

WATER PR24 REFERENCES

**Final Determinations Volume 1:
Introduction, Background, Approach and
prioritisation, Base costs - Chapters 1–4**

10 March 2026

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The Competition and Markets Authority has excluded from this published version of the final determinations information which the group considers should be excluded having regard to section 206 of the Water Industry Act 1991.

Any omissions are indicated by [§<]. Any non-sensitive replacement content is indicated in square brackets.

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Summary

Introduction

1. Every five years, Ofwat – the sector regulator – decides through a ‘price control’ how much revenue each of the 16 regional regulated water companies is allowed for providing and improving water and sewerage services in their area.
2. In England and Wales, water and wastewater services are provided by privately-owned regional monopolies. As a result, there is no competitive rivalry to drive down prices or increase service quality, and incentives to innovate or be more efficient are limited. Economic regulation exists to compensate for this absence of competition.
3. The price control determines the amount companies can recover from customer bills. This is based on the money Ofwat decides companies need to spend on supplying customers, investing in improving services, and to achieve important obligations such as reducing pollution, as well as an allowed return to investors. The price control includes mechanisms that are meant to incentivise good performance and penalise poor performance. The price control aims to protect the interests of current and future customers.
4. Any company that disagrees with Ofwat’s price control decisions – for example, because it considers it has been allowed insufficient revenue to meet its obligations – can ask for a ‘redetermination’ by the Competition and Markets Authority (**CMA**).
5. In December 2024, Ofwat published its final determinations for the 2024 price review (**PR24**) which sets price controls for each of the 16 regulated companies for the period 2025 to 2030 (with that time period referred to as asset management period 8 or **AMP8**).
6. Five of the 16 companies – Anglian Water Services Limited (**Anglian**), Northumbrian Water Limited (**Northumbrian**), South East Water Limited (**South East**), Southern Water Services Limited (**Southern**) and Wessex Water Services Limited (**Wessex**) (together the **Disputing Companies**) – rejected Ofwat’s price control decisions. The Disputing Companies supply approximately 7 million households¹ and have a combined annual revenue of around £5 billion. On 18 March 2025, Ofwat referred the price controls of these five companies to the CMA for redetermination (the **References**).

¹ The population (approximately 14 million people) served by the Disputing Companies is approximately double the number of households (7 million households).

7. In February 2025, Thames Water Utilities Limited (**Thames Water**) also rejected its price control and has since been in discussion with Ofwat and others about its position. Thames Water and Ofwat agreed that Ofwat would defer making the reference to the CMA, to allow time for these discussions. After extending the deferral twice, in July and October 2025, Ofwat agreed to Thames Water's request to defer making the reference to the CMA indefinitely.² For these References, Thames Water has been treated as a third party; our decisions do not apply to it.
8. The other ten regulated water companies accepted Ofwat's PR24 price control decisions in full. These other companies are also third parties to these References and our decisions do not apply to them.
9. The CMA is required by law to undertake these redeterminations. An independent panel of expert decision makers is appointed to take these decisions (the group). The full report of the group's final determinations, issued to Ofwat on 10 March 2026, will be published in due course, in accordance with applicable legal requirements.³ On the day of issuing the full report of our final determinations to Ofwat, we have published this summary on our [case page](#) to provide an overview of the group's redeterminations of the price controls of the five Disputing Companies.

Wider context

10. These redeterminations are taking place against a backdrop of extensive debate and plans for fundamental changes to the water sector and how it is regulated.
11. Ageing infrastructure, climate change, population growth, and environmental concerns all pose increasingly serious risks to the reliability, quality, and sustainability of water supply and wastewater treatment in the UK. The water sector faces significant challenges in managing and mitigating these impacts to ensure the needs of people, businesses, and the environment are met. Investment is needed to meet these challenges and support economic growth, placing pressure on affordability for customers. There has also been mounting concern about the financial resilience of some water companies, as well as the extent to which the management and financial structures of some companies may be properly serving the interests of current and future customers.
12. These concerns have led to several reviews of the water sector, most recently by the Independent Water Commission (**IWC**).⁴ Its final report was published in July

² [Thames Water CMA Reference Deferral Update \(18 July 2025\)](#); [CMA Reference Deferral Update \(21 October 2025\)](#).

³ The Water Industry Act 1991 requires Ofwat to send our full report to the Secretary of State. The full report of the CMA final determinations must be published no less than 14 days after it is received by the Secretary of State.

⁴ IWC (2025) [Final Report](#). See also, for example: National Audit Office (2025) [Regulating for investment and outcomes in the water sector report](#); EA (2025) [New report finds systemic water company failure and underperformance](#) (accessed 2 September 2025); and House of Lords Industry and Regulators Committee (2023) [The affluent and the effluent: cleaning up failures in water and sewage regulation](#).

2025 (**IWC Final Report**). It concluded that a fundamental ‘reset’ of the water sector is needed to restore public confidence in the sector and its regulation, to attract the investment needed to clean up the waterways of England and Wales, and to establish a framework that will meet the water demands of the future.

13. During its nine-month review, the IWC heard evidence about a very wide range of issues – from infrastructure development to the oversight of company finances. Its 88 recommendations cover a diverse range of areas, including: the strategic direction for the water system; planning; the legislative framework; regulator and regulation reform; company structures, ownership, governance and management; and infrastructure and asset health.
14. In response to the IWC Final Report, on 20 January 2026 the UK government published a White Paper which outlines its ‘action plan’ for what it describes as ‘a once in a generation opportunity’ to reform the water sector and the wider water system in England (**Defra White Paper**).⁵ Amongst other changes, the UK government intends to abolish Ofwat and create a new single regulator in England, bringing together economic regulation and the water functions of the Environment Agency (**EA**), Natural England and the Drinking Water Inspectorate (**DWI**), moving to a more ‘supervisory approach’.⁶ A Transition Plan will be published later in 2026 providing a roadmap for the transformation of the water industry regulatory framework and setting out how Ofwat will deliver the requirements of the PR24 price control during the transition to a single regulator. This will be supported by an interim Strategic Policy Statement (**SPS**) to provide direction for regulators during the transition. The UK government intends to introduce a water reform bill during this Parliament to implement these changes.⁷

Scope of our role

15. We are required to redetermine the price control decisions for the five Disputing Companies by 17 March 2026. Whilst we are aware of the broader context in which our redeterminations take place, we are required by law to take our decisions within the confines of the existing regulatory framework.
16. We are required to make our redetermination decisions in accordance with the principles that apply to Ofwat, including its various statutory duties and in light of the UK government’s existing SPS for Ofwat.⁸ However, we are not bound to follow the same approach as Ofwat. We must also consider whether new information is available that we should take into account. The redeterminations are

⁵ Defra (2026) [A new vision for water \(Defra White Paper\)](#).

⁶ ‘Supervision’ is described in the Defra White Paper as operating through teams with company-specific expertise, who are responsible for oversight and funding decisions relating to each water company.

⁷ We also note the Defra White Paper’s proposal to move from redeterminations to appeals where the regulator’s decisions are challenged, but this does not affect our task in these references.

⁸ See ‘February 2022: The government’s strategic priorities for Ofwat’ at [Strategic policy statement for Ofwat - GOV.UK](#)

highly complex, and it is not feasible or appropriate in one year to replicate all the work done by Ofwat in its price controls over four years. Our decisions also apply to only a minority – five of the 16 – of regulated water companies.

17. Fundamental decisions about the structure of the water sector in England and how it is regulated, including the implementation of the IWC Final Report's recommendations and subsequent Defra White Paper proposals, are necessarily for the UK government and UK Parliament. The IWC's terms of reference were clear that its recommendations would be for future economic regulation, not for PR24 and the current price control period. The Defra White Paper also states that the planned new guidance on priorities for the water sector is to inform the next price review in 2029 (PR29). Notwithstanding this, where relevant and appropriate – bearing in mind the limited scope and timeframe for the redeterminations – we have taken into account submissions from the Disputing Companies and Ofwat on certain matters covered in the IWC Final Report and Defra White Paper.
18. Within that context, we have sought to carry out the redeterminations fairly, efficiently and at proportionate cost within the statutory timeframes.⁹

Ofwat's PR24 price control decisions for the water sector

19. Ofwat used three basic 'building blocks' for developing the PR24 price control: (i) assessments of the companies' costs to determine their **expenditure allowances**; (ii) an **Outcomes framework** to incentivise delivery and performance and penalise non-delivery and underperformance; and (iii) an assessment of what **balance of risk and return** should attract the investment required. Together these building blocks form 'the package' of the overall price control.

Expenditure allowances

20. In its PR24 final determinations (Ofwat's **PR24 FD**), Ofwat increased expenditure allowances for the water sector substantially to £104 billion (compared to £62 billion in the previous price control, PR19).¹⁰ This included allowing around four times the amount of expenditure on improvement projects (known as 'enhancement expenditure') than in the PR19 price control. Ofwat's view was that a step change in investment was required, largely to meet new legal requirements (for example, in water resource management plans and the environmental programmes of the EA and the DWI).¹¹

⁹ This objective is described as the CMA's 'overriding objective' in [Competition and Markets Authority Water Reference Rules \(CMA204\)](#), December 2024 (**Rules**), Rule 4.1. The Rules set a framework for how we conduct water references.

¹⁰ Both amounts in 2022/23 prices. The previous price control period was 2020–2025.

¹¹ Ofwat (2025) [PR24 final determinations: sector summary - republished 12 May 2025](#), pp3–5 and 9. Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p3; Ofwat (2025) [PR24 final determinations: Our approach](#), pp29–30; and Ofwat (2025) [PR24 final determinations – City briefing](#), p7.

Outcomes framework

21. Alongside the increased funding provided to the companies in Ofwat's PR24 FD, Ofwat made significant changes to its framework of performance targets, incentives, penalties and clawback mechanisms (known as the 'Outcomes framework'). Under the Outcomes framework, companies return money to customers if the companies do not provide defined deliverables or achieve performance targets, but can earn more money if they outperform.
22. Ofwat's PR24 FD increased the specificity of required outputs, made greater use of common (rather than bespoke) performance commitments for areas important to all customers, and imposed stronger incentives and penalties to drive improvements in performance. It made these changes to help ensure that money from the increased customer bills is used to deliver the right outcomes for customers and that customers do not pay for the same thing twice because allowances in previous years have not been spent appropriately.

Balance of risk and return

23. Companies require money upfront to fund investment, which is provided by debt and equity investors. Investors expect to earn a return which reflects the risk of their investment – otherwise they may invest their money elsewhere. Ofwat's PR24 FD provided for this return through an 'allowed rate of return'. This is not guaranteed and the actual return that companies receive depends on their performance.
24. Ofwat's PR24 FD included a real (ie excluding inflation) allowed rate of return of 4.03%. Ofwat also considered the appropriate balance of risk and return, ie how much potential for variation in investor returns is reasonable, given the risks the investors are taking. This included introducing specific mechanisms to limit the overall scope for returns to deviate from the allowed level.
25. The decisions Ofwat made on the three elements described above – expenditure allowances, the Outcomes framework and the management of the risk and return to investors – determined its PR24 price control. Ofwat's PR24 FD would have resulted in industry average increases in annual bills for customers of water and wastewater companies of £31 per year (before inflation) between 2024/25 and 2029-2030.¹²

¹² Ofwat (2024) [What the 2024 price review means for water customers](#).

Reasons for Disputing Companies rejecting Ofwat's price control decisions

26. The Disputing Companies asked for further increases in revenue of £2.7 billion in total on top of the £26.6 billion allowed to them by Ofwat,¹³ as well as changes to the Outcomes framework. While Anglian, Northumbrian, South East, Southern and Wessex each provided extensive and different reasons for rejecting Ofwat's price control decisions, some common themes in their arguments were that Ofwat had:
- (a) provided insufficient funding for maintaining and replacing the water companies' pipes and other assets;
 - (b) made mistakes in what it expected allowances for day-to-day expenditure to fund;
 - (c) set the allowed rate of return (the returns to investors) too low; and
 - (d) not appropriately balanced the risk and return for investors, including in its Outcomes framework, so that the water companies would not be able to raise finance for their activities.

Our approach to the redeterminations

27. In a redetermination, the CMA can look at all aspects of the price control, not necessarily just those issues raised by the Disputing Companies. We are mindful of Disputing Companies' incentives to selectively raise areas where Ofwat's price control decisions might be unfavourable to them. However, a redetermination is not a 'one-way bet' – the CMA may choose to take a different approach to Ofwat, resulting in lower allowances or returns (ie it is not necessarily the case that a Disputing Company will benefit from a redetermination).
28. We set out our proposed approach to the redeterminations of the PR24 price controls (including what we were prioritising and deprioritising) on 28 May 2025.¹⁴ The main parties and third parties had the opportunity to comment on our approach in consultations on this approach document, our provisional determinations (published on 9 October 2025) and our base cost modelling working paper (published on 18 December 2025). Our final decisions reflect new data where practicable and appropriate (including more recent financial market data and some actual performance data for 2024-2025). We have also considered Ofwat's consultations and guidance introduced since our provisional determinations.

¹³ In Ofwat's PR24 FD, before any subsequent adjustment by Ofwat.

¹⁴ CMA (2025) [Water PR24 Redetermination References: Approach and Prioritisation](#).

29. We have reviewed extensive evidence from the Disputing Companies, Ofwat and over 50 third parties including the Consumer Council for Water (**CCW**), representatives of investors, environmental groups, other consumer groups, business and domestic customers, and other water companies which have accepted Ofwat's PR24 price control decisions.
30. We carefully considered the interests of customers in our approach – both in terms of the levels of bills and affordability and in relation to critical outcomes (such as a reliable water supply and reduced leakage), now and in future. We scrutinised the evidence to decide if the spending proposed is necessary to deliver the right outcomes for customers, and whether the amount requested represented efficient costs (so customers do not pay for inefficiency or more than is needed). We have looked carefully at the efficiency challenges within the price control for the Disputing Companies: to encourage less efficient Disputing Companies to catch up with their more efficient peers ('catch up efficiency'); to reflect sector wide general expected efficiency improvements (known as the 'frontier shift'); and to adjust estimated expenditure for projects where evidence of efficient costs is lacking. We have also sought to ensure that customers genuinely benefit from any bill increases they are bearing and are not funding improvements for which they have already paid.
31. We have sought to ensure that the Disputing Companies have enough funding for what they are expected – often legally mandated – to achieve. We also sought to ensure that returns to investors reflect the risk in the PR24 price control as a whole, so that the companies are able to raise the substantial finance required for investment at a time of challenges and instability in the water sector. We have considered the impact of our decisions for each Disputing Company individually, including ensuring that each company is expected to remain financeable, provided its capital structure is in line with what we consider to be efficient.
32. We have reached each Disputing Company's redetermination in accordance with the statutory principles that apply to Ofwat, including various statutory duties. Our decisions reflect our judgement on how these principles should be balanced. We have also considered the overall price control in the round for each Disputing Company and decided that each is consistent with the relevant statutory principles.

Overview of our decisions

33. The overall impact of our decisions on Disputing Companies' allowed revenue is set out in Table 1 below.

Table 1: Impact of our redeterminations on total allowed revenue

Disputing Company	Ofwat's PR24 FD AMP8 allowed revenue	Disputing company statement of case AMP8 allowed revenue			Ofwat's updated PR24 AMP8 allowed revenue *	CMA redeterminations AMP8 allowed revenue		
		AMP8 allowed revenue	Change from Ofwat's PR24 FD AMP8 allowed revenue	Change from Ofwat's PR24 FD AMP8 allowed revenue		AMP8 allowed revenue	Change from Ofwat's updated PR24 AMP8 allowed revenue **	Change from Ofwat's updated PR24 AMP8 allowed revenue **
	£m	£m	£m	%	£m	£m	£m	%
Anglian	£9,634	£10,552	£918	9.5%	£9,647	£9,797	£150	1.6%
Northumbrian	£5,205	£5,495	£290	5.6%	£5,199	£5,190	-\$9	-0.2%
South East†	£1,679	£1,960	£282	16.8%	£1,679	£1,740	£62	3.7%
Southern	£6,466	£7,416	£949	14.7%	£6,491	£6,646	£155	2.4%
Wessex	£3,632	£3,875	£243	6.7%	£3,628	£3,734	£106	2.9%

Source: CMA analysis; 'Ofwat's PR24 FD AMP8 allowed revenue' from Ofwat (2024) [PR24 Key Dataset 2 Costs Past Delivery and Risk and Return data](#), 'Allowed Revenue' sheet (in 2022/23 CPIH real prices); and 'Disputing company statement of case [...]Change from Ofwat's PR24 FD AMP8 allowed revenue' from Disputing Companies responses to Disputing Companies RFI08.

Note: £ million, 2022-2023 CPIH real prices.

* 'Ofwat's updated PR24 AMP8 allowed revenue' includes adjustments which Ofwat has made to the Disputing Companies' allowances following its PR24 FD.

** The final two columns ('Change from Ofwat's updated PR24 AMP8 allowed revenue') show the difference between the CMA redeterminations AMP8 allowed revenue and 'Ofwat's updated PR24 AMP8 allowed revenue'.

† South East is a water only company (WoC); each of the other four Disputing Companies is a water and sewerage company (WaSC).

34. Our redeterminations allow a total increase of £463 million in confirmed revenue for the Disputing Companies (17% of what they collectively sought) compared with Ofwat's PR24 FD (adjusted for updates it has made to its decision since December 2024).¹⁵ In addition, we have included six enhancement schemes in 'gated' processes, where additional allowances can be released during the price control when required funding becomes clearer.¹⁶
35. The following factors have together resulted in the overall changes in confirmed allowances for the Disputing Companies, compared with Ofwat's PR24 FD.
- (a) We have slightly reduced base expenditure allowances by £32 million compared to Ofwat's PR24 FD, from £14,524 million to £14,492 million. The reduction reflects both the CMA's changes to base cost modelling and decisions on cost adjustment claims for individual Disputing Companies.

¹⁵ Ofwat adjusts companies' price controls through its 'blind year reconciliation' process, which it performs following the end of each AMP, to account for the difference between companies' actual performance and the forecast performance included in its final determinations once the outturn data for the final year of the previous AMP is available. [Blind year for 2024-25 - final determinations - Ofwat](#).

¹⁶ Anglian, Southern and South East each have one scheme, and Northumbrian has three schemes, included in 'gated' processes.

These reductions in base funding slightly reduce allowed revenues compared to Ofwat's PR24 FD.

- (b) We have increased the Disputing Companies' enhancement expenditure allowances by a total of £289 million compared to Ofwat's PR24 FD. The increase reflects the CMA's changes to enhancement cost modelling and individual assessment of Disputing Companies' enhancement claims. Some of the increase in enhancement allowances is reflected in higher allowed revenues in this price control.¹⁷
- (c) We have increased the allowed rate of return from 4.03% to 4.20%. The increase in the allowed rate of return overall accounts for over half of the revenue increase compared to Ofwat's PR24 FD.¹⁸ The increase is driven by a combination of market movements (primarily the increases in interest rates) since Ofwat set the allowed return, together with some targeted methodology changes.

36. Alongside these revised allowances, we have maintained clear penalties and incentives which are intended, within the confines of the existing regulatory system, to drive companies to deliver on time and to budget.

37. An indication of what the confirmed allowances would mean for average customer bills for each Disputing Company is laid out in Table 2 below.

Table 2: Indicative impact of our redeterminations on average annual customer bills*

Disputing Company	Ofwat's PR24 FD			Disputing Company statement of case average bill for AMP8		Ofwat's updated PR24 AMP8 bills**	CMA redeterminations AMP8 average bill	
	Company average bill 2024/25 (final year of AMP7)	Company average bill for AMP8	Change from final year of AMP7	Company average bill for AMP8	Change from Ofwat's PR24 FD AMP8 average bill		Company average bill for AMP8	Change from Ofwat's updated PR24 AMP8 average bill ***
	£	£	%	£	%	£	£	%
Anglian	£491	£591	20.4%	£649	9.8%	£592	£602	1.7%
Northumbrian	£422	£488	15.6%	£515	5.5%	£488	£488	0.0%
South East†	£232	£274	18.1%	£322	17.5%	£274	£284	3.7%
Southern	£420	£620	47.6%	£710	14.5%	£626	£641	2.5%

¹⁷ More of enhancement expenditure is recovered over several price controls so changes in enhancement expenditure will have a smaller impact on allowed revenues in this price control, compared with changes in base expenditure.

¹⁸ The impact of the increase in the allowed return on revenues is estimated after applying the changes in expenditure allowances.

Wessex	£508	£594	16.9%	£642	8.0%	£594	£614	3.3%

Source: CMA analysis (for 'CMA redeterminations [...] Company average bill for AMP8'); Ofwat's PR24 FD financial models for 'Ofwat's PR24 FD'; and Disputing Companies responses to Disputing Companies RFI07 (which requested £ figures in 2022-2023 CPIH real prices as per Disputing Companies' statements of case) for all other columns.

* These are indicative forecasts of average bills. Actual bills will vary according to, for example, average customer water consumption and company performance. AMP7 is asset management period 7, a 5-year regulatory period used by Ofwat to set price controls for water companies, from 2020 to 2025.

** 'Ofwat's updated PR24 AMP8 bills' includes adjustments which Ofwat has made to the Disputing Companies' bills following its PR24 FD.

*** 'Change from Ofwat's updated PR24 AMP8 average bill' shows the difference between the CMA redeterminations AMP8 average bill and 'Ofwat's updated PR24 AMP8' average bill).

† South East is a WoC; each of the other four Disputing Companies is a WaSC. Bills for South East therefore do not include the cost of wastewater services as it is a water-only company.

38. Ofwat's PR24 FD would have been expected to result in an increase in bills for customers of the Disputing Companies of 24% on average compared with 2024-2025. Our redeterminations result in further increases of 2.2% on average (although this varies across the Disputing Companies).
39. We understand that household budgets are under pressure and that our decisions will result in a further increase in customer bills. However, we have concluded that some additional allowances are needed by the Disputing Companies. We consider that the allowances in our redeterminations will enable the Disputing Companies to attract investment and deliver the improvements in standards and performance that current and future customers need. The allowances will also allow them to meet their legal obligations, including those within water resource management plans and those imposed by regulators for drinking water quality and environmental matters.

Decisions on each building block

40. We used the same building blocks in our redeterminations as for Ofwat's price control (as described in paragraphs 19 to 25 above). The sections below provide more detail on what we have decided for each building block.

Expenditure allowances

41. We looked at the amount of money that the Disputing Companies had been allowed by Ofwat for total expenditure. This consists of base costs and enhancement costs. **Base costs** are routine, year-on-year costs, which companies incur in the normal running of the business to provide a base level of service to customers and to maintain assets, such as water treatment works and water mains. **Enhancement costs** relate to expenditure required to achieve a step change in service levels, for example to meet new requirements or allow for growth in demand for water.
42. In its PR24 FD, Ofwat substantially increased industry base allowances by 19% compared to PR19, and by 7% more than was spent by all the water companies in

the five years prior to its PR24 FD. However, the Disputing Companies argued that the **base cost allowances** in Ofwat's PR24 FD were insufficient to enable them to provide services and maintain their asset base.

43. As a starting point, Ofwat used a complex modelling approach to calculate the majority of base cost allowances for all companies. The purpose of this modelling was to predict efficient costs for companies to fund their day-to-day activities. Ofwat then made some adjustments where the particular circumstances of a company were not considered to be properly reflected in the modelled costs.
44. The Disputing Companies raised various concerns with Ofwat's models, arguing that the outputs of Ofwat's base cost models did not accurately represent the costs they would incur. The Disputing Companies also asked for additional allowances, which they argued were justified by their specific circumstances, and objected to the efficiency challenges imposed.
45. Having carefully considered different possible approaches to assessing base cost allowances, and taking into account the Disputing Companies' concerns with Ofwat's models, we decided to apply a single modelling framework. Our approach results in simpler, more accurate models that better explain companies' costs. We consider this provides an improved basis for setting base cost allowances for the Disputing Companies. Our models incorporate most of the cost drivers used by Ofwat and some, though not all, of the cost drivers put forward by the Disputing Companies. Ofwat was supportive of our use of this modelling approach.
46. Following concerns about our modelling raised by the Disputing Companies and certain third parties in response to our provisional determinations, we improved and refined our approach. We consulted on this adjusted approach through our base costs modelling working paper. After considering all the responses to our provisional determinations and working paper, we remain of the view that our modelling approach is appropriate for these redeterminations, in particular given our approach's ability to better explain companies' cost data compared to Ofwat's models.
47. We are aware of the current debate – reflected in the IWC Final Report and Defra White Paper – on how base costs should be assessed in future price controls (including with respect to the extent of reliance on econometric modelling and the development of appropriate models). In future, the approach to setting base cost allowances may be revised to reflect broader changes in the regulatory framework. However, the proposals in the Defra White Paper are aimed at future price controls. We are required to conduct these redeterminations under the current regulatory framework and within the confines of the statutory process. For the reasons explained above, we have adopted the most appropriate approach to assessing base costs for the Disputing Companies within the context of these redeterminations.

48. We considered what level of efficiency challenge should be applied to base costs included in the price control, to encourage inefficient companies to catch up with their more efficient peers. In its PR24 FD, Ofwat considered companies should catch up to the company performing at the upper quartile of the water sector (ie three quarters of the way up the range from least to most efficient). We decided to also set an upper quartile efficiency challenge, although our modelling approach results in a higher catch-up efficiency challenge in absolute terms than that in Ofwat's PR24 FD. Our judgement, based on the available evidence, is that an upper quartile challenge appropriately protects customers from the risk of inefficiency in the circumstances of this price control without putting at risk the resilience or quality of water supplies and wastewater services.
49. We also assessed a number of requests for additional funding where the Disputing Companies claimed for costs that they considered were not reflected in the base cost modelling. We adjusted the base cost models explicitly to capture two of the cost drivers underpinning these claims: differences in regional wages; and energy costs. We also changed the assessment of 'what base buys', which affects the allowance granted to companies to improve asset health. Of the remaining seven claims, we have decided to allow three claims for: coastal wastewater processing; the costs of operating smaller water treatment works; and Anglian replacing failed boundary boxes (which house customers' water meters). We rejected four base claims, as we considered that the Disputing Companies provided insufficient evidence to support them, for example that they were needed or that the estimated costs were efficient.
50. There has been considerable debate about whether the level of funding in previous price controls has achieved the appropriate balance between keeping bills low and providing sufficient funding to maintain assets and improve performance. While we received submissions that more investment is needed, there is currently a lack of robust evidence about the condition of water companies' assets and the level of investment required.
51. We agree with the Defra White Paper that further work is urgently needed to assess the condition of water infrastructure and ensure that companies have sufficient funding to maintain and improve it going forward. We also note Ofwat's 'road map' on asset health and process that will allow all companies to access additional allowances in AMP8 if there is evidence this is needed. In our view, it is right that this issue is dealt with through industry-wide policy work, outside of these redeterminations, including those mechanisms recently introduced by Ofwat. Given this context, and after carefully considering the available evidence as well as these wider mechanisms, we are satisfied that our approach to base costs does not result in a material risk that companies will be unable to fund critical investments over AMP8.

52. Ofwat also used models to partly determine **enhancement cost allowances**. These models compared costs of similar schemes across the regulated companies to estimate the costs that a comparatively efficient company would be expected to incur for a particular type of project. If a proposed enhancement investment did not lend itself to this type of benchmarking, Ofwat carried out more detailed investigations of the relevant scheme. In deciding what costs to allow, Ofwat took into account what it expected to be incurred by an efficient company.
53. The Disputing Companies argued that the outputs of Ofwat's modelling did not give a realistic estimate of funding required for their specific circumstances. We have assessed 28 requests from Disputing Companies to increase allowances for planned enhancement schemes and projects which Ofwat had said in its PR24 FD were either unnecessary, already funded within base cost allowances expenditure or the previous price control, or for which estimated costs were too high and inefficient.
54. As with base costs, we have improved the modelling of certain enhancement scheme costs. This has changed some modelled allowances, for example for phosphorus removal schemes. We also looked in more detail at the plans and projected costs of several schemes where higher allowances were requested. For some of these schemes we decided that there was insufficient evidence that more funding was appropriate. In other cases, we have provided more funding, but applied an 'efficiency challenge', reducing requested cost allowances by 10 to 30%. We did this where we were not satisfied that the requested costs represented costs that would be incurred by an efficient company ('efficient costs').
55. Where we have allowed more funding for enhancements, this is to deliver on issues that matter to customers. Examples include funding to: reduce leakage, prevent water supply interruptions that can leave customers without water for prolonged periods (as recently occurred in the South East region), improve water quality, address pollution, and prevent environmental harm and safeguard aquatic ecosystems.
56. For some enhancement schemes, we have decided that the amount of money that would be needed is too uncertain at this point to provide a specific cost allowance. Instead, we decided that companies should use existing Ofwat mechanisms (such as the 'large scheme gated process') where companies can apply for funding as costs become clearer. This reduces the enhancement cost allowance at this point but, if the scheme progresses and the company can evidence that the funding is needed, revised allowances can be claimed later. The impact of this varies by Disputing Company. For example, we have added Northumbrian's Suffolk strategic network water supply interconnector scheme to the large scheme gated process, which reduces its immediate allowance by £147 million, but allows Northumbrian to access funding for this scheme in AMP8 once it has greater certainty over cost and timings.

57. In its PR24 FD, Ofwat also imposed a **frontier shift** on all companies. The frontier shift reflects the rate of efficiency improvements, across all expenditure allowances, that even the most efficient companies in the industry could be expected to achieve – and would be expected to do so in a competitive industry.
58. After refining our provisional determination approach through traditional productivity analysis and taking into account various relevant factors, we decided to set the frontier shift at 0.7% (which is lower than the 1.0% frontier shift set by Ofwat and in the range of 0.5% to 0.8% requested by the Disputing Companies in their statements of case). However, we have continued to apply the frontier shift to all expenditure allowances, except for costs that were mostly outside of company control and self-financing costs.
59. Taking account of the combined impact of the frontier shift and the catch-up efficiency challenge in our modelling, we carefully considered the risk of underfunding the Disputing Companies, which could result in the companies overspending their allowances or customers not receiving a high quality and resilient water supply. On the basis of the available evidence, we decided that the overall efficiency challenge is reasonable and does not undermine the ability of the Disputing Companies to carry out their functions and meet their obligations.
60. Taken together, our changes to expenditure allowances result in slightly lower confirmed allowances for one Disputing Company (Northumbrian), and higher allowances for the others (Anglian, South East, Southern and Wessex). Once additional funding in uncertainty mechanisms is taken into account, all Disputing Companies are likely to have higher allowances.

Outcomes framework

61. The Disputing Companies argued that some target performance levels in Ofwat's PR24 FD were too stretching and unrealistic, and that what they regarded as inevitable and severe penalties would reduce their ability to make required improvements in performance. Overall, they argued that companies were subject to unacceptable downside risks, given the impact that likely penalties would have on returns to investors.
62. It is critical that companies have sufficient incentives to deliver the projects and outcomes for which they have been funded, and that they are held to account when they do not. Ofwat seeks to achieve this through its Outcomes framework. We note the criticisms of this approach in the IWC Final Report and the Defra White Paper. However, the proposed changes are aimed at future price controls. As noted above, we are required to conduct these redeterminations under the current regulatory framework and within the confines of the statutory process.

63. In this context, we have made some limited adjustments to certain performance targets and incentive rates within Ofwat's Outcomes framework, either because we consider that Ofwat did not use appropriate data or that the way the penalties were calculated would disincentivise efforts to improve performance. We have also in some cases amended penalty mechanisms to reflect new allowances or protect customers from under-delivery, and also where we considered it appropriate to reflect new performance data.
64. Our analysis indicates that the overall impact of our decisions is to slightly lower the risk of underperformance for the Disputing Companies in some areas. However, we retain important drivers to improve performance and (where necessary) penalise poor performance in areas that are critical to current and future customers. This includes storm overflows (which lead to pollution), external sewer flooding and water supply interruptions.
65. We also looked at the penalties for failure to deliver agreed investments on time. The Disputing Companies claimed that these penalties introduce excessive risk. We do not share that view. We consider these penalties important to help ensure (as far as possible within the current regime) that companies deliver the new infrastructure that customers pay for. We also took into account new guidance issued by Ofwat, which improves clarity for the companies on how such penalties may be applied.

Balance of risk and return

66. The allowed rate of return for investors is a key component for ensuring that companies can access the finance they need to deliver the outcomes for current and future customers. In deciding on the appropriate methodology and assessing the available evidence, we kept in mind the following considerations.
- (a) **Maintaining consistency:** Consistency and predictability over time of regulatory cost of capital decisions are likely to have a positive impact on the overall attractiveness of UK water infrastructure to investors. This, in turn, is expected to benefit customers by lowering the costs of financing investment needed to deliver services and improvements.
 - (b) **Reducing regulatory complexity:** While the cost of capital methodology should be theoretically robust, it also needs to be transparent and practicable to implement.
 - (c) **Recognising uncertainty:** There is significant uncertainty around the expected cost of capital. It is important to consider the evidence in the round, and it is generally desirable to limit the number of more subjective adjustments to the underlying market data.

67. We acknowledge the growing calls for consistency in cost of capital methodologies and regulators' efforts through the UK Regulators Network to achieve this, as well as the precedent value afforded by stakeholders to previous CMA decisions on cost of capital. While maintaining consistency is important, approaches can evolve over time, in response to market conditions and new evidence, without undermining the desire for consistency. Our approach in these redeterminations has been to appropriately balance the consistency considerations with the principles we have adopted of reducing regulatory complexity and recognising uncertainty, as set out above.
68. We used the Capital Asset Pricing Model to estimate the allowed return to equity investors, and we considered each of the parameters of the Capital Asset Pricing Model in turn, using updated market data in our calculations.
69. A combination of market movements (primarily the increases in interest rates) since Ofwat set the allowed return, together with some targeted methodology changes, has meant that our decision has led to a higher allowed return on equity compared with Ofwat (an increase from 5.10% to 5.70%). The increase has been partially offset by a reduction in the real allowed cost of debt (from 3.15% to 2.97%), where we have taken into account changes in expected inflation.
70. Overall, we have increased the allowed return from 4.03% to 4.20%. Around half of this change since Ofwat's PR24 FD results from external market movements (primarily the increases in interest rates) since Ofwat's decision in December 2024, with the rest stemming from targeted methodological changes (the allowed rate of return is lower than in our provisional determinations in October 2025 – this is almost entirely as a result of subsequent financial market movements).
71. As well as looking at individual elements of the price control, we considered the balance of risk and return in the overall price control for each Disputing Company.
72. The Disputing Companies submitted analysis suggesting that Ofwat's PR24 FD as a whole would be likely to result in a significantly lower equity return than the specified allowed return – particularly given the downside risks of underperformance and subsequent penalties.
73. We have reviewed this analysis and consider that the assumptions are not consistent with the purpose of modelling the risk faced by an efficient company. We therefore do not place any weight on it. Overall, we consider that our redeterminations result in balanced price controls or a 'fair bet', in the sense that the risks for an efficient company of earning more or less than the specified allowed return are broadly similar.
74. The Disputing Companies also asked us to review two mechanisms introduced by Ofwat in its PR24 FD to manage the extent of downside and upside variation of

equity returns for investors – the Aggregate Sharing Mechanism (**ASM**) and the Outturn Adjustment Mechanism (**OAM**). We have concluded that, taken together, the ASM and OAM provide a sufficient level of downside risk protection and therefore both should be retained in their current form.

75. For each Disputing Company, we considered whether our decisions will enable them to finance the proper carrying out of their functions. The key aspect of this is ensuring that the price control allows for a reasonable rate of return, and we are satisfied that the allowed return we estimate is consistent with this. In line with standard regulatory practice, we have also performed financial ratio analysis, including in plausible downside scenarios. We are satisfied that each of the Disputing Companies, under the notional capital structure, can reasonably expect to maintain an investment grade credit rating over the price control.

1. Introduction

- 1.1 Every five years the water sector regulator, the Office of the Water Services Regulation Authority (**Ofwat**), decides how much revenue each water only company (**WoC**) and water and sewerage company (**WaSC**)¹⁹ in England and Wales is allowed for providing and improving water and sewerage services.²⁰ Water companies that disagree with Ofwat's price control decisions can ask the Competition and Markets Authority (the **CMA**) to review and form conclusions on the price control decisions for those companies (known as 'redeterminations').
- 1.2 On 19 December 2024, Ofwat gave notice to each of the water companies in England and Wales of its price control determinations in relation to them for the five-year period from 1 April 2025 to 31 March 2030 (Ofwat's **PR24 FD**).²¹
- 1.3 On 18 March 2025, Ofwat confirmed to the CMA that five companies – Anglian Water Services Limited (**Anglian**), Northumbrian Water Limited (**Northumbrian**), South East Water Limited (**South East**), Southern Water Services Limited (**Southern**) and Wessex Water Services Limited (**Wessex**) (each a **Disputing Company** and together, the **Disputing Companies**) – had rejected Ofwat's PR24 FD and required Ofwat to refer these disputed determinations to the CMA. As required by section 12(3)(a) of the Water Industry Act 1991 (the **Act**), Ofwat referred the disputed determinations to the CMA (the **References**).²²
- 1.4 The CMA was required to report on and redetermine the disputed determinations within a period of 6 months from 18 March 2025. On 1 April 2025, following a request from the CMA, Ofwat decided that, given the nature and scale of work involved in 5 water industry price controls and the associated procedural complexity, there were special reasons why the reports could not be made within the period specified in the References, and so extended the period by an additional 6 months.²³ The statutory deadline for the CMA's final determinations is therefore 17 March 2026.
- 1.5 We have conducted our work in accordance with the legislative requirements as well as the procedural rules and guidance for water references published in 2024.²⁴ The Chair of the CMA appointed members of the CMA Panel to form a group to conduct the redetermination of the References.²⁵
- 1.6 Further details of the conduct of our work are set out in Appendix A.

¹⁹ WaSCs are sometimes referred to as 'water and wastewater' companies.

²⁰ Unless otherwise specified, throughout this report we use 'water company' to refer to both WoCs and WaSCs.

²¹ [Ofwat PR24 Final determinations](#) (accessed 26 February 2026).

²² Ofwat's notices of reference are published on the CMA's case page [here](#).

²³ Ofwat's notice of extension is published on the CMA's case page [here](#).

²⁴ [Competition and Markets Authority Water Reference Rules \(CMA204\)](#), December 2024 (**Rules**); [Competition and Markets Authority Water Reference Guide \(CMA205\)](#), December 2024 (**Guide**).

²⁵ Rules ([CMA204](#)), Rule 5.1.

- 1.7 The CMA's provisional determinations (**CMA PR24 PD**) were published on 9 October 2025. The main purpose of the CMA PR24 PD was to enable Ofwat, the Disputing Companies and any third parties to comment on the CMA's reasoning and accuracy of arguments, as well as the factual accuracy of the matters in the CMA PR24 PD and any key issues in need of clarification.²⁶
- 1.8 The CMA published a base cost modelling working paper (the **Working Paper**) on 18 December 2025 for further consultation with Ofwat, the Disputing Companies and third parties.
- 1.9 This report presents our final determinations for the Disputing Companies (**CMA PR24 FD**). It covers our conclusions on the questions or other matters contained in the redetermination references, an explanation for our conclusions and our determination on costs.²⁷

²⁶ Guide ([CMA205](#)), paragraph 3.30.

²⁷ Rules ([CMA204](#)), Rule 12.4.

2. Background

- 2.1 This chapter provides information on the background to our redeterminations, covering:
- (a) the context, including an overview of challenges facing the water sector, how the water sector is regulated, and recent reviews of the sector;
 - (b) customer interests, including surveys on affordability challenges for customers, issues relating to bills and customer priorities;
 - (c) an overview of Ofwat's PR24 FD; and
 - (d) the five Disputing Companies.

The context for our redeterminations

- 2.2 Ofwat's website includes a detailed overview of the water sector.²⁸ We do not repeat similar background material here but note some contextual points that are particularly relevant to our PR24 redeterminations.

Challenges facing the water sector

- 2.3 These redeterminations are taking place during a period of extensive debate and potential change for the water sector and how it is regulated. Ageing infrastructure, climate change, population growth and environmental concerns all pose increasingly serious risks to the reliability, quality, and sustainability of water supply and wastewater treatment in the UK. The water sector faces significant challenges in managing and mitigating these impacts to ensure the needs of people, businesses, and the environment are met. Investment is needed to meet these challenges and support economic growth. While customers may value improvements arising from increased investment by water companies, funding that investment through higher water bills places pressure on affordability. There has also been mounting concern about the financial resilience of some water companies, as well as the extent to which the management and financial structures of some water companies may be properly serving the interests of current and future customers.

Regulation of the water sector

- 2.4 Ofwat is currently responsible for the economic regulation of the water sector in England and Wales which includes the setting of price controls for a five-year period known as the asset management period (**AMP**). Other relevant regulatory

²⁸ [Water sector overview](#) (accessed 26 February 2026).

bodies include the Environment Agency (the **EA**) and its Welsh counterpart Natural Resources Wales, which are currently responsible for environmental regulation. Additionally, the Drinking Water Inspectorate (the **DWI**) is currently responsible for monitoring the quality of drinking water and ensuring that the water supply is safe to drink and meets the standards set in the relevant water quality regulations. Further background information about economic regulation of the water sector in England and Wales can be found in Appendix B.

Reviews of the water sector

- 2.5 The regulation of the water sector has been examined by a number of bodies including the National Audit Office (**NAO**)²⁹ and most recently the Independent Water Commission (**IWC**), led by Sir Jon Cunliffe. In the IWC's final report (**IWC Final Report**), published in July 2025, it concluded that a fundamental reset of the water sector is needed to restore public confidence in the sector and its regulation, to attract the investment needed to clean up the waterways of England and Wales, and to establish a framework that will meet the water demands of the future.³⁰ One of the IWC's recommendations was that the UK government should establish a new integrated regulator in England.³¹ The UK government subsequently indicated that it intends to abolish Ofwat and create a new single regulator, bringing together economic regulation and the water functions of the EA, Natural England and the DWI.³² The UK government published a white paper in January 2026 (**Defra White Paper**), formalising its response to the IWC's recommendations.³³
- 2.6 The IWC was clear that it had not made recommendations to reopen the PR24 process, and that all of its recommendations were for government or a future integrated regulator.³⁴ Therefore, while we are aware of the context in which our redeterminations take place, we are required by law to take our decisions within the confines of the existing regulatory framework. We are required to make these decisions in accordance with the principles that apply to Ofwat. Some of our decisions nonetheless align with IWC recommendations and the Defra White Paper.

²⁹ NAO (2025) [Regulating for investment and outcomes in the water sector report](#).

³⁰ IWC (2025) [Final Report \(IWC Final Report\)](#)

³¹ [IWC Final Report](#), p165, Recommendation 16.

³² Defra (2025) [Ofwat to be abolished in biggest overhaul of water since privatisation](#) (accessed 26 February 2026); Defra (2026) [A New Vision for Water \(Defra White Paper\)](#) (accessed 26 February 2026).

³³ [Defra White Paper](#) (accessed 26 February 2026).

³⁴ [IWC Final Report](#), p201, paragraph 448.

Customer interests

Introduction

- 2.7 Throughout our redeterminations we have been conscious of the interests of customers. We sought submissions from third parties and engaged with the Consumer Council for Water (**CCW**), including through its own dedicated third-party hearing.³⁵ We also sought and considered submissions from third parties and engaged with other consumer bodies such as Citizens Advice.³⁶ We have summarised third party submissions as appropriate within the various chapters of this report.
- 2.8 We have looked at the level of customer bills, past and present, recognising that any change to the Ofwat price control would likely affect customer bills. As set out below, we have also considered the implications of evidence collected from customers on affordability of water bills and customer views on the water companies' business plans and priorities.

Customer bills

- 2.9 We have seen evidence and submissions indicating a trend for customers' water bills to have decreased, in real terms, over the past few AMPs – as shown for example in Figure 2.1 below. The IWC suggested that there was underinvestment over this period and considered the reasons for this trend.³⁷
- 2.10 On issuing its PR24 FD, Ofwat stated the average household bills for customers of all WaSCs would rise by £31 per year between 2024-2025 and 2029-2030 before inflation.³⁸ This reflects Ofwat's stated intention that its PR24 FD would permit a step up in investment to deliver significant improvements for customers and the environment.³⁹ However, CCW noted that its customer research shows that while customers may value improvements arising from increased investment, many struggle with the bills.⁴⁰

³⁵ CCW is a statutory consumer organisation that represents household and non-household water and sewerage consumers in England and Wales.

³⁶ For example, Citizens Advice (2025) [Third Party Submission on the Water PR24 References](#).

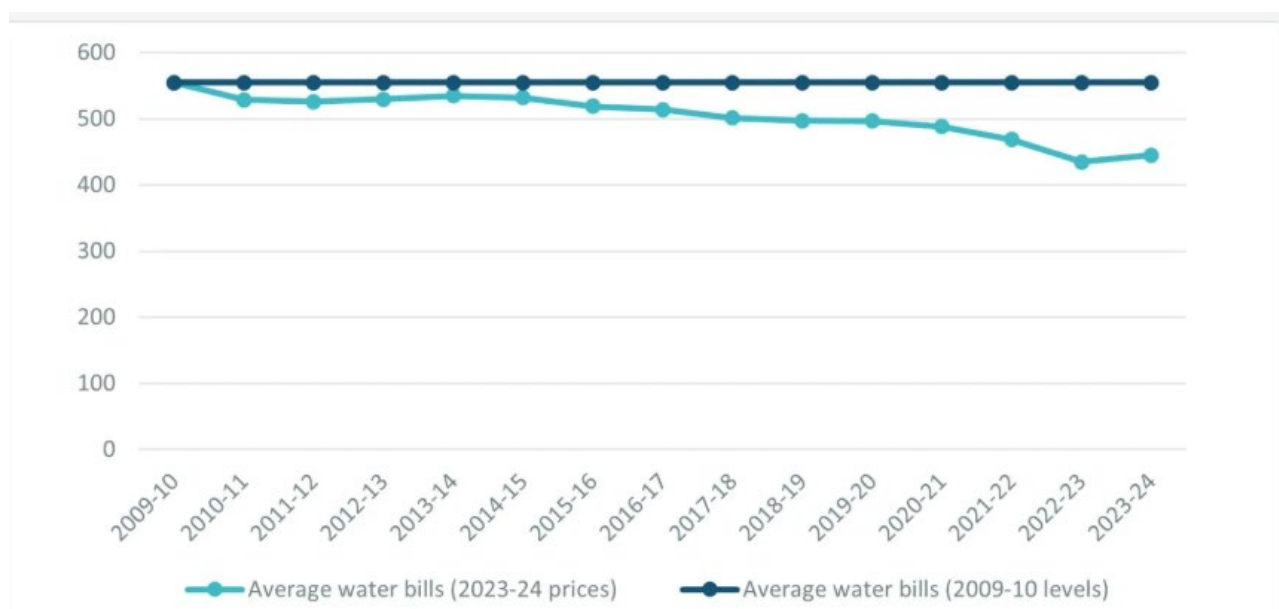
³⁷ [IWC Final Report](#), pp201–204.

