian Water has referenced their strong performance in asset management as a result of a limited data request exercise undertaken in September 2024 as part of Ofwat's operational resilience working group.⁸⁵ In the last asset management maturity assessment (AMMA) in 2021, Northumbrian Water's overall score was 12 out of the 15 companies, with the lowest score across the water and sewerage companies⁵⁷. Northumbrian Water scored an average of three across all five areas which is the category developing. This highlights that the latest evidence would indicate in all likelihood Northumbrian Water had less mature asset management practice than the rest of the sector. We include a letter sent to the company in April 2025 to discuss its statement regarding its AMMA score for reference.⁸⁶

Through our Operational Resilience Working Group (ORWG) we are working collaboratively with the sector on three areas: Asset Management, Water and Wastewater. **As a sector we are exploring insights and measures associated with the operational resilience of the sector.** We are exploring how we can consistently understand and compare different companies resilience. We are looking at a range of approaches to resilience such as reliability, resistance, redundancy and response capabilities in line with our published operational resilience paper.⁸⁷

⁸⁵ [OF-CA-002] Northumbrian Water, Statement of Case, March 2025, p.81, paragraph 273.

⁸⁶ [OF-CA-270] Ofwat, Ofwat letter in response to NES Asset Management Statement, April 2025

⁸⁷ [OF-CA-121] Ofwat, Operational resilience discussion paper, April 2022.

We always look to evolve and improve our base cost assessment approach, and are open to exploring more granular base cost assessment approaches

- 4.34 We always look to evolve and improve our base cost assessment approach, and are open to exploring alternative approaches in future, such as more granular, bottom-up approaches.
- 4.35 As discussed above, we engaged extensively with water companies for PR24 to explore ways in which our base cost assessment approach could be improved, and subsequently made a number of improvements. For example, introduction of several forward-looking base cost adjustments, and improvements to our base cost econometric models.
- 4.36 In addition to this, we have engaged proactively with other regulators and stakeholders to understand alternative approaches. This includes meeting with Water UK and Reckon to discuss their report that explored potential improvements to the regulatory framework for asset health and operational resilience.^{88 89} Also with Water Industry Commission Scotland (WICS) to discuss its approach to setting capital maintenance allowances for Scottish Water. We also met with Ofgem's cost assessment team, who were interested in learning more about how we split cost assessment between base and enhancement. We aim to collaborate with other regulators in preparing for PR29.
- 4.37 We are open to exploring more bottom-up approaches to base cost assessment if the sector is supportive of doing so. This may involve making our current base benchmarking models more granular. This includes, for example, looking at capital maintenance separately from opex, or looking at base expenditure for different assets (eg spend on different assets at a sewage treatment works). Moving to such an approach would require a substantial increase in data collection, and cannot be delivered by Ofwat alone. This means that a collective effort from Ofwat and water companies will be required. We also consider that other key stakeholders, such as Water UK, will also play an important role.
- 4.38 Moving to a bottom-up approach will require each company to assess what capital maintenance is required to maintain and improve asset condition and health, taking into account what has been funded in the past. This should be informed by asset deterioration models that use a wide range of information (eg asset condition, installation date, environmental factors, criticality, performance) and not only asset age. This information would then form the basis of company business plan submissions, alongside detailed cost information to be able to demonstrate efficiency.
- 4.39 We have done some initial thinking on taking a more bottom-up approach to assessing base costs, and what this may mean in practice. In theory, we consider moving to a more bottom-up approach would lead to more visibility of what companies are proposing to deliver through

⁸⁸ [OF-CA-139] Water UK, Reckon, Opportunities for improving Ofwat's approach to asset health following the PR24 draft determinations, August 2024.

⁸⁹ Out of the packages suggested in the Water UK report, we consider our PR24 base cost assessment approach at final determinations is reasonably close to package 2 (ref 74, pp.15-16)

their base allowances. This would also make it easier to hold companies to account. It could also help to provide better transparency on what drives variance in cost between companies.