³⁸ Ofwat (2025) [Our final determinations for the 2024 price review – Sector summary](#), p21. The price control period running from 2025 to 2030 is the eighth since privatisation, so is referred to as **AMP8**.

³⁹ Ofwat (2024) [Ofwat approves £104bn upgrade to accelerate delivery of cleaner rivers and seas and secure long-term drinking water supplies for customers](#) (accessed 26 February 2026).

⁴⁰ CCW (2025) [Third party response to the CMA PR24 Approach document](#), paragraph 3.4.

Figure 2.1: Water UK graph of average water and wastewater bills in real terms (£, 2023/24 prices)



Source: Water UK [The real \(terms\) story of historic water bills](#) (accessed 26 February 2026). In line with the approach Ofwat takes to setting price limits, Water UK used the retail prices index (RPI) prior to 2020, and the consumer price index with housing costs (CPIH) for subsequent years.

2.11 The Disputing Companies provided data indicating that the additional requests made in their statements of case⁴¹ would add in total an average of 11%, or £54, to customer bills for AMP8 relative to bills based on Ofwat's PR24 FD.⁴²

Table 2.1: Indicative impact on AMP8 annual customer bills of Ofwat's PR24 FD and the Disputing Companies' statements of case, relative to pre-AMP8 average bills (2022/23 prices)

Disputing Company	Company average bill 2024/25 (final year of AMP7)	Company average bill for AMP8 in responses to Ofwat's PR24 DD	Company average bill for AMP8 under Ofwat's PR24 FD	Company average bill for AMP8 based on all requests in SoC
Anglian	£491	£583	£591	£649
Northumbrian	£422	£475	£488	£515
South East*	£232	£292	£274	£322
Southern	£420	£746	£620	£710
Wessex	£508	£626	£594	£642

Source: Ofwat [approves £104bn upgrade to accelerate delivery of cleaner rivers and seas and secure long-term drinking water supplies for customers](#) (accessed 26 February 2026); Disputing Company responses to Disputing Companies RFI02 (for all other columns), which requested £ figures in 2022/23 CPIH real prices as per Ofwat's PR24 FD.

*South East is a WoC; each of the other four Disputing Companies is a WaSC. Bills for South East therefore do not include the cost of wastewater services as it is a water-only company.

2.12 For most Disputing Companies, if we accepted all requests in their statements of case it would result in higher average bills even than those envisaged in their submissions during the Ofwat PR24 process. CCW raised with us that the statements of case submitted to the CMA may introduce cost claims that were not

⁴¹ In this final determination, in particular in the footnotes, a statement of case may also be referred to as a 'SoC'.

⁴² Disputing Company responses to Disputing Companies RFI07.

accounted for in Ofwat's PR24 FD and will not have been through the same scrutiny and testing.⁴³

Customer surveys on affordability and acceptability of plans

- 2.13 In its PR19 redetermination the CMA noted the difficulties in delivering research that effectively addressed affordability and acceptability issues, especially on 'willingness to pay' studies.⁴⁴ We have observed for PR24 that Ofwat developed, with CCW, guidance for water companies on how best to deliver this type of affordability and acceptability research.⁴⁵
- 2.14 We welcome the work Ofwat and CCW have undertaken to develop this extensive guidance for PR24 across both qualitative and quantitative research disciplines. We recognise the role this guidance has played in improving the consistency and comparability of this research across different water companies, and encourage continuing use of this guidance, as appropriate, for future price reviews.
- 2.15 We set out at Figure 2.2 and Figure 2.3 below charts which summarise the findings from the survey questions on customer affordability and acceptability prescribed by Ofwat and CCW and conducted by each Disputing Company as part of the PR24 quality and ambition assessment (**QAA**) of companies' business plans.⁴⁶

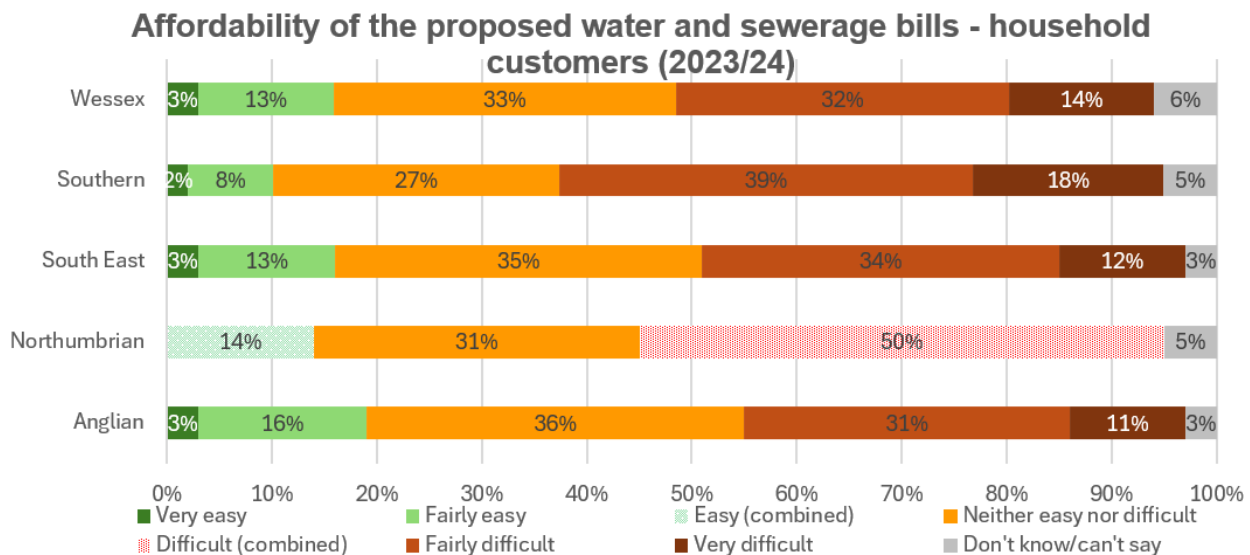
⁴³ CCW (2025) [Third party response to the CMA PR24 Approach document](#), paragraph 2.3.

⁴⁴ CMA (2021) [Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations Final Report \(PR19 Final Report\)](#), p101, paragraph 3.31. PR19 refers to price control determinations for the five-year period from 1 April 2020 to 31 March 2025.

⁴⁵ Ofwat and CCW (2022) [Guidance for water companies: testing customers' views of the acceptability and affordability of PR24 business plans](#).

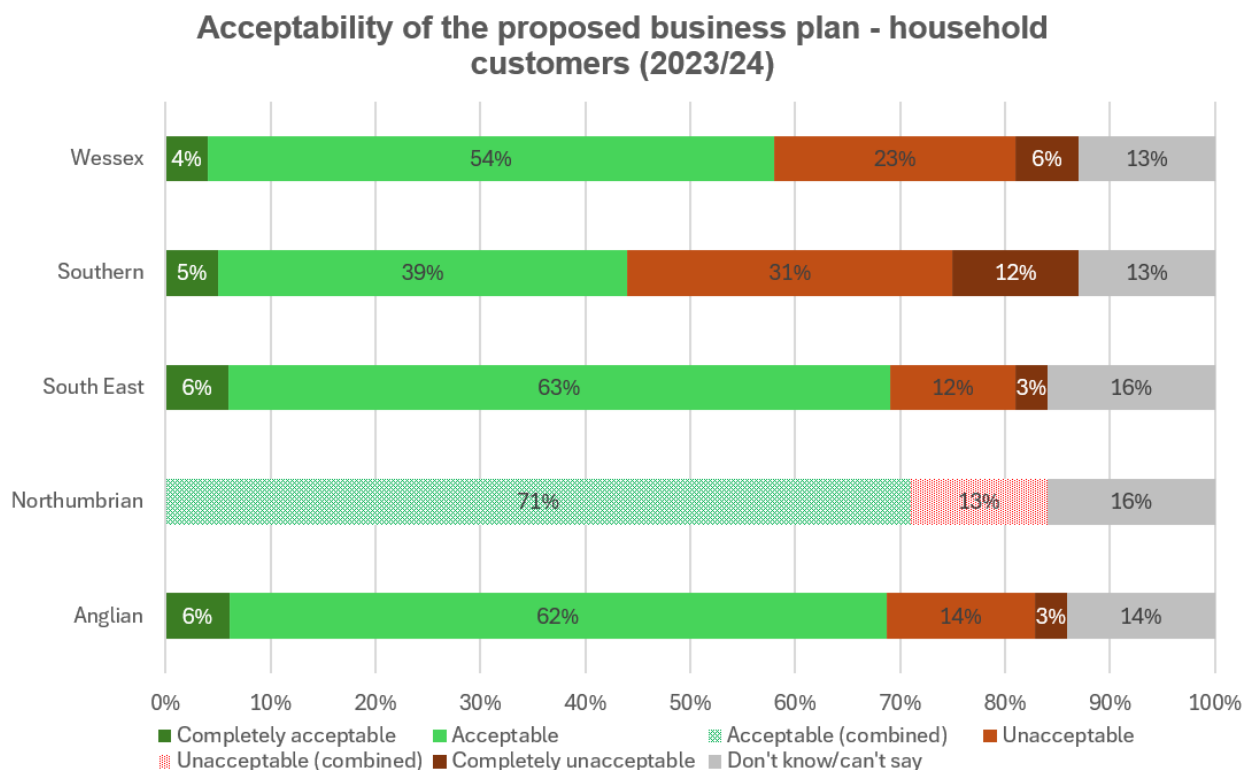
⁴⁶ As part of Ofwat's QAA process of Disputing Companies' business plans. See Appendix B for more details.

Figure 2.2: Affordability of the Disputing Companies' PR24 business plan proposals (October 2023) for water and sewerage bills – household customers (2023/24)



Source: CMA analysis of Disputing Companies' publications.⁴⁷

Figure 2.3: Acceptability of the Disputing Companies' proposed business plans (October 2023)- household customers (2023/24)



Source: CMA analysis of Disputing Companies' publications.⁴⁸

2.16 The research findings referred to in Figure 2.2 above show that 42% to 57% of customers surveyed considered the bills proposed in business plans fairly or very

⁴⁷ Full question wording: 'The next set of questions are about proposed changes to your [water/water and sewerage/sewerage] bill for the years 2025-2030. The chart below shows these changes. It also shows how inflation may impact on your bill, based on the Bank of England's inflation forecasts. How easy or difficult do you think it would be for

difficult to pay. However, the findings in Figure 2.3 also show that levels of customer acceptability of companies' business plans are higher for all Disputing Companies than the levels of customer affordability of the bills proposed in those plans. When asked about the acceptability of companies' plans, customers were shown the bill impacts alongside the proposed services or benefits within these plans.⁴⁹ Therefore, the research findings above provide some evidence that many customers accept the need for investment in the sector.

Customer priorities

- 2.17 Research on customer priorities can provide relevant evidence when considering how far parties' submissions are supported by customers. This research evidence typically covers service areas which broadly align with Ofwat's performance commitment framework.⁵⁰ We have assessed research commissioned by Ofwat,⁵¹ research jointly commissioned by Ofwat and CCW⁵² and specific Disputing Companies' research as part of our determinations.⁵³ This research tends to ask customers to rank these broad service areas in order of importance. For example, it shows customers consistently put the highest priority on areas that directly impact the service they experience in their homes, such as water supply

you to afford these [water/water and sewerage/sewerage bills]?' For analysis purposes, we assume that where findings are reported as 'Easy' this equates to 'Very easy' or 'Fairly easy' and that 'Difficult' equates to 'Fairly difficult' or 'Very difficult' and that 'Don't knows' are included in the base, though this may not be clear in the agency reports. Typically results from these surveys are described as the total 'Easy' score equating to 'affordable' and the total 'Difficult' score equating to 'unaffordable'. Data taken from: Anglian (2023) [Affordability and Acceptability Testing Quantitative Fieldwork Final Report](#), Figure 7 (no figures given for the unweighted base size); [Northumbrian SoC](#), Appendix SOC059, pp45 and 144 (base size is unclear from that document); South East (2023) [Affordability and Acceptability Testing Quantitative Fieldwork Final Report](#), p28, Figure 11 (base size 1,562); Southern response to Southern RFI01, Q1 supporting document 'SupportDoc_004_207d - Southern Water - Final Affordability Testing Sep', slide 31 (base size: 969); [Wessex SoC](#), Appendix A013, slide 67 (base size: 1,935).

⁴⁸ Question wording: 'We are now going to ask you some questions about your views on your water company's business plan. Water companies are required to put together business plans for each five-year period. The plan we are showing you is for 2025- 2030.' [Selected common PCs are then shown in blocks of three with contextual information as required and customers first asked to rank importance.] Based on everything you have seen and read about [COMPANY]'s proposed business plan, how acceptable or unacceptable is it to you?' (Ofwat and CCW (2022) [Guidance for water companies: testing customers' views of the acceptability and affordability of PR24 business plans](#), p84–85.) For analysis purposes, we assume that where findings are reported as 'Acceptable' this equates to 'Completely acceptable' and 'Acceptable', combined and that 'Unacceptable' equates to 'Unacceptable' and 'Completely unacceptable', combined and that 'Don't knows' are included in the base, though this may not be clear in the reports. Data taken from: Anglian (2023) [Affordability and Acceptability Testing Quantitative Fieldwork Final Report](#), Figure 14 (no figures given for the unweighted base size); [Northumbrian SoC](#), Appendix SOC059, pp62 and 144 (base size is unclear from this document); South East (2023) [Affordability and Acceptability Testing Quantitative Fieldwork Final Report](#), p34 (base size 1,562); Southern response to Southern RFI01, Q1 supporting document 'SupportDoc_004_207d - Southern Water - Final Affordability Testing Sep', slide 20 (base size: 969); [Wessex SoC](#), Appendix A013, slide 44 (base size: 1,935).

⁴⁹ Ofwat and CCW (2022) [Guidance for water companies: testing customers' views of the acceptability and affordability of PR24 business plans](#), p25.

⁵⁰ See [PR24 final determinations performance commitment definitions - Ofwat](#) (accessed 26 February 2026). More information on the performance commitment framework is set out in chapter 6 (Outcomes).

⁵¹ Yonder (2022) [Preferences research](#), slides 31–33; and PJM Economics (2023) [Collaborative ODI Research, Final Survey Values Report](#), Appendix C Table 56 (for example).

⁵² Savanta (2024) [Customer Spotlight: People's views and experiences of water - Wave two](#), slide 23.

⁵³ Examples include: Pure know how for SEW (2024) [Engaging with Customers Communities and Stakeholders](#), p26; Northumbrian (2024) [PR24 Customer Research – Enhancements and other service areas summaries \(NES43\)](#), p10 and p33; Northumbrian (2024) [PR24 Customer Research – Common PCs Insight summaries \(NES42\)](#), p31; Northumbrian (2024) [PR24 Customer Research - Prioritisation of Common PCs \(NES44\)](#), slide 5, Table 1; Anglian (2025) [Anglian Water response to provisional determination](#), p104 [PR24 Anglian Water Customer Engagement Synthesis Report](#) p66; Wessex Water (2025) [Wessex Water response to provisional determination](#), p23.

interruptions and internal sewer flooding. Customers tend to view wider environmental concerns such as pollution incidents (including sewage in rivers and seas) and leakage reduction as more of a medium priority, and to put other areas such as demand/water efficiency initiatives as lower priorities.⁵⁴

- 2.18 While this research provides helpful context on customer priorities, it often does not address directly or explore robustly customers' willingness to pay for any Disputing Company's specific funding requests. We also consider that there are limits to how far we can expect customers, through research, to make complex relative judgments prioritising different and sometimes highly technical service areas. However, we considered this research evidence on customer priorities throughout our assessments where relevant.

Consideration of customer interest in CMA final determinations

- 2.19 Considering the research and submissions noted above, and other evidence including from third parties, we understand that household budgets are under pressure and recognise the impact of the significant bill increases that are being faced by customers in light of Ofwat's PR24 FD. We have also taken account of evidence that customers may value improvements arising from increased investment. We have carefully considered the potential impact on customer bills from any changes to the Disputing Companies' allowed revenue, as set out in our final determinations. We have aimed in particular to promote efficiency, and to avoid customers 'paying twice' for outcomes that have not been delivered in prior AMPs.

Ofwat's PR24 FD

- 2.20 Every five years Ofwat performs a review of how much revenue companies need to deliver certain specified outcomes over the AMP. This is known as conducting a price control review.
- 2.21 The price control period running from 2025 to 2030 is referred to as **AMP8**. Ofwat's price review covering this period is referred to as **PR24**.
- 2.22 Ofwat said that companies would need to raise greater levels of finance in AMP8 than in any period since privatisation to deliver the PR24 investment programme.⁵⁵ Ofwat stated that it had continued to 'raise the bar' on expectations of water companies' performances through the introduction of stretching annual targets which carry automatic penalties, and additional monitoring arrangements.⁵⁶

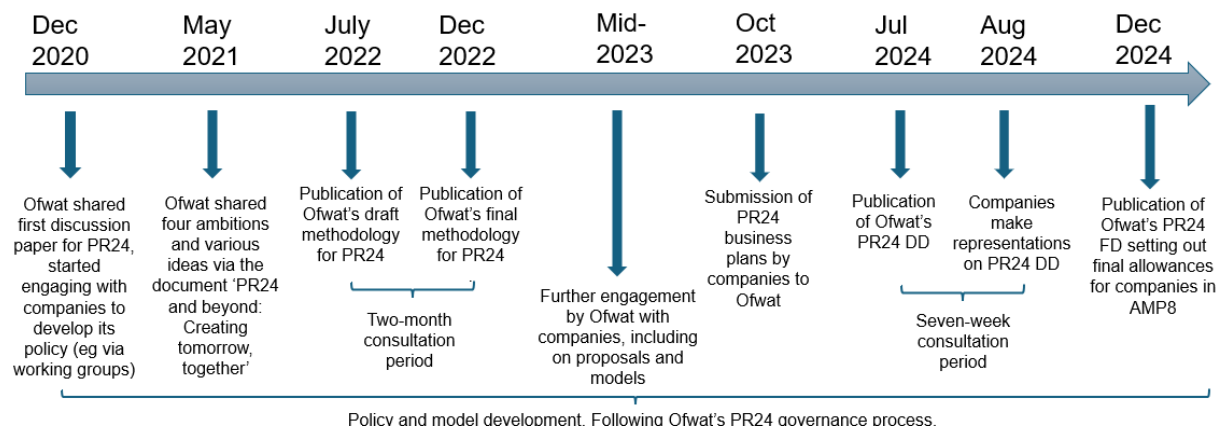
⁵⁴ Ofwat (2023) [PR24: Using collaborative customer research to set outcome delivery incentive rates](#), Table 6.2.

⁵⁵ Ofwat (2024) [PR24 Final determinations: Our approach](#), p18.

⁵⁶ Ofwat (2024) [PR24 Final determinations: Our approach](#), pp 3, 18 and 22–24.

2.23 An overview of the key stages in Ofwat's PR24 process is shown in Figure 2.4.

Figure 2.4: Overview of key stages within Ofwat's PR24 process



Source: CMA, based on teach-ins provided by Ofwat and 'Key milestones' at [Ofwat's 2024 price review page](#).

2.24 Ofwat based its PR24 review around three main building blocks, detailed in Figure 2.5 below.

Figure 2.5: Ofwat's overview of PR24's three key building blocks



Source: Ofwat (2021) [PR24 and- beyond: Performance commitments for future price reviews](#), p7 (Figure 1).

2.25 Further details on technical matters within Ofwat's PR24 price control framework, including new elements for PR24, are explained as appropriate within the various substantive assessment chapters of this report.

2.26 After considering responses to the consultation on the PR24 draft determination (Ofwat's **PR24 DD**), Ofwat's PR24 FD made certain changes to positions in the PR24 DD. For example, it:

- (a) increased the allowed return to 4.03% from 3.72%, to reflect targeted changes to Ofwat's methodology and more recent data indicating a higher cost of finance;⁵⁷
- (b) increased the overall total expenditure (**totex**) allowance to £103.7 billion including contingent allowances;⁵⁸ and
- (c) made several changes to its price control deliverables (**PCDs**) framework, while retaining the application of PCDs to around 80% of the allowed enhancement expenditure and the application of time incentive (**TI**) PCDs to around 50% of enhancement expenditure.⁵⁹

2.27 Ofwat stated in its PR24 FD that base expenditure allowances for all water companies were 19% higher than at PR19 and 7% more than all water companies have spent in the last 5 years.⁶⁰ Ofwat further stated that it was providing a step change increase in enhancement expenditure allowances to improve services to customers and the environment.⁶¹ Ofwat stated that it was allowing around 4 times the level of enhancement expenditure than it did in PR19, noting that nearly 90% of this expenditure was driven by legal requirements specified in water resources management plans (**WRMPs**) and by the environmental programmes of the EA and Natural Resources Wales, the DWI and other statutory drivers such as the Industrial Emissions Directive (**IED**).⁶²

2.28 In setting out its approach, Ofwat submitted that the substantial and lasting improvements that water companies must make would deliver better services and protect the environment, but this would mean higher bills for customers. Under its PR24 FD, Ofwat considered that indicative bills would rise by an average of £31 per year between 2024-2025 and 2029-2030, before inflation, for water and sewerage customers.⁶³

2.29 Ofwat published its PR24 FD on 19 December 2024. Ofwat has conducted various consultations and published decisions since this date to update its PR24 FD and provide further guidance, as detailed on its website.⁶⁴

⁵⁷ Ofwat (2024) [PR24 final determinations: Aligning risk and return](#), p4.

⁵⁸ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p368.

⁵⁹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p313.

⁶⁰ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p3.

⁶¹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p5.

⁶² Ofwat (2025) [PR24 final determinations: Our approach](#), pp29–30.

⁶³ Ofwat (2025) [PR24 final determinations: Our approach](#), p19.

⁶⁴ For example, see Ofwat (2025) [PR24 final determinations](#); [Ofwat publications](#); [Ofwat consultations](#).

The Disputing Companies

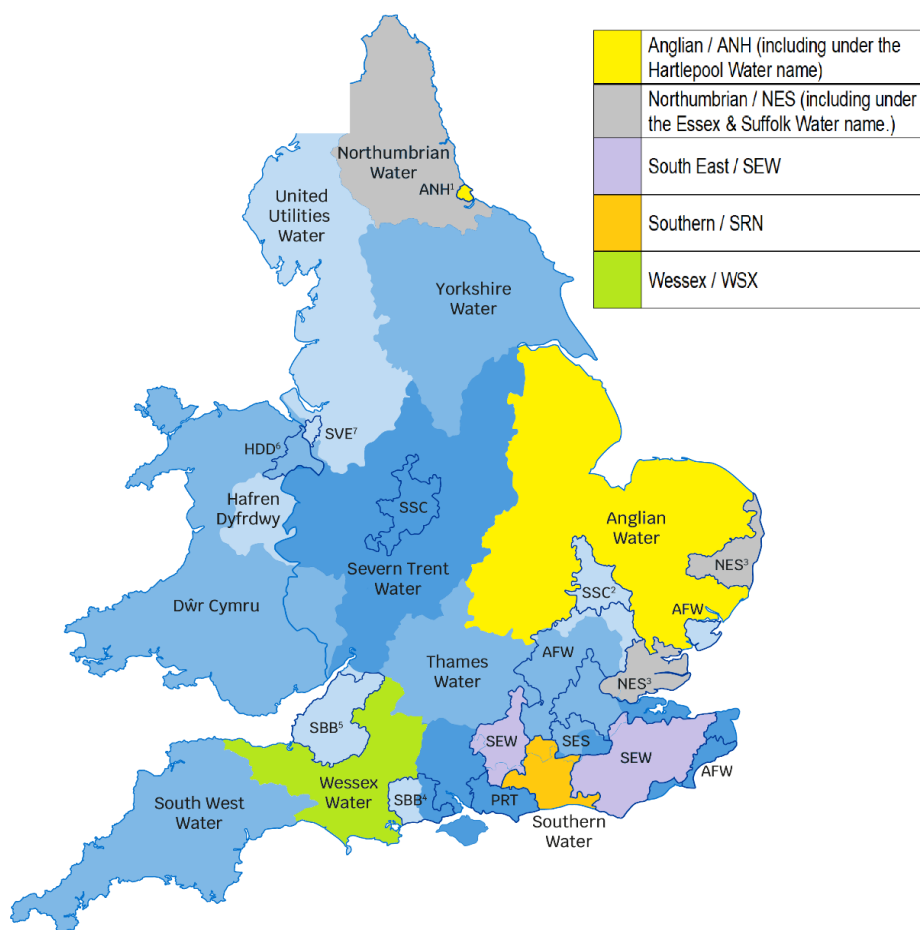
2.30 This section sets out some background information about the five Disputing Companies whose PR24 price controls were referred to the CMA by Ofwat, including:

- (a) areas supplied with water by each Disputing Company;
- (b) key facts about the scale of operations of each Disputing Company; and
- (c) an overview of each Disputing Company.

Areas supplied with water by the Disputing Companies

2.31 Figure 2.6 below shows the areas in the UK to which the Disputing Companies supply water.

Figure 2.6: Indicative map of the Disputing Companies' supply areas



Source: CMA, adapted from map published at [Contact details for your water company - Ofwat](#) (accessed 26 February 2026).

2.32 The Disputing Companies (apart from South East) also provide wastewater services to their customers in the areas shown in Figure 2.6 above. Southern

supplies some wastewater services to customers in certain neighbouring areas (including the area served by South East).⁶⁵

Key facts about scale of operations of each Disputing Company

2.33 The Disputing Companies serve 27% of customers (household and business) and account for 29% of revenue in England and Wales.⁶⁶ An illustration of each Disputing Company's relative size is set out in Table 2.2 below.

Table 2.2: Indicators of the size of the Disputing Companies

	Anglian	Northumbrian	South East	Southern	Wessex
Regulatory Capital Value (RCV) (2024/25)	£11.2 billion	£5.8 billion	£1.8 billion	£7.4 billion	£4.6 billion
Ofwat's PR24 determination allowed revenues over 5 years	£9.6 billion	£5.2 billion	£1.7 billion	£6.5 billion ⁶⁷	£3.6 billion
Totex allowance in Ofwat's PR24 FD	£10,971 million	£6,153 million	£1,821 million	£8,530 million	£4,231 million
km of water mains	39,397	26,537	15,099	13,973	12,149
km of sewer	77,780	30,261	-	40,031	35,138
Annual revenue (2024/25)	£1,749.3 million	£1,017.2 million	£285.5 million	£964.2 million	£652.6 million
Number of employees (FTE, directly employed)	5,874	3,500+	1,173	2,741	2,963
Projected rise in average customer bills during AMP8, based on Ofwat's PR24 FD	29%, reaching £631 by 2029/30	21%, reaching £510 by 2029/30	24%, reaching £287* by 2029/30	53%, reaching £642 by 2029/30	21%, reaching £614 by 2029/30

Source: RCV for 2024-2025 from [Ofwat Regulatory capital value updates](#) (in nominal prices); allowed revenues from Ofwat (2024) [PR24 Key Dataset 2 Costs Past Delivery and Risk and Return data](#), 'Allowed Revenue' tab (in 2022/23 CPIH real prices); totex allowance from Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), Table 55 (after frontier shift and real price effects); pipe lengths from Ofwat (2024) [PR24-FD-CA03-Base-costs-water-model-1](#); annual revenue (in nominal prices) and employee numbers from published annual reports for [Anglian](#), [Northumbrian](#), [South East](#), [Southern](#), [Wessex](#); Disputing Companies' initial presentations to the CMA; projected rise in average customer bills during AMP8 from Ofwat (2025) Ofwat slides prepared for Ofwat initial presentation to CMA, slide 55. Note: all values are as at 31 March 2025, otherwise stated.

*South East is a WoC; each of the other four Disputing Companies is a WaSC. Bills for South East therefore do not include the cost of wastewater services, as it is a WoC.

Overviews of Disputing Companies

2.34 Below are brief overviews of each Disputing Company, including customer base, ownership and allowances in Ofwat's PR24 FD. Descriptions of specific characteristics of the Disputing Companies are set out where relevant within the various substantive assessment chapters of this report.

⁶⁵ [Southern SoC](#), Figure 6.

⁶⁶ CMA analysis.

⁶⁷ Reflects allowed revenue for Southern without an additional delivery mechanism. With delivery mechanism, Southern's allowed revenue is £6.6 billion. See Ofwat (2024) [PR24 Key Dataset 2 Costs Past Delivery and Risk and Return data](#).

Anglian

- 2.35 Anglian is the largest WaSC by geographic area in England and Wales, serving over 2 million water and nearly 3 million wastewater customers across the east of England and Hartlepool.⁶⁸ It provides water and wastewater services in areas in eastern England and water only services in Hartlepool.⁶⁹
- 2.36 Anglian operates as the principal subsidiary of Anglian Water Group Limited, which in turn is owned by a consortium of long-term infrastructure investors including the Canada Pension Plan Investment Board, IFM Global Infrastructure Fund, Infinity Investments S.A., Igneo Infrastructure Partners, and Camulodnum Investments.⁷⁰
- 2.37 Ofwat's PR24 FD provided Anglian with a £11 billion totex allowance for AMP8, £4 billion more than AMP7.⁷¹

Northumbrian

- 2.38 Northumbrian is a WaSC operating primarily in the north-east of England, with additional water only services in the south-east of England.⁷² It provides over 2 million customers water services and 1.3 million customers wastewater services.⁷³
- 2.39 Northumbrian's group was formed through the Northumbrian Water/Essex and Suffolk Water merger in 2000.⁷⁴ It is owned by two major infrastructure investors: CK Infrastructure Holdings Limited and KKR.⁷⁵
- 2.40 Ofwat's PR24 FD provided Northumbrian with a £6.2 billion totex allowance for AMP8, £2.5 billion more than AMP7.⁷⁶

South East

- 2.41 South East is a WoC that supplies water to over 1 million customers across 3 regions: Western (Hampshire, Berkshire and Surrey); Kent; and Sussex.⁷⁷ It is England's second largest WoC.⁷⁸

⁶⁸ Ofwat (2025) Response to CMA Water Industry Background – high level dataset request.

⁶⁹ [Anglian SoC](#), paragraph 119.

⁷⁰ [Anglian SoC](#), paragraph 131.

⁷¹ Ofwat (2025) [Overview of Anglian Water's PR24 final determination - republished 10 April 2025](#), p7.

⁷² [Northumbrian SoC](#), paragraph 58 and Figure 4.

⁷³ Ofwat (2025) Response to CMA Water Industry Background – high level dataset request.

⁷⁴ [The Northumbrian Water and Essex and Suffolk Water \(Amendment of Local Enactments Etc.\) Order 2000 No. 969](#) (accessed 26 February 2026).

⁷⁵ [Northumbrian SoC](#), paragraph 84; [Northumbrian Water Group Structure](#) (accessed 26 February 2026).

⁷⁶ Ofwat (2025) [Overview of Northumbrian Water's PR24 final determination - republished April 2025](#), p3, 7.

⁷⁷ Ofwat (2025) Response to CMA Water Industry Background – high level dataset request; [South East SoC](#), paragraph 2.25.

⁷⁸ [South East SoC](#), paragraph 2.2.

- 2.42 In its current form, South East is the result of the Mid Kent Water/South East Water merger in 2007.⁷⁹ South East is owned by NatWest Pension Trustee Limited (as Trustee for the Natwest Group Pension Fund); three Desjardins cooperative financial group entities; and Utilities of Australia Pty Ltd (as trustee of Utilities Trust of Australia).⁸⁰
- 2.43 Ofwat's PR24 FD provided South East with a £1.8 billion totex allowance for AMP8, £651 million more than AMP7.⁸¹

Southern

- 2.44 Southern is a WaSC serving the south of England. It supplies water to over 1.1 million customers and wastewater services to over 2 million customers across Kent, Sussex, Hampshire, and the Isle of Wight.⁸² Southern provides wastewater services to the customers of certain WoCs such as South East.⁸³
- 2.45 Southern is majority-owned by funds managed by Macquarie Asset Management on behalf of long-term investors, for example, pension and insurance funds.⁸⁴
- 2.46 Ofwat's PR24 FD provided Southern with a £8.6 billion totex allowance for AMP8, £4.3 billion more than AMP7.⁸⁵

Wessex

- 2.47 Wessex is a WaSC serving the south-west of England.⁸⁶ It provides water services to approximately 600,000 customers and wastewater services to nearly 1.3 million customers.⁸⁷
- 2.48 Wessex's owner is YTL Power International Berhad, a Malaysian company listed on Bursa Malaysia.⁸⁸
- 2.49 The PR24 FD provided Wessex with a £4.3 billion totex allowance for AMP8, £1.7 billion more than AMP7.⁸⁹

⁷⁹ South East SoC, paragraph 2.24.

⁸⁰ South East SoC, paragraph 2.52; South East (2025) [Annual Report](#), p72.

⁸¹ Ofwat (2024) [Overview of South East Water's PR24 final determination](#), p2 and p6.

⁸² Ofwat (2025) Response to CMA Water Industry Background – high level dataset request; Southern (2025) [Southern Annual Report and Financial Statements 2024-25](#), p2.

⁸³ Southern SoC, p13, paragraph 24. Southern also provides wastewater to customers in the areas of eg Affinity Water Limited (**Affinity**) and Portsmouth Water Limited (**Portsmouth Water**): see <https://www.southernwater.co.uk/help-and-support/wastewater-only-bills> (accessed 26 February 2026).

⁸⁴ Southern SoC, Chapter 6, p371, paragraph 25; Southern (2025) [Southern Annual Report and Financial Statements 2024-25](#), p108.

⁸⁵ Ofwat (2025) [Overview of Southern Water's PR24 final determination - republished 10 April 2025](#), p8.

⁸⁶ Wessex SoC, paragraph 3.1.

⁸⁷ Ofwat (2025) Response to CMA Water Industry Background – high level dataset request.

⁸⁸ Wessex SoC, paragraph 3.11.

⁸⁹ Ofwat (2025) [Overview of Wessex Water's PR24 final determination - republished 10 April 2025](#), p3.

3. Approach and prioritisation

The framework for our redeterminations

- 3.1 The framework for our redeterminations is set out in section 12 of the Act, and in our procedural rules and guide for water references.⁹⁰ The Guide includes the CMA's overriding objective to carry out the redeterminations fairly, efficiently and at proportionate cost within the statutory timeframes (the **overriding objective**).⁹¹
- 3.2 Under section 12 of the Act, where a reference is made to the CMA by Ofwat, the CMA is to decide the redetermination in accordance with the principles that apply to Ofwat which include various statutory duties.⁹² The CMA will undertake the redeterminations in accordance with these principles but may make different judgements from Ofwat on how they should be interpreted and balanced.⁹³
- 3.3 The CMA is not bound by the decisions of other groups in past redetermination references but may have regard to previous decisions of the CMA and the Competition Commission to the extent relevant.⁹⁴
- 3.4 Ofwat's general statutory duties with respect to the water industry are split into 'primary' and 'secondary' duties.⁹⁵
- 3.5 The primary duties set out in section 2(2A) of the Act require Ofwat to exercise and perform its powers and duties in the manner which it considers is best calculated to:
- (a) further the consumer objective, which is to protect the interests of consumers,⁹⁶ wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the provision of water and sewerage services (the **Consumer Objective**);⁹⁷

⁹⁰ Rules ([CMA204](#)), Guide ([CMA205](#)).

⁹¹ Rules ([CMA204](#)), Rule 4.1.

⁹² The Act, section 12(3)(b)(ii).

⁹³ Guide ([CMA205](#)), paragraph 3.3.

⁹⁴ Guide ([CMA205](#)), paragraph 3.11.

⁹⁵ The language of primary and secondary duties was used in eg Ofwat (2025) [PR24 final determinations: Our approach](#), pp4–5; Ofwat (2025) [Overview of our response to the SoCs](#), paragraphs A1.10–A1.11; and by the CMA in the [PR19 Final Report](#), paragraph 2.72, following previous practice.

⁹⁶ For the purposes of section 2 of the Act, section 2(5A) of the Act defines 'consumers' as including both existing and future consumers and the 'interests of consumers' means the interests of consumers in relation to the supply of water by means of a water undertaker's supply system to premises either by water undertakers or by water supply licensees acting in their capacity as such and the provision of sewerage services either by sewerage undertakers or by sewerage licensees acting in their capacity as such.

⁹⁷ The Act, section 2(2B); under section 2(2C) of the Act, for the purposes of the Consumer Objective, Ofwat is required to have regard to the interests of a non-exhaustive list of particular groups, including individuals who are disabled or chronically sick, of pensionable age, with low incomes, residing in rural areas etc, but this does not imply that Ofwat may not also take into account interests of other customer groups. Under section 2(2E) of the Act, Ofwat has a discretion to have regard to the interests of consumers in relation to gas, electricity, communications and electronic communications.

- (b) secure that the functions of water companies are properly carried out as respects every area of England and Wales (the **Functions Duty**);⁹⁸
- (c) secure that water companies are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of those functions (the **Financing Duty**);⁹⁹
- (d) secure that the activities authorised by the licence of a water company and any statutory functions imposed on it in consequence of the licence are properly carried out (the **Licence Duty**);¹⁰⁰ and
- (e) further the **Resilience Objective**. The Resilience Objective is: (a) to secure the long-term resilience of water companies' supply and sewerage systems as regards environmental pressures, population growth and changes in consumer behaviour; and (b) to secure that water companies take steps for the purpose of enabling them to meet, in the long term, the need for the supply of water and the provision of sewerage services to consumers, including by promoting: (i) appropriate long-term planning and investment by relevant water companies; and (ii) the taking by them of a range of measures to manage water resources in sustainable ways, and to increase efficiency in the use of water and reduce demand for water so as to reduce pressure on water resources.¹⁰¹

3.6 Subject to the primary duties, the secondary duties require Ofwat to exercise and perform its powers and duties in the manner which it considers is best calculated to:¹⁰²

- (a) promote economy and efficiency on the part of water companies holding licences (the **Efficiency Duty**);¹⁰³
- (b) secure that no undue preference (including for itself) is shown and that there is no undue discrimination in the doing by a water company of things which relate to the provision of services by itself or another water company or

⁹⁸ 'Water companies' is used here to denote a 'water undertaker and a sewerage undertaker' as referenced in the Act section 2(2A)(b) and the Guide (CMA205), paragraph 2.4(b).

⁹⁹ 'Water companies' is used here to denote 'companies holding appointments under Chapter 1 of Part 2 of this Act as relevant undertakers' as referenced in section 2(2A)(c) of the Act and 'appointed companies' as referenced in the Guide (CMA205), paragraph 2.4(c).

¹⁰⁰ 'Water company' is used here to denote a 'water supply licensee or sewerage licensee' as referenced in the Act, section 2(2A)(d) and 'water supply licensee or sewerage licensee (retailers in the business retail market)' as referenced in the Guide (CMA205), paragraph 2.4(d).

¹⁰¹ The Act, section 2(2DA); 'water companies' supply and sewerage systems' is used here to denote 'water undertakers' supply systems and sewerage undertakers' sewerage systems' as referenced in the Guide (CMA205), paragraph 2.4(e).

¹⁰² The Act, section 2(3).

¹⁰³ 'Water companies' is used here to denote 'companies holding an appointment under Chapter 1 of Part 2 of this Act' as referenced in the Act, section 2(3)(a) and 'appointed companies' as referenced in the Guide (CMA205), paragraph 2.5(a).

things as relate to the provision of services by a water supply or sewerage licensee;¹⁰⁴

- (c) secure that consumers are protected as regards benefits that could be secured for them from the proceeds for any disposal of any water company's protected land;¹⁰⁵
- (d) ensure that consumers are protected as regards any activities of a water company which are not attributable to the exercise of its functions under the Act, in particular by ensuring that any transactions are carried out at arms-length and that in the exercise of their functions companies maintain and present accounts in a suitable form and manner;¹⁰⁶ and
- (e) contribute to the achievement of sustainable development (the **Sustainability Duty**).¹⁰⁷

- 3.7 Ofwat is also subject to the '**Growth Duty**', which requires that Ofwat, in the exercise of its regulatory functions, has regard to the desirability of promoting economic growth.¹⁰⁸ In carrying out this duty, Ofwat must consider the importance of ensuring that any regulatory action it takes is needed and proportionate.¹⁰⁹
- 3.8 In exercising its powers and performing its duties Ofwat is required to have regard to the principles of best regulatory practice, including the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed.¹¹⁰
- 3.9 Ofwat and the water companies also have specific environmental duties in relation to the protection of areas of natural beauty, special environmental interest and historical sites.¹¹¹
- 3.10 In addition to these statutory duties, the Secretary of State has set out strategic priorities and objectives for Ofwat in a strategic policy statement (**SPS**), the latest of which came into effect in March 2022.¹¹² Following the publication of the IWC

¹⁰⁴ The Act, sections 2(3)(b) and 2(3)(ba).

¹⁰⁵ The Act, section 2(3)(c). 'Water company' is used here to denote 'appointed company' as referenced in the Guide (CMA205), paragraph 2.5(d).

¹⁰⁶ The Act, section 2(3)(d). 'Water company' is used here to denote 'appointed company' as referenced in the Guide (CMA205), paragraph 2.5(e).

¹⁰⁷ The Act, section 2(3)(e).

¹⁰⁸ The [Economic Growth \(Regulatory Functions\) \(Amendment\) Order 2024](#) amends Schedule 1 of [The Economic Growth \(Regulatory Functions\) Order 2017](#) to list Ofwat as a regulator to which the [Deregulation Act 2015, section 108](#), applies.

¹⁰⁹ Deregulation Act 2015, section 108(2).

¹¹⁰ The Act, section 2(4).

¹¹¹ The Act, sections 3–5.

¹¹² A separate strategic policy statement was published for Wales by the Welsh Ministers, but the CMA's redetermination relates to England, given the operating areas of the Disputing Companies.

Final Report, the UK government indicated that it intends to issue an interim SPS to Ofwat.¹¹³

- 3.11 The UK government's SPS must take account of Ofwat's statutory duties, social and environmental matters and other matters that the Secretary of State thinks fit.¹¹⁴ The SPS is relevant to all of Ofwat's functions, not just price controls. The SPS covers issues under the following four strategic priorities.¹¹⁵
- (a) 'Protecting and enhancing the environment': Ofwat should 'challenge water companies to improve their day-to-day environmental performance to enhance the quality of the water environment' and challenge them to be more ambitious in doing so.
 - (b) Delivering a 'resilient water sector': Ofwat should 'challenge the water industry to plan, invest in and operate its water and wastewater services to secure the needs of current and future customers' and to deliver value over the long-term.
 - (c) 'Serving and protecting customers': Ofwat should challenge water companies 'to provide a better and fairer water service for all' and to meet the needs of vulnerable customers.
 - (d) 'Using markets to deliver for customers': where appropriate, Ofwat should consider how promoting competition can drive long-term sustainable investment, benefitting customers and supporting government's priorities.
- 3.12 Ofwat set out how it considered it had fulfilled the priorities and objectives of the SPS in its PR24 FD.¹¹⁶
- 3.13 The legislation does not set out any hierarchy of the primary duties,¹¹⁷ or that they should affect Ofwat's compliance with any other duty, such as the Growth Duty.¹¹⁸ The duties should not be considered or applied in isolation. In addition, the relevant strategic policy statement complements Ofwat's existing statutory duties. Ofwat's statutory duty is to carry out its functions in accordance with the relevant SPS and to that extent it may prioritise certain work areas over others. The expectation is that the regulated water industry will reflect the priorities and objectives in its strategic direction.¹¹⁹

¹¹³ Environment Secretary Steve Reed (2025) Oral statement to Parliament, [Environment Secretary Steve Reed: Response to the IWC's final report](#); and [Defra White Paper](#) (accessed 26 February 2026), p13 and p45.

¹¹⁴ The Act, section 2A(3).

¹¹⁵ Secretary of State (2022) [Government's strategic priorities for Ofwat](#).

¹¹⁶ Ofwat (2024) [UK Government priorities and our 2024 price review final determinations](#).

¹¹⁷ Guide ([CMA205](#)), paragraph 3.4; supported by case law. See *R v Director General of Telecommunications, ex p. Cellcom* [1999] ECC 314.

¹¹⁸ The Act, section 2(7).

¹¹⁹ Guide ([CMA205](#)), paragraph 3.4.

- 3.14 We have reached our decisions in accordance with the statutory principles that apply to Ofwat, including various statutory duties. Our decisions reflect our judgement on how these principles should be balanced. In making these judgements, we have taken into account submissions from the Disputing Companies, Ofwat and third parties on the application by Ofwat of the applicable statutory principles including various statutory duties.
- 3.15 We have considered the final package in the round for each Disputing Company and decide that each is consistent with the relevant statutory principles.

Approach to the redeterminations

- 3.16 On 28 May 2025, the CMA published its proposed approach to the redeterminations of the PR24 price reviews (**CMA PR24 Approach document**).¹²⁰ This set out the issues that the CMA intended to prioritise and deprioritise, having regard to the overriding objective and invited responses from interested parties.
- 3.17 Following careful consideration of responses received to the CMA PR24 Approach document and CMA PR24 PD, we have broadly maintained the approach set out in the CMA PR24 Approach document in our final determinations.
- 3.18 While it is open to us to reconsider any aspect of the price control decisions for the Disputing Companies, in practice we need to focus our work and resources to complete the redeterminations within our statutory deadline and in line with the overriding objective. With that in mind, we:
- (a) focused our attention on the specific issues raised by Disputing Companies within their statements of case; we only considered more general objections raised by the Disputing Companies to the extent that an understanding of these was needed to come to a view on the specific requests;
 - (b) considered specific issues raised by Ofwat and third parties in response to the statements of case so our consideration is balanced, taking account of customers' interests;
 - (c) treated some matters raised by the Disputing Companies, Ofwat and third parties on issues of principle as common issues, on which we held joint hearings with the Disputing Companies and Ofwat and requested joint submissions from the Disputing Companies; and
 - (d) have not re-opened points that are unchallenged unless we considered doing so was necessary to come to a view on the specific requests.

¹²⁰ CMA (2025) [Water PR24 Redetermination References: Approach and Prioritisation](#).

- 3.19 While looking at groups of issues and common issues, we have been conscious of the interlinkages and interdependencies arising between them. In addition, we have considered whether our determinations on issues raised, unless the issue was a solely company-specific matter, may have relevance for the final determinations of the other Disputing Companies.
- 3.20 Where our final determinations do not explicitly amend Ofwat's PR24 FD, it should be taken as a decision not to amend Ofwat's approach.
- 3.21 It is not within the CMA's powers to make changes to Ofwat's PR24 FD for those water companies for which we have not received a reference. As such, to the extent that our final determinations would change the position for the Disputing Companies on issues common across the sector, for example on allowed return, our changes would not apply to any water companies for which we have not received a reference.

Prioritisation and deprioritisation of issues

- 3.22 In the CMA PR24 Approach document, we set out our proposed approach to the prioritisation and deprioritisation of issues.¹²¹ We explained that we did not intend to focus on issues raised with us where:¹²²
- (a) the issue has an insignificant impact on customer bills or other outcomes (de minimis);
 - (b) we expect the issue to be addressed in a reasonable period through alternative means (alternative route);
 - (c) the issue reflects a well-established regulatory practice and we have not received compelling evidence to suggest we should revisit this in the context of this redetermination process (well-established practice); or
 - (d) the issue would require a disproportionate amount of work to resolve in the context of this redetermination process when set against the potential impact (disproportionate).
- 3.23 Our proposal to deprioritise certain base costs and enhancement costs matters prompted the most detailed responses to the consultation on the CMA PR24 Approach document.¹²³ We focus below on our response in those areas.

¹²¹ [CMA PR24 Approach document](#), paragraphs 30–94.

¹²² [CMA PR24 Approach document](#), paragraph 34.

¹²³ We received few submissions on our approach to prioritisation in response to the CMA PR24 PD.

- 3.24 In particular, we received detailed feedback on issues we proposed to deprioritise as de minimis in the CMA PR24 Approach document.¹²⁴ We proposed that a factor in whether or not an issue has a significant impact on customer bills or other outcomes was where an issue had a value of 0.5% or less of the relevant PR24 total expenditure allowance.¹²⁵
- 3.25 We have retained this threshold as a starting point to assess the significance of scale of impact of matters raised before us. We have only applied this threshold to base costs and enhancement cost matters. We have reviewed the cost ‘gap’ identified by Disputing Companies to assess the value of an issue, where possible, to most accurately reflect the potential impact of the decision. Our Rules and Guide envisage considering whether there is a significant scale of impact when prioritising matters, and our threshold acts a reasonable starting point. In our view, taking this approach is consistent with the overriding objective.
- 3.26 We considered at the time of the CMA PR24 PD and again for the final determinations whether there were reasons to review previously deprioritised matters falling below the threshold to ensure we were comfortable with the assessment (eg where Disputing Companies suggested that an issue is one of strategic importance).
- 3.27 Where we expect an issue to be addressed in a reasonable period through an alternative route, we sought clarity as required on the likelihood and nature of the alternative route before reaching our final decisions.¹²⁶ We address these issues and the information we have received on the alternative routes in the substantive chapters that follow.
- 3.28 Ofwat submitted that we could deprioritise further matters beyond those set out in the CMA PR24 Approach document.¹²⁷ However, we decided not to deprioritise any further matters.¹²⁸

¹²⁴ Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraphs 8(a) and 23; Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraphs 18–24; South East (2025) [Reply to CMA PR24 Approach document](#), paragraphs 2.3, 3.5, 3.7–3.12; Southern (2025) [Reply to CMA PR24 Approach document](#), paragraph 2; Wessex (2025) [Reply to CMA PR24 Approach document](#), paragraph 1.27 (on national insurance); CCW (2025) [Third party response to the CMA PR24 Approach document](#), paragraphs 2.5 and 4.1; Ofwat (2025) [Response to Approach document](#), paragraphs 1.3 and 1.6; Thames Investor Group (2025) [Third party response to the CMA PR24 Approach document](#), paragraph 4; Thames Water (2025) [Third party response to the CMA PR24 Approach document](#), paragraphs 10, 11, 16 and 32; and Thames Water (2025) [Response to CMA PR24 PD](#), p25, paragraph 149.

¹²⁵ [CMA PR24 Approach document](#), paragraph 34(a).

¹²⁶ Consistent with Disputing Companies’ requests to seek clarity in their responses to the CMA PR24 Approach document. For example, see: Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 8(b); Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraphs 26 and 28; Wessex (2025) [Reply to CMA PR24 Approach document](#), paragraph 1.22; and South East (2025) [Reply to CMA PR24 Approach document](#), paragraphs 3.14–3.15.

¹²⁷ Ofwat (2025) [Response to Approach document](#), paragraphs 1.6 (bullet point 4), 1.7, 1.9, 1.10, 1.11 and 1.12.

¹²⁸ For example, we do not consider it appropriate to apply our de minimis threshold to determine the significance of scale of impact to outcomes or risk and return matters. For outcomes, it is not clear what the threshold would be applied to, given the outcomes, and therefore the significance of any impact, are unknown at this time. For risk and return, given the interlinkage between the issues under consideration, it would not be coherent to apply this threshold.

- 3.29 Our view is that our overall approach to prioritisation and deprioritisation represents a fair and proportionate approach to assessing the issues raised with us by the Disputing Companies, Ofwat and third parties and is fair and proportionate in respect of each Disputing Company.

Base costs

- 3.30 We have retained the deprioritisations set out in the CMA PR24 Approach document.¹²⁹

- 3.31 In response to our CMA PR24 Approach document a number of Disputing Companies argued that business rates, national insurance charges, the Ofwat licence fee and the EA levy should not be deprioritised as de minimis. Disputing Companies argued that these costs should be considered to be material for a range of reasons including the following.

- (a) The costs raise important points of principle, are certain and largely outside company control.¹³⁰
- (b) The issues are administratively simple for the CMA to consider.¹³¹ The CMA has better information readily available than Ofwat did at the time of its PR24 FD, or the changes would be simple updates to models that can be forecast during PR24 with a relatively high degree of accuracy.^{132 133}
- (c) The impact of deprioritising these requests carries material, unavoidable costs for companies.¹³⁴
- (d) Inaccurate estimates are a poor outcome for future customers, who bear associated costs via passing through costs (cost sharing).¹³⁵

- 3.32 On **business rates**, we note that Disputing Companies will be able to recover 90% of any additional business rates costs from customers at the end of the AMP, once the cost to companies is known.¹³⁶ This in our view provides strong support for deprioritisation. While we accept that there is some uncertainty as to the precise value of claims raised in relation to business rates, it is clear that the impact on any Disputing Company from our deprioritisation of business rates

¹²⁹ We note that Ofwat supported the CMA's provisional decisions to deprioritise these base cost issues (see Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), pp8–9, Table 1).

¹³⁰ South East (2025) [Reply to CMA PR24 Approach document](#), paragraph 3.5; Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 24; Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraph 21; and see also Thames Water (2025) [Response to CMA PR24 PD](#), paragraph 151.

¹³¹ Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraph 22.

¹³² Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraph 21.

¹³³ Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 25.

¹³⁴ Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 23; Southern (2025) [Reply to CMA PR24 Approach document](#), paragraph 2(a); Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraph 21; and see also Thames Water (2025) [Response to CMA PR24 PD](#), paragraph 150.

¹³⁵ Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 24.

¹³⁶ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp64–65.

would be immaterial, including due to the application of cost sharing. We therefore find in the round that focusing on this matter would not be consistent with the overriding objective.

- 3.33 On **national insurance charges, the Ofwat licence fee and the EA levy**, we received estimates of the value of these claims from some but not all Disputing Companies. However, based on the estimates we received, we have confidence that the value of the claims will fall below the de minimis threshold we set in the CMA PR24 Approach document. On the EA levy, we note Ofwat's submission that Disputing Companies would also be able to recover from customers 75% of any cost increases.¹³⁷ Disputing Companies would also be able to recover 50% of any overspend on overall base costs from customers at the end of the AMP, once the cost to companies is known.¹³⁸ We therefore find in the round that focusing on these matters would not be consistent with the overriding objective.
- 3.34 Some Disputing Companies argued that updating for business rates, national insurance charges, the Ofwat licence fee and the EA levy would be a simple exercise. We do not agree that making updates for these matters is as simple as suggested by some Disputing Companies. For example, national insurance charges are not a separate cost item in the company allowances. In addition, it was not certain that before the CMA's final determinations we would obtain the sufficiently robust final information needed to update allowances (for example, business rates). This in our view adds to the case for deprioritisation.
- 3.35 In response to our CMA PR24 Approach document Disputing Companies argued that asset health and residential retail allowances should not be deprioritised. We summarise submissions received below.
- (a) While Disputing Companies recognised that the CMA would not be able to address all **asset health** issues, it was a topic raised by all Disputing Companies and third parties and has a significant impact on current and future bills, resilience and other outcomes.¹³⁹ ¹⁴⁰ Disputing Companies referred to the findings of the IWC to support their response, and, while they expressed some support for Ofwat's asset health roadmap, they did not

¹³⁷ Ofwat (2025) [Response to Disputing Companies' submissions on other Disputing Companies' SoCs](#), paragraph A1.5.

¹³⁸ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.351; and Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), Table 39. Thames Water submitted that the CMA should introduce a regulatory mechanism for companies to recover these deprioritised base costs (referring to national insurance contributions): Thames Water (2025) [Response to CMA PR24 PD](#), paragraph 153. We consider that developing such a mechanism following one submission in response to the CMA PR24 PD would be disproportionate in the context of this redetermination process when set against the potential impact.

¹³⁹ For example, Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 28; Southern (2025) [Reply to CMA PR24 Approach document](#), paragraph 4; Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 32 and 86; Northumbrian, (2025) [Response to CMA PR24 PD](#), p8; Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p8, table 1; Wessex (2025) [Response to CMA PR24 PD](#), paragraphs 4.3–4.5; and Water UK (2025) [Response to CMA PR24 PD](#), pp5–6.

¹⁴⁰ Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraphs 27 and 31.

consider that this alternative route is adequate for PR24.¹⁴¹ ¹⁴² Disputing Companies submitted that the CMA should consider the wider asset health context when considering their claims.¹⁴³

- (b) On **residential retail allowances**, Anglian submitted that the CMA should at least update the models to reflect Disputing Company inputs which were not already reflected and that this would be straightforward to calculate, using existing data the CMA holds.¹⁴⁴ Anglian noted that its claim is not de minimis in the context of the retail price control.¹⁴⁵ Southern noted in its response to the CMA PR24 Approach document that it is a material issue for Southern and if the CMA makes any changes to wholesale price controls, a mechanical adjustment is required to retail allowances.¹⁴⁶

- 3.36 On **asset health**, we set out more detail on our assessment in chapter 4 (Base costs). In that chapter, we have considered the specific claims related to asset health submitted by the Disputing Companies. For example, we have considered claims related to Ofwat's sector-wide adjustments for mains renewals and meter renewals, notably where these related to Ofwat's evaluation of what base buys, adjustments for under-delivery, and unit costs. However, we continue to consider that any fundamental changes to the regulatory framework are best addressed through industry-wide policy work, outside of these redeterminations.
- 3.37 Ofwat's 'cost change process' consultation and associated final decision in November 2025 began an important move in the right direction on these matters and a potential means for water companies to access additional asset health funding in-period or at the end of the period.¹⁴⁷ We also note the focus on infrastructure resilience and asset health in the IWC's review and the Defra White Paper.
- 3.38 In our view, continued engagement by the Disputing Companies with this ongoing wider work is the best means to address more fundamental changes in how asset health is monitored and how relevant allowances are designed going forward. Ofwat's cost change process decision includes a decision to modify water company licences that was appealable by Disputing Companies to the CMA under section 12D of the Act. Further, determinations by Ofwat under the cost change

¹⁴¹ Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 28; Southern (2025) [Reply to CMA PR24 Approach document](#), paragraphs 1 and 4; Wessex (2025) [Reply to CMA PR24 Approach document](#), paragraph 1.28; and Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraph 9.

¹⁴² Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 30; and Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraph 8.

¹⁴³ Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 30; Southern (2025) [Reply to CMA PR24 Approach document](#), paragraph 4; and Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraph 6.

¹⁴⁴ Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 20; and Anglian (2025) [Response to CMA PR24 PD](#), p9, paragraph 26 and p107, paragraph 283.

¹⁴⁵ Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraph 21.

¹⁴⁶ Southern (2025) [Reply to CMA PR24 Approach document](#), paragraph 2(c).

¹⁴⁷ [Consultation on the PR24 cost change process and proposed licence modifications - Ofwat](#) and Ofwat (2025) [Cost change process decision document](#).

process would be subject to a redetermination by the CMA if requested by a company (with the timing of the redetermination depending on whether the dispute concerned an in-period or end-of-period adjustment).¹⁴⁸

- 3.39 On **residential retail allowances**, we have decided to deprioritise this request as disproportionate compared to the impact.¹⁴⁹ While we are making certain updates to retail allowances that are purely mechanical in nature (eg to reflect our updated frontier shift), the updates proposed would require significant further work. For example, on requests relating to updating average bill forecasts we would need to verify updated data including at the sector-wide level to ensure that customers are adequately protected. This would be in the context of an area we have not otherwise assessed as part of the redeterminations. Contrary to the responses received, we do not therefore consider this a simple update.¹⁵⁰ We therefore find in the round that focusing on these matters would not be consistent with the overriding objective to dispose of redeterminations fairly, efficiently and at proportionate cost within the time available.

Enhancement costs

- 3.40 We continue to deprioritise as de minimis two Southern claims:

- (a) **£21 million claim for Monitoring Certification Scheme (MCERTS) flow monitoring at sewage treatment works**; and
- (b) **£13.8 million claim for certain Water Industry National Environment Programme (WINEP) water and wastewater projects**.

- 3.41 Southern raised concerns on these matters in response to the CMA PR24 Approach document.¹⁵¹ While these schemes both fall under our de minimis threshold, we also considered their collective value when compared against Southern's overall enhancement allowance under Ofwat's PR24 FD. These 2 schemes collectively represent £34.8 million compared against an overall enhancement allowance in Ofwat's PR24 FD of £4.6 billion.¹⁵² We therefore consider that the scale of the impact of these 2 claims is unlikely to be material. Disputing Companies would also be able to recover 60% of the overspend on overall enhancement costs from customers.¹⁵³

¹⁴⁸ Ofwat (2025) [Cost change process decision document](#), p19, section 2.5.

¹⁴⁹ We note that Ofwat supported this decision in the CMA PR24 PD. See Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p9, table 1.

¹⁵⁰ Southern (2025) [Reply to CMA PR24 Approach document](#), paragraph 2(c); Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraphs 20–21; and Anglian (2025) [Response to CMA PR24 PD](#), p9, paragraph 26 and p107, paragraph 283.

¹⁵¹ Southern (2025) [Reply to CMA PR24 Approach document](#), paragraph 2.

¹⁵² Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), Table 50.

¹⁵³ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p303.

- 3.42 On the first claim, we also considered Southern's response to the CMA PR24 Approach document around disaggregation of issues that should be considered together. Southern submitted that the de minimis threshold applied separately would result in monitoring at emergency overflows being considered but flow monitoring at sewage treatment works not being considered.¹⁵⁴ In light of this, we asked the firm of engineering consultants assisting the CMA on technical engineering matters, Water Research Centre Group (**WRc**), for a view on the overlap between Southern's claims. WRc advised us that while the equipment to be installed was very similar, the additional logistics, planning and operational procedures will mean that an installation in an emergency pumping station will, in general, take longer and be more expensive than an equivalent installation on a wastewater treatment works. We are therefore satisfied that it is appropriate to consider these matters separately and to deprioritise the first Southern claim listed above.
- 3.43 We continue to deprioritise the following four South East claims as de minimis:
- (a) **£1.9 million claim for drinking water protected areas programme;**
 - (b) **£1.5 million claim for a cyber security scheme;**
 - (c) **£1.2 million for a security and emergency measures direction project;**
and
 - (d) **£2.6 million for raw water deterioration.**
- 3.44 South East raised concerns on these matters in response to the CMA PR24 Approach document¹⁵⁵ and the CMA PR24 PD,¹⁵⁶ stating that these claims are important areas of security and water quality that matter to its customers. While these schemes all fall under our de minimis threshold, we also considered their collective value when compared against South East's overall enhancement allowance under Ofwat's PR24 FD. These 4 schemes collectively represent £7.2 million compared against an overall enhancement allowance in Ofwat's PR24 FD of £580 million.¹⁵⁷ We therefore consider that the scale of the impact of these four claims is unlikely to be material. Disputing Companies would be able to recover 60% of any overspend on overall enhancement costs from customers.¹⁵⁸
- 3.45 However, in the CMA PR24 PD we updated our approach to the following two South East claims in light of South East's submissions and we retain that approach in this report:¹⁵⁹

¹⁵⁴ Southern (2025) [Reply to CMA PR24 Approach document](#), paragraph 2(b).

¹⁵⁵ South East (2025) [Reply to CMA PR24 Approach document](#), paragraphs 3.7–3.12.

¹⁵⁶ South East (2025) [Response to CMA PR24 PD](#), paragraph 3.186.

¹⁵⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), Table 50.

¹⁵⁸ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p303.

¹⁵⁹ South East (2025) [Reply to CMA PR24 Approach document](#), paragraphs 3.9(f) and 3.13–3.15.

- (a) **£6.8 million for the Southern River Medway water treatment works upgrade; and**
- (b) **£9 million claim in relation to perfluoroalkyl and polyfluoroalkyl substances (PFAS).**¹⁶⁰

- 3.46 On the first claim, we accept that it would be inconsistent to consider a related Southern claim and not South East's claim in light of the clear links between them. We have considered this claim and discuss further in chapter 5 (Enhancement costs).
- 3.47 On the second claim, we had previously deprioritised all elements of it following assurances from Ofwat that this could be considered as part of Ofwat's PFAS uncertainty mechanism. The PFAS uncertainty mechanism will form part of Ofwat's cost change process. Following submissions from South East and Ofwat, we noted in the CMA PR24 PD that at least one part of this claim relates to PFAS investigations rather than PFAS interventions. Ofwat explained that PFAS investigations will not be eligible for the cost change process. South East confirmed that £4.2 million of its claim related to PFAS investigations. We assess this claim in chapter 5 (Enhancement costs).¹⁶¹
- 3.48 We deprioritised the remainder of South East's PFAS claim that relates to PFAS interventions in the CMA PR24 PD and we retain that approach in this report. This is because PFAS interventions will be eligible for Ofwat's cost change process and Ofwat had given assurances confirming the same in respect of South East's proposed interventions.¹⁶² We note that in a more recent submission Ofwat suggested that the interventions may not in fact be eligible due to a triviality threshold set out in its cost change process consultation.¹⁶³ South East raised concerns in response to the CMA PR24 PD about Ofwat's comments, asking the CMA either to provide funding or to direct Ofwat to change its triviality threshold.¹⁶⁴ However, Ofwat stated in its cost change decision document that the threshold does not apply to individual schemes (companies can combine multiple schemes within a category to form a cost change claim) and no company with deferred PFAS schemes told Ofwat that that it expected to not be able to meet the triviality threshold. Ofwat also noted that if it becomes aware of new evidence that the triviality threshold is not appropriate, it will consider whether it needs to review its approach.¹⁶⁵ In light of Ofwat's previous assurances around South East's PFAS interventions and the flexibility it has afforded itself in its decision, Ofwat should

¹⁶⁰ This relates to addressing risks that affect raw water quality from certain substances otherwise known as 'forever chemicals'.

¹⁶¹ Ofwat response to Ofwat RFI16, Q2; South East (2025) Response to Hearings (non-confidential), paragraph 10.

¹⁶² See, for example, Ofwat (2025) [Response to South East SoC](#), paragraph 4.174–4.189.

¹⁶³ Ofwat response to Ofwat RFI16, Q1, Q2, Q3.

¹⁶⁴ South East (2025) [Response to CMA PR24 PD](#), paragraphs 3.177–3.181.

¹⁶⁵ Ofwat (2025) [Cost change process decision document](#), p12.

take the steps necessary to ensure that South East's PFAS interventions are considered as part of its cost change process.

Use of new evidence and updated information

- 3.49 We may take account of evidence that was not available to Ofwat at the time of its PR24 FD. One way we can do this is to use recent market data in our assessments. We note that Citizens Advice¹⁶⁶ and Ofwat requested that we do not take account of more recent data that was not available at the time of Ofwat's decision. In response to the CMA PR24 PD, Ofwat noted that if the CMA chooses to use updated data, it is important to alleviate the risk of an unbalanced or selective redetermination by updating all relevant parameters.¹⁶⁷ The Disputing Companies and some third parties also provided submissions on the extent to which the CMA ought to consider updated information and evidence.¹⁶⁸
- 3.50 We understand that taking account of more recent data than was available to Ofwat risks creating incentives on companies to challenge Ofwat's determination where they consider the new data is likely to result in a better outcome for their businesses. However, our role in providing a redetermination means we are not simply deciding whether Ofwat's PR24 FD was right or wrong, but rather we are required to reach a decision about the correct price control to be applied at the time we make the redetermination. In this context, we consider that the current regulatory framework would not allow us to take a blanket decision to disregard evidence that was unavailable to Ofwat. Instead, we considered the appropriate use of new data on a case-by-case basis, including considering whether new data that becomes available to us was relevant and robust, and able to be properly analysed and quality assured within the timescale of our redetermination process.¹⁶⁹
- 3.51 In view of those considerations, we have made changes to reflect certain updated data. We have made updates in this final report to:
- (a) use 2024-2025 outturn company data to update supply interconnectors enhancement modelling;
 - (b) use 2024-2025 outturn company performance data to update performance commitment levels (**PCLs**) and outcome delivery incentive (**ODI**) rates where

¹⁶⁶ For example, Citizens Advice (2025) [Response to CMA PR24 PD](#), paragraphs 4(a), 7, 10, and 14–16.

¹⁶⁷ Ofwat (2025) [Response to CMA PR24 PD: Overview](#), p7, paragraph 1.25.

¹⁶⁸ For example, see Anglian (2025) [Reply to CMA PR24 Approach document](#), paragraphs 10–11; Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraph 2 (third bullet); Anglian (2025) [Response to CMA PR24 PD](#), p151 (at point (ii)); South East (2025) [Response to CMA PR24 PD](#), paragraphs 2.51–2.52; Southern (2025) [Response to CMA PR24 PD](#), paragraphs 1.81–1.82; Water UK (2025) [Response to CMA PR24 PD](#), pp2 and 4.

¹⁶⁹ See also [CMA PR24 Approach document](#), paragraph 96.

we have assessed the PCL or ODI rates as part of the redetermination process; and

- (c) apply a cut-off of 30 November 2025 for market data.

4. Base costs

Introduction

- 4.1 In this chapter we set out our assessment and final decisions on base expenditure allowances that are used to fund base costs. Base costs are routine, year-on-year costs, which companies incur in the normal running of the business to provide a base level of service to customers and maintain the long-term capability of assets.¹⁷⁰
- 4.2 The setting of base expenditure involves two key aspects. Customers should receive value for money and not pay for inefficiency and companies should have sufficient funding to maintain their assets, provide a good level of service and deliver improvements for customers, and the environment.¹⁷¹ For example, the base expenditure allowances will provide funding for the efficient replacement of water mains, helping to reduce leaks.
- 4.3 In its PR24 FD, Ofwat allowed £60.1 billion of base expenditure allowances across the industry. Ofwat explained that this was 19% higher than base allowances in its PR19 final determination and 7% more than companies had spent in the five years prior to its FD.¹⁷²
- 4.4 Ofwat's base costs assessment involved three key elements: base cost econometric benchmarking models, cost adjustment claims and unmodelled base costs.¹⁷³
- 4.5 In the longer-term, the framework for setting base funding will reflect the Government's white paper (**Defra White Paper**), which proposes a more supervisory approach to regulation.¹⁷⁴ However, ahead of the implementation of this approach, these redeterminations have been made under the current framework for setting base funding and with the information available at this time. Our approach to the assessment of base costs set out below is not necessarily something we expect would be followed in future decisions on base costs in the context of a reformed regulatory regime.
- 4.6 The scope of our assessment of base costs has necessarily required prioritisation due to the limited time available to us during the redeterminations. Following our prioritisation decisions, our assessment has focused on the following:

¹⁷⁰ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p18.

¹⁷¹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p2.

¹⁷² Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p19.

¹⁷³ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p18.

¹⁷⁴ [Defra White Paper](#) (accessed 26 February 2026), p19.

- (a) assessment of wholesale water and wastewater econometric benchmarking models;
- (b) asset health;
- (c) cost adjustment claims and certain other company-specific claims; and
- (d) the level of frontier shift and catch-up efficiency challenge.

4.7 The headline outcomes of our assessment are as follows – with the detailed reasons for these decisions set out in the rest of this chapter.

- (a) We have implemented a revised approach to modelling wholesale water and wastewater (not including bioresources) base costs.
- (b) We have allowed a number of company-specific claims for additional base funding beyond those allowed by Ofwat in its PR24 FD, and have made some limited changes to sector-wide cost adjustments received by Disputing Companies.
- (c) We have decided that broader issues on asset health funding are better dealt with through industry-wide policy work. Ofwat's AMP8 cost change process (**CCP**), and the longer-term reform process allow for the collection of robust and comparable asset health data across the water sector which is currently lacking. The CCP brings the possibility of additional asset health allowances from 2027. We did not consider it appropriate to grant additional asset health allowances now through the Cost Adjustment Claims (**CACs**) proposed by disputing companies, as we did not find evidence that specified assets were both outside the scope of the CCP and facing immediate critical investment needs.
- (d) We have set the level of frontier shift to 0.7%.
- (e) We have set a catch-up efficiency challenge at the upper quartile benchmark.

4.8 Table 4.1 below shows the outcome of our final decisions for each Disputing Company.

Table 4.1: Impact of final decisions on wholesale water, wastewater and bioresources base cost allowances

Description	Ofwat PR24 FD	CMA final decision	CMA final decision minus Ofwat PR24 FD
	£m	£m	£m
<i>Anglian</i>			
Base cost modelled (water, waste and bioresources) post efficiency challenge but before RPEs and Frontier shift	4059.2	4034.0	-25.2
Energy sector wide adjustment (note: energy costs included in water and wastewater base models for CMA PR24 FD)	120.0	-1.9	-121.9
Mains renewals sector wide adjustment	108.9	114.5	5.6
Meter replacement sector wide adjustment	144.4	145.2	0.7
Network reinforcement sector wide adjustment	55.2	96.8	41.6
Boundary box CAC	0.0	113.0	113.0
Economies of scale at water treatment works CAC	0.0	0.0	0.0
Coastal population wastewater treatment works CAC	0.0	0.0	0.0
Leakage CAC	0.0	0.0	0.0
Storage points and gravity sewers CAC	0.0	0.0	0.0
RPEs and frontier shift	-108.6	-118.6	-9.9
Total change in base allowance			4.0
<i>Northumbrian</i>			
Base cost modelled (water, waste and bioresources) post efficiency challenge but before RPEs and Frontier shift	2400.9	2329.6	-71.3
Energy sector wide adjustment (note: energy costs included in water and wastewater base models for CMA PR24 FD)	83.8	-5.4	-89.2
Mains renewals sector wide adjustment	19.4	48.6	29.2
Meter replacement sector wide adjustment	51.3	51.1	-0.2
Network reinforcement sector wide adjustment	0.1	31.0	30.9
Economies of scale at water treatment works CAC	0.0	0.0	0.0
Coastal population wastewater treatment works CAC	0.0	13.2	13.2
Northumbrian civil structures CAC	0.0	0.0	0.0
RPEs and frontier shift	-61.4	-65.1	-3.7
Total change in base allowance			-91.2
<i>Southern</i>			
Base cost modelled (water, waste and bioresources) post efficiency challenge but before RPEs and Frontier shift	2941.2	2990.6	49.4
Energy sector wide adjustment (note: energy costs included in water and wastewater base models for CMA PR24 FD)	58.4	-3.5	-61.9

Description	Ofwat PR24 FD	CMA final decision	CMA final decision minus Ofwat PR24 FD
	£m	£m	£m
Mains renewals sector wide adjustment	98.8	116.6	17.8
Meter replacement sector wide adjustment	6.1	28.3	22.1
Network reinforcement sector wide adjustment	45.8	57.2	11.3
Economies of scale at water treatment works CAC	19.4	13.5	-6.0
Coastal population wastewater treatment works CAC	0.0	56.8	56.8
Boundary boxes claim	0.0	0.0	0.0
Energy CAC	0.0	N/A - energy included in base models	N/A
Wages CAC	0.0	N/A - wages included in base models	N/A
RPEs and frontier shift	-76.2	-86.1	-9.9
Total change in base allowance			79.6
<i>South East</i>			
Base cost modelled (water, waste and bioresources) post efficiency challenge but before RPEs and Frontier shift	797.8	824.0	26.2
Energy sector wide adjustment (note: energy costs included in water and wastewater base models for CMA PR24 FD)	29.3	0.0	-29.3
Mains renewals sector wide adjustment	23.9	31.8	7.9
Meter replacement sector wide adjustment	29.5	30.5	1.0
Network reinforcement sector wide adjustment	32.2	41.2	9.1
Economies of scale at water treatment works CAC	14.3	17.0	2.7
Coastal population wastewater treatment works CAC	0.0	0.0	0.0
RPEs and frontier shift	-23.1	-26.2	-3.1
Total change in base allowance			14.5
<i>Wessex</i>			
Base cost modelled (water, waste and bioresources) post efficiency challenge but before RPEs and Frontier shift	1617.1	1609.5	-7.6
Energy sector wide adjustment (note: energy costs included in water and wastewater base models for CMA PR24 FD)	45.9	-0.1	-46.0
Mains renewals sector wide adjustment	8.3	17.4	9.1
Meter replacement sector wide adjustment	23.3	23.1	-0.2
Network reinforcement sector wide adjustment	19.9	22.8	2.8
Economies of scale at water treatment works CAC	4.5	28.0	23.5
Coastal population wastewater treatment works CAC	0.0	14.8	14.8
RPEs and frontier shift	-41.7	-45.3	-3.6

Description	Ofwat PR24 FD	CMA final decision	CMA final decision minus Ofwat PR24 FD
	£m	£m	£m
Total change in base allowance			-7.2

Source: CMA analysis

4.9 In this chapter we set out our approach to determining the Disputing Companies' base cost allowances and cover the following topics:

- (a) base cost modelling;
- (b) asset health;
- (c) cost adjustment claims (**CACs**);
- (d) other claims (Southern claims which are not CACs);
- (e) frontier shift; and
- (f) overall assessment of funding available in base costs

Base cost modelling

Background

4.10 At PR24, Ofwat used econometric modelling to set allowances for modelled costs.¹⁷⁵ This involved the following steps.

- (a) First, Ofwat estimated a series of econometric models of base costs, reflecting a selection of cost drivers (24 models in wholesale water, and 7 models in wastewater). The estimation used historical data for 12 financial years (2011/12 to 2023/24).
- (b) Second, Ofwat used the estimated models to predict base costs for each company for AMP8, using forecasts of the different cost drivers. Predictions were generated for each of the 31 models and then averaged across models.
- (c) Third, Ofwat reduced the predicted base costs of each company by the 'catch-up efficiency challenge', which corresponded to the upper quartile (**UQ**) of differences between actual and predicted costs for the companies, measured over the past five financial years (2019/20 to 2023/24);

¹⁷⁵ Ofwat (2024) [PR24 final determinations: Expenditure allowances - base cost modelling decision appendix](#).

- (d) Fourth, Ofwat applied Real Price Effects (**RPEs**) to account for any expected changes in input prices that were not captured by the general indexation of allowed revenues with inflation.¹⁷⁶
- (e) Finally, Ofwat applied a frontier shift to encourage leading companies to improve further and account for ongoing efficiency.

- 4.11 Each modelled business (wholesale water and wastewater) encompasses two constituent activities, broadly corresponding to treatment and network operations: the wholesale water business covers ‘water resources plus’ (broadly treatment operations) and ‘treated water distribution’ (broadly network operations); and the wastewater business covers ‘sewage treatment’ and ‘sewage collection’. For wholesale water and wastewater Ofwat models costs both at the ‘top-down’ level which combines costs across activities (eg for all of wholesale water), and at the ‘bottom-up’ level (ie estimate at the level of each of the four constituent activities). Under Ofwat’s approach the predictions from the top-down and bottom-up models are then averaged to calculate allowances.¹⁷⁷
- 4.12 Our approach to base cost modelling follows the same overall structure as Ofwat and uses Ofwat’s input data and forecasts, but involves different methodological approaches at certain steps which we describe in detail in this section. We have sought input from interested parties in our approach document, at hearings, in our provisional determinations and in our Working Paper. At various stages we have received detailed feedback from stakeholders on our approach which we have considered carefully.
- 4.13 As set out in the CMA PR24 Approach Document and the CMA PR24 PD, we have focused our redeterminations of base cost modelling on wastewater and wholesale water models.¹⁷⁸ We have not sought to redetermine Ofwat’s retail or bioresources models.¹⁷⁹ In the remainder of this section, references to base cost models are to wastewater and wholesale water models unless otherwise specified.
- 4.14 We first considered what revisions might be appropriate to Ofwat’s base cost modelling having read the statements of case of the Disputing Companies. In those statements of case, several disputing companies raised concerns related to

¹⁷⁶ Ofwat applies RPEs to account for input costs rising faster than general inflation. Ofwat also provides a ‘true-up’ mechanism post-period to reconcile predicted and actual input prices. In this category Ofwat apply the following adjustments: a labour cost RPE for wholesale labour costs, an ex-post true-up between forecast and outturn wage growth, a labour cost RPE for retail labour costs (with no associated ex-post true-up), an energy cost adjustment to base expenditure, an ex-post energy cost true-up between forecast and outturn energy prices, and an ex-post true-up for materials, plant and equipment enhancement expenditure.

¹⁷⁷ Ofwat (2024) [PR24 final determinations: Expenditure allowances - base cost modelling decision appendix](#)

¹⁷⁸ [CMA PR24 Approach document](#), paragraphs 40–53.

¹⁷⁹ CMA (2025) [Water PR24 References Provisional Determinations Volume 1: Introduction, Background, Approach and prioritisation, Base costs – Chapters 1–4 \(CMA PR24 PD Volume 1\)](#), p49, paragraph 4.44–4.48

Ofwat's PR24 FD base cost models. In particular, these concerns included the following.

- (a) South East's statement of case raised a series of detailed concerns with Ofwat's PR24 base models, and how they did not adequately reflect industry-wide cost pressures relating to topography, population growth and water treatment complexity. It argued for the inclusion of both average pumping head (APH) and booster pumping stations in the models to capture the full impact of network topography on costs. It requested that the number of connected properties be included as a scale driver to better account for population growth and network reinforcement needs. It also stated that weighted average complexity would be better specified in levels than in logarithmic form statistically. South East also noted the lack of evidence supporting Ofwat's efficiency challenge. It claimed that the UQ was achievable, but only insofar as other implicit/explicit challenges including frontier shift, stretching PCLs and enhancement funding reallocation were corrected.¹⁸⁰
- (b) Southern raised a range of concerns with Ofwat's base modelling, especially around specification. It requested the CMA to remove the 'Load treated in size bands 1 to 3 (%)' variable, claiming it was insignificant, lacked robust theoretical or empirical basis, and could distort cost estimation. It also requested to remove APH, citing data quality concerns. In response to other Disputing Parties' statements of case, Southern supported the inclusion of connected properties as a scale driver in treated water distribution models.¹⁸¹
- (c) Northumbrian's principal request in its statement of case related to the application of the UQ catch-up efficiency challenge. It argued that, given the inherent limitations of econometric modelling, the UQ benchmark risks a downward spiral in allowances over time. Northumbrian also raised concerns about the adequacy of allowances for capital maintenance, especially adjustments for mains renewals.¹⁸² Responding to statements of case from Disputing Parties, Northumbrian noted that base cost modelling is a natural area of contention between companies and should not be reconsidered as part of the redetermination.¹⁸³
- (d) Wessex expressed strong concerns in its statement of case about underfunding arising from historical outturn spend. It argued that Ofwat's models were counterintuitive and failed to capture the complexity of the water industry and issues such as rurality, asset health, and performance. It noted that Wessex was assessed as efficient at previous price controls but found to

¹⁸⁰ [South East SoC](#), paragraphs 4.14.(b), 4.18–4.21.

¹⁸¹ [Southern SoC](#), pp114–131, chapter 2, section 2.1.1–2.1.2.

¹⁸² [Northumbrian SoC](#), paragraphs 332–336.

¹⁸³ Northumbrian (2025) [Response to other Disputing Companies' SoCs](#), pp9–11, section 5.1.

be 30% inefficient in wholesale water at PR24. Wessex requested the CMA to put aside the results of the models and set its base costs based on the ‘bottom-up’ engineering evidence submitted in the Wessex business plan. It also asked for the application of an evidence-based ongoing efficiency challenge.¹⁸⁴

- (e) Anglian did not raise issues with Ofwat PR24 FD modelling but submitted that the CMA should use the most up-to-date and accurate data (including 2024-2025 outturns) to ensure that outcomes better reflect past performance and future capabilities.¹⁸⁵
- (f) Several Disputing Companies raised issues relating to cost adjustment claims which are relevant to the modelling. These include Southern’s coastal population, regional wages and energy cost adjustment claims, alongside South East’s economies of scale in wastewater treatment services claim.¹⁸⁶
¹⁸⁷

4.15 In its response to the Disputing Companies’ statements of case, Ofwat maintained that its base expenditure benchmarks were robust, and supported by both economic and engineering rationale. Ofwat also defended its use of historical data for benchmarking, noting that this approach mitigated the risk of perverse incentives and ensured that customers do not pay twice for asset renewals. Ofwat argued that the UQ efficiency challenge was consistent with regulatory best practice and was not overly stringent as the adjustment was smaller than at previous price controls.¹⁸⁸ Ofwat also emphasised that it had made extensive cost adjustments where companies had provided compelling evidence of unique circumstances.¹⁸⁹

4.16 In light of the range of conflicting concerns raised in this area, in the CMA PR24 Approach document we proposed to adopt a revised methodology for base cost modelling.¹⁹⁰ In particular we proposed to explore a data-driven approach to variable selection using econometric tools such as Least Absolute Shrinkage and Selection Operator (**LASSO**). We considered that this approach may be well suited to the assessment of the disputed points, insofar as much of the debate between Ofwat and the Disputing Companies revolves around the degree of correlation between potential explanatory variables, and which set of variables can best predict costs given the limited number of observations. We continue at final determination stage to consider that it would be challenging to reconcile the conflicting concerns raised within Ofwat’s methodological approach to modelling.

¹⁸⁴ [Wessex SoC](#), pp38–59, chapter 8.

¹⁸⁵ [Anglian SoC](#), paragraphs 306–309.

¹⁸⁶ [South East SoC](#), paragraph 4.33(a).

¹⁸⁷ [Southern SoC](#), pp148–162, pp190–199.

¹⁸⁸ Ofwat (2025) [Response to common issues on expenditure allowances](#), section 2.

¹⁸⁹ Ofwat (2025) [Response to common issues on expenditure allowances](#), p1.

¹⁹⁰ [CMA PR24 Approach document](#), paragraph 41.

Under Ofwat's modelling approach many models are used and, adding or removing cost drivers, involves judgements on removing or adding whole models and/or the weight to give to different models. This is complex and challenging where companies disagree. Thus, we consider that our revised methodological approach remains a better way to address these concerns.

- 4.17 We are also mindful that the IWC found that, while it is necessary to have objective benchmarking to protect customers from misuse of monopoly power, over-reliance on this approach had led to sub-optimal outcomes.¹⁹¹ The IWC recommended that a supervisory approach be used to inform future price controls (from 2030), with the econometric benchmarked outputs balanced with company-specific and expert supervisory judgement. The recent UK government white paper on water (Defra White Paper) made similar comments, noting an over-reliance on industry-wide benchmarking and economic modelling. It stated that to fix this it will require and support the new regulator to adopt a supervisory approach. It noted this will transform the way water companies are regulated. While benchmarking and modelling would continue to be an important tool to avoid abuse of monopoly power, the new supervisory approach would allow improvement through company specific capability and contextual judgement within the new regulator.¹⁹² This supervisory approach is in development as part of the government's reform agenda, along with a range of other matters. The Defra White Paper sets out the steps that need to be taken to implement this new approach.¹⁹³ As a result, the benefit of this new supervisory approach not available to us in this process.
- 4.18 With that in mind, we have decided to use benchmarking to set allowances for companies, adjusted as needed on the basis of evidenced cost adjustment claims. While the government's reform agenda means that this basic structure for assessing modelled allowances may not be followed in future, in our judgement it remains for the purposes of this redetermination the best way to balance the applicable statutory duties. At the same time, we have made sure to carefully consider asset health matters (paragraphs 4.171 to 4.512), companies' underfunding concerns (paragraphs 4.1056 to 4.1129) and allowances outside the modelling (paragraphs 4.513 to 4.898).
- 4.19 We have sought to use a simpler approach to benchmarking, relying on fewer models that each incorporate additional cost drivers and explain a larger share of cost differences between companies (as opposed to many, narrower models). To assist in implementing this approach as explained in paragraph 4.16 we have sought to use data driven tools such as LASSO.

¹⁹¹ [IWC Final Report](#), pp193–194

¹⁹² [Defra White Paper](#) (accessed 26 February 2026), p19.

¹⁹³ [Defra White Paper](#) (accessed 26 February 2026), p19.

- 4.20 At the CMA PR24 Approach document stage and in follow-up discussions at the hearings, both Ofwat and Disputing Companies cautioned that the use of data driven tools such as LASSO is relatively novel in regulation and that, if used, care would be needed to ensure the methodology results in models that uphold the economic and engineering rationale.¹⁹⁴
- 4.21 This approach involved moving away from ‘triangulation’ (ie averaging) across many models with different levels of aggregation and sets of cost drivers and instead using data-driven methods to address cost driver and model selection issues.¹⁹⁵ In the CMA PR24 PD we explained that it was not clear to us how applying arbitrary weights to different models estimated with different cost drivers, which is what triangulation does, was a more effective way of dealing with variable and model selection issues compared to the approach we took.¹⁹⁶
- 4.22 In response to the CMA PR24 PD, companies expressed concerns with our approach, while Ofwat supported the approach but noted implementation concerns.¹⁹⁷ Respondents opposed to our approach highlighted implementation issues, methodological concerns about the use of LASSO and policy concerns about the lack of interpretability, stretching nature of the resulting allowances and appropriateness of the modelling in a regulatory setting.
- 4.23 Following our PR24 PD, we updated our approach to take account of responses which raised material concerns. We decided to invite views on this updated approach through publication of a Working Paper. This Working Paper made several changes to the approach. In particular, we:
- (a) addressed technical implementation issues;
 - (b) changed the algorithm used to implement LASSO so that the results were more stable and not dependent on the order in which variables were listed;
 - (c) adopted a different cross-validation method that addressed the sensitivity arising from the choice of folds and selected the regularisation parameter in a way that prioritised data fit over sparsity in variable selection;
 - (d) added additional sensitivity tests;
 - (e) provided greater explanation of impact of modelling energy prices on the resulting catchup efficiency challenge; and

¹⁹⁴ Ofwat (2025) [Response to Approach document](#), paragraphs 1.16–1.20; Northumbrian (2025) [Reply to CMA PR24 Approach document](#), paragraph 12; South East (2025) [Reply to CMA PR24 Approach document](#) paragraphs 3.3– 3.4; Southern (2025) [Reply to CMA PR24 Approach document](#), paragraph 3 and Annex ‘The LASSO technique’.

¹⁹⁵ [CMA PR24 PD Volume 1](#); [Working Paper](#).

¹⁹⁶ [CMA PR24 PD Volume 1](#), p48, paragraph 4.40.

¹⁹⁷ [Working Paper](#), section 1, paragraph 1.2 and 1.5, see also the section below on submissions on base costs.

(f) provided further information on our approach to true-ups and RPEs.

4.24 Before detailing our final approach and rationale we summarise the submissions received on base cost modelling. We focus primarily on submissions to our Working Paper or those to the CMA PR24 PD to the extent that they were not fully addressed at Working Paper stage.

Submissions on base modelling

4.25 To structure this section, we have grouped submissions received at the PD and Working Paper stages by the following common themes:

- (a) reliance on econometrics and engineering grounding;
- (b) triangulation;
- (c) robustness of LASSO and Principal Component Analysis (PCA);
- (d) inclusion of input prices;
- (e) UQ challenge; and
- (f) other issues including concerns about panel data, data quality of APH and density variables.