- 4.40 On the other hand, it is likely to make comparing costs between companies more difficult. Therefore reducing our ability to challenge proposed costs and overcome information asymmetries. This may lead to customers overpaying, leading to cost inefficiency and/or excess returns to companies. In addition, it may be more difficult to capture trade-offs, synergies and interactions between different cost categories. For example, opex savings resulting from asset renewals.
- 4.41 In advance of PR29, we will continue to develop our thinking and approach to assessing base cost expenditure. We look forward to working collaboratively with the sector to do so, and encourage water companies to actively engage and contribute to this work.

Approaches to assessing capital maintenance taken by other regulators

We are open to discussing and learning from other regulatory approaches to assessing capital maintenance requirements at future price reviews. We provide below a brief summary of the approaches highlighted to the CMA by disputing companies and some key considerations.

Network Asset Risk Metric (NARM), Ofgem

NARM is a forward-looking asset risk metric that is used to monitor changes in asset risk over time. It is used by Ofgem as a way of incentivising companies to deliver the reduction in asset risk during the regulatory period that companies are funded for through total expenditure allowances.

The key benefits of this approach are that it is risk-based and it is forward-looking. We consider this provides positive incentives for companies to invest in good asset management practices, and in improving asset health over time.

NARM is a data heavy approach. It requires consistency in reporting across a range of data inputs for all companies. This includes, but is not limited to, age, material, diameter, pressure, coating type, weld type, and historical failures.⁹⁰ This approach requires consistency in data reporting between all companies to produce a robust metric.

The approach currently covers a subset of assets and interventions for the gas industry, focusing primarily on mechanical, electrical and infrastructure assets. It does not include civils assets.⁹¹ For electricity, civils assets are included for poles and towers only, with frequent mention of these assets being excluded when assessing specific asset failure types.⁹²

⁹⁰ [OF-CA-140] National Gas. Network Asset Risk Metric (NARM) Methodology, June 2024, pp.26–28

⁹¹ [OF-CA-141] Ofgem, NARM Handbook v3.1, February 2022, p.85

⁹² [OF-CA-142] Ofgem, DNO, Common network asset indices methodology, April 2021

WICS approach to regulating Scottish Water

WICS approach to assessing capital maintenance expenditure requirements for Scottish Water focuses predominantly on average asset life.⁹³ The approach relies on unit cost information to assess the costs associated with replacing the entire asset base over time based on average asset life assumptions. This approach may help to provide a portfolio view of when capital maintenance investment may be required across the asset base over the long term.

However, age is just one of the factors that is important to consider when assessing capital maintenance and asset health investment requirements. It is well known that assets can fulfil their purpose beyond the expected asset life, and therefore this should not always be used as the determining factor for investment.⁹⁴

When considering future investment requirements, it is also important to consider historical capital maintenance investment; performance; criticality (consequence of failure); asset condition and future environmental operating conditions (which both contribute to understanding probability of failure). This ultimately means that quantifying capital maintenance needs based on age alone is likely to overestimate the required investment. See section A1 for some illustrative examples.

Water companies in England & Wales since the mid 2000's, have adopted the Common Framework⁹⁵ planning approach, which requires understanding of historical investment, performance; current condition, forecast service and future risk levels to determine investment requirements. Over time this has evolved into value frameworks that utilise whole life cost benefit analysis.

In addition, WICS does not use financially incentivised performance measures or output delivery incentives, therefore its approach does not currently hold Scottish Water to account for what it has delivered during the regulatory period. While this may be appropriate for the state owned company, we have concerns around perverse incentives when applying this to privately owned companies operating in England and Wales. For example, Scottish Water returns any underspend back to the Scottish Government whereas underspend in England and Wales would be subject to cost sharing, and therefore could lead to financial gains.

⁹³ [OF-CA-143] Water Industry Commission for Scotland (WICS), Asset replacement, 2019, pp. 20–26.