Reliance on econometrics and engineering grounding

4.26 Some Disputing Companies in their responses to the CMA PR24 PD stated that the CMA had relied too heavily on an econometric approach. They argued that this did not reflect the economic and business reality of the water industry.

- (a) Anglian stated that the econometric models were not consistent with operational, economic and engineering rationale. It also said that our modelling approach was not robust in statistical and econometric terms.¹⁹⁸
- (b) Northumbrian said that we placed too much weight on a data-driven approach, and that this did not properly capture the operational reality of the companies.¹⁹⁹
- (c) South East said that we had not properly identified the full set of engineering and operational cost drivers in our cost assessment model.²⁰⁰

¹⁹⁸ Anglian (2025) [Response to CMA PR24 PD](#), p27.

¹⁹⁹ Northumbrian (2025) [Response to CMA PR24 PD](#), p11, paragraph 13; p28, paragraphs 62–63; p29, paragraph 65.

²⁰⁰ South East (2025) [Response to CMA PR24 PD](#), p8, paragraph 1.22.

- (d) Southern said that our econometric modelling did not adequately take into account economic and engineering expert judgment, in particular regarding the economic factors affecting costs related to coastal population.²⁰¹

- 4.27 Ofwat in response to the CMA PR24 PD welcomed that we applied the same overarching approach to assessing base costs, in particular the use of econometric benchmarking models.²⁰² Similarly, it agreed with our decision of focusing on explanatory variables used in its FD base cost models and those proposed by the Disputing Companies.²⁰³ It recognised the benefits of implementing the LASSO technique to alleviate the risk that coefficients captured multiple effects and reduced the influence of outliers, but it also noted that the models may be more difficult to use as a basis for making engineering based assessments.²⁰⁴
- 4.28 Other parties also argued in response to our PD that our modelling approach lacked engineering rationale, such as Severn Trent, United Utilities and Yorkshire Water.²⁰⁵ Similarly, South Staffs Water and Thames Water considered that our methodology over-relied on a data-driven approach.²⁰⁶ Compass Lexecon, advisers to the Thames Investor Group stated that we should have recognised the limits of comparative econometrics and re-introduced expert judgment in our assessment.²⁰⁷ Portsmouth Water considered that econometric models should form part of the regulatory toolkit, but submitted that our approach at PD was diminishing the role of expert judgement.²⁰⁸ On the other hand, CCW supported our modelling and benchmarking approach.²⁰⁹
- 4.29 In their responses to the Working Paper, the Disputing Companies continued to argue that we placed excessive weight on econometric modelling and that our approach was not anchored in operational reality. Most of the respondents noted the findings by the IWC, pointing at the over-reliance on the econometric methodology and the lack of real-world sense checks of the results.
- (a) Anglian considered that we had placed more weight on pure econometric analysis than Ofwat and that this worsened the initial problem in Ofwat's models. Its suggested remedy was in the first place to return to Ofwat's PR24 FD models.²¹⁰ Professor. Kumbhakar, on behalf of Anglian Water,

²⁰¹ Southern (2025) [Response to CMA PR24 PD](#), p9, paragraph 1.37; p11, paragraph 1.48; p72, paragraph 3.91.

²⁰² Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.3.

²⁰³ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.9.

²⁰⁴ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.14.

²⁰⁵ Severn Trent (2025) [Response to CMA PR24 PD](#), p2; United Utilities (2025) [Response to CMA PR24 PD](#), p3, Yorkshire Water (2025) [Response to CMA PR24 PD](#), p4.

²⁰⁶ South Staffs Water (2025) [Response to CMA PR24 PD](#), p4; Thames Water (2025) [Response to CMA PR24 PD](#), p7, paragraph 18.

²⁰⁷ Thames Investor Group (2026) [Response to Working Paper](#), Annex 1, p6, paragraph 1.6.

²⁰⁸ Portsmouth Water (2025) [Response to CMA PR24 PD](#), p5.

²⁰⁹ CCW (2025) [Response to CMA PR24 PD](#), p3, paragraph 3.1.

²¹⁰ Anglian (2026) [Response to Working Paper](#), pp3–4, paragraphs 6–9.

considered that our econometric approach provided limited checks on whether the models were consistent with economic theory.²¹¹

- (b) Northumbrian also suggested reverting to Ofwat's PR24 FD model suite, since it considered that the econometric models could not capture the complexity of the operational and business realities in the water industry.²¹²
- (c) South East considered that we almost exclusively relied on econometric fit to determine the cost allowances, and that we should have balanced the results of the econometric analysis with expertise from other disciplines to carry out an in the round assessment.²¹³
- (d) Southern stated that our determination of base cost allowances was based solely on an unstable technical model.²¹⁴

4.30 Ofwat's response to our Working Paper highlighted the improvements made to our base cost modelling approach in the Working Paper.²¹⁵ Ofwat considered that our approach respected the core PR24 cost modelling principles by giving special attention to the economic and engineering rationale of the models and by conducting a comprehensive series of statistical tests to confirm the robustness of our results.²¹⁶

4.31 Among third parties, Compass Lexecon, advisers to the Thames Investor Group maintained its views on the over-reliance on econometric modelling.²¹⁷ Similar arguments were also made by Thames Water.²¹⁸ Severn Trent also maintained its opinion about the lack of engineering rationale and an over-reliance on data driven techniques already expressed in its response to our PD.²¹⁹ Portsmouth, Water UK, and Economic Insight as advisers to Affinity Water, also considered that we placed excessive weight on the econometric model.²²⁰

4.32 We provide our response on the reliance on econometrics and engineering grounding in paragraphs 4.68 to 4.81.

²¹¹ Anglian (2026) [Response to Working Paper](#), Expert Report by Professor Kumbhakar.

²¹² Northumbrian (2026) [Response to Working Paper](#), p7, paragraph 16; p34, paragraph 128.

²¹³ South East (2026) [Response to Working Paper](#), p2, paragraphs 1.12–1.13; South East (2026) [Response to Working Paper](#), Annex 1, pp20–21.

²¹⁴ Southern (2026) [Response to Working Paper](#), p1, paragraph 2.

²¹⁵ Ofwat (2026) [Response to Working Paper](#), p2, paragraph 1.3.

²¹⁶ Ofwat (2026) [Response to Working Paper](#), p2, paragraph 1.3 and p4, paragraph 2.5.

²¹⁷ Thames Investor Group (2026) [Response to Working Paper](#), Annex 1, p1, paragraph 1.4.

²¹⁸ Thames Water (2026) [Response to Working Paper](#), p8, paragraph 14.

²¹⁹ Severn Trent (2026) [Response to Working Paper](#), pp5–6.

²²⁰ Portsmouth Water (2026) [Response to Working Paper](#), Affinity Water (2026) [Response to Working Paper](#), Water UK (2026) [Response to Working Paper](#).

Triangulation

- 4.33 In response to the CMA PR24 PD, Northumbrian presented the absence of triangulation as one of the main differences between the PD and Ofwat's PR24 approach. It considered that triangulation was likely to produce more robust estimates because results were not dependent on a single model.²²¹ Other Disputing Companies did not devote much attention to this issue in their responses to the PD.
- 4.34 In its response to the CMA PR24 PD, Thames Water noted that, although it did not agree with every model included in Ofwat's PR24 FD triangulation, it supported the broader principle of using a balanced triangulated approach.²²² The company emphasised that all models contain some degree of error, and that relying on a single specification was risky – especially in a price control context – where the model must perform adequately for every company. According to this company, triangulation helped mitigating the risk of significant detriment to any individual company that could arise from depending on a single, potentially flawed model. Other third parties South Staffs Water, Severn Trent, and United Utilities Water also supported triangulation, using arguments that are broadly in line with those set out for Thames Water.²²³
- 4.35 In their responses to the Working Paper, all the Disputing Companies, except Southern, proposed using triangulation. The main arguments they presented were that:
- (a) no single model would necessarily work well for every company;²²⁴
 - (b) there was uncertainty about which variables and functional forms should be included;²²⁵
 - (c) relying on only one model was unstable and statistically fragile;²²⁶ and
 - (d) not using triangulation was inconsistent with good regulatory practice.²²⁷
- 4.36 In contrast to our approach, the Disputing Companies argued that triangulation allowed different models to capture different engineering and economic realities,

²²¹ Northumbrian (2025) [Response to CMA PR24 PD](#), p108.

²²² Thames Water (2025) [Response to CMA PR24 PD](#) p10 and Thames Investor Group (2026) [Response to Working Paper](#), Annex 1, section 3.1.2.

²²³ South Staffs Water (2025) [Response to CMA PR24 PD](#); Severn Trent (2025) [Response to CMA PR24 PD](#); United Utilities (2025) [Response to CMA PR24 PD](#).

²²⁴ Northumbrian (2026) [Response to Working Paper](#), section 4.3; Northumbrian (2026) [Response to Working Paper](#), Annex 2; Wessex (2026) [Response to Working Paper](#), section 3.

²²⁵ Northumbrian (2026) [Response to Working Paper](#), section 4.3

²²⁶ Northumbrian (2026) [Response to Working Paper](#), section 4.3; Northumbrian (2026) [Response to Working Paper](#), Annex 2; South East (2026) [Response to Working Paper](#), supporting document 'Oxera (2026) Response to the CMA's consultation on base cost modelling'.

²²⁷ South East (2026) [Response to Working Paper](#), supporting document 'Oxera (2026) Response to the CMA's consultation on base cost modelling', p11.

mitigated concerns about potential misspecification in any single model, and reflected standard regulatory practice.²²⁸

- 4.37 Wessex, Anglian and Oxera, advisers to South East, proposed triangulating between the top-down and bottom-up models referred to in the Working Paper.²²⁹ Wessex also proposed triangulation between several of the estimated allowances arising from models in Ofwat's PR24 FD and our Working Paper.²³⁰
- 4.38 Northumbrian did not consider triangulating between top-down and bottom-up models appropriate since, in its view, the two models would still suffer from overfitting and instability, and two models were not sufficient for triangulation.²³¹ Its preferred approach was to return to the triangulated models in Ofwat's PR24 FD. As a second-best option, it proposed a plethora of potential candidate models based on all possible combinations of covariates. From this large pool, a subset could be selected – based on an ad-hoc trade-off between root mean square error (**RMSE**) and a stability criterion – to be triangulated with the Working Paper models and with Ofwat's PR24 FD models, with a 50% weight assigned to the latter.²³²
- 4.39 Ofwat did not comment specifically on triangulation.²³³
- 4.40 Some third-party responses also advocated for triangulation. The joint practitioners' submission, Severn Trent, South Staffs Water, and United Utilities Water preferred the use of triangulation, rather than reliance on a single model, to overcome the limitations they perceived in the approach used in the Working Paper.²³⁴ Thames Water maintained the view it expressed in its response to the CMA PR24 PD, supporting the principle of triangulation to mitigate the risk of a material error that can result from relying on a single model. Thames Water considered that this problem had not been addressed in the Working Paper.²³⁵
- 4.41 We provide our response on triangulation in paragraphs 4.82 to 4.86 below. We also respond to stability concerns in paragraphs 4.120 to 4.135.

²²⁸ Northumbrian (2026) [Response to Working Paper](#), section 4.3; Northumbrian (2026) [Response to Working Paper](#), Annex 2; Wessex (2026) [Response to Working Paper](#), section 3; South East (2026) [Response to Working Paper](#), supporting document 'Oxera (2026) Response to the CMA's consultation on base cost modelling', p21; Anglian (2026) [Response to Working Paper](#), paragraph 9.

²²⁹ Wessex (2026) [Response to Working Paper](#), pp8–9; Anglian (2026) [Response to Working Paper](#), paragraph 87; South East (2026) [Response to Working Paper](#), supporting document 'Oxera (2026) Response to the CMA's consultation on base cost modelling' p46.

²³⁰ Wessex (2026) [Response to Working Paper](#) pp8–9.

²³¹ Northumbrian (2026) [Response to Working Paper](#), paragraph 250.

²³² Northumbrian (2026) [Response to Working Paper](#), section 6.2.

²³³ Ofwat (2025) [Base cost modelling response](#), p2.

²³⁴ Economist Practitioners joint submission (2026) [Response to Working Paper](#), Severn Trent (2026) [Response to Working Paper](#), South Staffs Water (2026) [Response to Working Paper](#), and United Utilities (2026) [Response to Working Paper](#).

²³⁵ Thames Water (2026) [Response to Working Paper](#), section 8, pp19–20.

Robustness of LASSO and PCA

- 4.42 Anglian and Northumbrian raised the following in relation to the use of LASSO in the PD, including in accompanying expert reports by their advisers.
- (a) LASSO was designed to select sparse models when the number of candidate covariates exceeded the number of observations. LASSO was not fit for purpose in this case and introduced non-trivial econometric drawbacks.²³⁶
 - (b) LASSO was not stable in the list of variables it selected in the base cost modelling. Melvyn Weeks, adviser to Northumbrian and Thames Water, submitted that in the presence of multicollinearity, LASSO arbitrarily selected one of the correlated covariates and, more importantly, which of the correlated covariates was selected changed with small perturbations to the sample.²³⁷
 - (c) The cross-validation method used was sensitive to the choice of data points included in each fold.²³⁸ In addition, the criterion used to select the regularisation parameter favoured sparsity rather than choosing the value that minimised mean squared error, which was more aligned with the general objective of finding a cost model that fits the cost data.²³⁹
 - (d) The algorithm chosen to implement LASSO was sensitive to the order in which variables were introduced into the estimation routine.²⁴⁰
 - (e) LASSO was a non-transparent untried technique in regulatory settings.²⁴¹ It also relied on a range of subjective decisions: the decision of using LASSO, prioritising exclusively RMSE, and the pool of explanatory variables passed on to LASSO.²⁴²
- 4.43 Southern and South East considered LASSO a useful tool for improving the modelling of base costs and recognised certain improvements over Ofwat's previous approach.²⁴³ However, these Disputing Companies expressed concerns

²³⁶ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 155, and Anglian (2025) [Response to CMA PR24 PD](#), Expert Report by Professor Kumbhakar, section 1.1.

²³⁷ Northumbrian's [Response to CMA PR24 PD](#), NWL-PD-REP-001 Melvyn Weeks Report, section 3.3.

²³⁸ Northumbrian's [Response to CMA PR24 PD](#), NWL-PD-REP-001 Melvyn Weeks Report, p8.

²³⁹ Northumbrian's [Response to CMA PR24 PD](#), NWL-PD-REP-001 Melvyn Weeks Report, p4.

²⁴⁰ Anglian (2025) [Response to CMA PR24 PD](#), section 5.3; Anglian (2025) [Response to CMA PR24 PD](#), Expert Report by Professor Kumbhakar, p5; Northumbrian's [Response to CMA PR24 PD](#), NWL-PD-REP-001 Melvyn Weeks Report, section 3.3.

²⁴¹ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 13 and section 2.1; Thames Water (2025) [Response to CMA PR24 PD](#) - Annex 1, section 3.1.1.

²⁴² Northumbrian (2025) [Response to CMA PR24 PD](#), section 2.1.3; Northumbrian's [Response to CMA PR24 PD](#), NWL-PD-REP-001 Melvyn Weeks Report, p13.

²⁴³ South East (2025) [Response to CMA PR24 PD](#), paragraph 2.26; Southern (2025) [Response to CMA PR24 PD](#), paragraph 3.4

about relying solely on this data-driven method to determine the allowances, and about the level of allowances it produced.²⁴⁴

- 4.44 Additionally, some Disputing Companies also proposed and ran analyses excluding all observations for one company and also excluding one year of data. They considered these to be the types of changes in the sample to which LASSO (or the estimation method used) should be insensitive. Based on these analyses, they concluded that LASSO was not robust.²⁴⁵ They also argued that the CMA focused only on minimising mean squared prediction error and did not consider whether the model was suitable for individual companies.
- 4.45 Finally, Wessex did not raise material concerns in response to our PD on the LASSO methodology but requested that the CMA sets base cost allowances that, in the round, properly address the wider critique of underfunding in the industry over previous AMP periods. All Disputing Companies considered that there was a technical error in the implementation of LASSO in the PD.²⁴⁶
- 4.46 Ofwat welcomed the use of LASSO in developing the CMA's models and considered it to be a pragmatic approach for selecting models in the context of a time compressed redetermination.²⁴⁷
- 4.47 Some third parties expressed the following concerns with respect to the use of LASSO in the PD.
- (a) Thames Water considered LASSO to be a technique that had not been used in cost benchmarking in regulatory settings and that any party to the redeterminations had advocated for.²⁴⁸ It also argued that the cross-validation method used was sensitive to the choice of data points included in each fold.²⁴⁹
 - (b) The Thames Investor Group and its advisers in the Nolan/Compass Lexecon report argued that the LASSO approach had limited predictive strength, biased results toward materially lower cost allowances, and excluded quadratic terms that played an important role in capturing companies' scale economies.²⁵⁰
 - (c) Portsmouth Water argued that the LASSO approach represented a significant methodological change without sufficient justification or recognition

²⁴⁴ South East (2025) [Response to CMA PR24 PD](#), paragraph 2.27; Southern (2025) [Response to CMA PR24 PD](#), section 3.

²⁴⁵ Northumbrian's [Response to CMA PR24 PD](#), NWL-PD-REP-001 Melvyn Weeks Report, section 5.2; Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 75; Anglian (2025) [Response to CMA PR24 PD](#), Expert Report by Professor Kumbhakar section 3.2; Anglian (2025) [Response to CMA PR24 PD](#), section 5.2.

²⁴⁶ All Disputing Companies (2025) [Response to CMA PR24 PD](#): Economic Insight Report.

²⁴⁷ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 1.3.

²⁴⁸ Thames Water (2025) [Response to CMA PR24 PD](#), paragraph 19; section 2.1.2.

²⁴⁹ Thames Water (2025) [Response to CMA PR24 PD](#), paragraphs 78–80.

²⁵⁰ Thames Investor Group (2025) [Response to CMA PR24 PD](#), p2–3; p5.

of the limitations of the new approach. This included the choice of the penalty parameter. Also, it argued that LASSO produced counterintuitive results in the variables it selected, and that it had the potential to establish harmful regulatory precedent. Nevertheless, it did not claim that the CMA should abandon LASSO for the purposes of the PR24 redetermination and recognised that LASSO provided a useful tool for assessing the wide range of issues raised by the appealing companies in an integrated way. It asked for the CMA to recognise its limitations and clarify its scope in a regulatory context.²⁵¹

- (d) A similar position was expressed by United Utilities Water, which asked the CMA to recognise the limits of LASSO in this context due to the limited number of variables, the potential instability of the model (particularly when multicollinearity was present), and its lack of consistency with engineering evidence.²⁵²
- (e) An individual third party respondent Fionn Cliffe considered the use and implementation of LASSO inappropriate in this case given that the dataset did not contain a large number of possible variables.²⁵³ Similarly, South Staffs Water considered LASSO adequate only when there was a choice between many explanatory variables, and pointed to some multicollinearity problems in the variables selected by LASSO.²⁵⁴

4.48 In response to our Working Paper, Melvyn Weeks, adviser to Northumbrian and Thames, considered that the change in the implementation and the algorithm solved the problem of the order of variables affecting the results.²⁵⁵ He also acknowledged that introduction of PCA resolved the arbitrary selection among correlated variables that LASSO would otherwise produce.²⁵⁶

4.49 However, Dr Weeks and Anglian considered that PCA introduced an interpretability problem into the cost model.²⁵⁷ Southern also argued that PCA reduced interpretability, produced a counterintuitive sign for the estimated effect of density, raised concerns about only the first principal component being included, and was applied inconsistently because some collinear variables were not processed through PCA.²⁵⁸ Wessex similarly argued that PCA was used inconsistently and considered that pre-processing with PCA conflicted with using LASSO as a variable-selection tool.²⁵⁹ South East, following the report of its

²⁵¹ Portsmouth Water (2025) [Response to CMA PR24 PD](#).

²⁵² United Utilities (2025) [Response to CMA PR24 PD](#).

²⁵³ Fionn Cliffe (2025) [Response to CMA PR24 PD](#).

²⁵⁴ South Staffs Water (2025) [Response to CMA PR24 PD](#).

²⁵⁵ Northumbrian (2026) [Response to Working Paper](#), Annex 2, section 2.1.

²⁵⁶ Northumbrian (2026) [Response to Working Paper](#), Annex 2, p5.

²⁵⁷ Northumbrian (2026) [Response to Working Paper](#), Annex 2, p9.

²⁵⁸ Southern (2026) [Response to Working Paper](#), pp22–30.

²⁵⁹ Wessex (2026) [Response to Working Paper](#), paragraph 2.13.

advisers (Oxera), agreed that PCA made the model more difficult to interpret and that it conflicted with LASSO.²⁶⁰ Finally, Professor Kumbhakar (on behalf of Anglian) argued that using a single principal component would create omitted-variable bias and heteroskedasticity problems.²⁶¹

4.50 The Disputing Companies raised some additional concerns with the implementation of LASSO in the base cost model.

- (a) Southern, Northumbrian, and Wessex considered the bootstrap insufficient as a sensitivity check. They argued that robustness should be tested by removing an entire company (and an entire year of data). One of the main reasons they gave is that the model should be able to fit all companies and should not be unduly influenced by any single company in isolation. Related to this, Dr Weeks advocated using a leave-one-company-out approach not only as a stability test but also as a cross-validation method for determining the regularisation parameter of the LASSO.²⁶²
- (b) Anglian criticised the use of LASSO because it resulted in wages being applied to water but not to wastewater, and therefore the model did not account for future increases in costs arising from increases in wages.²⁶³
- (c) Northumbrian and Anglian questioned the use of LASSO because it focused on minimising mean squared error and predictive power, even at the risk of producing a model that may not be correct.²⁶⁴ Northumbrian specifically considered the model generated by LASSO may be subject to over-fitting.²⁶⁵
- (d) Northumbrian still considered the use of LASSO to be econometric experimentation, arguing it is a novel and inappropriate tool for this regulatory setting without much deeper prior validation.²⁶⁶

4.51 In response to the Working Paper, Ofwat encouraged the use of PCA. Ofwat argued that the Working Paper approach, which combines PCA and LASSO, and the way they are implemented, is robust and consistent with both economic and engineering rationale.²⁶⁷

4.52 Several third party responses to the Working Paper further commented on LASSO or PCA.

²⁶⁰ South East (2026) [Response to Working Paper](#), paragraph 1.41.

²⁶¹ Anglian (2026) [Response to Working Paper](#), Expert Report by Professor Kumbhakar, Appendix 1.

²⁶² Northumbrian (2026) [Response to Working Paper](#), Annex 2, pp6–7.

²⁶³ Anglian (2026) [Response to Working Paper](#), section 5.1, paragraphs 90–92.

²⁶⁴ Northumbrian (2026) [Response to Working Paper](#), section 4.1; Anglian (2026) [Response to Working Paper](#), pp19–20, paragraphs 57–59.

²⁶⁵ Northumbrian (2026) [Response to Working Paper](#), section 5.1.

²⁶⁶ Northumbrian (2026) [Response to Working Paper](#), paragraph 104.

²⁶⁷ Ofwat (2026) [Response to Working Paper](#), section 2.

- (a) Portsmouth Water considered that the concerns it expressed in response to the PD (see above) had not been addressed, and that the use of PCA exacerbated these concerns because it made the model more difficult to interpret and assess.²⁶⁸
- (b) South Staffs Water considered that the use of PCA further weakened the LASSO approach because it reduced the set of choices available to LASSO.²⁶⁹
- (c) United Utilities Water said that it appreciated that the CMA had sought to address some of the concerns raised in its response to the PD – for example, counterintuitive results, robustness testing, and multicollinearity. However, it still considered that the limitations of a purely data-driven approach had not been sufficiently recognised and argued that these limitations meant LASSO should be used only as a complement to established cost-modelling approaches. It stated that the following were limitations of the approach used in the Working Paper: reduced interpretability (worsened by the use of PCA), unsuitability given the small number of variables, and the potential for regulatory uncertainty.²⁷⁰
- (d) Thames Water shared some of the concerns of other respondents. It argued that LASSO was not appropriate for small samples and that it did not provide a stable, well-understood cost benchmark which companies could engage with.²⁷¹ Thames Water considered PCA non-transparent, unstable, and introduced an unnecessary layer of complexity to an already complex approach.²⁷²

4.53 We provide our assessment on the use of LASSO in paragraphs 4.120 to 4.135 and on the use of PCA in paragraph 4.91.

Inclusion of input prices

4.54 Responding Parties raised several concerns regarding the inclusion of input prices in our models at both the PD and Working Paper stages. We summarise their submissions in the following subsections on Energy and Wages.

Energy cost driver

4.55 In their responses to our PD, all Disputing Companies disagreed with the inclusion of input prices, especially energy, in the base cost models. The Disputing

²⁶⁸ Portsmouth Water (2026) [Response to Working Paper](#).

²⁶⁹ South Staffs Water (2026) [Response to Working Paper](#).

²⁷⁰ United Utilities (2026) [Response to Working Paper](#)

²⁷¹ Thames Water (2026) [Response to Working Paper](#), p3.

²⁷² Thames Water (2026) [Response to Working Paper](#), p4 and Section 5.

Companies generally argued that we were over-attributing the overspend in AMP7 to energy prices.

- (a) Anglian and Northumbrian considered that the energy price variable in our models captured a spurious relationship between energy prices and costs unrelated to energy.²⁷³
- (b) Oxera, advisers to South East, suggested that we should revert to Ofwat's approach for energy prices. According to Oxera, the inclusion of this variable in the model risked conflating its effect on costs with recent upward pressures on companies' annual expenditures.²⁷⁴
- (c) Southern and Wessex also considered that we should revert to Ofwat's approach to adjust the allowances in relation to energy prices ex-post, through the application of RPEs. As an alternative, Southern proposed using an 'energy intensity' driver in the wastewater models by interacting the energy price index with pumping capacity per sewer length.²⁷⁵

4.56 Ofwat said in its response to our PD that in its view, the inclusion of an energy price index could capture unrelated cost variation and act as a time trend in the model. Ofwat also noted that CEPA had advised against the use of energy prices in the model due to the risk of this variable capturing a spurious correlation. In relation to the inclusion of wages in the base cost modelling, Ofwat expressed some concern with the use of regional wages, noting that a sector median unit cost could be more appropriate.²⁷⁶

4.57 Amongst the other companies who responded to our PD responses were mixed.

- (a) Severn Trent argued that the role of input prices should be assessed following Ofwat's approach instead of including them in the model.²⁷⁷
- (b) South Staffs made a similar argument to Anglian and Northumbrian, stating that the energy index was likely acting as a time trend variable and not necessarily capturing energy related expenditure but a general trend of rising real expenditure.²⁷⁸

²⁷³ Anglian (2025) [Response to CMA PR24 PD](#), p39, paragraph 104; Northumbrian (2025) [Response to CMA PR24 PD](#), p33, paragraph 83.

²⁷⁴ South East (2025) [Response to Working Paper](#), supporting document 'Oxera (2025) Assessment of the CMA's base cost modelling in the provisional determination', p35.

²⁷⁵ Southern (2025) [Response to CMA PR24 PD](#), pp62–63; Wessex (2025) [Response to CMA PR24 PD](#) pp5–6.

²⁷⁶ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.6 Table 1.

²⁷⁷ Severn Trent (2025) [Response to CMA PR24 PD](#) p3.

²⁷⁸ South Staffs Water (2025) [Response to CMA PR24 PD](#), pp3–4.

- (c) The Second Nolan/CL Report for the Thames Investor Group did not oppose the inclusion of energy prices in the model but argued that this variable should have been included in logarithmic form instead of in levels.²⁷⁹

4.58 Following our Working Paper, the Disputing Companies continued to consider in their responses that the inclusion of input prices in the Working Paper base cost models was incorrect. Most of them explicitly requested that we reverted back to Ofwat's approach.

- (a) Anglian and Northumbrian repeated concerns already expressed in response to PR24 PD in relation to the inclusion of input prices in the base cost model.²⁸⁰ The report by Professor Kumbhakar, adviser to Anglian, also said that the energy price index captured upwardly trending external factors beyond energy prices.²⁸¹
- (b) South East, Southern and Wessex disagreed with our interpretation set out at PR24 PD that energy prices explained a large proportion of the increased expenditure during PR19.²⁸²
- (c) According to Economic Insight, advisers to the Disputing Companies, the energy index we included in the base cost models captured average price hedging strategies and not managerial efficiency in procuring energy.²⁸³ The Oxera report, advisers to South East, suggested that our energy cost variable captured service quality and cost overruns related to outcomes.²⁸⁴

4.59 Northumbrian and Oxera (advisers to South East) based their assessment about the energy price index on the following arguments and numerical exercises.

- (a) Companies' power costs did not maintain a close-to-1:1 relationship with the energy index.²⁸⁵
- (b) They tried to estimate what the appropriate magnitude of the energy index coefficient should have been if it were capturing the effect of energy on cost, based on a numerical exercise with assumptions about its relationship with inflation and other input prices. From this, they concluded that the estimated coefficients in the Working Paper were too high.²⁸⁶

²⁷⁹ Thames Investor Group (2025) [Response to CMA PR24 PD](#) - Annex 1, p19.

²⁸⁰ [Working Paper](#), p10, paragraph 2.13; Northumbrian (2026) [Response to Working Paper](#), p6, paragraph 14; p36.

²⁸¹ Anglian (2025) [Response to CMA PR24 PD](#), Expert Report by Professor Kumbhakar, p10.

²⁸² South East (2026) [Response to Working Paper](#), p6 paragraph 1.32; Southern (2026) [Response to Working Paper](#), p1 paragraph 5; Wessex (2026) [Response to Working Paper](#) pp6–7, paragraph 2.13.

²⁸³ Wessex (2026) [Response to Working Paper](#), supporting document 'A461 - Economic Insight - Treatment of energy input price inflation in base models-STC-09-01-26', pp2–3.

²⁸⁴ South East (2026) [Response to Working Paper](#), supporting document 'Oxera (2026) Response to the CMA's consultation on base cost modelling', p1.

²⁸⁵ South East (2026) [Response to Working Paper](#), supporting document 'Oxera (2026) Response to the CMA's consultation on base cost modelling', section 2.2.1.

²⁸⁶ Northumbrian (2026) [Response to Working Paper](#), paragraphs 172–182.

- (c) Northumbrian and Oxera referred to an exercise that consisted of removing energy cost from the dependent variable in the cost model of the Working Paper. They stated that LASSO still selected the energy index, and that a positive coefficient was estimated. The estimated coefficients and standard errors of these exercises were not reported.²⁸⁷
- (d) Northumbrian and Oxera used data from previous periods to estimate the model. For the 2012–15 (AMP5) period, the estimated coefficient on energy was negative, and in AMP6 it switched to positive. They also reported that predictions for the following period (AMP5 estimates predicting AMP6, and AMP6 predicting AMP7) were worse with the energy index included in the model than without it. They argued that this indicated volatile behaviour and overfitting that, in their view, invalidated the use of the energy index.²⁸⁸

- 4.60 In its response to our base Working Paper, Ofwat agreed with the approach implemented in our Working Paper for energy costs and wages. Ofwat recognised that including these cost factors in our base econometric models for wholesale water and wastewater, mitigated the risk of overestimating the modelled allowances due to a potential overlap between Ofwat’s energy RPE adjustment and the efficiency challenge.²⁸⁹
- 4.61 Some other companies continued to express concerns with the treatment of input prices in the base models presented in our Working Paper. Severn Trent stated that energy prices and wages were uncontrollable, volatile and their inclusion in the base cost model would risk biasing the efficiency assessment.²⁹⁰ South Staffs Water explained that, in its view, including energy prices in the model was inappropriate because the link between base costs and energy costs is lagged due to the existence of multi-year energy contracts with significant hedging. South Staffs and Thames Water also submitted, as other companies, that the energy price index is capturing other time trend factors unrelated to energy.²⁹¹
- 4.62 We provide a discussion of our assessment of input prices in paragraphs 4.104 to 4.114 below. We separately discuss the role of energy prices in PR19 overspend in paragraph 4.1086 to 4.1097 below.

²⁸⁷ South East (2026) [Response to Working Paper](#), supporting document ‘Oxera (2026) Response to the CMA’s consultation on base cost modelling’, section 2.2.1; and ; Northumbrian (2026) [Response to Working Paper](#), paragraphs 186–189.

²⁸⁸ South East (2026) [Response to Working Paper](#), supporting document ‘Oxera (2026) Response to the CMA’s consultation on base cost modelling’, p29, section 2.2.2.

²⁸⁹ Anglian (2026) [Response to Working Paper](#), pp24–42, paragraphs 73–127.

²⁹⁰ Severn Trent (2026) [Response to Working Paper](#), p3.

²⁹¹ South Staffs Water (2026) [Response to Working Paper](#), pp2-3; Thames Water (2026) [Response to Working Paper](#), p21, paragraph 85.

Regional wage cost driver

- 4.63 In their responses to our PD, parties raised the following issues concerning wages in our model.
- (a) Anglian believed that the inclusion of wages led to counterintuitive results in the coefficient which were inconsistent with engineering rationale. It did not consider the variable suitable for the base model.²⁹² Southern raised a similar concern regarding counterintuitive effects of the model, such as penalising companies with high wages.²⁹³
 - (b) Northumbrian did not consider construction wages representative of wage costs of the companies. It recommended using a weighted mix of different wage categories put forth in Southern's statement of case. Northumbrian also proposed that at least 20% of wages should reflect national average wages rather than the regional average.²⁹⁴
 - (c) South East did not agree with the wage-scale interaction at PD, and requested the CMA to revert to standalone RPE allowances.²⁹⁵ Oxaera, advisers to South East, recommended using a de-trended regional wage index. However, in its analysis it removed the variable due to a negative sign on the coefficient. Instead, it suggested a post-modelling adjustment to account for regional wage differences.²⁹⁶
 - (d) Cadent supported the explicit inclusion of regional wages in the base cost model.²⁹⁷
- 4.64 Following our Working Paper, some parties considered that we should have included input prices differently in our modelling, while others disputed the inclusion of wages in the modelling altogether.
- (a) Ofwat and Northumbrian expressed their support for the revised specification of the wage input price variable, stating that it was more intuitive for company costs.²⁹⁸ Northumbrian however also raised concerns about overfitting and unstable coefficients for the wage variable.²⁹⁹
 - (b) Anglian stated that the CMA's treatment of wage costs was internally inconsistent and economically incoherent, conflating regional wage

²⁹² Anglian (2025) [Response to CMA PR24 PD](#), p6, paragraph 15(iii); p39 paragraph 104.

²⁹³ Southern (2025) [Response to CMA PR24 PD](#), paragraph 3.13.

²⁹⁴ Northumbrian (2025) [Response to CMA PR24 PD](#), pp46–47, paragraphs 135–138.

²⁹⁵ South East (2026) [Response to Working Paper](#), paragraph 2.20.

²⁹⁶ South East (2026) [Response to Working Paper](#), supporting document 'Oxaera (2026) Response to the CMA's consultation on base cost modelling', section 4.13, pp48–49.

²⁹⁷ Cadent (2025) [Response to CMA PR24 PD](#), p2.

²⁹⁸ Ofwat (2026) [Response to Working Paper](#), paragraph 2.2; Northumbrian (2026) [Response to Working Paper](#), Figure 8.

²⁹⁹ Northumbrian (2026) [Response to Working Paper](#), paragraph 134, Figure 8.

differences with wage growth over time. It also argued for an ex-ante allowance for real wage effects, stating that the CMA models would not account for future wage growth increases.³⁰⁰

- (c) South East stated its concerns that the CMA's wage index could capture unintended cost pressures. It reiterated that regional differences in wage rates are a relevant economic driver and can be modelled through detrending the wage index.³⁰¹ Oxera, adviser to South East, recommended the replacement of the CMA wage index with a 'detrended' regional wage index, similar to its submission in response to the CMA PR24 PD.³⁰²
- (d) Southern said that the CMA should address wages outside the model. It raised concerns about how the wage variable was selected in the wastewater model when the energy index was omitted, indicating unintended effects between the two variables.³⁰³
- (e) Thames Water raised its concerns about the selection of wages in the wholesale water model and not the wastewater model, despite the latter having a higher labour share.³⁰⁴ Professor Kumbhakar, on behalf of Anglian, also made a similar point in his submission.³⁰⁵

4.65 We respond to concerns about wages being dropped in the wastewater model in paragraph 4.146.

Other issues

4.66 Several parties also raised other concerns in response to our Working Paper, including.

- (a) Submissions from Northumbrian, Thames Water and Professor Kumbhakar, on behalf of Anglian, argued that the CMA models did not comply with the panel structure of the data and misrepresented statistical significance.³⁰⁶ They also recommended using panel estimators such as random effects instead.³⁰⁷ ³⁰⁸ We discuss the use of OLS compared to other panel estimators in paragraphs 4.121 to 4.123.
- (b) Heathrow Airport raised that all cost drivers may not have been identified. It considered that the differences in costs predicted by the model varied

³⁰⁰ Anglian (2026) [Response to Working Paper](#), pp24–42, paragraphs 75, 85, 100.

³⁰¹ South East (2026) [Response to Working Paper](#), p7, paragraphs 1.36.

³⁰² South East (2026) [Response to Working Paper](#), supporting document 'Oxera (2026) Response to the CMA's consultation on base cost modelling', p9

³⁰³ Southern (2026) [Response to Working Paper](#), p11 paragraph 45.

³⁰⁴ Thames Water (2026) [Response to Working Paper](#), paragraph 36.

³⁰⁵ Anglian (2026) [Response to Working Paper](#), Expert Report by Professor Kumbhakar, paragraph 2.1.

³⁰⁶ Northumbrian (2026) [Response to Working Paper](#), paragraph 167.

³⁰⁷ Thames Water (2026) [Response to Working Paper](#), paragraph 58–66.

³⁰⁸ Anglian (2026) [Response to Working Paper](#), Expert Report by Professor Kumbhakar, paragraphs 1.1 and 1.3.

significantly across companies and that the part that is not explained could not be solely attributed to differences in efficiency but to un-modelled factors not included in the estimation. It asked for caution while interpreting and applying modelling results.³⁰⁹ We discuss the accuracy and predictive performance of our models in paragraph 4.1092.

- (c) Several parties raised concerns about the quality and usage of the APH data in our models. Northumbrian stated that APH could not be accurately back-casted due to unmeasured and estimated historical data, quoting the Turner and Townsend review. It encouraged removing the variable from modelling, ensuring data quality with due evidence, or mitigating risks through averaging.³¹⁰ Southern considered that the CMA had not assessed its concerns or submissions about the data quality for APH.³¹¹ It pointed out that this made HDD atypical, and not a reliable candidate for efficiency.³¹² We provide our decision on the use of APH in paragraph 4.97 below.
- (d) Oxera, adviser to South East suggested that all variables measured as a proportion should have been modelled in levels, not logarithms, and that each wastewater model should control for economies of scale at water treatment works, so that a CAC for this is no longer needed.³¹³ Our approach to proportion variables is discussed in the section on cost drivers below, eg in paragraphs 4.100, 4.103 and 4.104, while our approach to the economies of scale CAC is explain in paragraphs 4.705 to 4.738.
- (e) The Third Nolan/Compass Lexecon report for the Thames Investor Group considered that Thames Water is an outlier in the sample and should be excluded from the base cost modelling. The report also considers that a quadratic density term should be included in the wastewater model, and a density variable in some form should be used in the top-down model for wastewater.³¹⁴ Below we discuss our decision on density (paragraph 4.95) and our rationale for not excluding individual companies from the model (we describe this in relation to cross validation but the arguments would extend to removing Thames Water from the modelling, see paragraph 4.129(b)).

Our assessment and final decision

4.67 As noted above (paragraph 4.17) the Defra White Paper proposes that in future, the new water regulator would adopt a supervisory approach to setting price controls and notes the preparatory steps to enable it. As this new supervisory

³⁰⁹ Heathrow Airport (2025) [Response to Working Paper](#), p2.

³¹⁰ Northumbrian (2026) [Response to Working Paper](#), paragraphs 200–205.

³¹¹ Southern (2025) [Response to Working Paper](#), paragraphs 108–109.

³¹² Southern (2025) [Response to Working Paper](#), paragraphs 119–122.

³¹³ South East (2026) [Response to Working Paper](#), supporting document 'Oxera (2026) Response to the CMA's consultation on base cost modelling', p3.

³¹⁴ Thames Investor Group (2026) [Response to Working Paper](#), Annex 1, Sections 2 and 5.

approach is not available to us in this redetermination process, we have developed wastewater and wholesale water models that best allow us to set base costs in accordance with our duties. The approach we have taken applies only to the Disputing Companies in respect of these redeterminations. It will be for the new water regulator to decide future allowances in accordance with the reformed regime.

- 4.68 Our approach to base cost modelling has been informed both by concerns about Ofwat's PR24 models raised in this process and by the responses received to our provisional decision and Working Paper on base cost modelling. We considered it appropriate and in line with our overriding objective to develop a simple suite of econometric benchmarking models designed to select economic and engineering cost drivers that most accurately predict routine, year-on-year costs, which companies incur in the normal running of the business. This would allow us to both set base cost allowances and to assess the Disputing Companies' requests in relation to specific cost drivers.
- 4.69 At its most basic level, econometric benchmarking is designed to predict efficient costs so companies can fund their day-to-day activities, without customers overpaying where companies are inefficient. No econometric model will perfectly capture the complexities of the industry and regulators must therefore use judgement to pick a model that in the round performs best. We find that our models perform better than Ofwat's with this task in mind.
- 4.70 Since our Working Paper we have changed only one element of our approach, which is to replace our index of energy prices. At PD and Working Paper we used the seasonally adjusted Department for Energy Security and Net Zero (**DESNZ**) energy price index in our forecast. However, this series has been discontinued and therefore we have replaced this with the non-seasonally adjusted index which will continue to be published. The impact of this change is minor (less than 0.1% of allowances).³¹⁵
- 4.71 For the purposes of our redetermination on base modelling we have not used the updated 2024-2025 outturn data, that is we only use the period of cost data used by Ofwat in its PR24 FD (see also Chapter 3 which discusses our general approach to updating data). This is because although we received 24-2025 cost data from Ofwat, (i) issues had been raised with it by Disputing Companies which required resolution with Ofwat which were not resolved in sufficient time to take it into account and (ii) we do not possess the complete associated forecast data as this has not been made available to us in sufficient time to take it into account.³¹⁶

³¹⁵ See Table 4.6 and Table 4.7 below for a comparison of Ofwat PR24 FD and Working Paper allowances.

³¹⁶ CMA (2026), Email from the CMA to Disputing Companies and Ofwat re use of updated information, Southern and Anglian (2025) Email chain between Southern, Anglian and Ofwat re Outturn data.

- 4.72 In this section we set out our final methodology and rationale before presenting results under the updated methodology.

Methodology

- 4.73 Our objective in determining base cost models has been to develop a reduced number of econometric benchmarking models designed to select economic and engineering cost drivers that most accurately predict routine, year-on-year costs, which companies incur in the normal running of the business. In developing these models, we have ensured that the cost determinants reflect the factors that determine production processes according to standard economic theory of costs and that have an economic and engineering rationale.³¹⁷ By reflecting economic and engineering rationale, our modelling approach is not purely data-driven: instead our model uses data to select amongst a set of plausible cost drivers.
- 4.74 Therefore, our modelling approach is suitable to both form the basis of setting base cost allowances and allow us to assess the Disputing Companies' requests in relation to specific cost drivers. Implementing this methodology involves the following steps:
- (a) selecting the appropriate level of aggregation of costs;
 - (b) selecting the relevant cost drivers (variables) for that level of aggregation; and
 - (c) selecting the appropriate model or approach to combining models.
- 4.75 Compared to the Ofwat PR24 FD, we have made changes to each of these steps and our approach is similar to that presented in our Working Paper.
- 4.76 While ensuring our methodology is grounded in economic and engineering rationale, we have sought to apply a data driven approach. In particular, we utilise LASSO, combined with PCA, in a way that is objective and targeted at resolving the issues raised in these redeterminations (see Appendix D: Base Cost Modelling for a technical description). In using this tool, we have sought to work with the grain of Ofwat's PR24 FD approach, using the modelling structures (ie level of aggregation of business activities) and the sets of variables adopted by Ofwat as our starting points.
- 4.77 We start with a list of possible cost drivers (referred to as variables) that have an economic, engineering and operational rationale. Where appropriate, as we will explain, we apply PCA to mitigate the multicollinearity problem that would arise in the estimation of the model if highly correlated measures of the same cost factors that form part of the initial list were all included. PCA consolidates highly correlated

³¹⁷ [Working Paper](#), p9, paragraph 2.10.

variables into composite indices and we include just the first principal component as this captures the majority of the variation.³¹⁸

- 4.78 Then, LASSO chooses which of the candidate pool of cost drivers are most useful for making accurate predictions. It does this by adding a penalty when too many cost drivers are included. The more drivers we try to keep, the bigger the penalty becomes. This encourages the model to stay simple and only keep the most important drivers. The strength of this penalty is chosen using a method called ‘cross-validation’, which relies on the data itself to find the best balance between accuracy in the historical data and simplicity (which all else equal may improve predictive performance for new data). The final model is then estimated on the cost drivers kept by LASSO.
- 4.79 Our modelling does not involve triangulation (averaging) between different models as in Ofwat’s approach to base cost modelling. We consider such triangulation would unnecessarily retain features and cost drivers of inferior models (from a statistical or economic perspective). This is a suboptimal result as the goal of the modelling is to achieve the best prediction as a basis for setting allowances. Similarly, developing a readily interpretable benchmarking model was one of the objectives set out at Working Paper, and we find that this is not achieved by triangulating models with very different characteristics, or based on different econometric approaches. To keep a unified and coherent framework that uses data-driven approaches to address model selection issues, we have, in our approach not used triangulation.
- 4.80 Additionally, we apply a suite of diagnostic exercises to assess the stability and sensitivity of our econometric models. These statistical and econometric tests are aimed at ensuring the robustness of the results and the models’ predictive ability, so that the resulting cost allowances were not heavily influenced by the choice of a particular model specification or the presence of outliers.³¹⁹
- 4.81 The following subsections, we describe elements of our approach. In particular:
- (a) level of aggregation;
 - (b) cost drivers and PCA;
 - (c) estimation and selection of models using LASSO; and
 - (d) approach to true-ups.

³¹⁸ In cases where we use PCA, the first PCA component explains at least 93.5% of the variance of each underlying cost driver, based on regressions of the underlying cost drivers on the component.

³¹⁹ [Working Paper](#), p12, paragraph 2.26–2.33.

Level of aggregation

- 4.82 As explained in paragraphs 4.37 to 4.38 above, a number of Disputing Companies (Wessex, Anglian and Oxera (advisers to South East)) supported triangulating between the top-down and bottom-up models following Ofwat's approach, while Northumbrian proposed triangulating with the results of Ofwat's PR24 FD models. These recommendations were made on the basis of allegedly achieving greater stability and retaining features of the individual models triangulated.
- 4.83 A number of respondents to our Working Paper suggested triangulating between the top-down and bottom-up models, while others cautioned against doing so. We recognise that there is more of a case for triangulation when it is between models at different levels of aggregation but consider that it is not an appropriate approach in this context.
- 4.84 First, while different models can achieve similar predictive performance, they embody different structural assumptions and therefore produce different estimates. It is ultimately the responsibility of the decision-maker to assess this model set and select the most appropriate way forward, taking into account factors such as model performance and the economic credibility of alternatives. Simply averaging across models may not necessarily improve the economic and policy justification of the resulting estimate.
- 4.85 Second, the interpretation challenges are material when attempting to combine models built at different levels of aggregation. Bottom-up models typically capture a richer set of cost drivers but do not reflect shared-cost synergies or higher-level interactions, which are better captured in top-down models.³²⁰ Each model therefore represents a distinct structural view of costs. Averaging these different cost structures does not guarantee a result that better reflects engineering or economic reality; it may instead obscure these rationales while adding methodological complexity.
- 4.86 Therefore, we retain our approach at PD and in our Working Paper and estimate the fit of the updated (i) bottom-up models and (ii) top-down model.³²¹ We then compare the RMSE of resulting predictions under each approach and select the level of aggregation that minimises the RMSE.

Cost drivers

- 4.87 As in our PR24 PD, our candidate set of cost drivers is grounded in economic and engineering rationale, comprising scale variables, controls for production process differences and network topology, and input prices linked to water treatment

³²⁰ Top down models also impose a restriction that the coefficients on cost drivers relating to how they relate to parts of the value chain.

³²¹ Wholesale water allowances under the bottom-up are the sum of allowances in the WRP and TWD models.

complexity, labour and wages. Below we discuss each category of cost driver and how we have included these in our modelling. At the end of the section we provide a summary table explaining what is included in each model.

- 4.88 For each model, we have used a set of candidate variables consisting of the variables used in the Ofwat PR24 FD models combined with additional variables that reflect those submitted by Disputing Companies in their requests or are additional variables based on economic and engineering rationale. All these variables are grounded in economic and engineering rationale, comprising scale variables, controls for production process differences and network topology, and input prices linked to water treatment complexity, labour and wages.

Scale

- 4.89 In line with the approach taken by Ofwat in its PR24 FD, in wholesale water the number of properties served is included in the set of candidate variables in our bottom-up water resources plus model and the length of potable mains is used in our treated water distribution (**TWD**) model. Meanwhile for wastewater sewer length is included as a scale variable in the bottom-up sewage collection (**SWC**) model, while load is included in the sewage treatment (**SWT**) model.
- 4.90 In each of wholesale water and wastewater, the scale variables used in the bottom-up models are highly correlated (see Appendix D: Base Cost Modelling) and have roles in the different parts of the value chain of wholesale water. Given their high mutual correlation and the limited sample size, including these measures simultaneously would likely induce severe multicollinearity.³²² To address this, PCA is applied to extract components from the correlated variables that summarise the common information shared across them.³²³ In the case of the scale cost drivers (and in other instances where we use PCA) the first component explains a high portion of the variance.³²⁴ Therefore, instead of including multiple highly correlated variables, we include just this first component.³²⁵
- 4.91 As noted above, our use of PCA has received some push back from stakeholders (see paragraphs 4.49 to 4.52). However, addressing possible multicollinearity before applying LASSO is important. Otherwise, the LASSO methodology would typically select one of the correlated variables randomly and omit the others. This could introduce instability in the model specification and affect the prediction – especially if, for example, a company has an outlier value for one of the variables. Therefore, one of the advantages of applying PCA is that, when all the variables

³²² Goldberger (1991) 'A course in Econometrics', Harvard University Press, chapter 23, for explanations of multicollinearity problem and its relation with the available sample size.

³²³ See Appendix D: Base Cost Modelling for the explanation on the application of PCA in this context.

³²⁴ [Working Paper](#), paragraph 3.6 and 4.4.

³²⁵ Note that, contrary to what Professor Subal Kumbhakar's report claims in Anglian (2026) [Response to Working Paper](#), Expert Report by Professor Kumbhakar, Appendix 1, the omission of the other components does not generate an omitted variable bias problem or heteroskedasticity, since the components are orthogonal to each other.

are valid measures of the same underlying cost driver, extracting the common information they contain is a better way to retain the relevant information contained in the set of correlated variables, rather than relying on LASSO to select one at random. Using PCA does not preclude interpreting the estimated coefficients and evaluating them against economic and engineering rationale. The principal component can be transformed back into the original variables, and the model can be interpreted by combining the coefficient estimates for that component with the weights determined by the PCA.³²⁶ For these reasons we consider it appropriate to use PCA in the context of our cost modelling.

- 4.92 With the addition of PCA we also no longer consider interactions between scale and other cost drivers. This is consistent with our approach in described in our Working Paper.³²⁷

Population density

- 4.93 Measures of population density are included in our wholesale water models and in the sewage collection bottom up wastewater model.
- 4.94 Due to high levels of correlation between the three density cost drivers, as with scale in our modelling we use PCA to calculate a composite measure of population density. The first principal component of PCA on the three density measures captures over 93.5% of the variance of the logarithm of the population density variables.³²⁸ For the wholesale water modelling we include the first principal component of density in the modelling in its level and square. The square term allows for a 'U-shaped' relationship between population density and wholesale water costs.³²⁹
- 4.95 Thames Investor Group, in its response to our Working Paper as well as in the report by its advisers Compass Lexecon, argued that we should include density and density squared in the wastewater top-down modelling.³³⁰ We note that density (but not density squared) is already included in the candidate set for the bottom-up wastewater modelling and that Ofwat rejected the inclusion of density and density squared in its top-down modelling. While we agree there is engineering rationale for including density, we note that it is highly correlated with

³²⁶ [Working Paper](#), paragraphs A.17–A.19A and 3.18–3.19.

³²⁷ [Working Paper](#), paragraph 2.31.

³²⁸ The first principal component is our composite measure of population density. It captures 93.5% of the variance of logarithm of properties per length of mains, 96.4% of the logarithm of the Middle-layer Super Output Area (**MSOA**) weighted average density, and 95.9% of the logarithm of the Local Authority District (**LAD**) from MSOA weighted averaged density.

³²⁹ Ofwat's PR24 FD notes the potential existence of opposing forces that can lead to increased costs when serving populations that are particularly sparse or very dense. If so, the relationship between cost and population density may be 'U-shaped'. If the squared term on population density has a positive coefficient, then the shape of this relationship in the estimated model is U-shaped. Ofwat (2025) [PR24 Final Determinations: Expenditure Allowances – Base cost modelling appendix](#), p25.

³³⁰ Thames Investor Group (2026) [Response to Working Paper](#), Annex 1, p14, paragraph 5.6–5.8.

other variables and therefore we consider that including it would add limited benefit, but risk added stability concerns (eg due to multicollinearity).

- 4.96 Additionally, we consider that there is insufficient additional evidence presented to justify adding density squared, noting that factors such as topology and wages which may contribute to the proposed U-shape are already in the model.

Network topology

- 4.97 In the wholesale water models, to control for differences in cost due to network topology, we include average pumping head (**APH**) in our updated bottom-up TWD model and our top-down model. Throughout the course of the redetermination, we have not seen sufficient evidence to change our view on the data quality of the APH cost driver. We note submissions from Northumbrian have pointed to the Turner and Townsend report which noted the potential concerns of including a cost driver that may have poor data quality in the early years of the sample.³³¹ We also note submissions from Anglian, Thames Water and South East about including APH to capture the full impact of network topography on costs in line with engineering rationale.³³² We agree with Ofwat's PR24 FD decision which noted the Turner and Townsend report and concluded that there remains sufficient rationale for the inclusion of the variable.³³³
- 4.98 We note further that under our approach the variable is added into the candidate set only. The LASSO will only retain the variable if its explanatory power exceeds the penalty. Excluding it before beginning the exercise due to measurement concerns, without sufficiently strong evidence, would risk omitted variable bias. In contrast, keeping it ensures that the model captures a cost relationship, even if the estimated coefficient is conservatively attenuated by measurement error.
- 4.99 We also include booster pumping stations per length of mains in our updated bottom-up TWD model and our top-down wholesale model. As in our PR24 PD, we continue to allow the LASSO technique to select one, both or neither of these cost drivers in these models. In contrast, Ofwat only permits one of the network topology cost drivers in each of its TWD models and top-down wholesale water cost models.³³⁴
- 4.100 Meanwhile in wastewater models, to reflect cost differences arising from network configuration, pumping capacity per sewer length is included in the SWC and WWW models. Urban rainfall per sewer length is also incorporated to capture additional load and operational challenges in sewer systems. Both candidate

³³¹ Northumbrian (2026) [Response to Working Paper](#), section 5.3, paragraph 196–203.

³³² [Anglian SoC](#), paragraphs 170 (ii); [South East SoC](#), paragraphs 4.19 (a); Thames Water (2025) [Third Party Submission on the Water PR24 References](#), paragraph 26.

³³³ Ofwat (2024) [PR24 final determinations: Expenditure allowances - base cost modelling decision appendix](#), p23.

³³⁴ Ofwat (2024) [PR24 final determinations: Expenditure allowances - base cost modelling decision appendix](#), section A2.

variables are considered in logarithmic form, and we allow LASSO to select one or both, consistent with our PR24 PD approach.

Water treatment complexity

- 4.101 Ofwat used two variables to measure water treatment complexity in its PR24 FD.³³⁵
- (a) **Weighted average treatment complexity measure (WAC)**, where each level of complexity, as defined in Ofwat's annual reporting tables (ie levels 0 to 6), is weighted by the proportion of water treated at that level.
 - (b) **Proportion of water treated at complexity levels 3 to 6.** Levels 0, 1 and 2 include relatively simple works, such as those treating good quality groundwater sources, while level 3 will introduce works with multiple treatment stages treating lower quality raw water sources.
- 4.102 In our Working Paper, we only included the WAC. We did so due to the high correlation between the two cost drivers and the fact that, unlike other areas, PCA would not add insight as these variables both draw on the same data. We also chose to include our WAC variable in logs as we considered that unit cost proxies should be included as logs in a cost model with log of total cost as a dependent variable and because the Ofwat precedent is to use logs of this variable.
- 4.103 As noted above in paragraph 4.66(d), Oxera, adviser to South East also argued against our approach, noting that the variables capture different aspects and that using levels has a better engineering rationale than logs. However, no additional evidence was provided in its submission and we continue to consider that our approach is appropriate. We also note that including both WAC and 'proportion of water treated at complexity levels 3 to 6' in logs does not change our results.

Input prices

- 4.104 As in our PR24 PD and Working Paper we consider that it is important to capture input prices in our cost modelling. In line with the commonly used Cobb-Douglas cost function, we include its logarithm in our set of cost drivers for our updated model.³³⁶ In particular, we include the logarithm of regional hourly construction wages (**ONS ASHE**) as a measure of the unit cost of labour. The regional aspect reflects the consideration that companies may face different labour costs depending on their region. Likewise, the logarithm of the DESNZ energy price

³³⁵ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.76.

³³⁶ Charles W. Cobb and Paul H. Douglas (1928), 'A theory of production', *The American Economic Review*, 18(1):139–165.

index is included which captures typical industrial energy prices faced by water companies.³³⁷ We explain our use of each of these cost drivers below.

4.105 As in our PR24 PD and Working Paper, given we have included energy and wages in the set of candidate variables in the model we do not separately provide allowances for energy or wages as RPEs. However, we do provide a true-up for each of wages and energy irrespective of whether it is selected in the final model: see paragraphs 4.136 to 4.142 below.

4.106 We also note that there are CAC claims relating to energy and regional wages. These are discussed below in paragraphs 4.851 to 4.879 and 4.774 to 4.806.

Energy cost driver

4.107 Compared to the Working Paper, we use a slightly different version of the DESNZ energy index. In particular, we now use the non-seasonally adjusted index due to the fact the seasonally adjusted version has been discontinued. We considered other indexes such as that produced by the OBR. However, our view is that using the same index as Ofwat uses for its other work on energy (namely true-ups) remains appropriate (Ofwat also has recommended for us to use the non-seasonally adjusted index).³³⁸ We also considered using the actual energy price paid. However, we consider that this is within the companies' control and, to be consistent with Ofwat's modelling principle to not include cost drivers for costs within the companies' control, we excluded it from the model. Additionally, we note that indices already capture representative movements in energy prices.

4.108 Some companies considered that the energy index was a proxy for other upward-trending costs unrelated to energy. However, no specific omitted cost driver has been proposed that explains these trends, and we still see a clear rationale to include energy costs in the model.

- (a) Energy prices have a clear engineering and economic link to water operations. Even if the index partly captured some omitted trending factors, omitting the energy index may create a significantly larger omitted variable bias which may be worse than bias from potential spurious correlation.
- (b) Some parties point to the index being selected by LASSO even when costs directly relating to energy are removed from the dependent variable. However, energy prices may still impact other costs (such as those relating to energy intensity or relating to input substitution) due to the interaction between energy prices and other factors that affect costs. In this sense the energy index may also pick up the indirect impact of energy prices.

³³⁷ For details on the index please see GOV.UK (2025) [Industrial energy price indices](#).

³³⁸ Ofwat (2026) [Response to Working Paper](#), paragraph 4.7.

- 4.109 We consider that the argument raised by Northumbrian and Oxera (on behalf of South East) that the energy index is invalid because it lacks close to a 1:1 relationship with total power costs is conceptually incorrect. The energy price index is a market-wide proxy, not the specific unit price each firm pays. A 1:1 pass-through of the index is not an econometric requirement for it to be a valid driver.
- 4.110 Furthermore, we do not agree with speculations on the 'correct' coefficient magnitude based on models that assume a specific relationship with CPIH while omitting other input prices. In our framework, the energy index coefficient is estimated conditional on other factors. This makes comparisons on the correct coefficient once accounting for CPIH uninformative about the validity of the full model's estimates.
- 4.111 We also consider that the claim made by Oxera, advisers to South East, of 'volatility' and 'overfitting' based estimations which only use part of the sample (AMP5 or AMP6) is misleading. The energy index varies primarily over time, and we consider that estimating the model on small datasets (3–5 years) lacks the necessary degrees of freedom and temporal variation to produce reliable point estimates and predictions. Thus, the instability in sub-periods of our sample can be a symptom of small sample bias and lack of temporal variation, not an invalidation of the driver. We consider that our full sample period provides the necessary variation to identify the cost relationship robustly, which is the standard requirement for regulatory benchmarking.
- 4.112 Some companies said that the energy price index should be removed because energy costs affect companies differently and these reflect differences in company hedging positions. However, our view is that these claims do not justify the variable's removal for two reasons. First, we consider that other model covariates, such as scale, can already capture the structural differences that drive these variations. Second, regardless of whether residual differences stem from hedging strategies or managerial efficiency, we view that neither interpretation leads to the conclusion that the variable should be excluded from a robust cost benchmarking.

Regional wage cost driver

- 4.113 Stakeholders have raised questions about our choice of wage variable. However, we continue to consider our approach appropriate. While numerous wage measures exist, we judge it most consistent to align our methodology with that used by Ofwat. In our PR24 PD, we selected a regional wage measure based on construction-sector earnings. Although this decision was finely balanced, we maintain that the construction code is more tightly defined and represents a smaller group of sectors that are more likely to share a labour market with water-sector activities, particularly when compared with other measures such as those based on manufacturing wages or broader composite measures.

- 4.114 We continue to consider it appropriate, in the context of wages, to use a forecast based on the wage variable selected rather than a forecast derived from an alternative metric. This approach uses a standard time series method, and we have not seen evidence that this leads to an extreme result. Finally, we do not consider detrending the wage variable. Such an approach would be inconsistent with the treatment of other cost drivers, and from an economic perspective, we aim to capture both aggregate time-related and company-specific variation. Moreover, our view on the alleged problems with a possible trend in this wage variable is the same as that in paragraph 4.108 for the energy index.

Treatment complexity

- 4.115 Ofwat's PR24 FD approach for wastewater treatment complexity uses a measure of ammonia consent levels. Like Ofwat, we include the cost driver, 'load treated with ammonia consent with less than 3mg/l' in the SWT and WWW models to reflect higher treatment costs incurred in meeting more stringent discharge standards.

Economies of scale at sewage treatment plants

- 4.116 Ofwat expects large sewage treatment works (**STWs**) to have a lower unit cost of treatment than small STWs due to economies of scale.³³⁹ The size of STWs is mostly outside of company control as it depends on where a company's customers are located. Companies serving sparsely populated areas tend to have smaller STWs.
- 4.117 As in our PR24 PD, we include the following two candidate variables to capture economies of scale at STWs.
- (a) A weighted average treatment works size (**WATS**) variable. This variable captures the weighted average sewage treatment works size for each company. It allows for a continuous relationship with sewage treatment costs.
 - (b) The percentage of load treated in sewage treatment works serving less than 2,000 people (bands 1 to 3). Ofwat states that this captures step-like changes in sewage treatment costs.

Summary

- 4.118 Table 4.2 below summarises the resulting cost drivers included in bottom-up (WRP and TWD) and top-down wholesale water models.

³³⁹ Note we consider economies of scale in water treatment works as a CAC see paragraphs 4.705 to 4.738.

Table 4.2: Cost drivers included in our updated approach: wholesale water models

Cost drivers	Bottom-up models		Top-down model
	WRP	TWD	WW
Number of Properties (log)	✓		
Length of Mains (log)		✓	
(log) Scale combined			✓
(log) Density combined	✓	✓	✓
Squared (log) density combined	✓	✓	✓
Average Pumping Head TWD (log)		✓	✓
Booster Stations per length of mains (log)		✓	✓
Weighted Average Complexity (WAC) (log)	✓		✓
Hourly regional construction wages (log)	✓	✓	✓
DESNZ energy price index (log)	✓	✓	✓

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).³⁴⁰

4.119 Table 4.3 below summarises the resulting cost drivers included in the bottom-up SWC and SWT models and the top-down WWW model.

Table 4.3: Cost drivers included in our updated approach – wastewater models

Cost drivers	Bottom-up models		Top-down model
	Sewage collection (SWC)	Sewage treatment (SWT)	Wastewater (WWW)
Sewer length (log)	✓		
Load (log)		✓	
Scale combined (log)			✓
Density combined (log)	✓		
Pumping capacity per sewer length (log)	✓		✓
Load treated with ammonia consent <3mg/l (%)		✓	✓
Weighted average treatment size (log)		✓	✓
Load treated in size bands 1 to 3 (%)		✓	✓
Urban rainfall per sewer length (log)	✓		✓
Hourly regional construction wages (log)	✓	✓	✓
DESNZ energy price index (log)	✓	✓	✓

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

Estimation and selection of models using LASSO

4.120 As in our PR24 PD and Working Paper we utilised the LASSO to select between cost drivers. This is a regression-based variable selection method that augments the standard least squares objective with a penalty on the sum of the absolute values of the coefficients. This penalty shrinks some coefficients towards zero and, crucially, can set them exactly to zero. In doing so, LASSO performs estimation and variable selection simultaneously.

³⁴⁰ CMA PR24 PD Volume 1, pp51–52, paragraph 4.51(a)–(b).

- 4.121 Once LASSO identifies the relevant set of cost drivers, the final coefficients are estimated using OLS. This avoids the bias introduced by penalised estimators and ensures that coefficient magnitudes – central to interpreting the importance of cost drivers – reflect the underlying economic relationships. This approach is well-documented in the econometric literature as a means to recover unbiased coefficients and improve the model's performance.³⁴¹
- 4.122 We chose not to use a Post-LASSO Random Effects (**RE**) specification as there is a lack of formal literature documenting its statistical properties or its stability in the context of variable selection. Furthermore, since our analysis prioritises consistent coefficient estimation for benchmarking over traditional hypothesis testing, the post-LASSO OLS remains appropriate for our purpose.³⁴²
- 4.123 We also considered but chose not to use a Post-LASSO fixed effect (**FE**) specification, since this is unsuitable for cost benchmarking. Variation across companies is necessary to identify the impact of observed cost drivers, which is the ultimate goal of cost benchmarking. However, the FE methodology absorbs time-invariant factors into firm-specific intercepts in the estimation equation. This therefore eliminates the between-company variability required for identification.³⁴³ Instead, in our approach, by preserving this variability, we consider that the model can set credible future allowances while any residual company-specific variability is more appropriately addressed through CACs.
- 4.124 For the base cost modelling exercise, in response to concerns about stability and implementation at PR24 PD, we adopted the Least Angle Regression (**LARS**) algorithm to implement our LASSO. We retain the use of LARS for our final determination. This algorithm traces the solution path in a systematic and replicable way, ensuring that coefficient selection does not depend on arbitrary choices such as variable ordering or random initialisation. The level of penalisation is chosen through cross-validation to balance predictive accuracy and model parsimony.
- 4.125 Following the application of PCA to reduce multicollinearity among the initial set of cost drivers, LASSO is applied to identify the subset of variables that best explain cost variation while avoiding over-fitting. Its use in this context offers two core advantages:

³⁴¹ Belloni & Chernozhukov (2013) 'Least squares after model selection in high-dimensional sparse models'.

³⁴² While RE improves efficiency for better hypothesis testing, it introduces an additional layer of parameters to estimate that is unnecessary for setting future allowances and adds estimation noise.

³⁴³ For similar reasons, we also consider that including a time trend would be inappropriate. Time trends risk masking the operational and environmental factors we seek to measure and can lead to spurious correlations with cost movements over time. In the context of cost benchmarking, where the purpose is to explain differences in efficient costs across companies, imposing a deterministic trend would therefore misattribute year-to-year variation and reduce transparency in the drivers of cost change. Retaining the observed temporal variation in the data without imposing a trend allows the model to identify cost drivers more reliably.

- (a) transparent and data-driven variable selection; and
- (b) emphasis on out of sample forecasting performance.

4.126 On point (a), because LASSO can set coefficients to zero, it allows a clear and reproducible identification of variables with limited explanatory power. This is especially valuable in a modelling environment with many candidate cost drivers and correlations across them. In comparison we can contrast to other common approaches:

- (a) ridge regression (an alternative estimation tool) shrinks coefficients but never eliminates a variable;
- (b) OLS (a standard tool for estimation) rarely produces zero coefficients, creating a less systematic and more judgement driven selection process; and
- (c) retaining variables with negligible explanatory power would add noise, reduce interpretability, and undermine the stability of the model. LASSO avoids this by applying a widely recognised, objective penalty structure that removes variables with low additional explanatory power from the model.

4.127 Regarding point (b), given that the purpose of the model is not only to explain historical costs but also to forecast future allowances, out of sample performance is a central criterion. In implementing LASSO since PD, we have used cross validation which helps ensure we choose the most appropriate penalties for our LASSO model such that these penalties support out of sample performance.

4.128 In response to implementation concerns raised in response to our PR24 PD, we revised our approach to cross validation for the Working Paper and we continue to use that revised approach for our final determinations. Our implementation uses leave-one-out cross validation, which provides a stable and transparent assessment of predictive accuracy and avoids dependence on random sampling splits. The penalty choice is intentionally calibrated to prioritise data fit over further sparsity, ensuring that variables are excluded only when the evidence is strong.

4.129 Some stakeholders such as Professor Kumbhakar, adviser to Anglian, suggested dropping all observations for one company or one company-year to test model robustness or to use leave-one-company-out cross-validation instead of leave-one-observation-out. Compass Lexecon, advisers to the Thames Investor Group, suggested removing Thames Water on the basis that it was an outlier. These proposals were considered but rejected for three reasons.

- (a) They do not reflect the model's purpose. The model is designed to explain and forecast costs for the existing companies and years, not for a hypothetical dataset with an entire firm missing.

- (b) They are not 'small' perturbations. Removing a company eliminates up to 10% of the dataset – a substantial and non-random change. It is expected that model results would differ under such a material distortion, and this does not indicate a lack of robustness.
- (c) Differences created by such tests do not invalidate the methodology. A change in results after excluding a company may simply reflect the removal of a relevant cost driver that is unique to that company, or the fact that the company is relatively efficient or inefficient, so its omission alters the efficiency distribution. In both cases, the correct response is either to include the missing driver or to recognise genuine efficiency differences – not to discard the model.

- 4.130 Regarding wider concerns with LASSO, Northumbrian noted concerns about overfitting when LASSO is used. However, we do not view this as a concern and Northumbrian did not provide sufficient evidence to support this claim.³⁴⁴ More generally on overfitting we note that the PR24 modelling framework explicitly prevents overfitting risk in at least four key ways. Firstly, in addition to solving problems with reproducibility, LASSO is designed specifically to reduce overfitting problems (compared with using only OLS estimates) by adding a penalty that shrinks irrelevant coefficients to zero. Secondly, we utilise a post-LASSO OLS regression, which reduces the possibility of overfitting due to shrinkage or tuning to noise. Thirdly, the data is not high dimensional and is based on only a limited set of cost drivers that have an economic and engineering rationale. Finally, the stability testing described below would likely show extreme results under overfitting, and this is not the case. This is direct evidence of the reliability of the model.
- 4.131 The robustness of the methodology was a key concern raised by stakeholders in response to the Working Paper. To address this, the Working Paper introduced a suite of sensitivity and stability tests designed specifically to assess whether the LASSO variable-selection process and resulting cost allowances are reliable under small perturbations to the dataset.
- 4.132 The primary tool used was a bootstrap procedure to evaluate how sensitive the selection of variables, the efficiency challenge, and the estimated cost allowances are to random variation in the underlying data. Each bootstrap draw introduces small, random fluctuations to the sample – precisely the type of variation robustness checks should target.
- 4.133 This approach assesses the following.

³⁴⁴ Northumbrian (2025) [Response to Working Paper](#), section 4.1.

- (a) Model stability: whether the same variables are consistently selected.
- (b) Estimate stability: whether OLS coefficients and predicted costs vary within reasonable bounds.
- (c) Allowance stability: whether overall cost allowances change materially under minor data fluctuations.

4.134 The bootstrap results therefore provide direct evidence on whether the LASSO-OLS procedure is robust to the sort of uncertainty inherent in real-world data.

4.135 Finally, the robustness assessment is not dependent solely on statistical tests. All variables under consideration have economic and engineering rationale, and model results are interpreted through the lens of economic theory.

True-ups

4.136 In our Working Paper we provided a brief proposal for our approach to true-ups.³⁴⁵ We received some responses from Disputing Companies about our approach.

4.137 Southern supported our approach to true-ups. It reiterated its previous request to apply the true-ups annually instead of at the end of the AMP to mitigate cashflow risk.³⁴⁶ Anglian considered that there was no mechanism to recover the costs of high-performance standards the model misattributed to energy. For our PR24 FD, it recommended that the CMA clarify a wage true-up for both wholesale water and wastewater, as well as an energy true-up reflecting individual company power cost shares.³⁴⁷

4.138 Northumbrian requested an ex-ante labour RPE for wastewater as it is not selected in the CMA wastewater model. It also argued that a regional and sector mix of wages was required instead of only construction wages. Northumbrian and Ofwat, also raised queries about the true-up mechanism, which we clarify in the paragraphs below.³⁴⁸

4.139 Ofwat expressed its broad support in its response. It questioned why we did not use our estimated coefficients for the true-up. It also recommended the use of unadjusted data or the difference between unadjusted and the seasonally adjusted index.³⁴⁹

³⁴⁵ [Working Paper](#), paragraphs 5.2–5.5.

³⁴⁶ Southern (2025) [Response to Working Paper](#), paragraphs 114–118.

³⁴⁷ Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 104, 123.

³⁴⁸ Northumbrian (2026) [Response to Working Paper](#), paragraphs 269–271.

³⁴⁹ Ofwat (2026) [Response to Working Paper](#), paragraphs 4.1–4.8.

- 4.140 Having considered these responses, for our final determinations we have decided to include true-ups for energy and labour costs to apply in the same way as Ofwat (ie at the end of the AMP). We do this for the wastewater and wholesale water models. For each of these the approach will be the same and comprise of the following three components.
- (a) The industry average (median) contribution of the item to base costs based on the last 5 years (eg labour costs capturing X% on average of base costs).
 - (b) The final allowance for base costs in our redetermination (after Frontier Shift and CACs).
 - (c) The change in the index for energy or wages. For energy the index is DESNZ energy price index net of CPIH (not seasonally adjusted) and for labour the index is ONS ASHE construction wage index adjusted for regional wages (ie the same index as used in our modelling).
- 4.141 The resulting true-up would therefore be calculated as follows, where (a), (b) and (c) refer to the sub points above:

$$\text{True-up} = (a) \times (b) \times (c)$$

- 4.142 In our wastewater model wages are not selected by the LASSO however we will still provide a true-up recognising the fact that labour costs are captured in the modelling and may be subject to unexpected shocks in the AMP8 period.

Results

- 4.143 The following section shows the results of our base cost modelling. We present these in 4 sections:
- (a) first, we discuss the level of aggregation and the quality of our model fit;
 - (b) second, we present the resulting prediction;
 - (c) third, we show the resulting efficiency scores; and
 - (d) finally, we show the results of our sensitivity and robustness checks.

Level of aggregation

- 4.144 Table 4.4 below shows the RMSEs of the bottom up and top down levels of aggregation in our wholesale and wastewater models. As described above we select for our final methodology the level of aggregation that results in the lowest (best) RMSE. Namely we select top-down models in both wholesale water and wastewater.

Table 4.4: Resulting errors at different aggregation levels

<i>Model type</i>	<i>Top down</i>	<i>Bottom Up</i>	<i>Ofwat</i>
Wholesale water	33.0	33.1	37.2
Wastewater	35.7	39.3	39.3

Source: CMA analysis of Ofwat (2025) PR24 Final Determination models data.

Note: Ofwat's RMSE is calculated using the modelled prediction produced following Ofwat's aggregation of models.

4.145 Table 4.5 below shows the cost drivers retained by LASSO for the final top down models and thus those which comprise our final models for wholesale water and wastewater. The LASSO did not drop any variables for the top down wholesale water model. For the wastewater model, the LASSO dropped the log of hourly regional construction wages.

Table 4.5: Selected cost drivers top down modelling

<i>Model</i>	<i>Selected cost drivers</i>
Wholesale water	Scale combined (log) Density combined (log) Squared density combined (log) Weighted average complexity (log) Average pumping head TWD (log) Booster pumping stations per length of mains (log) Energy index (log) Construction wages (log)
Wastewater	Scale combined (log) Pumping capacity per sewer length (log) Load treated with ammonia consent $\leq 3\text{mg/l}$ Load treated in size bands 1 to 3 (%) Weighted average treatment size (log) Urban rainfall per sewer length (log) Energy index (log)

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#).

4.146 The fact that the wages cost driver is only selected in one of the two models does not mean that the impact of wages is not captured in the wastewater model. Instead, it means that the variation due to wages is sufficiently picked up by other cost drivers. For this reason, we are not concerned that the wages cost driver is dropped in the wastewater model.

Predictions

4.147 In this section we provide the resulting model predictions before applying any efficiency challenge. Table 4.6 shows these predictions for wholesale water and Table 4.7 shows those for wholesale wastewater. To make numbers comparable to Ofwat's PR24 FD allowances we add the allowances they provide for RPEs. This allows a like for like comparison with the Working Paper and FD models which do not provide separate RPE allowances for energy and labour costs.

Table 4.6: Wholesale water cost allowances comparison – before efficiency challenge is applied, wholesale water (£m, 2022/23 prices)

Company	Ofwat PR24 FD (including RPEs (£m))	CMA Working Paper (£m)	CMA PR24 FD (£m)	CMA PR24 FD vs Ofwat PR24 FD	CMA PR24 FD vs CMA Working Paper
Anglian	1,861	1,870	1,869	0.4%	-0.1%
Northumbrian	1,503	1,473	1,472	-2.1%	-0.1%
South East	851	889	889	4.5%	-0.1%
Southern	869	945	944	8.6%	-0.1%
Wessex	537	571	570	6.2%	-0.1%
All Disputing Companies	5,622	5,748	5,744	2.2%	-0.1%
Industry	23,207	22,912	22,897	-1.3%	-0.1%

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#). Numbers presented do not include blind year reconciliation.

Table 4.7: Wastewater cost allowances comparison – before efficiency challenge is applied, wastewater (£m, 2022/23 prices)

Company	Ofwat PR24 FD (including RPEs (£m))	CMA Working Paper (£m)	CMA PR24 FD (£m)	CMA PR24 FD vs Ofwat PR24 FD	CMA PR24 FD vs CMA Working Paper
Anglian	1,981	1,988	1,988	0.3%	0.01%
Northumbrian	872	840	840	-3.7%	0.00%
Southern	1,932	1,966	1,965	1.7%	-0.03%
Wessex	979	955	955	-2.4%	0.01%
All Disputing Companies	5,764	5,748	5,748	-0.3%	-0.01%
Industry	18,743	18,428	18,426	-1.7%	-0.01%

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#). Numbers presented do not include blind year reconciliation.

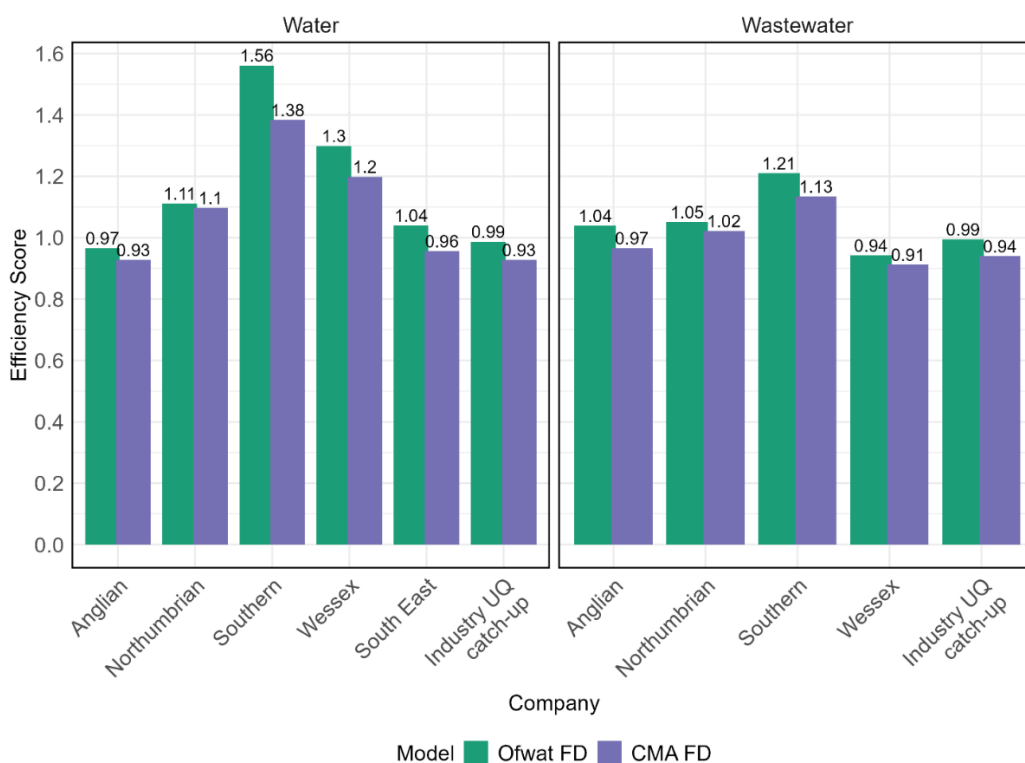
4.148 These tables show that before applying an efficiency challenge the results of our model and Ofwat's PR24 FD models are similar. Before applying efficiency adjustments, CMA allowances for the Disputing Companies are broadly similar to Ofwat's PR24 FD; differences range in wholesale water from 8.6% for Southern to -2.1% for Northumbrian and in wastewater from 1.7% to -3.7% for the same companies respectively. At the industry level, CMA allowances are 1.3% lower in wholesale water and 1.7% lower in wastewater than Ofwat's before catch-up challenges are applied. This suggests that there are only modest divergences in baseline cost allowances. In this sense our final approach is not radically different from Ofwat's. To the extent they do differ, this is due to the efficiency challenge which as explained below is higher in our approach because our model captures energy prices and thus assigns cost increase during the period of energy shock in the 2020s to energy prices and not industry inefficiency.

- 4.149 The differences between our results and those in our Working Paper are very small, consistent with the limited impact of changing our energy price index.
- 4.150 Additionally, we note that as in Table 4.4 our model outperforms Ofwat's PR24 FD models in terms of in-sample prediction. In particular, our models perform between 9% and 11% better than Ofwat's in terms of in sample (RMSE) fit. This is a material improvement, noting this is achieved with only one model compared to Ofwat's triangulated approach.

Efficiency scores

- 4.151 Figure 4.1 below shows the efficiency scores for each Disputing Company and the industry UQ level. Compared to Ofwat's PR24 FD, our efficiency scores are generally lower across companies. This means that if an efficiency challenge is adopted at the UQ level, the challenge in percentage terms is higher than that imposed by Ofwat. This higher challenge means the challenge is asking firms to catchup to a more efficient level so companies have to do more to become efficient. We consider the appropriate level of efficiency challenge, along with claims of underfunding in the final section of this chapter.

Figure 4.1: Efficiency scores by Disputing Company and industry UQ



Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

- 4.152 As we considered at Working Paper stage we continue to consider that the higher efficiency scores in our model can be explained by the inclusion of energy prices in the model (see paragraphs 4.1088 to 4.1097 for more discussion).

- 4.153 We note that Figure 4.1 shows, consistent with Ofwat's PR24 FD, a substantial difference in Wessex Water's efficiency scores between the wholesale water and wastewater models. Wessex raised this point in relation to Ofwat's PR24 FD models in its statement of case, in the hearings, and again in response to our Working Paper on base modelling. It highlighted that in previous price reviews its efficiency scores were more aligned and that it has been considered efficient under previous Ofwat cost models.³⁵⁰
- 4.154 It is difficult to draw firm conclusions about the reasons for this change from PR19 resulting in such a marked difference. It may reflect differences in the variables used in the PR24 models compared with earlier price reviews, as well as shifts in the relative performance of other companies included in the benchmarking of each cost area. However, across all of Ofwat's water cost models, Wessex appears as inefficient, suggesting that no single cost driver in Ofwat's model is responsible for the observed difference. We note that our model results in a Wessex efficiency score of 1.2 for wholesale water compared to Ofwat's 1.3.
- 4.155 Moreover, Wessex did not identify any specific cost drivers omitted from our or Ofwat's models that it considered may explain the divergence between its wholesale water and wastewater scores.³⁵¹ Additionally, we have not identified any flaw in our modelling methodology that is influencing Wessex's efficiency scores in a way that would result in this difference. Outside of the base modelling we have considered factors raised to us via CAC claims and have awarded additional funding (eg see the economies of scale CAC paragraphs 4.705 to 4.738).
- 4.156 There is no requirement or expectation that efficiency scores remain consistent across AMPs, nor that scores should necessarily be similar between wastewater and wholesale water models. These models cover different business activities, use different cost drivers, and are benchmarked against different peer groups. Variation in company efficiency scores across these contexts is therefore both possible and reasonable and is also the case for other companies not just Wessex. Finally, we note that under our stability results this pattern is retained (see paragraphs 4.167 to 4.170). We therefore do not consider that in the efficiency scores indicates a problem with our modelling approach or that the results are counterintuitive.

³⁵⁰ Wessex (2026) [Response to Working Paper](#), paragraph 2.12; [Wessex SoC](#), paragraph 8.36(a).

³⁵¹ In Wessex (2026) [Response to Working Paper](#), paragraph 2.13, Wessex raised that our exclusion of the 'pctwatertreated36' variable was arbitrary. However, we explain the reason for this exclusion in paragraphs 4.101—4.103. Wessex did not argue that this variable explains the difference (it was also included in Ofwat's PR24 FD models).

Sensitivity tests

- 4.157 To assess the sensitivity and robustness of our updated base cost modelling, we have undertaken a series of diagnostic exercises.
- 4.158 First, we subject our models to the suite of statistical tests routinely applied by Ofwat to its own cost models. This enables us to verify the statistical properties of our models and to ensure that they perform appropriately against established sector standards. The suite of tests includes the following:
- (a) misspecification test (ie RESET) to check for omitted variable bias and functional form;
 - (b) test for heteroskedasticity (ie Breusch-Pagan) to ensure that the variance of residuals is stable across observations;
 - (c) test for multicollinearity (ie using Variance Inflation Factors (**VIF**)) to identify excessive correlation among explanatory variables; and
 - (d) residual analysis to check for normality and independence of errors.
- 4.159 While this suite of statistical tests provides a framework for assessing model validity, as also noted by Ofwat, it is not necessary for a model to pass every individual test in order to be considered robust and fit for purpose. This is because the tests are designed to highlight a range of potential issues – such as functional form, heteroskedasticity, or multicollinearity – that may arise in complex, real-world datasets.
- 4.160 In practice, some degree of departure from ideal statistical properties is common, particularly when working with real world data. The key consideration is whether any identified issues materially affect the reliability of the model's predictions or its suitability for regulatory benchmarking.
- 4.161 It is not possible to fully evaluate the predictive performance of a model ex-ante. However, where a model demonstrates strong predictive performance in the data available, is grounded in sound economic rationale, and passes the majority of diagnostic checks, it can be considered appropriate for use.
- 4.162 Table 4.8 and Table 4.9 below shows the results of Ofwat's suite of statistical tests when applied to our final models. As noted above, and by Ofwat, it is not necessary for a model to pass every individual test in order to be considered robust and fit for purpose.³⁵²

³⁵² Ofwat (2024) [PR24 final determinations: Expenditure allowances - base cost modelling decision appendix](#), p16.

Table 4.8: Statistical test results of the CMA's wholesale water model

Statistical test	P-value (rounded to 2 decimal places)	Interpretation
RESET	0.08	No evidence of model misspecification
Max VIF	2.25	No serious multicollinearity (VIF > 10 would suggest severe multicollinearity)
Shapiro-Wilks	0.05	We reject the hypothesis that residuals are normally distributed
Breusch-Pagan	0.00	Heteroskedasticity present
R-Squared	0.97	Model explains ~97% of variance
Adjusted R-Squared	0.97	Adjusted R ² confirms strong explanatory power after accounting for the number of predictors.

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

Table 4.9: Statistical test results of the CMA's wastewater model

Statistical test	P-value (rounded to 2 decimal places)	Interpretation
RESET	0.11	No evidence of model misspecification
Max VIF	5.07	No serious multicollinearity (VIF > 10 would suggest severe multicollinearity)
Shapiro-Wilks	0.05	We reject the hypothesis that residuals are normally distributed
Breusch-Pagan	0.01	Heteroskedasticity present
R-Squared	0.95	Model explains ~95% of variance
Adjusted R-Squared	0.95	Adjusted R ² confirms strong explanatory power after accounting for the number of predictors.