⁹⁴ [OF-CA-255] Mott Macdonald, Determining Capital Maintenance Allowances, April 2025, pp.12–14.

⁹⁵ [OF-CA-272] UKWIR, Capital Maintenance Planning: A Common Framework Volume 1: Overview, 2002 (online source)

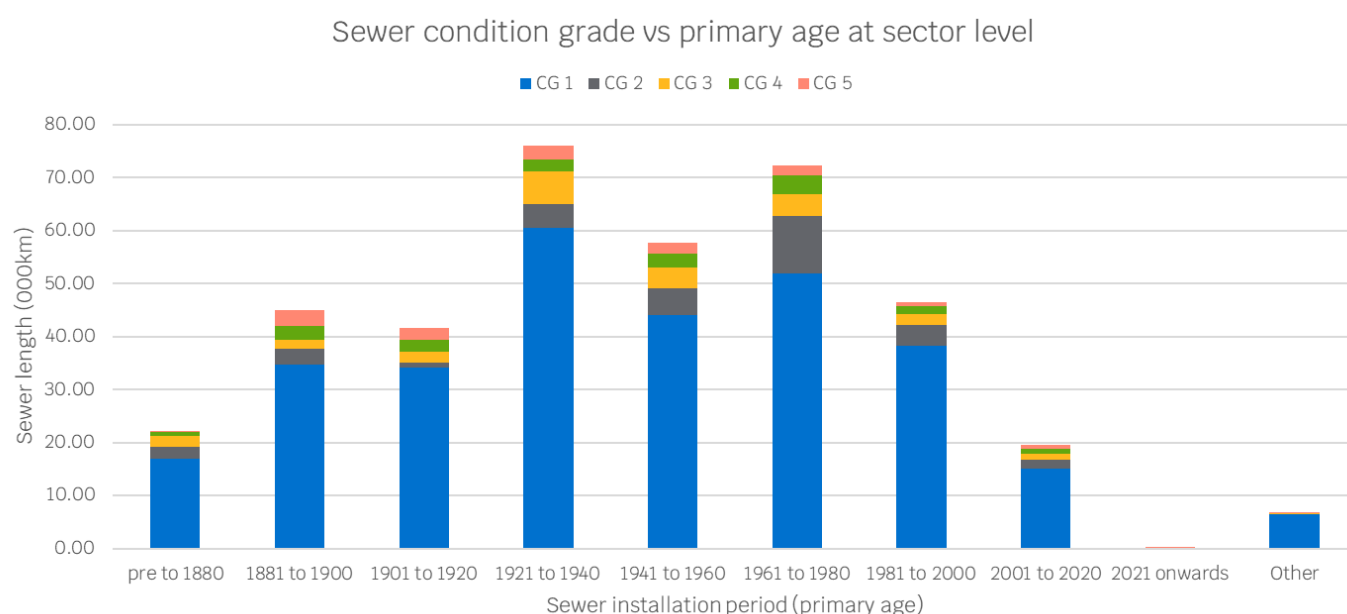
Annex A1: evidence that age is not the only factor that determine asset replacement levels

Some examples of age not being the only factor to consider in determining asset replacement include:

- Many Victorian sewers are still in operation and fully functional despite being over 100 years old.
- Mains failures are heavily influenced by environmental factors⁹⁶, such as: soil moisture (dry soils); water hardness; soil acidity; increased rainfall. This is shown in section A1.

The chart below (created using PR24 sewer condition cohort data) shows sewer age versus condition. This shows that majority of sewers are in condition grade 1 (very good condition), regardless of age. For example, almost 80% of sewers build pre-1880 are condition grade 1. This demonstrates that age should not be considered in isolation when assessing the need to replace an asset.

Figure 1: Sewer condition grade vs. primary age at sector level⁹⁷

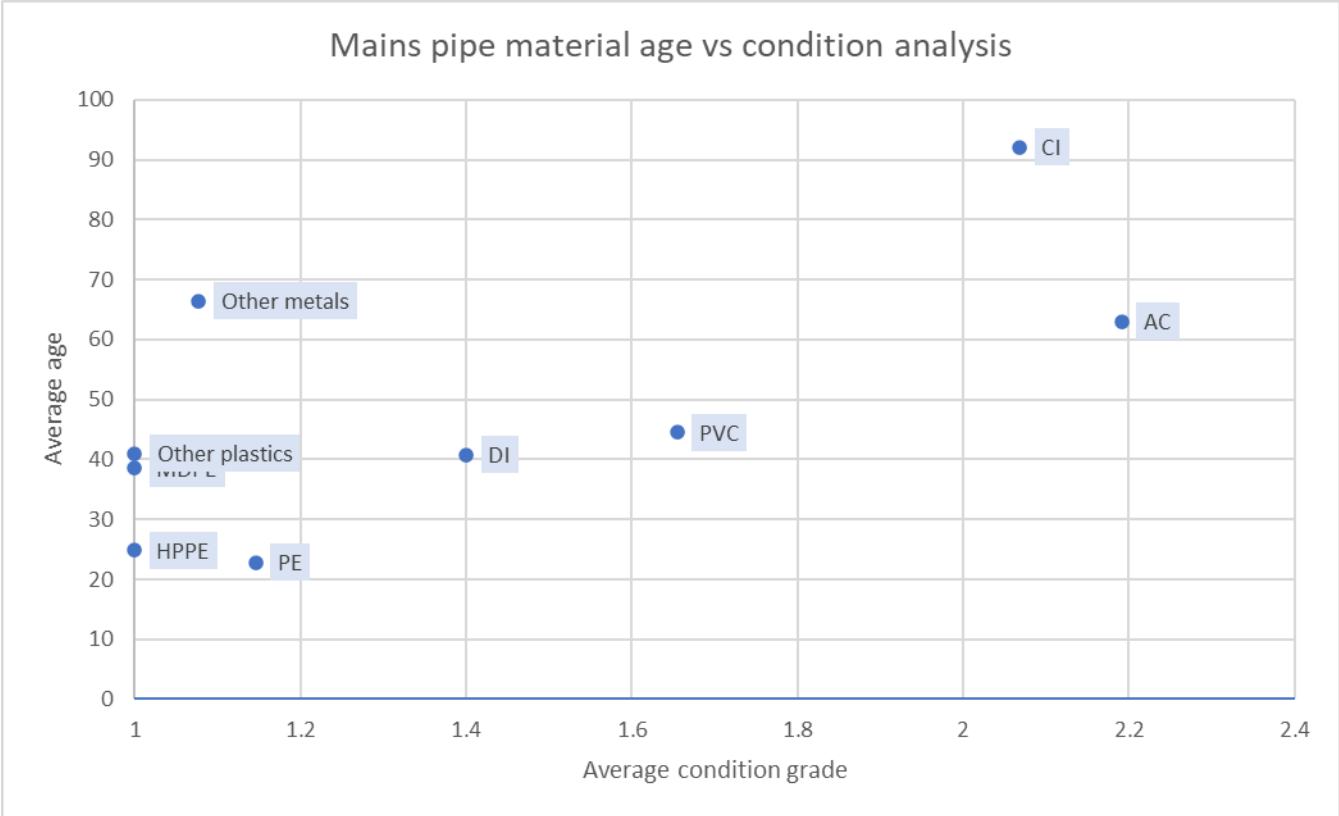


The chart below (created using PR24 mains condition cohort data) shows water mains age versus condition by material. This shows that although cast iron (CI) pipes are the oldest, they have on average a better condition grading than asbestos cement (AC) mains which are more prone to failures as a result of soil conditions.