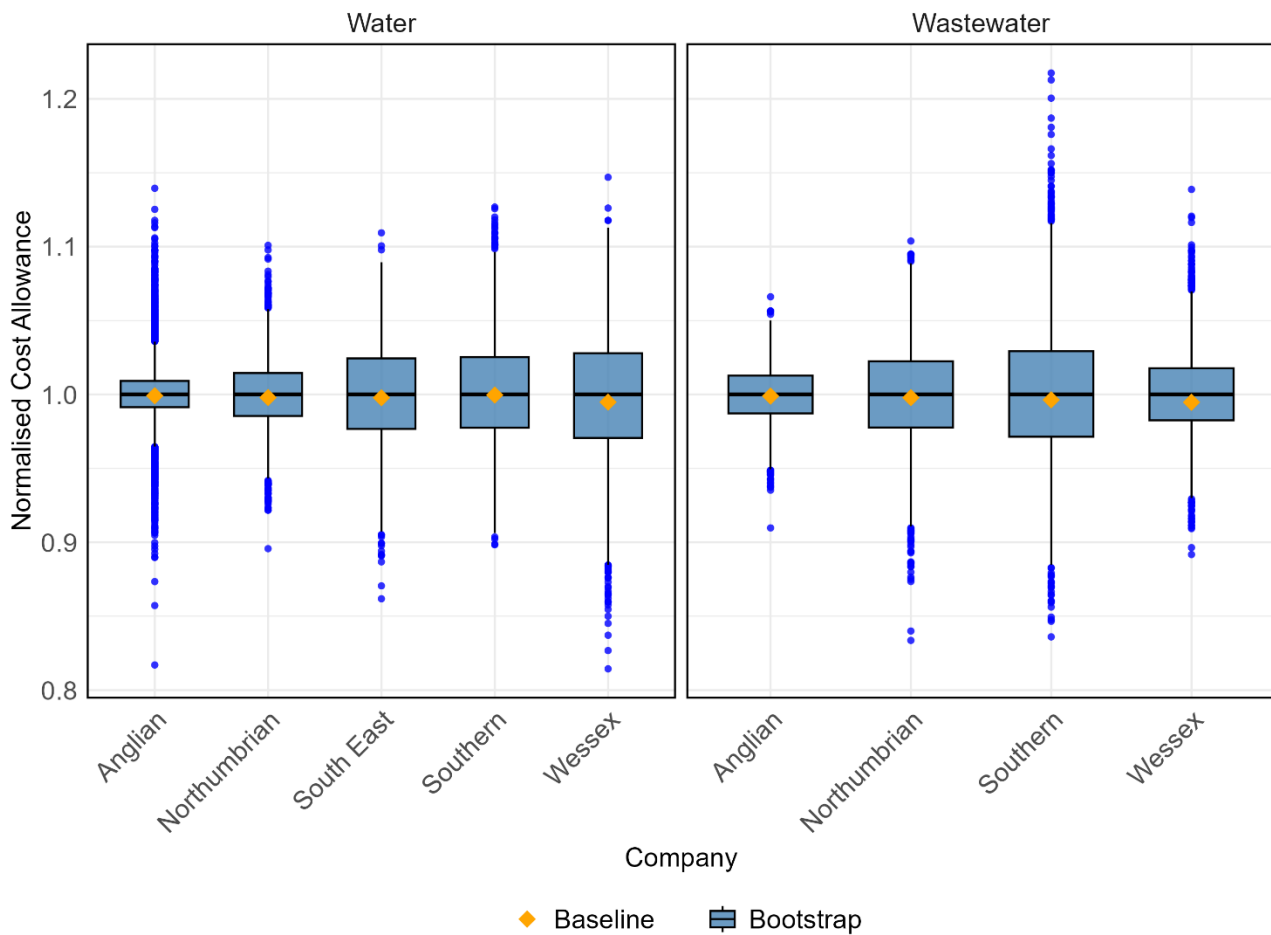
Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

- 4.163 The test results indicate that the model passes model specification and multicollinearity checks, supporting the robustness of the modelling framework. Tests for heteroskedasticity and normality are not passed. However, we do not consider these issues sufficient to invalidate the predictions of the model.
- 4.164 The normality assumption primarily affects the validity of standard errors and the related inference. Since our analysis does not rely on hypothesis testing or confidence intervals, this violation is not critical. Similarly, heteroskedasticity – where error variances differ across observations – is common in regulatory models, often because smaller companies exhibit differing error variances compared to larger ones. While this affects standard errors, it does not bias coefficient estimates, so we consider that model remains appropriate for our purpose.
- 4.165 Finally, to evaluate the stability of the LASSO procedure, we use a ‘bootstrap’ technique on our modelled results (see also Appendix D: Base Cost Modelling for details). In particular, we perform a repeated sampling analysis using a bootstrapping approach. This involves resampling the data many times with

replacement to generate a distribution of efficiency scores and modelled allowances. The rationale for this method is to mimic the inherent uncertainty in the data by constructing alternative samples. This allows us to observe the stability of the model's predictions under different data realisations. In assessing the stability, we have focused on the stability of the final model (ie top down) and therefore have not included the level of aggregation choice in the stability analysis.

- 4.166 It is important that the baseline model's predictions do not lie at the extremes of the resulting distribution. This would indicate that the model's results are unstable and unduly sensitive. Ideally the baseline modelled efficiency scores and cost allowances would be close to the middle of the set of their predictions.
- 4.167 Figure 4.2 below plots post-efficiency cost allowances for the Disputing Companies, normalised by the median cost allowance of that company. The lighter blue boxes represent the interquartile range of results across repeated runs of the model, the black line in the box represents the median, the dark blue dots represent outliers in the data, and the orange diamond represents our modelled cost allowance after an UQ catch-up efficiency challenge is applied.
- 4.168 The results show that the baseline (orange diamond) is in the middle, near the median of the distribution. In addition, results show that the interquartile range is narrow (within $\pm 5\%$). This indicates robust results for cost allowances of all the Disputing Companies, reinforcing the finding that the model is stable under perturbations in the data.

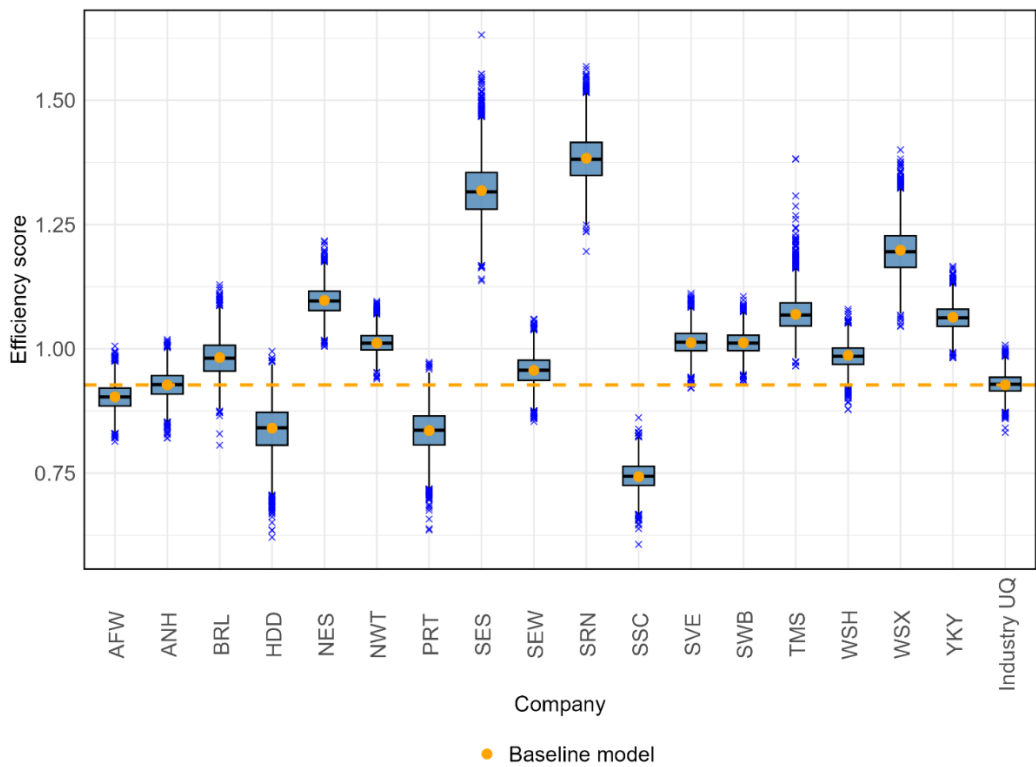
Figure 4.2: Range of Disputing Company wholesale water and wastewater cost allowance after UQ applied under the bootstrap LASSO



Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

4.169 We see similarly stable results for efficiency score distributions across the industry in Figure 4.3 and Figure 4.4 below. The additional dotted orange line represents the industry UQ challenge. The results highlight stability in the model, with tight distribution boxes, and the baseline (orange dot) in the middle near the median for all companies.

Figure 4.3: Wholesale water company and industry-wide efficiency score distribution from bootstrap LASSO



4.170 Finally, we note that as in our Working Paper the model selection is very stable with our chosen cost drivers each selected in at well above 50% of runs in wholesale water. Where the selected probabilities are closer to 50% for wholesale wastewater, we do not see this reflected in increased instability in the bootstrap results for cost allowances and efficiency scores as can be seen from Figure 4.3 and Figure 4.4 above. This provides future reassurance of the stability of our model to small changes in the data.

Table 4.10: Percentage of bootstrap runs in which costs drivers are selected, CMA's wholesale water model

Cost Driver	% of runs selected
(log) Scale combined	100%
(log) Density combined	100%
Squared (log) density combined	100%
Weighted average complexity (log)	100%
Average pumping head TWD (log)	95%
Booster pumping stations per length of mains (log)	100%
Energy index (log)	99%
Construction wages (log)	92%

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

Table 4.11: Percentage of bootstrap runs in which costs drivers are selected, CMA's wholesale wastewater model

Cost Driver	% of runs selected
Scale combined (log)	100%
Pumping capacity per sewer length (log)	100%
Weighted average treatment size (log)	71%
Load treated in size bands 1 to 3 (%)	58%
Load treated with ammonia consent <3mg/l	100%
Urban rainfall per sewer length (log)	100%
Construction wages (log)	58%
Energy index (log)	100%

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

Asset health

Introduction

4.171 Ofwat defines asset health as an indicator of an asset's ability to perform its functions so that it delivers a range of benefits (for example, financial, societal, environmental).³⁵³

4.172 The remainder of this section covers the following topics:

³⁵³ Ofwat (2024) [PR24 final determinations Roadmap for enhancing asset health understanding in the water sector](#), p3.

- (a) our approach to broader asset health issues;
- (b) company specific asset health CACs; and
- (c) sector-wide cost adjustments relating to mains renewals, meter replacements and network reinforcement.³⁵⁴

Our general approach to asset health

- 4.173 In this section we summarise Ofwat’s PR24 FD approach and submissions on the general approach we should take to asset health, before setting out the approach we have taken.
- 4.174 Asset reliability is of critical importance for customers and the environment.³⁵⁵ This is because the consequences of asset failure can be substantial (eg it can lead to service failures such as interruption to supply, sewer flooding or pollution incidents).
- 4.175 Ofwat’s approach to asset health during PR24 emphasised that companies have a duty to maintain asset health.³⁵⁶ Disputing Companies have said that Ofwat’s current approach to setting capital maintenance allowances is inadequate and that the PR24 FD underfunds their maintenance requirements (see paragraphs 4.192 and 4.193 below).
- 4.176 Our decision is that the general issues around asset health funding raised by Disputing Companies should be dealt with through industry-wide policy work, outside of these redeterminations, because:
- (a) this allows for all relevant stakeholders to be fully involved;
 - (b) developing an economic framework, collecting comparable asset health data and agreeing common asset condition metrics – which are currently lacking and fundamental for understanding asset health requirements – is not feasible as part of these redeterminations, given time constraints and the fact that they only involve a subset of all water companies; and
 - (c) Ofwat has established an industry-wide process to gather data and deal with the general issues around asset health raised by Disputing Companies.

³⁵⁴ In this section we have used industry-wide when referring to policy work or process and sector-wide when referring to Ofwat’s sector-wide cost adjustments.

³⁵⁵ CCW (2025) [Third party submission on the Water PR24 References – Anglian](#), paragraph 3.5; CCW (2025) [Third party submission on the Water PR24 References – Northumbrian](#), paragraph 3.6; CCW (2025) [Third party submission on the Water PR24 References – South East](#), paragraph 3.5; CCW (2025) [Third party submission on the Water PR24 References – Southern](#), paragraph 3.3.

³⁵⁶ Ofwat (2024) [PR24 final determinations Roadmap for enhancing asset health understanding in the water sector](#), p3; [the Act](#), section 37.

- 4.177 We agree with various stakeholders that asset health is an important area. It was raised by the CMA at PR19 and also by the National Infrastructure Commission (**NIC**).³⁵⁷ This is in addition to the more recent discussion of this issue by the NAO, IWC and the Defra White Paper.³⁵⁸ Although some progress has been made, there is a pressing need for further progress to be made on resolving the broader issues around asset health.
- 4.178 Notwithstanding our decision on general asset health matters, we consider below specific requests for allowances or adjustments to allowances raised by Disputing Companies that are relevant to asset health.

Ofwat's PR24 FD approach

- 4.179 Ofwat's PR24 FD approach to asset health emphasised that 'water companies have a duty to maintain an efficient and economical system of water supply, which includes maintaining good asset health'.³⁵⁹ Ofwat said that this duty meant that companies must deliver sufficient asset renewals and refurbishments using base allowances to maintain the long-term capability of assets.³⁶⁰
- 4.180 Ofwat's PR24 FD approach to asset health and capital maintenance was intended to give companies flexibility over their spending choices.³⁶¹ Ofwat did not set specific allowances for capital maintenance, nor did it routinely set Price Control Deliverables (**PCDs**) for specific volumes of asset maintenance work to be undertaken in each price control period. It set totex allowances and performance commitment levels (**PCLs**) to penalise companies if companies' performance and service levels dropped below agreed levels.³⁶² Ofwat said that companies should decide how best to maintain the productive capability of their assets. However, if they failed to do so, customers should not pay twice for these choices.³⁶³
- 4.181 At PR24 FD Ofwat primarily set the base expenditure allowances in a similar way to PR14 and PR19 – using the base cost expenditure models, alongside company specific cost adjustments where companies could evidence additional spending

³⁵⁷ [PR19 Final report](#), paragraph 4.293; NIC (2024) [Developing resilience standards in UK infrastructure](#), p9; [Defra White Paper](#) (accessed 26 February 2026), pp37–38.

³⁵⁸ The recently published IWC Final Report (in July 2025) highlights that substantial industry-wide work is required to further develop the approach to asset health in the water industry and recognises the role of the Asset Health Roadmap in this process. [IWC Final Report](#), pp379–380, paragraphs 886, 888–889; [Defra White Paper](#) (accessed 26 February 2026); National Audit Office (2026) [Regulating for investment and outcomes in the water sector](#).

³⁵⁹ Ofwat (2024) [PR24 final determinations Roadmap for enhancing asset health understanding in the water sector](#), p3; [the Act](#), section 37.

³⁶⁰ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p89.

³⁶¹ Ofwat (2022) [PR24 Appendix 9: Setting expenditure allowances](#), p51.

³⁶² Ofwat (2022) [PR24 Appendix 9: Setting expenditure allowances](#), p4; Ofwat (2022) [Creating tomorrow, together: our final methodology for PR24](#), p17. Three of the performance commitments are explicitly identified as asset health performance commitments: Repairs to burst mains; unplanned interruptions; and sewer collapses. In addition, a company's performance in a number of the other performance commitments is likely to be related to its asset health: such as compliance index risk; internal and external sewer flooding; leakage; pollution incidents; and supply interruptions.

³⁶³ Ofwat (2024) [PR24 final determinations Roadmap for enhancing asset health understanding in the water sector](#), p8,

needs.³⁶⁴ However, to address asset health issues, and partly in response to the CMA's suggestion in its PR19 redeterminations that Ofwat develop a 'forward-looking' element to setting base cost allowances, Ofwat also:³⁶⁵

- (a) collected asset health data and applied sector-wide cost adjustments to provide companies with additional base allowances in a number of areas;³⁶⁶ and
- (b) set out its Asset Health Roadmap to enhance asset health understanding in the water sector, including improving the understanding of asset condition by PR29.³⁶⁷

Collection of asset health data and sector-wide cost adjustments

4.182 After considering feedback from stakeholders Ofwat concluded that it was unable to put in place comprehensive forward-looking asset metrics prior to its PR24 FD given the challenges to agree and develop them.³⁶⁸

4.183 As part of its PR24 process, Ofwat focused on collecting sector-wide data on some aspects of asset health for some asset classes:³⁶⁹

- (a) data on asset condition for bioresources assets, gravity sewers, sewer mains and water mains; and
- (b) data on asset replacement and renewals rates for meters, sewer mains and water mains. This has been part of Ofwat's annual reporting process for a number of years.³⁷⁰

4.184 Ofwat said that the data it collected for the PR24 FD covered 70% of assets by value.³⁷¹ Using this data, Ofwat concluded that sector-wide asset condition had largely been maintained or improved since PR09 across bioresources assets, gravity sewers, sewer mains and water mains.³⁷² However Ofwat concluded that water mains and meters required a higher level of replacement and renewals than historical rates and it provided 'sector-wide cost adjustments' to base costs allowances to fund this.³⁷³

³⁶⁴ Ofwat (2024) [PR24 final determinations Roadmap for enhancing asset health understanding in the water sector](#), p18.

³⁶⁵ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 2.7 and 2.9.

³⁶⁶ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp81–82. Ofwat stated that it was not feasible to expand sector-wide capital maintenance cost adjustments to a wider set of assets at PR24 due to the absence of robust asset condition and workload data. Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p90.

³⁶⁷ Ofwat (2024) [PR24 final determinations Roadmap for enhancing asset health understanding in the water sector](#), p3.

³⁶⁸ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 2.17.

³⁶⁹ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 2.17.

³⁷⁰ Ofwat (2024) [RAG 4.12 – Guideline for the table definitions in the annual performance report](#), p83, line 4L.48–50 (meters); p137, 6C.2–3 (water mains); p153, 7C.14–15 (sewer mains).

³⁷¹ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.19.

³⁷² Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p87.

³⁷³ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p87.

4.185 Ofwat also made other sector-wide adjustments for energy costs, net zero, network reinforcement and P-removal where it determined that additional allowances were required on a sector-wide basis.³⁷⁴

Asset Health Roadmap

4.186 At PR24 FD Ofwat published its Asset Health Roadmap, which set out a plan to improve understanding of asset condition by PR29.³⁷⁵ Ofwat said that the first part of this process (2025 to 2027) would identify the priority assets that were driving the need for additional investment.³⁷⁶ Ofwat estimated that, building on the data collected during PR24, it will have collected relevant data on assets accounting for around 80% by value of the sector's asset base by 2027.³⁷⁷

4.187 As part of this first stage, Ofwat published its cost change process (**CCP**) decision document in November 2025.³⁷⁸ The CCP will allow companies to submit proposed asset health improvement investment cases for the identified priority assets. Some of the guidance relevant to asset health included the following.

- (a) Applications can be made between March and May in 2026, 2027 and 2028 with decisions due by 15 December in the applicable year.³⁷⁹
- (b) By default, claims will be assessed as end-of-period adjustments. However, companies can make the case for in-period adjustments where requests are greater than 2% of the appointee's business turnover.³⁸⁰
- (c) The assessment will be informed by sector wide asset health and condition data, data on historical investment for the priority assets, and evidence on whether base expenditure has been used appropriately and efficiently.³⁸¹
- (d) Additional allowances will only be considered where there is a sector-wide issue.³⁸²

4.188 Ofwat also said that in advance of PR29, it was open to considering the collection of more asset health data should the sector support doing that.³⁸³ Ofwat said that it had been developing a longer-term plan for overcoming challenges related to asset health ahead of the next price review.³⁸⁴ It said that it was also working with

³⁷⁴ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p29

³⁷⁵ Ofwat (2024) [PR24 final determinations Roadmap for enhancing asset health understanding in the water sector](#), p1

³⁷⁶ Ofwat (2024) [PR24 final determinations Roadmap for enhancing asset health understanding in the water sector](#), p1; (Non-confidential) transcript of the hearing for Ofwat on 10 July 2025, p13, lines 15–16.

³⁷⁷ (Non-confidential) transcript of the hearing for Ofwat on 10 July 2025, p13, lines 11–12.

³⁷⁸ Ofwat (2025) [Cost change process decision](#).

³⁷⁹ Ofwat (2025) [Cost change process guidance note](#), p6, p11.

³⁸⁰ Ofwat (2025) [Cost change process guidance note](#), p8.

³⁸¹ Ofwat (2025) [Cost change process guidance note](#), p20.

³⁸² Ofwat (2025) [Cost change process guidance note](#), pp19–20.

³⁸³ (Non-confidential) transcript of the hearing for Ofwat on 10 July 2025, p14 lines 6–8.

³⁸⁴ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.24.

companies and the wider sector to develop better asset health measures through the industry Operational Resilience Working Group.³⁸⁵

Parties' submissions

4.189 In this section we summarise the submissions by the Disputing Companies, Ofwat and third parties.

Disputing Companies

4.190 In their statements of case, Disputing Companies said that they did not expect the CMA to solve fully the issues around asset health within these redeterminations. However, given the shortcomings they had identified in Ofwat's approach, they asked the CMA to approve their specific CACs for capital maintenance.³⁸⁶

4.191 Some Disputing Companies submitted declining rates of asset renewal were at least in part due to them employing shorter-term solutions due to underfunding.³⁸⁷

4.192 The Disputing Companies said that Ofwat's approach to setting capital maintenance funding allowances – almost solely relying on historical models – was not appropriate, highlighting the following issues.

- (a) Historical models were an inappropriate basis for setting forward-looking capital maintenance allowances.³⁸⁸
- (b) Ofwat's approach did not adequately reflect changing capital maintenance requirements over time due to factors such as asset growth, climate change and changing performance requirements.³⁸⁹
- (c) Ofwat's approach was inconsistent with that of other regulators, such as Ofgem and the Water Industry Commission for Scotland (**WICS**). Furthermore, Ofwat's approach did not reflect statements by the CMA and the NIC on the need to have a forward-looking element as part of the assessment of asset health investment requirements.³⁹⁰

³⁸⁵ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 2.31.

³⁸⁶ [Anglian SoC](#), paragraph 368; [Northumbrian SoC](#), paragraph 234; [Southern SoC](#), p212, paragraph 390; [South East SoC](#), paragraph 4.36; [Wessex SoC](#), paragraph 8.56.

³⁸⁷ [Wessex SoC](#), paragraph 8.5; [Northumbrian SoC](#), paragraph 176.

³⁸⁸ [Anglian SoC](#), paragraph 323; [Northumbrian SoC](#), paragraph 217; [Southern SoC](#), p201, paragraph 353; [Wessex SoC](#), paragraphs 8.31–8.35.

³⁸⁹ [Northumbrian SoC](#), paragraph 220; [Wessex SoC](#), paragraphs 8.31–8.35.

³⁹⁰ [Anglian SoC](#), paragraphs 328 and 329; [Northumbrian SoC](#), paragraph 198; [Southern SoC](#), p210, paragraph 379; [Wessex SoC](#), paragraph 8.17; [PR19 Final Report](#), p185, paragraph 4.293; NIC (2024) [Developing resilience standards in UK infrastructure](#), p9.

- (d) There was a lack of information on water companies' asset health and the available information had limitations.³⁹¹

4.193 The Disputing Companies also presented evidence that they said showed the outcome of Ofwat's PR24 FD approach was that capital maintenance had been underfunded. They highlighted:

- (a) consistent overspend of base cost allowances at a sector level over successive price control periods;³⁹²
- (b) widespread underperformance against outcome delivery incentives (**ODIs**) (in combination with overspend of base allowance) over AMP7;³⁹³
- (c) a failure of capital maintenance expenditure growth to keep pace with growth in asset values;³⁹⁴ and
- (d) capital maintenance funding was much lower than the levels that were implied by asset lives.³⁹⁵

4.194 In response to the CMA PR24 PD, Anglian and Northumbrian said that they did not disagree with our provisional decision to deprioritise broader asset health issues. However, they asked us to look again at base cost funding including their targeted asset health cases, given the evidence they had supplied and the findings of the Environment Agency (**EA**), the IWC and the NAO that water companies were not adequately funded to maintain asset health. Anglian said that an alternative would be to provide Disputing Companies with gated allowances (**Gated Allowance**) for specific asset health issues.³⁹⁶

4.195 Anglian said that the CMA PR24 PD made a critical situation worse by imposing a 4% reduction in modelled base costs compared with Ofwat's PR24 FD and that the underfunding of capital maintenance was already affecting the environment and service to customers. Anglian cited an EA report which stated:

‘The data and intelligence we are collecting with more staff, new monitoring tools and our improved digital capability is highlighting persistent problems across the sector. These are due to poor asset health, underinvestment in maintenance and replacement of aging

³⁹¹ [Northumbrian SoC](#), paragraph 223; [Southern SoC](#), Sections 7.1.9–7.1.11; [Anglian SoC](#), paragraph 343.

³⁹² [Southern SoC](#), p206, paragraph 372.

³⁹³ [Wessex SoC](#), paragraph 8.22.

³⁹⁴ [Anglian SoC](#), paragraph 340.

³⁹⁵ [Northumbrian SoC](#), paragraph 166.

³⁹⁶ Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 293, 302; Northumbrian (2025) [Response to CMA PR24 PD](#), paragraphs 182–183.

infrastructure as well as reduced resilience due to the impacts of climate change.’³⁹⁷

- 4.196 Wessex agreed with the CMA PR24 PD that fundamental changes to the regulatory framework were best addressed through industry-wide policy work.³⁹⁸ However, the CMA should ensure that its final determinations were supportive of (or at least not at odds with) companies being able to invest sufficiently to maintain asset resilience in the immediate term.³⁹⁹ It said that the CMA should consider:
- (a) reassessing the appropriate level of catch-up efficiency, recognising that the benchmark was not a true reflection of the efficient spend required to maintain a notional water and sewerage network; and
 - (b) what Ofwat’s Asset Health Roadmap should do to ensure sufficient funding for asset health.⁴⁰⁰
- 4.197 Several Disputing Companies also said that they did not have confidence that the Ofwat Asset Health Roadmap would deliver a solution.⁴⁰¹ Northumbrian said that the CMA had relied too heavily on the Asset Health Roadmap process in its provisional determinations, which was too narrow in scope and too uncertain in outcome.⁴⁰² It understood that the CMA may still feel that some sector-wide data was required and that a delay of one year was unlikely to cause significant harm. In this scenario, Northumbrian asked us to issue directions on the Asset Health Roadmap process, including:
- (a) broadening the scope of assets covered;
 - (b) making clear that the absence of sector wide data should not necessarily bar funding; and
 - (c) making clear that additional allowances should not be exclusively dependent on establishing a sector-wide issue.⁴⁰³
- 4.198 South East said that where the CMA proposed to defer issues to other regulatory processes, such as the Asset Health Roadmap, it should set clear parameters around how and when those processes must address them.⁴⁰⁴

³⁹⁷ Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 296–297; Environment Agency (2025), [Water and sewerage companies in England: pollution incident report for 2016 to 2024](#), Section 8.

³⁹⁸ Wessex (2025) [Response to CMA PR24 PD](#), paragraph 4.6.

³⁹⁹ Wessex (2025) [Response to CMA PR24 PD](#), paragraph 4.2.

⁴⁰⁰ Wessex (2025) [Response to CMA PR24 PD](#), paragraph 4.6.

⁴⁰¹ [Anglian SoC](#), paragraph 358; [Northumbrian SoC](#), paragraph 231; [Southern SoC](#), paragraphs 388–389.

⁴⁰² Northumbrian (2025) [Response to CMA PR24 PD](#), paragraphs 215–221.

⁴⁰³ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 225.

⁴⁰⁴ South East (2025) [Response to CMA PR24 PD](#), paragraph 1.15.

- 4.199 Ofwat said that asset health was one area which could be deprioritised in the CMA redeterminations as mechanisms or ongoing processes were in place to address the issue.⁴⁰⁵ Ofwat supported the CMA's provisional decision to deprioritise the development (within its PR24 redetermination) of a broader framework on how to evaluate and regulate asset health in the water sector.⁴⁰⁶ Ofwat said that companies should invest from base expenditure allowances to maintain good asset health. It said that capital maintenance within base expenditure allowances had increased materially since privatisation, and asset health metrics showed a stable or improving trend over time.⁴⁰⁷
- 4.200 Ofwat said that the water mains and meter replacement cost adjustments it introduced at PR24 FD provided an additional £1.2 billion in base allowances. In addition, it allowed ten company specific CACs, with a total value of £207 million.⁴⁰⁸
- 4.201 Ofwat said that it was important that cost adjustments to address asset condition issues were underpinned by robust and comparable data, ensuring that all companies were assessed equally.⁴⁰⁹ It said that it was collecting asset health data via its Asset Health Roadmap (see paragraphs 4.186 to 4.188).
- 4.202 Ofwat said that capital maintenance spend had increased in real terms on a per population basis – since privatisation there had been a real average increase of 2% per year for water and 3% per year for wastewater.⁴¹⁰ Base capital maintenance spend had also increased in real terms over time relative to network length, by an average increase of 2% per year for water and 3% per year for wastewater.⁴¹¹
- 4.203 Ofwat said that several unprecedented events in AMP7, including COVID-19 and Russia's invasion of Ukraine, had contributed to the unexpected increases in outturn expenditure of water companies during AMP7.⁴¹²
- 4.204 Ofwat said that the rate of asset renewals had fallen and companies had not delivered the renewal rates promised in their PR19 business plans.⁴¹³ It noted that stable or improving asset condition despite low renewal rates may indicate that

⁴⁰⁵ Ofwat (2025) [Overview of our response to the SoCs](#), paragraph 5.2.

⁴⁰⁶ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.21.

⁴⁰⁷ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.41.

⁴⁰⁸ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraphs 2.22, 2.25. Note that all financial values quoted in the section are in 2022/23 prices based on the CPIH price index unless otherwise stated.

⁴⁰⁹ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.47.

⁴¹⁰ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.8.

⁴¹¹ Ofwat said that this was preferable to RCV growth which reflected historical investment as it factored in the size of the network, and how that had changed in response to population. Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraphs 3.8–3.11.

⁴¹² Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.17.

⁴¹³ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.26.

companies were investing in other, potentially shorter-term, fixes to maintain the life of the asset or to meet PCLs.⁴¹⁴

- 4.205 Ofwat said that companies would be able to submit investment proposals for the identified priority asset(s) by 1 May 2026 and access funding through the CCP. Ofwat supported not allowing the capital maintenance related CACs submitted by the Disputing Companies.⁴¹⁵
- 4.206 Ofwat said that it planned to consult on expanding the list of priority assets ahead of the next price review. This would require additional licence modifications and the collection of robust and comparable asset condition data during 2026. Subject to consultation, Ofwat expected companies to be able to submit claims relating to the broader range of assets from 2027.⁴¹⁶
- 4.207 Ofwat said that, as part of the Asset Health Roadmap, it had been exploring the feasibility of implementing Ofgem's Network Asset Risk Metric (**NARM**) in the water sector, with a pilot study expected to begin in 2026. It had also been working towards developing a common asset inventory as a necessary first step to enable other asset health related models such as NARM.⁴¹⁷
- 4.208 Ofwat that said that its approach would align with the IWC's recommendation to develop asset condition methodologies and subsequently collect asset condition data to better understand asset health in the sector.⁴¹⁸

Third parties

- 4.209 Alan Sutherland, former Chief Executive of the WICS, said that the CMA should not seek to establish a definitive approach to setting allowances for asset maintenance and replacement going forward. Instead, it should assure itself that companies were adequately funded to achieve the performance levels required. Mr Sutherland suggested looking at three approaches for maintenance and replacement expenditure.
- (a) What level of expenditure is required to ensure that the average age of the assets of the appellant companies (across different categories) is not increasing?
- (b) What level of expenditure is implied by the companies' asset management systems?

⁴¹⁴ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.27.

⁴¹⁵ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.23.

⁴¹⁶ Ofwat (2025) [Cost change process guidance note](#), p22.

⁴¹⁷ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.24.

⁴¹⁸ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.25.

- (c) What level of expenditure would be required to maintain the proportion of expenditure relative to the company's RCV at a broadly similar level to previous regulatory control periods? ⁴¹⁹

4.210 CCW said that it could not assess the technical merits of approaches to asset maintenance cost benchmarking and modelling. ⁴²⁰ However, it made the following points.

- (a) Customers should be assured that the latest evidence on asset deterioration, climate risks and independent cost assessments would inform decisions on efficient costs they needed to pay to ensure delivery of a reliable service. ⁴²¹
- (b) Customers saw asset reliability as essential to their everyday service, making it a critical factor in investment and regulatory decisions over the next several years. ⁴²²
- (c) The CMA should assess whether Ofwat's cost modelling reflected the actual and future costs of asset maintenance. ⁴²³
- (d) Any additional funding should directly correspond to measurable improvements in service. ⁴²⁴

4.211 CPP investment (Anglian's largest shareholder) said that Ofwat's current approach relied on retrospective models to determine allowances, while simultaneously increasing deliverables from an already stretched base cost envelope. This had led to structurally embedded underfunding of base operations and capital maintenance activities across multiple AMPs. It estimated that the PR24 FD left Anglian with around £500 million of unfunded base expenditures, severely compromising its ability to manage capital maintenance risks. ⁴²⁵

⁴¹⁹ Alan Sutherland (2025) [Third party response to the CMA PR24 Approach document](#), p3.

⁴²⁰ CCW (2025) [Third party submission on the Water PR24 References – Anglian](#), paragraph 3.1; CCW (2025) [Third party submission on the Water PR24 References – Northumbrian](#), paragraph 3.3; CCW (2025) [Third party submission on the Water PR24 References – South East](#), paragraph 3.2; CCW (2025) [Third party submission on the Water PR24 References – Southern](#), paragraph 3.1; CCW (2025) [Third party submission on the Water PR24 References – Wessex](#), paragraph 3.1.

⁴²¹ CCW (2025) [Third party submission on the Water PR24 References – Anglian](#), paragraph 3.2; CCW (2025) [Third party submission on the Water PR24 References – Northumbrian](#), paragraph 3.4; CCW (2025) [Third party submission on the Water PR24 References – South East](#), paragraph 3.3; CCW (2025) [Third party submission on the Water PR24 References – Southern](#), paragraph 3.2; CCW (2025) [Third party submission on the Water PR24 References – Wessex](#), paragraph 3.2.

⁴²² CCW (2025) [Third party submission on the Water PR24 References – Anglian](#), paragraph 3.5; CCW (2025) [Third party submission on the Water PR24 References – Northumbrian](#), paragraph 3.6; CCW (2025) [Third party submission on the Water PR24 References – South East](#), paragraph 3.5; CCW (2025) [Third party submission on the Water PR24 References – Southern](#), paragraph 3.3.

⁴²³ CCW (2025) [Third party submission on the Water PR24 References – Anglian](#), paragraph 3.3; CCW (2025) [Third party submission on the Water PR24 References – South East](#), paragraph 3.6.

⁴²⁴ CCW (2025) [Third party submission on the Water PR24 References – Anglian](#), paragraph 3.7; CCW (2025) [Third party submission on the Water PR24 References – Northumbrian](#), paragraph 3.7; CCW (2025) [Third party submission on the Water PR24 References – South East](#), paragraph 3.7; CCW (2025) [Third party submission on the Water PR24 References – Southern](#), paragraph 3.5; CCW (2025) [Third party submission on the Water PR24 References – Wessex](#), paragraph 3.3.

⁴²⁵ CPP (2025) [Third party submission on the Water PR24 References](#), p2.

- 4.212 The Global Infrastructure Investment Association (**GIIA**) said that Ofwat had relied too heavily on backward-looking data and past delivery, and its models focused on a narrow subset of activities. This modelling approach continued a pattern of long-term underfunding for capital maintenance. This created incentives to defer essential maintenance or avoid necessary but capital-intensive upgrades. Ofwat's use of retrospective penalties also undermined confidence in the regulatory regime.⁴²⁶
- 4.213 The Northumbrian and Essex and Suffolk Water Forum expert challenge report said that adequately funding asset health presented a wider problem for water companies. Given affordability concerns, the temptation to put it off until the review after next was overwhelming for all parties. A completely new approach to cost assessment was needed, probably on a cross-industry basis although this was probably impractical to implement as part of Ofwat's PR24 process.⁴²⁷
- 4.214 Pennon (owners of South West Water and Sutton and East Surrey Water) said that it welcomed Ofwat's more pragmatic approach to asset health in PR24, especially its acknowledgement that past base expenditure may not reflect future investment needs. It also supported Ofwat's commitment to gather more forward-looking asset condition data to strengthen the regulatory approach for AMP9.⁴²⁸ In response to the CMA PR24 PD, Pennon said that it agreed with the CMA's conclusion that longer-term reforms to asset health regulation should be developed through industry-wide policy work, including Ofwat's development of the cost adjustment mechanisms for AMP8.⁴²⁹
- 4.215 Thames Water said that companies could not have confidence that an alternative process would deliver an outcome which addressed their concerns in a reasonable timeframe.⁴³⁰ It also said that while it appreciated that the CMA could not fix fundamental, structural challenges facing the sector, the CMA should consider whether regulatory practice delivered an outcome which was correct on its own merits for PR24 and consistent also with the statutory duties.⁴³¹
- 4.216 Thames Investor Group said that the IWC and the NAO had called for a step-change in price control methodology. The IWC cited systemic 'underinvestment' in price reviews between 2009 and 2024. The NAO concluded that 'the water sector's regulators have not encouraged water companies to spend what they need to deliver the performance expected'.⁴³² Thames Investor Group said that

⁴²⁶ GIIA (2025) [Third Party Submission on the Water PR24 References](#), p4.

⁴²⁷ Northumbrian and Essex and Suffolk Water Forum Independent Challenge Group (2025) [Third Party Submission on the Water PR24 References](#), Annex A: Expert challenge, p24.

⁴²⁸ Pennon (2025) [Third Party Submission on the Water PR24 References](#), p3.

⁴²⁹ Pennon (2025) [Response to CMA PR24 PD](#), p1.

⁴³⁰ Thames Water (2025) [Third party response to the CMA PR24 Approach document](#), paragraph 12.

⁴³¹ Thames Water (2025) [Third party response to the CMA PR24 Approach document](#), paragraph 13.

⁴³² Thames Investor Group (2025) [Response to CMA PR24 PD](#), paragraph 5.

the IWC's findings were essential evidence that the CMA must consider as it fell within the CMA's 30 September 2025 cut-off date.⁴³³

- 4.217 Water UK said that Ofwat's econometric models were largely backward-looking and failed to capture appropriately that cost drivers such as climate change would be more important soon. It was not convinced that Ofwat's current approach to asset health was sufficiently effective and future-proofed. Ofwat had made statements in the past on asset health which had not resulted in further funding.⁴³⁴
- 4.218 Water UK said that it was concerned that Ofwat's Asset Health Roadmap may not be a reliable route to securing the additional allowances required to maintain assets appropriately. The CMA should:
- (a) allow water companies to request funding for a much broader set of asset types than those Ofwat had included in the process;
 - (b) remove the reliance on sector-wide data collection activities, which prevented water companies from requesting funding for company specific risks; and
 - (c) remove unnecessary barriers to requesting and financing investment.⁴³⁵
- 4.219 Yorkshire Water said that asset health was a pressing industry issue and Ofwat's PR24 FD did not provide sufficient funding to enable the industry to begin addressing this. It encouraged the CMA to make clear recommendations to Ofwat on how these issues should be addressed through its Asset Health Roadmap, which was due for completion in 2026.⁴³⁶ Yorkshire Water said that it was important that the CMA's final determination reflected the fact that it may have implications for all companies.⁴³⁷

Our final approach

- 4.220 In our CMA PR24 Approach document we said that we would assess several Disputing Company-specific CAC requests and requests related to Ofwat's sector-wide cost adjustments. However, we did not prioritise the broader issues related to the evaluation and economic regulation of asset health raised by the Disputing Companies.⁴³⁸ We stated that 'fundamental changes to the regulatory framework are best addressed through industry-wide policy work, outside of these redeterminations'.⁴³⁹

⁴³³ Thames Investor Group (2025) [Response to CMA PR24 PD](#), paragraph 8.

⁴³⁴ Water UK (2025) [Third party submission on the Water PR24 References](#), p63.

⁴³⁵ Water UK (2025) [Response to CMA PR24 PD](#), pp5–6.

⁴³⁶ Yorkshire Water (2025) [Third party submission on the Water PR24 References](#), pp3–4.

⁴³⁷ Yorkshire Water (2025) [Response to CMA PR24 PD](#), p5.

⁴³⁸ [CMA PR24 Approach document](#), paragraph 49.

⁴³⁹ [CMA PR24 Approach document](#), paragraph 49.

- 4.221 An industry-wide process allows for all relevant stakeholders to be fully involved. It also allows for the time required to develop an appropriate economic framework and to collect robust and comparable data at the sector level, which is currently lacking and is fundamental for understanding asset health requirements.
- 4.222 Our decision is that it is not feasible to address the broader issues related to asset health as part of these redeterminations. As we explain further in paragraph 4.223, robust and comparable asset health data has not been systematically collected at an industry level in the water sector. It would not have been feasible for the CMA to collect sector-wide robust and comparable asset health data, given time constraints and the fact that these redeterminations only involve a subset of all water companies. Even if we could have collected all of the relevant data, there would then have been a substantial challenge of agreeing common measure(s) of asset condition and developing a suitable economic framework to translate data into allowances and ensure companies face the right incentives. As we explain further in paragraph 4.224, evidence from Ofgem and the WICS shows that such a process would be complex and time consuming.
- 4.223 Historically only a very limited amount of robust and comparable asset health data has been collected at an industry level in the water sector, especially on asset condition. Asset condition data is directly related to underlying asset health but collecting it generally requires inspection. This can be time consuming and difficult especially where – as in the water sector – many of the assets are underground.⁴⁴⁰ Ofwat has collected asset condition data only for some assets as part of its PR24 process. However, in our view this data has some limitations. Notably, the data was compared to data last collected in PR09 and typically focuses primarily on one aspect of asset condition (eg water mains bursts or sewer collapses).⁴⁴¹ In addition, this data is static, only providing a snapshot of asset condition at a point in time.⁴⁴²
- 4.224 We looked at some of the approaches to asset health taken by some of the regulators highlighted by the Disputing Companies, including Ofgem and the WICS.
- (a) Ofgem has a more sophisticated system for monitoring asset condition – which assesses forward-looking asset risk – and it uses this information both to set maintenance allowances and to monitor how companies maintain the condition of their assets.⁴⁴³ However, the industry context is different in water as more assets are located underground which poses a challenge for

⁴⁴⁰ Ofwat (2024) [PR24 final determinations Roadmap for enhancing asset health understanding in the water sector](#), p7.

⁴⁴¹ Albeit some data on other relevant aspects was also collected. Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp87–89.

⁴⁴² What is most relevant to investment needs is a projection of how condition, and the consequent risk of failure, is likely to evolve over time.

⁴⁴³ Ofgem (2021) [RIIO-2 Final Determinations NARM Annex \(REVISED\)](#), paragraph 1.2; Ofgem (2022) [RIIO-ED2 Final Determinations Core Methodology Document](#), paragraphs 6.194, 6.197, 7.236, 7.245.

assessing their condition. Moreover, the Ofgem methodology for electricity distribution networks took years to develop.⁴⁴⁴ This would suggest that developing such a methodology in the water sector will take well over a year and will be a complex process.

- (b) The WICS has adopted a simpler approach based on transitioning to its view of full funding of asset replacement costs by 2040.⁴⁴⁵ However, even though it is only applied to one company, developing this approach was still relatively time consuming to implement and the WICS is still in the process of developing measures of asset condition.⁴⁴⁶

- 4.225 Ofwat began a process of directing more funding towards the maintenance of assets in its PR24 FD through its sector wide adjustments and this is continuing through the CCP (as set out in paragraphs 4.186 to 4.188).
- 4.226 Ofwat is seeking to broaden the range of assets covered by the CCP as well as to further improve the collection of relevant data and explore the development of a NARM type methodology ahead of PR29. The CCP will be based on the collection of robust and comparable sector wide data and involve all relevant parties (see paragraphs 4.206 to 4.207). In our view this is the most appropriate route to address the broader issues on asset health.
- 4.227 Further, determinations by Ofwat under the CCP, once in place, would be subject to a redetermination by the CMA if requested by a Disputing Company.⁴⁴⁷ It would not be appropriate for the CMA to provide detailed guidance on what the CCP assessment process should look like. The focus of these redeterminations has been PR24 base allowances, not the CCP, and the assessment process has already been subject to industry consultation and a decision made on how it will proceed.
- 4.228 In the longer-term, the framework for setting asset health funding will reflect the Defra White Paper, which proposes a more supervisory approach to oversight of infrastructure resilience and asset health.⁴⁴⁸ The Defra White Paper includes several proposals directly relevant to asset health and operational resilience. Consistent with our view set out above, it highlights that substantial industry-wide work is required to further develop the approach to asset health in the water industry and recognises the role of the Asset Health Roadmap in this process. In the Defra White Paper the UK government proposes to:

⁴⁴⁴ Ofgem (2021) [DNO Common Network Asset Indices Methodology](#).

⁴⁴⁵ WICS (2019) [2019 Decision Paper: Asset Replacement](#), p40; WICS (2020) [Prospects for Prices](#), p9.

⁴⁴⁶ WICS (2024) [SRC27 Final Methodology](#), p119.

⁴⁴⁷ Ofwat (2025) [Cost change process decision](#), p19.

⁴⁴⁸ [Defra White Paper](#) (accessed 26 February 2026), p19.

- (a) work with the new regulator to develop a fuller picture of asset health, building on Ofwat's plans for a data-gathering exercise to provide a snapshot of asset conditions;
- (b) work with the new regulator to develop forward-looking asset health metrics to ensure this critical infrastructure receives the funding it needs;
- (c) improve the mapping of assets;
- (d) develop statutory resilience standards to ensure all companies make forward-looking long-term assessments of their systems; and
- (e) direct funding to appropriately maintain assets by clearly defining and ringfencing capital maintenance expenditure.⁴⁴⁹

4.229 For the reasons above, we have not sought to address these broader issues on asset health in these redeterminations as they are better dealt with through the CCP, the Asset Health Roadmap and longer-term reform. Below we consider company specific CACs and sector wide cost adjustments. As we explain in more detail below (see paragraph 4.240), with regard to company specific CACs we have assessed whether there was compelling evidence that there are immediate critical asset health needs related to these assets in AMP8 that would not be covered by the CCP.

Company specific CACs

4.230 In this section we cover the following:

- (a) deprioritised CACs – Southern Gated Allowance and Wessex bottom up engineering costs;
- (b) introduction and background to CAC assessment; and
- (c) an Anglian CAC for storage points and gravity sewers and a Northumbrian CAC for treatment works and service reservoirs.

Deprioritised CACs

4.231 In our CMA PR24 Approach document we said that we would assess several Disputing Company-specific CAC requests related to asset health.⁴⁵⁰ However, we did not prioritise two CACs that we cover in this section. We retain that prioritisation decision in this final determination and explain our reasons for not assessing these CACs below.

⁴⁴⁹ [Defra White Paper](#) (accessed 26 February 2026), pp37–38.

⁴⁵⁰ [CMA PR24 Approach document](#), paragraphs 48–49.

Southern claim for £500 million Gated Allowance

- 4.232 Southern requested a Gated Allowance of up to £500 million that could be accessed when evidence of specific asset health requirements was presented: because ‘the evidence strongly points to systematic under-funding across multiple AMPs and a need for additional funding in AMP8’.⁴⁵¹
- 4.233 In our view, while this claim is framed as a specific company request, it falls into the category of general claims around asset health discussed above that would not be appropriate for us to deal with as part of this redetermination process for the reasons explained in paragraphs 4.220 to 4.229.

Wessex claim for £244 million allowance for water capital maintenance

- 4.234 Wessex requested an additional £244 million for its wholesale water activity based on its ‘bottom-up’ engineering evidence on current operating expenditure rates.⁴⁵²
- 4.235 Wessex asked us to set aside the results of the base cost models in Ofwat’s PR24 FD and instead set its base costs using the ‘bottom-up’ evidence submitted in the Wessex business plan it submitted to Ofwat and it updated for its Sstatement of case, either in its entirety or as part of a ‘triangulation’ of various cost estimates.⁴⁵³ While we acknowledge that all econometric models are imperfect, the use of econometric benchmarking is well-established and an important means of protecting the interests of customers. In addition, econometric cost models contain important information about the relative performance of companies and are a key means of mitigating the asymmetry of information that exists between regulators and the companies. Ofwat’s and our process also leave room for companies to submit focused CACs to capture the impact of specific factors not included in the models.
- 4.236 In response to the CMA PR24 Approach Document Wessex asked the CMA to reframe the Wessex base cost claim as a series of company-specific CACs in a ‘similar approach to other companies’ claims’.⁴⁵⁴ However, taking this approach would effectively mean setting aside the base cost models and assessing Wessex’s allowed costs based on the ‘bottom-up’ evidence, but simply with a more granular assessment of costs. Rather than treat Wessex similarly to other Disputing Companies this approach would treat them quite differently: for the other Disputing Companies our base cost models would remain the basis for setting their base cost allowances, with the possibility of adjustments for CAC claims which meet the criteria set out in paragraphs 4.238 to 4.240. The CAC regime requires companies to identify specific factors not captured in the base models

⁴⁵¹ [Southern SoC](#), pp32–33, paragraph 20.

⁴⁵² [Wessex SoC](#), paragraph 8.57.

⁴⁵³ [Wessex SoC](#), paragraph 8.57; Wessex (2026) [Response to Working Paper](#), paragraph 3.4.

⁴⁵⁴ Wessex (2025) [Reply to CMA PR24 Approach document](#), paragraph 1.15.

that affect their costs, and the incremental impact of such factors. The approach proposed by Wessex, which effectively asks us to set aside the base models entirely, is inconsistent with this regime and with the approach followed for other Disputing Companies (paragraphs 4.153 to 4.156).

Introduction and background to CAC assessment

4.237 CACs give companies the opportunity to make claims for cost drivers that are not reflected in the econometric modelling.

4.238 Our assessment of the CACs adopts a similar framework to Ofwat. In summary, the Ofwat framework assesses whether there is: i) a need for an adjustment to allowances (referred to as the need criterion); and ii) whether the companies have submitted a claim which is based on efficient costs (referred to as the efficiency criterion).

4.239 In addition, for CACs related to capital maintenance Ofwat said that it would consider the following:

- (a) evidence of a clear link between the exogenous factors and capital maintenance expenditure requirements;
- (b) evidence of how these exogenous factors are likely to change in the future;
- (c) evidence of good practice in asset maintenance; and
- (d) efficient use of base expenditure allowances in previous periods.⁴⁵⁵

4.240 Given the broader concern on investment raised by recent reports (see paragraph 4.177) we have considered whether it may be appropriate to facilitate making additional allowances where claims may not fulfil the Ofwat CAC criteria, but where companies can show Ofwat's Asset Health Roadmap work would not cover the relevant assets and that there are immediate critical investment needs which may require additional allowances to prevent additional costs to customers (eg due to increased future repair costs) or substantively reduce the risk of service failure during PR24. Therefore, for asset health related CACs we have also assessed:

- (a) whether the assets identified in the CACs would not be covered by Ofwat's industry-wide work under the Asset Health Roadmap process; and
- (b) if there is compelling evidence that there are immediate critical asset health needs related to these assets during PR24 (ie ahead of PR29).

⁴⁵⁵ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p28.

Anglian and Northumbrian asset health CACs

4.241 In this section we discuss the Anglian and Northumbrian asset health CACs. We assess these two claims together as the framework and assessment are similar. For each of these claims we:

- (a) summarise the claims;
- (b) set out Ofwat's PR24 FD approach;
- (c) summarise the Anglian and Northumbrian submissions; and
- (d) set out our assessment of these claims and our final decision on each.

4.242 We decide not to allow either of the Anglian or Northumbrian CACs, for the reasons set out below.

Anglian CAC for gravity sewers and water storage points

4.243 Anglian requested £60 million for storage points and £90 million for gravity sewers to maintain those assets if each of the broader base costs claims it had requested (for mains renewals, frontier shift, leakage and boundary boxes) were rejected. Anglian said that this could be awarded through a use-it-or-lose-it mechanism to make a broader uplift to base allowances, with flexibility to deliver against those asset classes perceived to be most at need of investment.⁴⁵⁶

Ofwat PR24 FD approach

4.244 This claim was not submitted to Ofwat as part of Anglian's PR24 business plan nor in its draft determination representations and is new for these redeterminations.⁴⁵⁷

Summary of Anglian submissions

Need for investment

4.245 Anglian said that its PR24 Asset Systems Resilience Appraisal (**ASRAP**), produced in 2023, found that both of these asset classes would require additional funding in AMP9 due to anticipated increases in failure rates, collapses, or pollution incidents.⁴⁵⁸ Anglian did not submit CACs for the maintenance of those assets in PR24 as they did not meet the CAC criteria. Instead, Anglian had

⁴⁵⁶ [Anglian SoC](#), paragraph 304.

⁴⁵⁷ [Anglian SoC](#), paragraph 300.

⁴⁵⁸ Anglian (2023) [PR24 Asset Systems Resilience Appraisal](#), p37 and p49.

intended to manage the short-term risks within its base cost envelope.⁴⁵⁹
However, Anglian said that:

- (a) the base cost funding provided in the PR24 FD created asset health risk for Anglian's storage points and gravity sewers;⁴⁶⁰
- (b) Anglian needed to prepare to spend money on renewing assets that had been neglected for many AMPs; and
- (c) while Ofwat's Asset Health Roadmap set out a trajectory to resolve this issue, Anglian required funding now.⁴⁶¹

4.246 Anglian said that further information on the condition of these assets had become available since publication of its ASRAP in 2023.⁴⁶² The evidence had drawn on a substantial deployment of Dynamic Sewer Visualisation Monitors across Anglian's network that had provided significant insights on the scale of maintenance issues that needed to be addressed for these assets.⁴⁶³ This claim was therefore based on new risks that were not anticipated in its business plan. These risks were unmanageable within Anglian's current allowances due to underfunding in the PR24 FD, which had been exacerbated by the CMA's provisional determination.⁴⁶⁴ Further information about these assets had been provided as part of the Asset Health Roadmap process and the CMA should consider this information.⁴⁶⁵

4.247 Anglian said that it would be wrong and unevidenced to deny funding on the basis of reasoning set out in the provisional determination that base allowances 'are not intended to remunerate... shorter-term peaks of expenditure', and that if an activity involved long-lived assets 'allowances should be below actual base totex requirements in some periods, and above requirements in others'.⁴⁶⁶

Is the investment covered by the Asset Health Roadmap and are there immediate critical investment needs?

4.248 Anglian said that the provisional determination (to not allow its claim) had meant that any additional funding for its Storage Points and Gravity Sewer assets that would be required to address critical investment would be wholly dependent on the CCP.⁴⁶⁷

⁴⁵⁹ [Anglian SoC](#), paragraph 300.

⁴⁶⁰ [Anglian SoC](#), paragraph 300.

⁴⁶¹ (Non-confidential) transcript of the hearing for Anglian on 7 July 2025, p39, lines 24–26, and p40, lines 1–5.

⁴⁶² Anglian (2025) [Response to CMA PR24 PD](#), paragraph 247; [Anglian SoC](#), Annex 013; [Anglian SoC](#), Figure 24.

⁴⁶³ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 247.

⁴⁶⁴ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 249.

⁴⁶⁵ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 248.

⁴⁶⁶ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 252.

⁴⁶⁷ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 251.

- 4.249 Anglian said that companies could have no confidence in the receipt of timely and necessary allowances via the Asset Health Roadmap workstream and there was substantial uncertainty about which of the assets within this CAC would be covered by this process.⁴⁶⁸ It made the following points about the CCP.
- (a) The needs of Anglian's assets alone were insufficient to qualify them as in-scope for funding.⁴⁶⁹
 - (b) The CCP definitions did not appear to include costs related to the inspection of assets (for example CCTV).⁴⁷⁰
 - (c) It was not clear that the Anglian CAC would meet the materiality threshold to qualify for any adjustments.⁴⁷¹
 - (d) Even if funding was granted in full, it would only be received in the third year of the AMP at the earliest and there would be no certainty until final decisions were published in December 2026 at the earliest.⁴⁷²
- 4.250 With regard to its claim, Anglian said that the CMA should either assess the evidence provided in full; or be clear that it had not assessed evidence beyond the evidence set out in Anglian's ASRAP and be clear that the evidence should be assessed in the Asset Health Roadmap.⁴⁷³
- 4.251 Anglian said that if no funding was granted, the CMA should articulate why it would be appropriate to further reduce Anglian's base allowances.⁴⁷⁴

Summary of Ofwat submissions

Need for investment

- 4.252 Ofwat made the following points.
- (a) Anglian did not include an estimate of what was already funded by base allowances. This made it challenging to assess the need for a cost adjustment.⁴⁷⁵
 - (b) Anglian did not include measurable outputs that would enable the tracking of delivery.⁴⁷⁶

⁴⁶⁸ [Anglian SoC](#), paragraph 304.

⁴⁶⁹ Anglian response to Anglian RFI05, p2.

⁴⁷⁰ Anglian response to Anglian RFI05, p3.

⁴⁷¹ Anglian response to Anglian RFI05, p3.

⁴⁷² Anglian response to Anglian RFI05, p5.

⁴⁷³ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 254.

⁴⁷⁴ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 254.

⁴⁷⁵ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 4.11

⁴⁷⁶ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 4.13

- (c) It was not clear why this CAC was only proposed as part of this redetermination, instead of in previous business plan submissions.⁴⁷⁷
- (d) Anglian previously stated that it would manage these asset risks through reallocation of base allowances from other areas during AMP8 and would seek to secure further allowances at PR29.⁴⁷⁸
- (e) Anglian's gravity sewers average renewal rate over PR19 was 0.06%, below its forecast of 0.11%, raising concerns that it did not deliver during PR19.⁴⁷⁹

Is the investment covered by the Asset Health Roadmap and are there immediate critical investment needs?

- 4.253 Ofwat said that it was appropriate to assess the need for additional allowances at the sector level. Assessment at the sector level ensured that decisions were based on robust data and all companies were treated consistently. It also reduced the risk of allowing cost adjustments just because the company had not appropriately maintained its assets. The latter was more likely if company asset CACs were assessed in isolation.⁴⁸⁰
- 4.254 Ofwat also said that these assets were priority assets under the CCP, which aimed to decide on whether additional allowances are needed ahead of the 2027-2028 financial year.⁴⁸¹
- 4.255 Ofwat said that it supported the provisional decision to not allow this claim. It agreed that the Asset Health Roadmap would be the most appropriate route to consider this claim. It said that in addition to having not met the need criterion, Anglian had not presented compelling evidence to demonstrate cost efficiency, or that customers would be protected if the company underdelivered.⁴⁸²

Northumbrian CAC for civil structures for treatment works and service reservoirs

- 4.256 Northumbrian requested £179.54 million to fund investment in civil structures at treatment works and service reservoirs to bridge a 'funding gap' until the regulatory framework issues could be addressed on a more enduring basis.⁴⁸³ It said that the proposed work needed to be delivered in AMP8 and delays into AMP9 could lead to higher costs and increased risk to service levels, safety and the environment.⁴⁸⁴

⁴⁷⁷ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 4.14.

⁴⁷⁸ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 4.14.

⁴⁷⁹ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 4.15.

⁴⁸⁰ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 4.16.

⁴⁸¹ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 4.16.

⁴⁸² Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

⁴⁸³ [Northumbrian SoC](#), paragraph 321.

⁴⁸⁴ [Northumbrian SoC](#), paragraph 309.

Ofwat PR24 FD approach

4.257 Ofwat found that the Northumbrian CAC failed the need criterion for the following reasons.⁴⁸⁵

- (a) Northumbrian did not arrive at a view of what was funded by base allowances as its claim was focused on its internal cost data and did not account for what other companies had delivered with base allowances.
- (b) Northumbrian did not commit to delivering specific solutions. Since the outputs were unclear it would be difficult to protect customers from under-delivery with a PCD.
- (c) Northumbrian did not provide compelling evidence for why these asset condition issues had not already been addressed through its historical base allowances.
- (d) The forecast increase in capital maintenance expenditure was driven by factors inside company control.
- (e) Northumbrian originally submitted this claim as an enhancement case showing that it accepted that its circumstances were not different to other companies.
- (f) Northumbrian had underspent its capital maintenance allowance by 1% (£66 million) before cost sharing since AMP1, with most of this driven by a large underspend during the 2010-15 period of almost 25% (£327 million). Therefore, this CAC may be for maintenance that should have been delivered in previous periods.

Summary of Northumbrian submissions

Need for investment

4.258 Northumbrian said that its investment case was not driven by unique exogenous factors. Instead, it said that Ofwat's base cost assessment created a funding shortfall because it was based on historical costs and lacked a forward-looking view of capital maintenance.⁴⁸⁶ Ofwat's position seemed to be that a capital maintenance CAC could only succeed if the claim was driven by exogenous factors. This was unnecessarily restrictive and served no useful purpose.⁴⁸⁷

⁴⁸⁵ Ofwat (2024) [Base cost adjustment claim feeder model – Northumbrian Water](#), Sheet 'NES_CAC1' and 'NES_CAC2'.

⁴⁸⁶ [Northumbrian SoC](#), paragraph 283.

⁴⁸⁷ [Northumbrian SoC](#), paragraph 284.

- 4.259 Northumbrian said that its investment case was not based on the premise that funding was required to manage a short-term peak, specific to the status of its assets. While the CMA's provisional determination raised a concern of over-recovery of costs due to CACs granted at the high point of investment cycles; that was not the case here.⁴⁸⁸
- 4.260 Northumbrian said that if companies had efficiently spent their allowances elsewhere then there was no possibility that customers would be paying for something twice if a future uplift were provided.⁴⁸⁹
- 4.261 Northumbrian said that it disagreed that its base expenditure allowance was sufficient to fund a sustainable level of capital maintenance in AMP8 or beyond. Amongst other things it said that capital maintenance expenditure had not been keeping pace with the growth in its asset base.⁴⁹⁰
- 4.262 Northumbrian said that Ofwat incorrectly claimed that it had historically underspent its total capital expenditure allowance with a cumulative underspend of £1.1 billion. However, Ofwat had made several errors in its calculations, and when these were corrected, Northumbrian's capex was almost exactly in line with allowances.⁴⁹¹
- 4.263 Northumbrian also said that it was a good asset manager, achieving ISO 55001 certification in 2015 and retaining it in 2018, 2021 and 2024. Northumbrian also performed well in a 2023 independent Asset Management Maturity Assessment.⁴⁹²

Is the investment covered by the Asset Health Roadmap and are there immediate critical investment needs?

- 4.264 Northumbrian welcomed the Asset Health Roadmap as a start to addressing the problem of maintenance funding, however, it said that it covered less than a third of the assets in this CAC.⁴⁹³ While the headline priority asset categories that Ofwat had identified were very consistent with the asset categories in this CAC, the more detailed descriptions meant that coverage was less than a third of the assets.⁴⁹⁴ Northumbrian's analysis showed that 31% of the total number of assets were covered and 55% of the claim value was covered.⁴⁹⁵
- 4.265 Northumbrian identified two main consequences of delaying the proposed investment until AMP9.

⁴⁸⁸ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 194.

⁴⁸⁹ [Northumbrian SoC](#), paragraph 271.

⁴⁹⁰ [Northumbrian SoC](#), paragraphs 293–294; 289.

⁴⁹¹ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 195.

⁴⁹² Northumbrian (2025) [Reply to Ofwat Response](#), paragraph 8.

⁴⁹³ (Non-confidential) transcript of the hearing for Northumbrian on 4 July 2025, p13 lines 4–5.

⁴⁹⁴ (Non-confidential) transcript of the hearing for Northumbrian on 4 July 2025, p13 lines 5–6.

⁴⁹⁵ Northumbrian response to Northumbrian RFI06, Table 1.

- (a) The cost of delivering the proposed programme of works in civil structures could increase by £17.2 million (71%) for water and £49.7 million (48%) for wastewater.⁴⁹⁶
- (b) The monetised increase in service, environmental and safety risks arising from a catastrophic failure of assets could be between £36 million and £90 million for water and between £59 million and £150 million for wastewater.⁴⁹⁷

- 4.266 Its assessment was supported by asset deterioration modelling which ‘shows that the rate of structural deterioration of Northumbrian’s civil structures is increasing, which means that a proactive investment strategy is now required’.⁴⁹⁸ In particular, the number of assets entering conditions grade four and five (severely deteriorated states) was increasing as they aged.⁴⁹⁹ These assets were entering the propagation phase during which timely intervention could extend asset life and reduce whole-life maintenance costs. After this phase the assets entered a phase which entailed a high risk of catastrophic failure with consequent impacts on service, the environment and safety.⁵⁰⁰ Northumbrian estimated these assets had less than ten years before it was no longer possible to intervene and extend their lives.⁵⁰¹
- 4.267 Northumbrian said that its investment case was not solely based on modelling. Instead, it was based on civil engineer-led individual site inspection surveys which identified assets that were in corrosion category C4 and concluded that they needed to be fixed during AMP8 to manage failure risk associated with those assets.⁵⁰²
- 4.268 In particular, Northumbrian said that many of its concrete and steel structures operated in environments far more aggressive than the generic corrosion category C3 or C4 examples cited by Ofwat. Water and wastewater treatment works routinely experienced conditions at the upper end of the classification scale corrosion category C4/5. Many assets operated in constantly damp or saturated environments, with high humidity, splash zones, and limited ventilation. Final settlement tanks, inlet works, sludge treatment, and chemical dosing areas were regularly exposed to a combination of moisture, condensation and chemicals like hydrogen sulphide and ammonia. These exposure conditions matched the

⁴⁹⁶ [Northumbrian SoC](#), supporting document SoC045 A3-21 PR24 Asset Health Investment Case, Figure 49.

⁴⁹⁷ [Northumbrian SoC](#), supporting document SoC045 A3-21 PR24 Asset Health Investment Case, Figure 50; [Northumbrian SoC](#), paragraph 299.

⁴⁹⁸ [Northumbrian SoC](#), paragraph 303; [Northumbrian SoC](#), Appendix 2: Asset Health Overview and Key Evidence, section 7.3 and [Northumbrian SoC](#), Appendix 613 (Civil deterioration modelling).

⁴⁹⁹ [Northumbrian SoC](#), paragraph 303.

⁵⁰⁰ [Northumbrian SoC](#), paragraph 302.

⁵⁰¹ [Northumbrian SoC](#), Appendix 2: Asset Health Overview and Key Evidence, paragraph 84.

⁵⁰² Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 200.

examples listed under C5 and this justified adopting that classification when assessing deterioration.⁵⁰³

Summary of Ofwat submissions

Need for investment

- 4.269 Ofwat said that companies must demonstrate that the proposed investment was driven by factors that were unique to the company and/or were outside of company control.⁵⁰⁴
- 4.270 Ofwat did not agree that base allowances were insufficient. It noted that at PR24 FD, the company's base expenditure allowance was 11% higher than at PR19, 4.8% (£179 million) below its PR24 DD representations proposal, and only 1.8% (£64 million) below its original business plan.⁵⁰⁵ Ofwat said that capital maintenance expenditure relative to network length had increased as the asset base had grown.⁵⁰⁶ While the majority of companies had overspent their allowance during PR19, this was due to cost pressures that were largely unforeseen.⁵⁰⁷
- 4.271 Ofwat said that Northumbrian had historically underspent its total capital expenditure allowance with a cumulative underspend of £1.1 billion.⁵⁰⁸

Is the investment covered by the Asset Health Roadmap and are there immediate critical investment needs?

- 4.272 Ofwat said that its Asset Health Roadmap process had identified the priority assets that needed additional investment and accounted for the vast majority of assets in the claim.⁵⁰⁹ Ofwat said that both treatment works and storage points (including service reservoirs) had been identified as priority assets under the Asset Health Roadmap process.⁵¹⁰
- 4.273 According to the latest updates on this process companies will be able to submit asset health claims from 2026 based on the existing definition of priority assets. In addition, subject to consultation, companies would be able to submit claims relating to a broader range of assets in 2027 and 2028.⁵¹¹ In advance of PR29

⁵⁰³ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 199.

⁵⁰⁴ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 5.10.

⁵⁰⁵ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 5.49.

⁵⁰⁶ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 5.48.

⁵⁰⁷ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 5.47.

⁵⁰⁸ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 5.53.

⁵⁰⁹ (Non-confidential) transcript of the hearing for Ofwat on 10 July 2025, p13 lines 14–17.

⁵¹⁰ Ofwat (2025) [Enhancing asset health understanding update paper](#), p12; Ofwat (2025) [Consultation on the PR24 cost change process and proposed licence modifications](#), pp27–28.

⁵¹¹ Ofwat (2025) [Cost change process decision document](#), p11.

Ofwat was open to considering the collection of more asset health data should the sector support doing that.⁵¹²

- 4.274 Ofwat questioned the validity of the Northumbrian deterioration modelling. It was apparently based on a single inspection at each asset in 2022/23, making it difficult to estimate the asset age or understand deterioration over time.⁵¹³ Furthermore, the model did not show good correlation with the observed data. For concrete wastewater treatment works, the most common asset type, the model overpredicted the proportion of treatment works assets at condition grades four and five.⁵¹⁴
- 4.275 Ofwat also questioned the assumed rate of corrosion for the concrete structures.⁵¹⁵ The assumed corrosion rate that underpinned Northumbrian's analysis was corrosion category C5, very high (marine/industrial).⁵¹⁶ However, Ofwat said that a more appropriate category would be corrosion category C4 high (chemical plants, swimming pools, coastal ship and boatyards) or corrosion category C3 medium (production rooms with high humidity and some air pollution, eg food processing plants, breweries, laundries and dairies). Under this more appropriate categorisation, the time to repair the asset increased from ten years to 18 to 30 years from the start of propagation phase.⁵¹⁷
- 4.276 Ofwat said that it supported our provisional decision not to allow this claim and agreed that the Asset Health Roadmap was the most appropriate route to assess it. Northumbrian did not provide compelling evidence of need for investment or that delaying this investment would be detrimental to customers or the environment. Neither did it provide compelling evidence that the proposed cost adjustment was efficient.⁵¹⁸

Our assessment

- 4.277 In this section, we assess whether Anglian and Northumbrian have demonstrated the need for funding. Our assessment is based on the standard Ofwat CAC assessment framework and, consistent with the approach laid out in paragraphs 4.238 to 4.240, we have also assessed whether the assets identified in the CACs would be covered by Ofwat's industry-wide work under the Asset Health Roadmap process; and if there is compelling evidence that there are immediate critical asset health needs related to these assets during PR24 (ie ahead of PR29).

⁵¹² (Non-confidential) transcript Ofwat hearing 7 July, p14 lines 6–8; Ofwat (2025) [Enhancing asset health understanding update paper](#), p12.

⁵¹³ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 5.21.

⁵¹⁴ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 5.21.

⁵¹⁵ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraphs 5.17–5.18.

⁵¹⁶ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 5.17.

⁵¹⁷ Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraph 5.18.

⁵¹⁸ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

Need for investment

- 4.278 As set out in paragraph 4.258, Northumbrian has not explained how its claim is due to unique circumstances or exogenous factors that are outside of management control. Similarly, Anglian stated that its claim does not meet the CAC criteria (see paragraph 4.245). Instead, both have stated that the proposed investment is necessary due to an increasing need for maintenance spending on these assets. This was necessitated by the need to replace and refurbish ageing assets.
- (a) Northumbrian said that its deterioration modelling and inspection evidence showed that these assets were reaching the end of their life cycles and would need increased maintenance going forward – although Ofwat questioned the rate of deterioration predicted by this modelling.⁵¹⁹
 - (b) Anglian said that its ASRAP and subsequent further inspection of its assets, indicated that the condition of these assets was deteriorating, suggesting a need for higher investment.⁵²⁰
- 4.279 However, this is not compelling evidence that the claims fulfil the need criterion. The evidence submitted is indicative that these companies will need to spend more on maintenance of these assets than they have done historically – ie reflecting a high point in the investment cycle for these assets. However, base allowances are intended to provide long-term allowances that enable companies to maintain the long-term capability of assets while managing peaks and troughs in capital maintenance over time. Base allowances are not intended to remunerate individual companies in full for shorter-term peaks in expenditure which might occur in relation to specific assets within a specific AMP. Instead, they are intended to provide an allowance based on long-term average requirements. Maintenance needs for specific assets will typically follow patterns of peaks and troughs throughout their lifecycles. If a regulator awarded CACs to companies whenever they reached the high point in their investment cycles for each of their asset classes, companies would over-recover their costs overall.
- 4.280 We do not address issues raised around the overall adequacy of the base allowances here. However, we discuss the longer-term structural issues related to base allowances in the section on our approach to asset health above and discuss issues related to the overall outcome of our final decision for base funding for the DCs in paragraphs 4.1056 to 4.1129. In our view these claims do not fulfil the need criterion.

⁵¹⁹ Northumbrian SoC, paragraph 303; Northumbrian SoC Appendix 2: Asset Health Overview and Key Evidence, section 7.3; Northumbrian SoC, Appendix 613 (Civil deterioration modelling); Ofwat (2025) PR24 redeterminations Expenditure allowances – cost adjustment claims, paragraphs 5.17–5.18.

⁵²⁰ Anglian (2023) PR24 Asset System Resilience Appraisal, p11.

Is the investment covered by the Asset Health Roadmap and are there immediate critical investment needs?

- 4.281 Below we consider whether the assets identified in the claims are covered by the Asset Health Roadmap process and if not, whether there are immediate critical investment needs that might need funding in AMP8.

Anglian

- 4.282 Anglian's own assessment is that most of the expenditure it has identified as part of the CAC would be covered by the CCP, albeit there is some uncertainty about exactly what would be covered – including whether its claim would reach the materiality threshold. We note that the CCP consultation set out that costs below a materiality threshold of at least 2% of appointed business turnover will not be eligible for an in-period adjustment. However, they will still be eligible for an end of period adjustment which can be obtained via the CCP.⁵²¹
- 4.283 The fact that evidence on these assets has been collected under the CCP shows that Anglian's investment case is being actively considered under that process. Our assessment does not prejudice any future decision about funding for these assets under the CCP which uses different assessment criteria and will be able to call on a wider range of data on asset condition, age and maintenance rates (both for Anglian and the sector more generally).
- 4.284 Where the assets in the Anglian claims are not covered by the CCP priority asset categories, Anglian has not submitted compelling evidence that there are immediate critical asset health needs related to these assets.
- (a) Anglian's business plan documentation shows that it had intended to manage the short-term risks around these assets from its base allowances, before requesting that the CMA allow additional allowances for AMP8.⁵²²
 - (b) The Anglian evidence describes at a high level that following more recent inspections (subsequent to submission of its business plan), gravity sewers and storage points are in a worse condition than previously thought; and the projected maintenance expenditure was higher than Anglian had historically spent.⁵²³
- 4.285 This evidence suggests that these assets will need more investment than has historically been the case and are in worse condition than was known at the time of the business plan submission. However, these assets are largely covered by

⁵²¹ Ofwat (2025) [Cost change process draft guidance note](#), p7.

⁵²² Anglian (2023) [PR24 Asset Systems Resilience Appraisal](#), p11, p35, p49.

⁵²³ [Anglian SoC](#), Annex 013, pp2–3.

the CCP and the evidence does not show that there are immediate critical investment needs that cannot wait for this.

Northumbrian

- 4.286 Both treatment works and service reservoirs have been identified as priority assets in the CCP.⁵²⁴ Northumbrian estimates this covers at least 55% of the value of this CAC.⁵²⁵ In addition, assets that are not covered by the definition of priority assets could receive additional allowances (see paragraph 4.205).
- 4.287 Northumbrian said that delaying this investment until AMP9 would result in additional costs and risk for customers and the environment (see paragraphs 4.256 and 4.265). Northumbrian stated that this evidence suggested increasing numbers of these assets were in poor condition and entering the propagation phase during which timely intervention could extend asset life and reduce whole-life maintenance costs.⁵²⁶
- 4.288 Our engineering consultants reviewed the evidence provided by Northumbrian. They said that the duration of the propagation phase and therefore the period during which timely intervention could be undertaken would depend on the rate at which specific assets or assets classes were expected to further deteriorate. This in turn would depend on the specific operating conditions the assets faced. Cases where urgent repair was required (indicating a likelihood of intervention being needed in AMP8) would only be where rapid further deterioration of assets was likely to arise.
- 4.289 They said that: a more robust case would, for each major asset class, have included a tabulated mapping of the conditions they faced, and they concluded that the ‘evidence does not clearly show which civil structures should be treated as [operating in the C5 equivalent environment of] ‘very severe’.
- 4.290 Northumbrian’s evidence does not in our view clearly establish the duration of the propagation phase for the assets included in its claim. In particular, it does not establish which, if any, specific assets or asset classes face ‘very severe’ operating conditions and are likely to rapidly further deteriorate and therefore require urgent repair in AMP8. Northumbrian, therefore, has not provided compelling evidence that there are immediate critical investment needs not covered by the Asset Health Roadmap that might need funding in AMP8.

⁵²⁴ Ofwat (2025) [Consultation on the PR24 cost change process and proposed licence modifications](#), pp27–28.

⁵²⁵ Northumbrian response to Northumbrian RFI06, Table 1.

⁵²⁶ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 208.

Our final decision

4.291 Our final decision is to not allow the Anglian or Northumbrian claims.

Sector-wide cost adjustments

4.292 In this section we set out our assessment of and decision on sector-wide cost adjustments for water mains renewals, meter replacement and network reinforcement.

Introduction and background

4.293 Ofwat identified common themes in some CACs submitted by companies during its PR24 process and applied 'sector-wide' cost adjustments in its PR24 FD to uplift company allowances above base costs in a number of areas, including: water mains renewal, meter replacement and network reinforcement.

- (a) **Water mains renewal:** Renewal of water mains prevents leaks, bursts, and improves water flow and pressure. Ofwat made an adjustment above base allowances through base models 'to increase mains renewal rates to more sustainable levels', but only for companies with below average asset health.⁵²⁷
- (b) **Meter replacement:** Water smart meters provide accurate, real-time monitoring of water usage, offer faster leak detection, promote water saving, and produce more accurate and efficient billing. Water companies can also benefit from reduced operational costs and better data for forecasting. Ofwat made an adjustment above base allowances to allow for increased rates of meter replacement to facilitate the smart meter rollout.⁵²⁸
- (c) **Network reinforcement:** Network reinforcement includes the provision or upgrading of network assets to supply new customers and support economic growth with no net deterioration of existing levels of service. Ofwat made an adjustment above base allowances to allow for additional base costs in areas where the growth of the network is higher than historical averages.⁵²⁹

4.294 In each of these areas Ofwat applied a consistent (sector-wide) methodology to calculate the adjustment. However, when applied to the individual companies this could result in them receiving varying or even no additional allowances.

4.295 For each of these areas Ofwat's PR24 FD set an expectation that companies will undertake more activity than they have done historically (eg replace more water

⁵²⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p31.

⁵²⁸ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p41.

⁵²⁹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p59.

mains than historically to achieve more sustainable replacement rates). Given water companies' base allowances are largely based on historical cost models, Ofwat awarded companies additional base cost allowances to fund this on the basis that historical costs were not reflective of future costs.

4.296 The sector-wide cost adjustments for water mains renewals and meter replacement broadly followed the approach set out below (see also Figure 4.5).⁵³⁰

- (a) First estimating the costs of delivering the required the level of activity calculated as expected level of activity (eg % of water main length renewed per year) multiplied by the unit costs of undertaking the activity.
- (b) Deducting from this an estimate of the level of activity funded by base allowances ('what base buys') calculated as the level of activity funded multiplied by a unit cost.
- (c) Making a further deduction where Ofwat estimated a company had under-delivered over the PR19 period (where companies were not assessed to have under-delivered, this 'under-delivery adjustment' was zero).

4.297 For example, on mains renewal, Ofwat estimated that what base buys was equivalent to 0.3% of mains length per year.⁵³¹ It set an expectation that this would be the minimum achieved by every company during AMP8. For some companies (ie where it assessed that the condition of their assets had deteriorated) it set a higher target. Ofwat then provided an extra allowance to fund this higher target (multiplying the target rate of activity by the unit cost of mains renewals).⁵³² It then deducted an amount from this for some companies that it considered had 'under-delivered' mains renewals in PR19 (AMP7).⁵³³

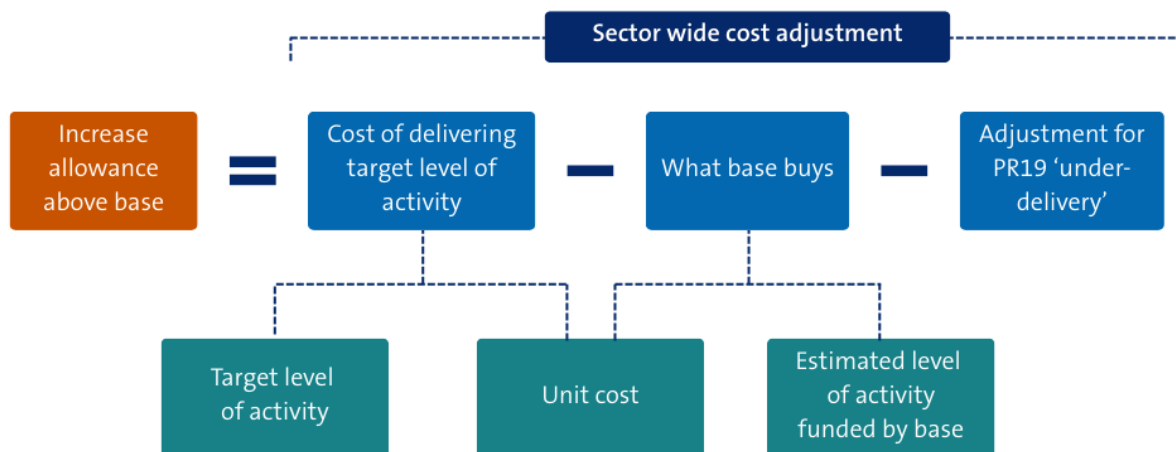
⁵³⁰ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp37–40.

⁵³¹ This was based on historical average rate average by the sector as a whole. Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p38.

⁵³² Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p38.

⁵³³ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p34.

Figure 4.5: Calculation of mains renewal and meter replacement sector-wide cost adjustments



Sources: CMA analysis of Ofwat (2025) [PR24 Final Determinations Expenditure Allowances](#), pp37–40.

4.298 For network reinforcement Ofwat could not identify a reliable activity-based driver of these costs.⁵³⁴ It therefore estimated the network reinforcement sector-wide cost adjustment as follows (see also Figure 4.6):⁵³⁵

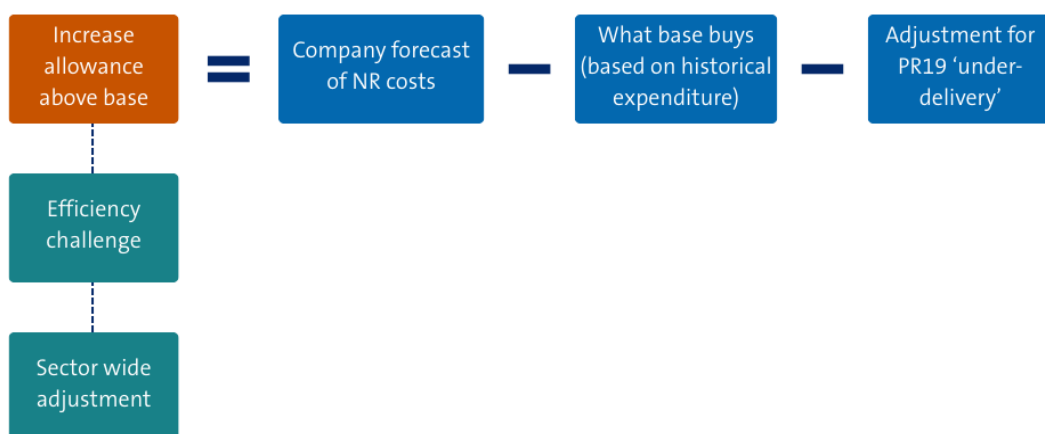
- (a) it took the forecast level of network reinforcement activity set out in companies' PR24 business plans or PR24 DD representations;
- (b) deducted an estimate of what base buys, based on historical network reinforcement expenditure; and
- (c) made a further deduction where Ofwat estimated a company had under-delivered over the PR19 period, and where companies were not assessed to have under-delivered this 'under-delivery adjustment' was zero.

4.299 Ofwat also applied an efficiency challenge, based on company unit costs, to estimates of the cost of delivering network reinforcement in excess of what base buys.

⁵³⁴ (Non-confidential) transcript of the hearing for Ofwat on 10 July 2025, p34 lines 5–9.

⁵³⁵ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p59.

Figure 4.6: Calculation of network reinforcement sector-wide cost adjustments



Source: CMA analysis of Ofwat (2025) [PR24 Final Determinations Expenditure Allowances](#), p59.

4.300 In the remainder of this section, we first briefly set out a summary of our final decisions relating to sector-wide cost adjustments and the impact of these decisions on Disputing Companies' allowances. We then discuss the issues raised and our assessment of the following aspects of the Ofwat methodology for calculating the value of the sector-wide cost adjustments:

- (a) how what base buys is calculated for sector-wide cost adjustments;
- (b) how unit costs were calculated by Ofwat for water mains renewals and meter replacement sector-wide cost adjustments;
- (c) the application of under-delivery adjustments to sector-wide cost adjustments; and
- (d) the application of an efficiency challenge to the network reinforcement sector-wide cost adjustment.⁵³⁶

Summary of our final decisions for sector-wide cost adjustments and their impact on Disputing Companies' allowances

4.301 Anglian, Northumbrian, South East and Southern questioned how Ofwat calculated what base buys – in particular the length of historical time series and the statistic (mean, median, etc) it used (see paragraph 4.310). Our final decision is to calculate what base buys using historical data from the period 2011/12 to 2023/24, using a within-company mean (for a representative level of activity by an

⁵³⁶ Note this efficiency challenge is specific to the network reinforcement sector wide adjustment and is not the same as the benchmarking upper quartile efficiency challenge applied to costs assessed through the base cost models.

individual company over this period) and a between-company median (for a representative level of activity across the industry).

- 4.302 South East and Southern questioned the use of an industry median unit cost (as opposed to their own unit costs) in the calculation of the water mains renewal and meter replacement sector-wide cost adjustments (see paragraphs 4.398 and 4.411). Both said that the evidence base used by Ofwat was not sufficiently robust and that there were specific factors (eg higher regional wages in their supply areas) that meant they had higher unit costs than the industry median. Our final decision is that it is appropriate to use industry median unit costs and that the evidence base used by Ofwat is sufficiently reliable for these purposes. We have also decided to adjust the industry median unit cost for all Disputing Companies to reflect differences in regional wages between the supply areas in which companies operate.
- 4.303 South East questioned the application of an efficiency challenge in Ofwat's calculation of the network reinforcement sector-wide cost adjustment (see paragraph 4.478). Our final decision is that it is appropriate to apply an efficiency challenge in the form used by Ofwat at PR24 FD.
- 4.304 All Disputing Companies said that it was not appropriate to apply under-delivery adjustments when calculating the value of the water mains, meter replacement and network reinforcement sector-wide cost adjustments (see paragraph 4.440). Our final decision is to not apply these adjustments.
- 4.305 Northumbrian said that it had understated its forecast for AMP8 water network reinforcement costs and requested that the CMA used an updated forecast when calculating the sector-wide cost adjustment (see paragraph 4.497). Our final view is that it is appropriate to use updated forecast costs in full when estimating its network reinforcement costs adjustment.
- 4.306 In Table 4.12 we set out the changes to water mains renewal, meter replacement and network reinforcement sector-wide cost adjustments for Disputing Companies resulting from our final decisions.

Table 4.12: Changes to water mains renewal, meter replacement and network reinforcement sector-wide cost adjustments for Disputing Companies resulting from our final decisions

	<i>Ofwat PR24 FD adjustment (corrected for acknowledged error)⁵³⁷</i>	<i>CMA adjustment</i>	<i>Change in adjustment</i>	<i>Change as % of water and wastewater totex</i>
	<i>£m</i>	<i>£m</i>	<i>£m</i>	<i>%</i>
Water mains renewals				
Anglian	144.4	145.2	0.75	0.01%
Northumbrian	51.3	51.1	-0.20	0.00%
South East	29.5	30.5	1.02	0.06%
Southern	6.1	28.2	22.10	0.28%
Wessex	23.3	23.1	-0.24	-0.01%
Meter replacement				
Anglian	108.3	114.5	6.3	0.06%
Northumbrian	18.9	48.6	29.7	0.52%
South East	23.6	31.8	8.2	0.47%
Southern	98.5	116.6	18.1	0.23%
Wessex	8.1	17.4	9.3	0.24%
Network reinforcement (water and wastewater combined)				
Anglian	55.2	96.8	41.6	0.41%
Northumbrian	0.1	31.0	30.9	0.54%
South East	32.2	41.2	9.1	0.52%
Southern	45.9	57.2	11.3	0.14%
Wessex	19.9	22.8	2.8	0.07%

Source: CMA analysis of data from Ofwat (2024) [Mains renewal cost adjustment model](#); Ofwat (2024) [Meter renewals cost adjustment model](#) and Ofwat (2024) [Network reinforcement cost adjustment model](#).

What base buys

4.307 In this section we discuss the issues raised and our final decision for how what base buys is calculated.

Ofwat's PR24 FD approach

4.308 When calculating the uplift for each sector-wide adjustment, Ofwat had to estimate what was funded by base allowances or what base buys.

4.309 Ofwat assessed what base buys primarily by looking at average historical levels of spending or maintenance activity for certain asset categories. We explain these calculations and summarise Ofwat's rationale for its approaches below.

⁵³⁷ There was an error in how Ofwat calculated the rates of meter replacement for water companies. This was acknowledged by Ofwat, See Ofwat Response to Ofwat RFI013, Q3.

- (a) For water mains renewal, what base buys for each water company was calculated as the industry historical average rate of renewal (% of mains renewed annually) multiplied by total length of water mains for that water company. This was converted into a £ allowance by multiplying by median industry unit cost. The industry historical average rate of renewal was calculated as the unweighted annual average of mains renewals rates over the historical modelling period (2011/12 to 2023/24).⁵³⁸
- (b) For meter replacement, what base buys for each water company was calculated as the average annual industry historical rate of meter replacement (the % of connected customers that have a meter replaced) multiplied by connected customers for that water company. This was converted into a £ allowance by multiplying by median industry unit cost. The average annual industry historical rate of meter replacement was calculated as the unweighted average of annual meter replacement rates over the historical modelling period (2011/12 to 2023/24).⁵³⁹
- (c) For network reinforcement there was no data available on rates of activity (eg in terms of the types and value of assets installed). Therefore, what base buys was calculated as an 'implicit allowance' in terms of the share of historical base expenditure accounted for by network reinforcement expenditure. This was calculated as the average of:
 - (i) five years of **company** outturn (2018/19 to 2023/24) spend on network reinforcement adjusted for an efficiency challenge; and
 - (ii) **industry** network reinforcement spend over the historical modelling period (2011/12 to 2023/24) as % of **industry** base spend * **company** base allowance for PR24 period.⁵⁴⁰

Summary of issues raised by Disputing Companies

- 4.310 The Disputing Companies raised a number of issues with the Ofwat methodology for calculating what base buys. These broadly fall into three categories.
- (a) Pre-modelling vs post-modelling adjustment.
 - (b) Length of time series used to calculate what base buys.
 - (c) Which statistic to use.

⁵³⁸ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p34.

⁵³⁹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p40.

⁵⁴⁰ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p60.

Pre-modelling vs post-modelling adjustment

- 4.311 Some Disputing Companies said that a better approach than Ofwat's post modelling adjustment was to use an alternative method for sector-wide adjustments – especially for network reinforcement - based on comparing estimates of modelled costs with and without relevant expenditure included.⁵⁴¹

Length of time series to use

- 4.312 Disputing Companies raised three issues regarding the length of time period to use:
- (a) our approach was inconsistent with the period used for benchmarking base costs (see paragraphs 4.313 to 4.316);
 - (b) our approach was inconsistent with the time period used to assess PCLs (see paragraph 4.317); and
 - (c) for the water mains renewal, companies also objected to Ofwat excluding the most recent year of data (2023/24) in its PR24 FD.⁵⁴²

Consistency with benchmarking period

- 4.313 Disputing Companies said that the use of the full modelling period was inconsistent with calculating catch-up efficiency over five years which helped to ensure the base expenditure allowances reflect more recent cost pressures. The last five years of data were relatively more important in setting modelled costs and more reflective of current operating circumstances.⁵⁴³
- 4.314 All Disputing Companies said that the provisional determination did not engage with the points made in their statements of case regarding the inconsistency between the time periods used, respectively, to assess: (i) cost efficiency; and (ii) historical maintenance activity levels. They said that because modelled base cost allowances for AMP8 were based on the historical level of company expenditure over the benchmarking period 2019–24, they effectively funded the same level of activity from the benchmarking period over AMP8.⁵⁴⁴
- 4.315 All Disputing Companies submitted a paper by Economic Insight which further outlined this point. The paper concluded that to be internally consistent (and to

⁵⁴¹ [Northumbrian SoC](#), paragraph 352; [Oxera \(2025\) Base cost adjustments and cost adjustment claims](#), p12.

⁵⁴² [Anglian SoC](#), paragraph 218; [Northumbrian SoC](#), paragraphs 337–339; [Southern SoC](#), pp268–269, paragraph 264.