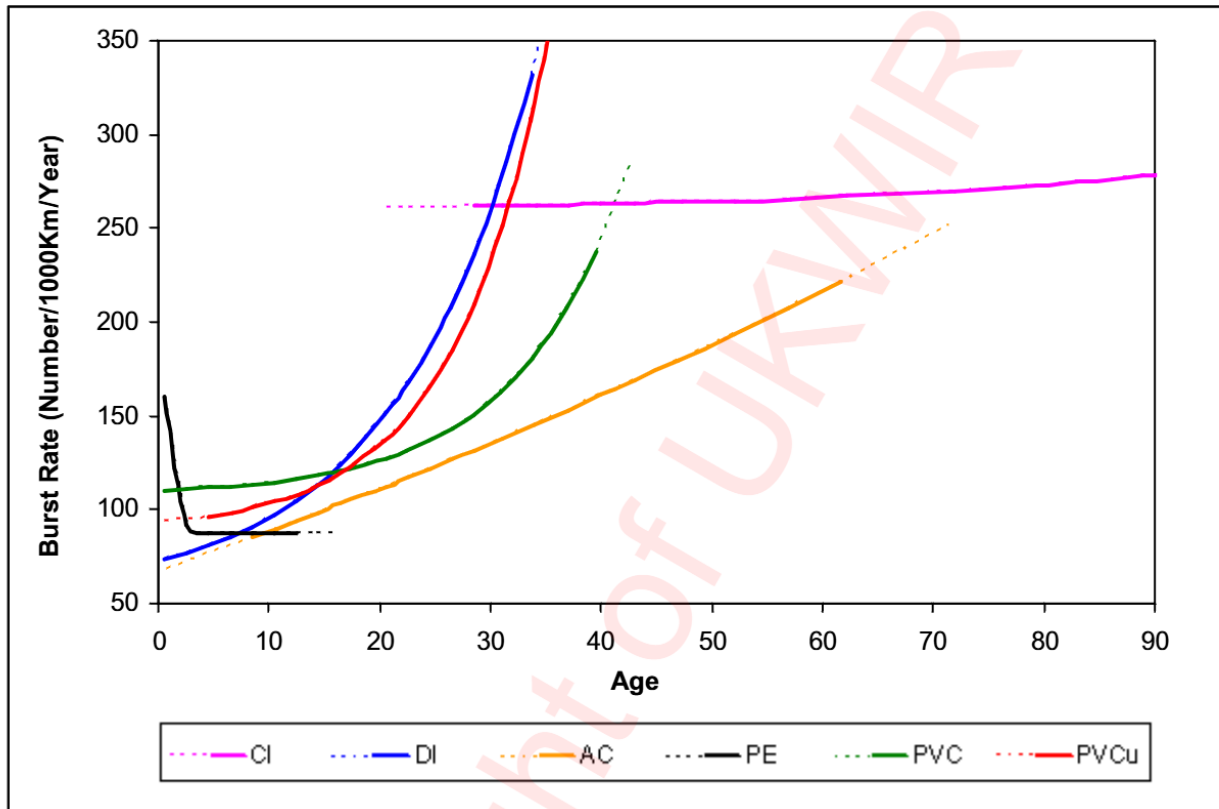
⁹⁶ [OF-CA-273] UKWIR, Asbestos Cement water mains deterioration and failure prediction models, March 2024 (online source)

⁹⁷ [OF-CA-229] Ofwat, Gravity sewers and water mains age analysis, April 2025.

Figure 2: Mains pipe material age vs condition analysis⁹⁸



⁹⁸ [OF-CA-229] Ofwat, Gravity sewers and water mains age analysis, April 2025.

Figure 3: Mean burst rate against age for six material types from UKWIR report**Figure 1 – Mean burst rate against age for six material types derived from the National data set**

Source: UKWIR, Distribution: Development of National Deterioration Models, p.33

The lines shown on the diagram above represent different pipe materials:

CI – cast iron, DI – , AC – asbestos cement, PE – polyethylene, PVC – polyvinyl chloride, PVCu – polyvinyl chloride unplasticised

**Ofwat (The Water Services Regulation Authority)
is a non-ministerial government department.
We regulate the water sector in England and Wales.**

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