⁵⁴³ [Anglian SoC](#), paragraph 218; [Northumbrian SoC](#), paragraph 345; [Southern SoC](#), p269, paragraph 265; [Northumbrian SoC](#), paragraph 333; [South East SoC](#), paragraph 4.25; [Oxera \(2025\) Base cost adjustments and cost adjustment claims](#), Section A1.

⁵⁴⁴ [Anglian \(2025\) Response to CMA PR24 PD](#), paragraph 264; [Northumbrian \(2025\) Response to CMA PR24 PD](#), paragraph 162; [South East \(2025\) Response to CMA PR24 PD](#), paragraph 2.9; [Southern \(2025\) Response to CMA PR24 PD](#), paragraph 4.59; [Wessex \(2025\) Response to CMA PR24 PD](#), paragraph 4.8.

ensure sufficient base cost allowances), the average activity level for each company must be estimated using the same time period as that used in setting the modelled base cost allowances.⁵⁴⁵ South East also submitted a report by Oxera which said that mathematically the full modelling period did not dictate the implicitly funded level of activity – only the benchmarking period was relevant as per the CMA’s framework.⁵⁴⁶

4.316 Between them, the Disputing Companies gave multiple reasons why mains renewal rates would not revert to their longer-term trend under the current base allowances.⁵⁴⁷

- (a) Ofwat’s totex and outcomes approach from 2015 onwards had acted to incentivise outcomes such as a stable burst rate and not a stable mains renewal rate.⁵⁴⁸
 - (i) The CMA did not find evidence that the choices to invest in these operational (eg pressure management) solutions (instead of mains renewals) could be considered as ‘gaming’ the settlement. These were legitimate responses to the totex and outcomes regulatory incentives of PR19 and PR24 and reflected customer priorities.⁵⁴⁹
 - (ii) Stable burst rates had been achieved by switching some investment from mains renewal to approaches such as pressure management, and this investment was needed to continue to maintain the benefits it had achieved. The provisional determination implicitly assumed the costs spent on other activities to maintain stable bursts could now be focused on mains renewal and therefore risked a funding gap.⁵⁵⁰
 - (iii) The other activities that had been funded instead of mains renewals were not temporary and, in any case, often not related to mains renewals activity.⁵⁵¹
- (b) Capital maintenance decisions were based on an efficient company’s expenditure decisions and were driven by multiple factors including statutory and regulatory requirements, performance commitments, and operating conditions. Unless there were good reasons to believe these factors might

⁵⁴⁵ Economic Insight (2025) Time inconsistency error in ‘what base buys’, paragraph 3.3.

⁵⁴⁶ Oxera (2025) Error in the CMA’s assessment of ‘what base buys’, p2.

⁵⁴⁷ The Disputing Companies’ comments focused on mains renewals. The use of the full modelling period to estimate what base buys in the provisional determination impacted the estimates of what base buys for mains renewals - given the historical industry wide fall in mains renewal rates (see Figure 4.8).

⁵⁴⁸ Southern (2025) [Response to CMA PR24 PD](#), paragraph 4.57.

⁵⁴⁹ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 275.

⁵⁵⁰ Southern (2025) [Response to CMA PR24 PD](#), paragraph 4.57.

⁵⁵¹ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 277.

revert to a stable long-term average, decisions made in AMP7 were likely to be better predictors for AMP8.⁵⁵²

- (c) There was no evidence the fall in mains renewals rates had been exclusively driven by temporary or cyclical factors. Ofwat's estimates suggested that just 2% of the industry-wide base expenditure over AMP7 could be attributed to 'unexpected energy price increases' arising from exceptional events, and that the industry-level overspend would reduce only marginally from 14% to 12% once this was accounted for.⁵⁵³
- (d) There had been increasing asset failure due to historical underfunding which led to higher fixed asset failure rates, leading to more reactive (and less proactive) maintenance.⁵⁵⁴
- (e) There were company specific issues which changed capital maintenance priorities.⁵⁵⁵

Consistency with PCLs

4.317 Northumbrian said that it was inconsistent for the CMA to decide that:

- (a) common PCLs should be set using data over the last four years; and
- (b) mains renewals should be set using data from 2011/12 to 2023/24.⁵⁵⁶

Which statistic to use

4.318 Disputing Companies said that using a weighted average placed an undue reliance on small, unrepresentative networks.⁵⁵⁷ Southern also said that the use of an unweighted average was inconsistent with the econometric estimation technique used by Ofwat.⁵⁵⁸ Anglian said that, by definition, a weighted average gave proportionate weight to each company, large and small, and therefore avoided distorting the estimates. In contrast, an unweighted average gave the same weight to each company regardless of size.⁵⁵⁹

⁵⁵² Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 155.

⁵⁵³ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 157.

⁵⁵⁴ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p88 lines 15 to 19.

⁵⁵⁵ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p72 lines 21 to 25; p73 lines 1 to 8; p74 lines 3 to 8.

⁵⁵⁶ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 161.

⁵⁵⁷ [Anglian SoC](#), paragraph 218; [Northumbrian SoC](#), paragraph 340; [Southern SoC](#), pp268–269, paragraph 264.

⁵⁵⁸ The random effects model uses a generalized least squares estimator to estimate the coefficients using a weighted average of the between and the within estimators. [Southern SoC](#), pp268–269, paragraph 264.

⁵⁵⁹ [Anglian \(2025\) Response to CMA PR24 PD](#), paragraph 261.

Pre-modelling vs post-modelling adjustment

- 4.319 Ofwat said that it had also considered calculating the implicit allowance by removing historical network reinforcement spend from its wholesale base econometric models but decided not to use this approach. Historical network reinforcement costs comprised a small percentage of wholesale base costs. So, removing these costs from the models sometimes led to estimates of the implicit allowance that were not reliable. Uncertainty over the consistency of company cost allocation between network reinforcement and capital maintenance over the historical period created further concerns with this approach.⁵⁶⁰
- 4.320 Ofwat said that to calculate the implicit allowance, it took the average of the results from two methods (set out in paragraph 4.309(c)), recognising there was no perfect approach. Ofwat said that these two methods were used by Thames Water in its business plans submissions.⁵⁶¹

Length of time series

- 4.321 Ofwat said that it had considered the arguments for moving to an alternative approach to calculating what base buys including: (i) using the last five years of data only and (ii) removing AMP5 years. However, it did not think there was a clear rationale for moving to a different approach. The base models determined allowances based on the full historical period and in doing so, provided long-term allowances that enabled companies to maintain the long-term capability of assets while managing peaks and troughs in capital maintenance over time. Ofwat had applied the same approach to determining what base buys at PR19 for the sector-wide growth unit cost adjustment, which the CMA also used. It therefore did not consider it appropriate to select a subset of years to determine what companies were funded to deliver over the long-term.⁵⁶²
- 4.322 Ofwat said that it supported the CMA's provisional decision to use the full historical period to determine what base buys. This had a strong and clear rationale and was consistent with the setting of long-term base expenditure allowances.⁵⁶³
- 4.323 Ofwat said that a mains renewal rate of 0.1% in 2023/24 was not reflective of what base buys and therefore excluded this data. It said that including this data could

⁵⁶⁰ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p61.

⁵⁶¹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp60–61.

⁵⁶² Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p34; Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp40–41; (Non-confidential) transcript of the hearing for Ofwat on 10 July 2025, p39 lines 7–13.

⁵⁶³ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

incentivise companies to reduce renewal rates towards the end of the current regulatory period to obtain a higher cost adjustment in the future.⁵⁶⁴

Which statistic to use

- 4.324 Ofwat said that it was not appropriate to use a weighted mean as its econometric benchmarking included drivers that captured differences in company size, including total length of mains and population served.⁵⁶⁵ A weighted mean would place disproportionate weight on large water and wastewater companies.⁵⁶⁶
- 4.325 Ofwat encouraged the CMA to satisfy itself that there was sufficient variation between companies to warrant our provisional decision to use the median rather than the mean.⁵⁶⁷

Views of Third Parties

Length of time series – consistency with benchmarking and PCLs

- 4.326 Thames Water said that the base allowances including what base buys were largely determined by company spend over the last five years.⁵⁶⁸ Declining asset replacement rates should be taken into consideration and extrapolated to AMP8. It recognised that extrapolation of the mains renewal trend would result in replacement rates that appeared too low but said that the CMA should adopt a consistent approach to what base buys across costs and outcomes.⁵⁶⁹
- 4.327 Yorkshire Water said that the CMA had not fully understood the Disputing Companies' arguments when deciding on the time period. The decision was based on whether the low renewal rates in AMP7 were reflective of long-term base activity – with the CMA finding that they were not. However, this was not what the implicit allowance was. The implicit allowance should be based on the previous five years as this period was used to set catch-up efficiency. If the industry had invested more in mains renewals in AMP7 this would have led to higher AMP7 expenditure, a reduced efficiency benchmark and greater cost allowances.⁵⁷⁰

Which statistic to use

- 4.328 Thames Water said that the provisional decision to use the median was superficially attractive as it reduced the influence of companies with very small or large replacement rates, but it remained inaccurate. The use of the median

⁵⁶⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.202.

⁵⁶⁵ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraphs 2.204–2.205.

⁵⁶⁶ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.205.

⁵⁶⁷ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

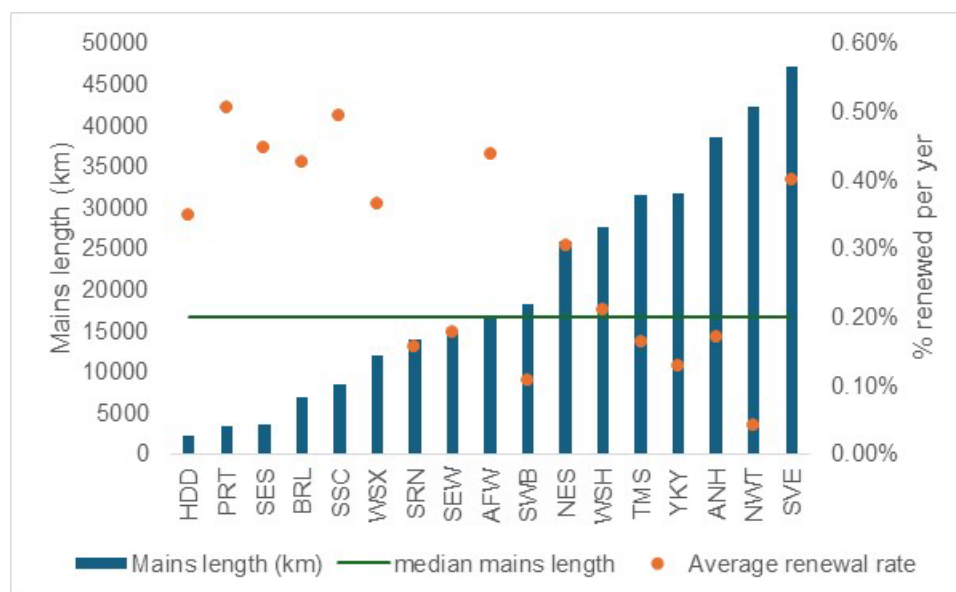
⁵⁶⁸ Thames Water (2025) [Response to CMA PR24 PD](#), paragraph 107.

⁵⁶⁹ Thames Water (2025) [Response to CMA PR24 PD](#), paragraphs 108–111.

⁵⁷⁰ Yorkshire Water (2025) [Response to CMA PR24 PD](#), p5.

appeared to introduce a material inaccuracy as companies with mains renewal rates above the median were systematically smaller than the companies with mains renewal rates below the median (see Figure 4.7).⁵⁷¹

Figure 4.7 Sectoral mains renewal rate and main length



Source: CMA replication of Figure 1 of Thames Water (2025) [Response to CMA PR24 PD](#); data from Ofwat (2024) [Mains renewal cost adjustment model](#)

Assessment and final decision

4.329 In this section we set out our assessment of the parties' submissions and set out our final decision on how what base buys should be calculated. We first set out the conceptual framework for the calculation of what base buys and then apply this to each of the sector-wide cost adjustments.

Conceptual framework

4.330 The calculation of what base buys and its inclusion in the calculation of the sector-wide cost adjustments helps to ensure that customers do not pay twice for the same activity. To facilitate this, we need to assess the level of activity that base allowances can reasonably be expected to fund for an efficient company over the PR24 period. Using an efficient company as the conceptual benchmark for this assessment helps to ensure that customers do not overpay by funding inefficient or unnecessary expenditure (eg by providing additional funding for mains renewals or meter replacement that an efficient company should already have received adequate funding for through its base allowances).

4.331 Base totex allowances are based on historical costs which reflect past investment decisions, therefore what base buys is to an extent necessarily a function of

⁵⁷¹ Thames Water (2025) [Response to CMA PR24 PD](#), paragraph 101.

historical spending decisions. However, water companies have discretion over how they spend their capital maintenance budgets, and they will take account of forward-looking conditions when deciding how to allocate their AMP8 allowances. Therefore, what base has funded historically may not be the same as what it may reasonably be expected to fund over AMP8. We do not have a model of how companies make capital maintenance decisions, nor a forecast of the key variables that might impact these decisions for AMP8. We must therefore approximate what base buys using the observed decisions of companies in the recent past.

- 4.332 In addition, what base buys could in principle vary across firms depending on their characteristics and their operating environment. However, without a model of capital maintenance decisions, it might be difficult to capture company-specific factors, and it might be reasonable to set a single figure instead.
- 4.333 The conceptual benchmark we use is therefore what is a reasonable level of activity funded by base allowances for an efficient company facing ‘average’ conditions (where the average is taken over the different companies).
- 4.334 While this conceptual benchmark is unattainable in practice, it provides a framework for evaluating the practical options that have been put forward to approximate what base buys. Broadly, two methods have been put forward by the parties:
- (a) a pre-modelling approach based on estimating the base costs models with and without relevant expenditure (suggested by some Disputing Companies); and
 - (b) post-modelling adjustments based on historical industry average rates of maintenance activity or expenditure (what Ofwat did).
- 4.335 There is some intuitive appeal to the pre-modelling approach because it would produce estimates that would to an extent account for some relevant between-company differences.⁵⁷² However, in our view there are two potential problems with this approach.
- 4.336 First, from a conceptual standpoint, this approach only provides a good approximation to what base buys if the variables that determine the optimal volumes of different activities (mains renewals, meter replacement, etc) are the same as those included in the totex models. It is not clear that this condition is met. For example, in the case of network reinforcement expenditure, requirements

⁵⁷² For example, renewing water mains may be on average more expensive in areas where there is greater population density (eg as they are likely to be more urban and more congested increasing the complexity and cost of mains renewal). Given population density is a cost driver in the water base modelling then estimates of what base buys should be greater for companies in higher population density areas all else being equal.

are likely to largely be driven by the growth in connections (as distinct from the total number of connections) which is not included as a cost driver in the base cost models (see Table 4.5).

4.337 Second, from a practical standpoint it is difficult to apply this approach to the activities to which sector-wide CACs are applied for the following reasons.

- (a) For water mains renewals and meter replacement the water companies do not record their historical costs meaning we would have to rely on relatively imprecise estimates.
- (b) Network reinforcement costs represent only a small proportion of total base costs (approx. 1.6% of water base costs and 1.3% of wastewater base costs between 2011/12 and 2023/24).⁵⁷³ Removing these from the base models could lead to estimates of the implicit allowance that are not reliable because the cost drivers may not accurately capture the impact of very small changes in expenditure.

4.338 We therefore estimate what base buys based on historical industry decisions (ie through post-modelling adjustments). This involves two key questions:

- (a) which time series of data to use; and
- (b) which statistic to use (mean vs median, weighted vs unweighted etc).

4.339 We evaluate these questions for each of water mains renewal, meter replacement and network reinforcement below.

Water mains renewals

4.340 In this section we assess how what base buys should be calculated for water mains renewals. First, we consider which period to use and then we consider which statistic to use.

Which time series to use

4.341 Ofwat used the full historical data series available to estimate its base costs models.⁵⁷⁴ Across the 13 years of data Ofwat used to estimate the base cost models average water mains renewal rates were 0.3% per annum.⁵⁷⁵ However, Figure 4.8 shows industry average water mains renewal rates can be separated into three distinct periods. The first is the four years of data for the AMP5 period. The second is the AMP6 period. The third is the first four years of AMP7. Average

⁵⁷³ Ofwat (2024) [PR24-FD-CA148-Network-Reinforcement-cost-adjustment-model.xlsx](#), sheet 'PR24 - IA Method 2'.

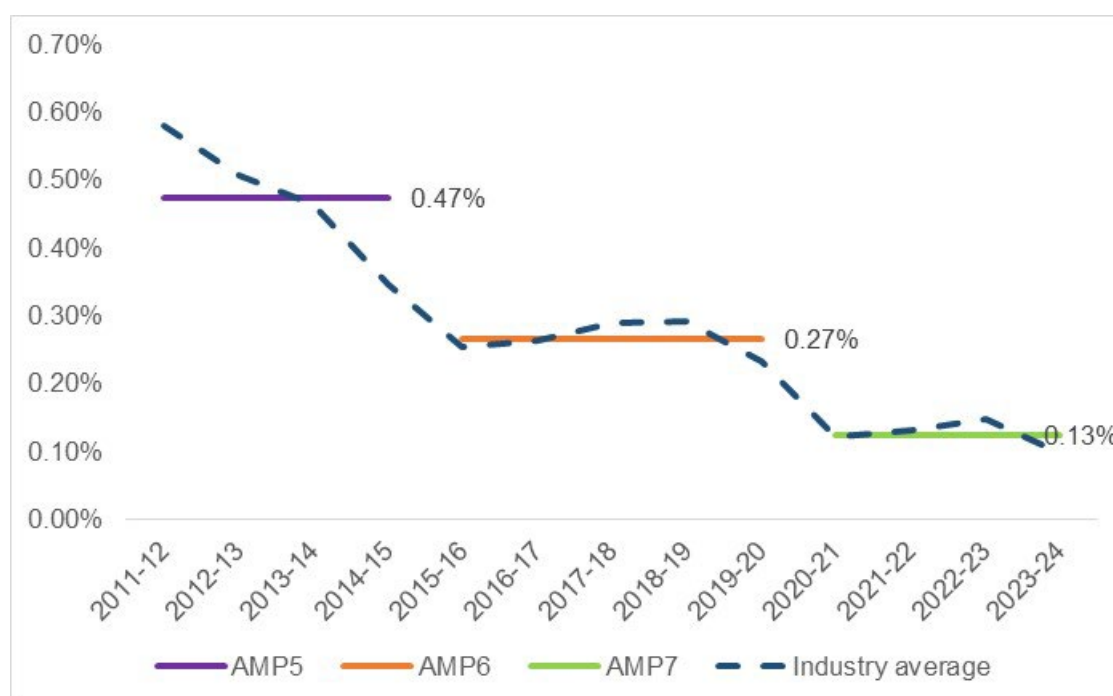
⁵⁷⁴ Ofwat (2022) [Final methodology for PR24: Appendix 9 Setting expenditure allowances](#), p14.

⁵⁷⁵ CMA analysis of data from Ofwat (2024) [Mains renewal cost adjustment model](#).

rates of industry mains renewal in each of the three periods are substantially different.

- (a) Renewal rates fell over the last four years of AMP5 with average rates across the period of 0.47% per annum.
- (b) Renewal rates remained fairly flat over AMP6 with an average rate of 0.27% per annum.
- (c) Renewal rates were fairly flat over AMP7 with an average rate of 0.13% per annum.

Figure 4.8: Historical industry average water mains renewal rates



Source: CMA analysis of data from Ofwat (2024) [Mains renewal cost adjustment model](#).

These substantial changes in renewal rates over time coincided with the introduction of an outcomes-based framework in PR14, and, more recently, unanticipated cost pressures during AMP7.

- 4.342 There was a substantial change in Ofwat's approach to setting base expenditure for AMP6 when it moved to a system of setting overall totex allowances - rather than separate opex and capex allowance – alongside high level outcome targets (outcome-based regulation).⁵⁷⁶ The intention was to give companies more flexibility to implement the best solutions for customers and the environment.⁵⁷⁷
- 4.343 Renewal rates in AMP5 were consistently higher. From AMP6 onwards, through the introduction of ODIs companies were financially incentivised to improve outcomes related to mains renewal, such as burst rates and supply interruptions.

⁵⁷⁶ Ofwat (2013) [Setting price controls for 2015-20 – final methodology and expectations for companies' business plans](#), section 5.2.

⁵⁷⁷ Ofwat (2019) [PR19 Final determinations Delivering outcomes for customers policy appendix](#), p3.

Outcomes targets from AMP6 onwards directly incentivised reductions in burst rates, and other things that were related to burst rates, for example, supply interruptions. However, bursts could also be managed by actions such as pressure management techniques rather than mains renewals.⁵⁷⁸ Anglian, for example, said that in 2013 only 7% of its network was pressure managed compared with 34% currently.⁵⁷⁹

- 4.344 Renewal rates during AMP7 were particularly low. This period was subject to substantial shocks such as COVID 19 and Russia's invasion of Ukraine, therefore the industry was subject to substantial cost pressures that were not anticipated before AMP7. This may have led companies to delay some maintenance expenditure where they were able to do so without a substantial deterioration in the underlying risk of asset failure. The incentive to do this is likely to have been particularly strong for longer life assets such as water mains, where deterioration rates are low, and alternative methods – such as pressure management – can be used to achieve the measured outcomes. Supporting this, Southern said:

Other demands on base funding, particularly in the last two AMPs, and the advent of stretching PCs and ODI penalties, have limited the scope for companies to replace their mains network at a sustainable rate without materially overspending Ofwat's base cost allowance. Deferring investment in some of our longer life assets including our mains, in that context is entirely rational but cannot be continued indefinitely. This is clearly a sector wide issue as illustrated by the AMP-by-AMP halving of replacement rates from AMP5 to AMP6 and from AMP6 to AMP7.⁵⁸⁰

- 4.345 The narratives and explanations offered by the Disputing Companies and Ofwat for falling renewal rates differ. The Disputing Companies said that this was because the current regime delivered insufficient funding and reflected customer priorities within an outcomes based regime (see paragraph 4.316). Conversely, Ofwat said that the decline was because companies might have an incentive to rely on relatively cheap options that allowed them to meet PCLs in the short-term while letting the risk of failure increase in the long-term.⁵⁸¹

Consistency with the benchmarking period

- 4.346 We agree with the Disputing Companies that efficient PR24 allowances are determined to a substantial extent by actual expenditure during the benchmarking period 2019/20 to 2023/24. In particular, actual expenditure data from this period is

⁵⁷⁸ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p67 lines 19–23.

⁵⁷⁹ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p88 lines 1–4.

⁵⁸⁰ Southern SoC, p276, paragraph 295.

⁵⁸¹ Ofwat (2022) [Operational resilience discussion paper](#), p19; Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.35.

used to assess company performance relative to the efficiency benchmark used in the base costs modelling and therefore a company's efficient base costs for AMP8. Actual expenditure during the benchmarking period will in turn implicitly reflect companies' actual maintenance and spending decisions during this period. However, it does not necessarily follow that extrapolating from activity rates during this period translates into an appropriate forward-looking estimate of the level of mains renewals an efficient company can reasonably be expected to deliver over AMP8.

- 4.347 Companies have flexibility over spending decisions within the outcomes/totex regime and how companies choose to spend allowances will vary over time depending on factors such as economic conditions, operating circumstances and maintenance priorities. We might expect that levels of maintenance activity for particular assets would vary – potentially substantially – from AMP to AMP. Consequently, expenditure choices made within a particular AMP may not be representative of what could or should be achieved by an efficient company with its base funding on average over the longer term. It is therefore appropriate to consider the historically low rates of renewal observed in AMP7 in a longer-term context before judging whether they represent what can reasonably be expected of an efficient company during AMP8.
- 4.348 During AMP6 average annual renewal rates were 0.27%, more than twice the AMP7 rate of 0.13%, and similar to average rate of 0.3% across the whole base cost modelling period. Other than the temporary macroeconomic cost pressures and company specific pressures during the AMP, the explanations provided for the historically low level of mains renewals in AMP7 would also apply to AMP6 (see paragraph 4.316). For example:
- (a) concerns with 'underfunding' due to reliance on modelling are long-term concerns rather than specific to AMP6 (see paragraphs 4.192 and 4.193);
 - (b) the regulatory regime, including the totex/outcomes approach, was broadly similar in AMP6 (see paragraph 4.342); and
 - (c) company specific issues which change capital maintenance priorities are something that will apply to all AMPs.
- 4.349 Therefore, it is not unreasonable to expect that companies could deliver similar rates of renewal with base expenditure allowances during AMP8 as they did during AMP6.

Consistency with PCLs

- 4.350 Some Disputing Companies said that using the full historical modelling period to assess what base buys is inconsistent with the time period used to assess PCLs (see paragraph 4.317).
- 4.351 What base buys and common PCLs are intended to reflect what can reasonably be expected of an efficient company over AMP8. However, it is not inconsistent to set them based on data drawn from differing time periods given the differences between them.
- 4.352 Base funding is intended to allow companies to achieve a level of performance that meets their PCLs.⁵⁸² However, performance levels evolve over time. PCLs and the outcomes regime in general are intended to ensure that water companies deliver improved outcomes for customers and the environment over time.⁵⁸³ Companies are expected to achieve a level of performance improvement through base expenditure and in addition, PCLs are adjusted to reflect relevant enhancement spending.⁵⁸⁴ Therefore, more recent performance is typically more relevant when estimating what level of performance is funded by the base cost allowances.
- 4.353 In contrast as we explain in paragraph 4.352 expenditure choices made within a particular AMP may not be representative of levels of maintenance activity that could or should be achieved by an efficient company with its base funding on average over the longer term.

Excluding last year of data

- 4.354 Ofwat said that using the last available year of data for water mains renewals (2023/24) could incentivise companies to reduce levels of expenditure to influence the assessment of what base buys.⁵⁸⁵
- 4.355 This may be appropriate if water companies had the ability and incentive to behave in this way. However, this is not the case. As the proposed methodology was first set out in Ofwat's PR24 DD in July 2024 (ie after the end of the financial year 2023/24), companies could not have adjusted their investment plans for 2023/24 and the impact of individual company decisions on sector-wide averages would be limited.⁵⁸⁶

⁵⁸² Ofwat (2024) [PR24 final determinations: Delivering outcomes for customers and the environment](#), p18.

⁵⁸³ Ofwat (2024) [PR24 final determinations: Delivering outcomes for customers and the environment](#), p18.

⁵⁸⁴ Ofwat (2024) [PR24 final determinations: Delivering outcomes for customers and the environment](#), p18.

⁵⁸⁵ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.202.

⁵⁸⁶ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p34.

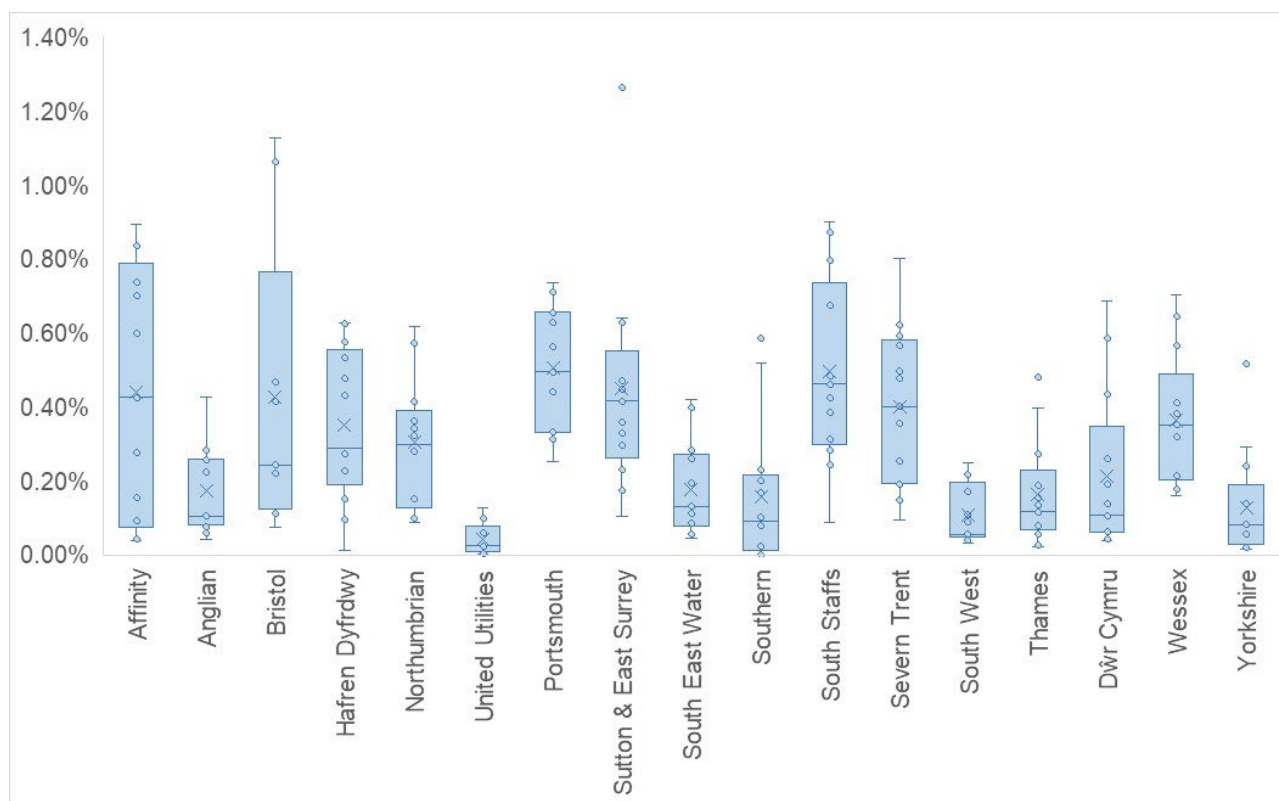
Conclusion

- 4.356 Our final assessment is that it appropriate to consider what might reasonably be expected of an efficient company in a longer-term context – rather than simply extrapolating from the benchmarking period. It is appropriate to use data from the full historical modelling period to estimate what base buys. It is not unreasonable to expect companies to deliver similar rates of renewal with base expenditure allowances during AMP8 as they did during AMP6.

Which statistic to use

- 4.357 Figure 4.9 presents box plots showing the distribution of mains renewal rates for all water companies between 2011/12 and 2023/24. These distributions show that there is substantial within-company and between-company variation in mains renewals rates.
- (a) A number of companies recorded large mains renewal rates in at least one year – fifteen of the seventeen companies recorded rates in excess of 0.4% (more than two and a half times the industry median), twelve more than 0.5% and ten more than 0.6%.
 - (b) A number of companies recorded low renewal rates in at least one year – ten companies recorded rates below 0.05% (approximately 1/3 of the industry median).
 - (c) There is a wide variation in the median annual renewal rate of the water companies – eight companies have a median rate of greater than 0.25% and four have a median rate of less than 0.1%.

Figure 4.9: Box plots of water company mains annual renewal rates between 2011/12 and 2023/24



Source: CMA analysis of data from Ofwat (2024) [Mains renewal cost adjustment model](#).

- 4.358 Across the industry, the mains renewals data shows a degree of positive skewness with the median of 0.23% being lower than the mean of 0.29%.⁵⁸⁷ The distribution might reflect investment patterns of some peaks of activity around a lower base level. At the base cost hearing Disputing Companies suggested that companies manage their water mains investment across the five year price control cycles. In the first year of the AMP, this may mainly involve doing design work for renewal programmes, with a peak in activity later in the AMP.⁵⁸⁸
- 4.359 Whilst mathematically it would be correct to estimate the industry average mains renewal rate using a weighted mean, this is not our goal when calculating what base buys. Instead, we aim to estimate average performance across the industry in terms of percentage of mains length renewed. An unweighted mean weights each company's performance equally and ensures that the average is not distorted by particularly good or bad performance by one or two larger companies.
- 4.360 The analysis set out in Figure 4.9 shows that typically smaller companies (with mains length below the industry median) have higher mains renewal rates than larger companies (with mains length above the industry median). However, there are clear exceptions such as South East and Southern (both companies with

⁵⁸⁷ Where the majority of observations within a distribution are concentrated below the mean leading to the median value being below the mean.

⁵⁸⁸ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p90 lines 6–12.

below median mains length and relatively low renewal rates) and Severn Trent (the company with the longest mains length and a relatively high renewal rate). In addition, neither Thames Water nor the Disputing Companies provided an explanation for why smaller companies might systematically have higher rates of mains renewal.

- 4.361 It is not clear what factors might be driving the observed differences. Smaller companies operate in the same regulatory regime and will have a similar production function and maintenance requirements to larger companies. The main difference between smaller and larger companies – that of scale – is already accounted for as renewal rates are expressed as a percentage of mains length.
- 4.362 In the absence of clear reasons and evidence to explain why smaller companies might systematically have higher mains renewal rates, it cannot be discounted that these companies tend to be better performers (ie able to deliver higher rates of main renewals). Therefore, our view is that the observed differences in mains renewal rates between smaller and larger companies do not provide a clear reason for using a weighted average.
- 4.363 Overall, we decide that the evidence supports the use of a within-company mean and a between-company median.
- (a) A **within-company mean** – this would give equal weighting to each year of data in calculating the average performance for each company over the period. While most companies record some relatively high and relatively low level of renewals activity, this is likely to reflect normal investment patterns of some peaks of activity around a lower base level.
- (b) A **between-company median** – given the wide variation in the mains renewal patterns across companies, this would avoid giving undue weighting to companies which have extreme high or low levels of mains renewal activity over the period. Given that we aim to estimate what base buys for an efficient company there could be an argument for using a more stretching benchmark than the median such as the upper quartile. However, this does not seem appropriate in this case. The intention behind using a benchmark of an efficient company is to protect customers against inefficiency. However, given the very wide variation in the between-company rates of renewals, we cannot discount that these differences are driven by unexplained company specific factors rather than inefficiency. We note that some Disputing Companies have suggested using a weighted mean across companies (see paragraph 4.318). This is inappropriate in this case. Using a weighted mean

could allow the performance of one or two larger companies to distort the estimates if they are particularly good or particularly poor performers.⁵⁸⁹

Our final decision

4.364 Based on the analysis set out above our final decision is to use:

- (a) data from the full historical modelling period (2011/12 to 2023/24); and
- (b) a within-company mean and a between-company median.

4.365 In practice this approach makes virtually no difference to estimates of the level of water mains renewals funded by base allowances compared to Ofwat's PR24 FD. This is shown in Table 4.13 below.

Table 4.13: Impact of CMA final decision estimates of what base buys for water mains renewal rates (in terms of % of mains length renewed per year)

<i>Ofwat PR24 FD</i>	<i>CMA final determination</i>
0.3% per year	0.3% per year

Source: CMA analysis of data from Ofwat (2024) [Meter renewals cost adjustment model](#).

4.366 In Table 4.14, the changes to mains renewal sector-wide cost adjustments received by the Disputing Companies are compared with the Ofwat PR24 FD resulting from our decision.

Table 4.14: Change in sector-wide adjustment for water mains renewals received by Disputing Companies due to our final decision on what base buys only

	<i>Ofwat PR24 FD adjustment</i>	<i>CMA adjustment</i>	<i>Change in adjustment</i>	<i>Change as % water and wastewater totex</i>
	<i>£m</i>	<i>£m</i>	<i>£m</i>	
Anglian	144.4	144.2	-0.2	0.00%
Northumbrian	51.3	51.2	-0.2	0.00%
South East	29.5	29.4	-0.1	-0.01%
Southern	6.1	6.1	-0.1	0.00%
Wessex	23.3	23.2	-0.1	0.00%

Source: CMA analysis of data from Ofwat (2024) [Meter renewals cost adjustment model](#).

⁵⁸⁹ We also note Southern said that to fit with Ofwat's approach to cost modelling, it was necessary to weight companies by size when computing the mean renewal rate (Southern SoC, pp 268–269, paragraph 264). This is incorrect: Ofwat used a random effects model for base costs, and this model transformed observations based on estimates of the variance of the time-varying and time-invariant error components, which are assumed to be the same across individuals. Thus Ofwat's approach did not weight observations based on the size of companies.

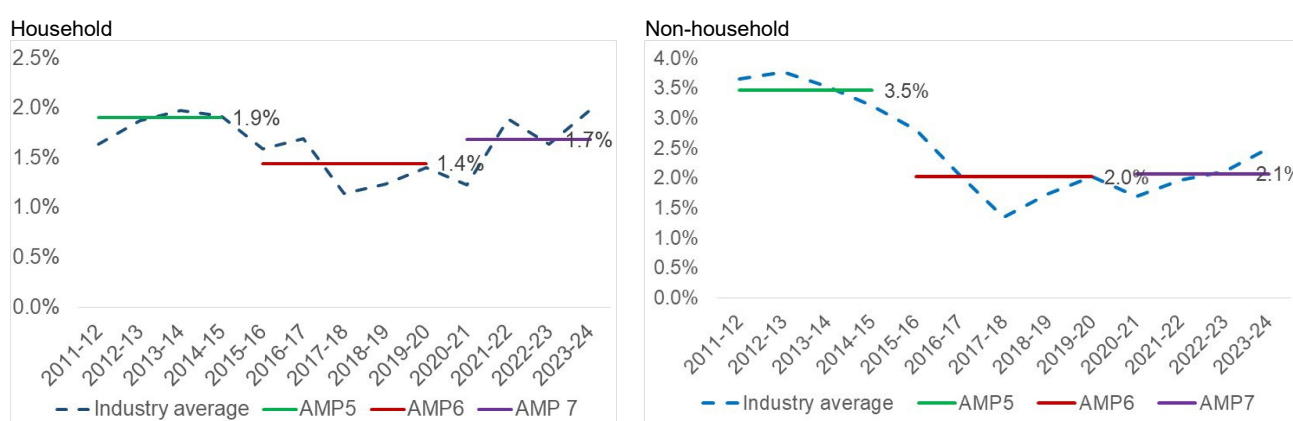
Meter replacement

- 4.367 In this section we assess how what base buys should be calculated for meter replacement. First, we consider which period to use and then we consider which statistic to use.

Which time series to use

- 4.368 Figure 4.10 shows average annual industry replacement rates for the four years of data available for AMP5, AMP6 and the four years of data available for AMP7 for household and non-household meters.

Figure 4.10: Historical industry average household and non-household meter replacement rates



CMA analysis of data from Ofwat (2024) [Meter renewals cost adjustment model](#).

- 4.369 For households the rate of meter replacement remained broadly stable across the historical period. As the household replacement rate has been fairly stable, the choice of which time period of data to use will have more limited impact on estimates of what base buys for meter replacement than it will for water mains renewals. For non-household meters there is a bigger drop in rates of replacement after AMP5. However, the volumes of non-household properties and meters are much lower than for household meters.⁵⁹⁰
- 4.370 Overall, there is no clear evidence for discounting any of the observations. Consistent with our approach to calculating what base buys for water mains renewals, our final assessment is to use data from the whole modelling period to estimate what base buys for meter replacement.

Which statistic to use

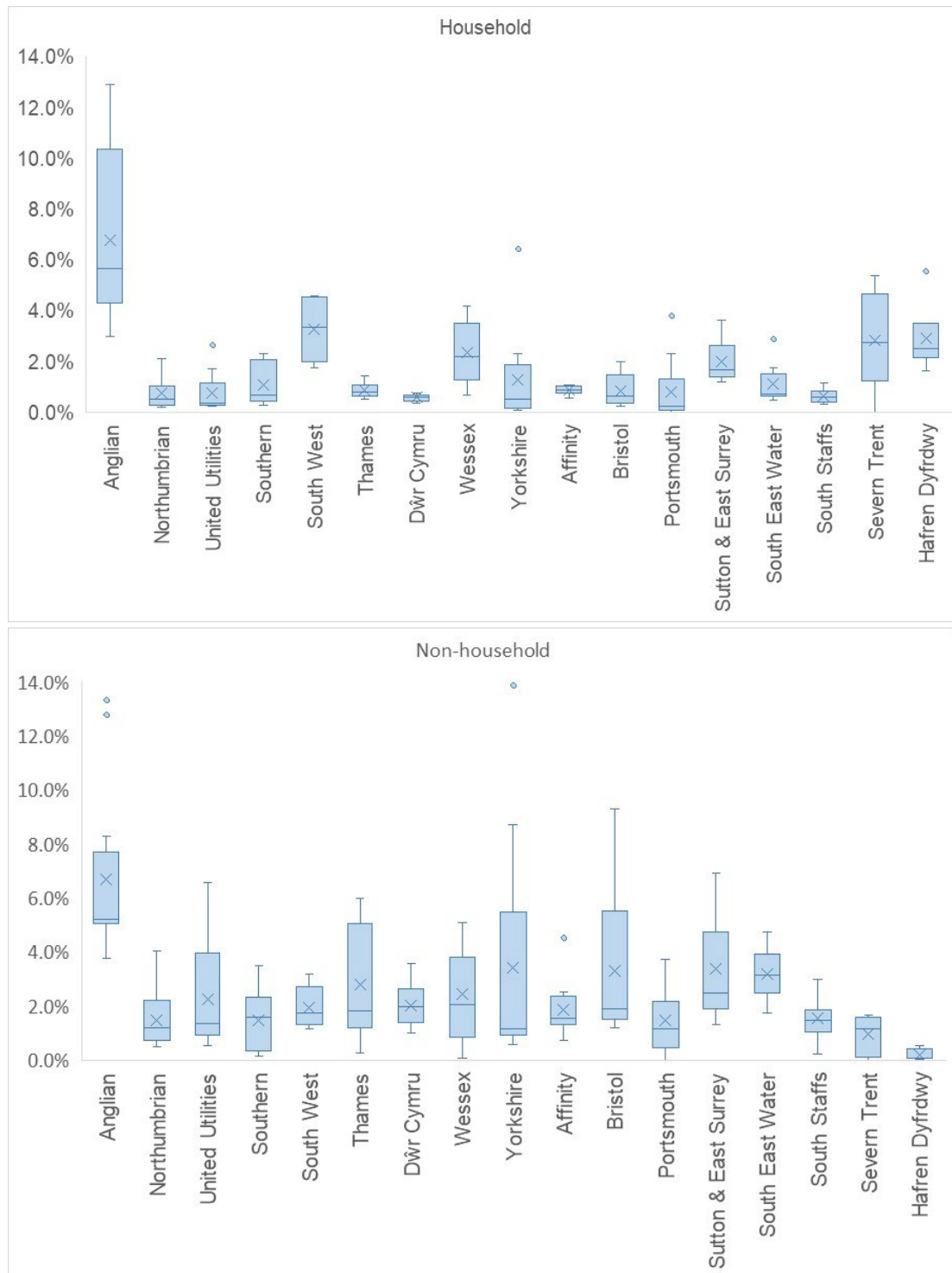
- 4.371 Figure 4.11 shows the distribution of annual household and non-household meter replacement rates for each company.

⁵⁹⁰ Ofwat (2024) [Meter renewals cost adjustment model](#).

- 4.372 As with water mains renewals there is a degree of skewness in the data for meter replacement rates.
- (a) For household replacement rates the mean is 1.7% compared to a median of 1.0%.
 - (b) For non-household replacement rates the mean is 2.5% compared to a median of 1.0%.
- 4.373 There are a small number of very large outliers in the data, all of which are accounted for by Anglian during AMP7: for household rates, four annual observations are in excess of 8% per year and three annual observations for non-household rates are in excess of 8% per year. The higher Anglian rate of replacement is linked to the early roll out of metering and high level of meter penetration in the Anglian area – as its older meters began to need replacing.⁵⁹¹

⁵⁹¹ Anglian said that it reached a 42% meter penetration rate by 2000, with the next highest rate being 23%, and the industry average excluding Anglian at 15%. With an expected asset life of 25–30 years, meters are reaching the end of their life and need replacement. [Anglian SoC](#), paragraph 266.

Figure 4.11: Box plots of annual average household and non-household meter replacement rates 2011/12 to 2023/24



Source: CMA analysis of data from Ofwat (2024) [Meter renewals cost adjustment model](#).

4.374 Overall, we decide that the evidence supports the use of a within-company mean and a between-company median.

- (a) A **within-company mean** - this would give equal weighting to each year of data in calculating the average performance for each company over the period. Whilst most companies record some relatively high and relatively low

level of renewals activity, this is likely to reflect normal investment patterns of some peaks of activity around a lower base level.

- (b) **A between-company median** – given the wide variation in the meter replacement pattern across companies, and, in particular, the outlier that is Anglian, this would avoid giving undue weighting to companies which have outlier levels of meter replacement.

Our final decision

4.375 Based on the analysis set out above, our final decision in relation to estimating what base buys for meter replacement is to use:

- (a) data from the whole base modelling period (2011/12 to 2023/24); and
- (b) a within-company mean and a between-company median.

4.376 We set our estimate the level of water mains renewals funded by base allowances compared to Ofwat's PR24 FD in Table 4.15 below.

Table 4.15: Impact of CMA final decision on estimates of what base buys (in terms of % properties with meter replaced per year)

	<i>Ofwat PR24 FD</i>	<i>CMA final determination</i>
Household	1.6% per year	1.3% per year
Non-household	2.5% per year	2.0% per year

Source: CMA analysis of data from Ofwat (2024) [PR24-FD-CA99-Meter-renewals-cost-adjustment-model.xlsx](#).

4.377 Table 4.16 shows the changes to the meter replacement sector-wide cost adjustment received by the Disputing Companies compared to the Ofwat PR24 FD.

Table 4.16: Changes to sector-wide cost adjustment for meter replacement for Disputing Companies resulting from our final decision on what base buys only

	<i>Ofwat PR24 FD adjustment (corrected for acknowledged error)⁵⁹²</i>	<i>CMA adjustment</i>	<i>Change in adjustment (CMA – Ofwat corrected PR24 FD)</i>	<i>Change as % water and wastewater totex</i>
	<i>£m</i>	<i>£m</i>	<i>£m</i>	
Anglian	108.3	113.8	5.5	0.05%
Northumbrian	18.9	23.8	4.9	0.09%
South East	23.6	26.2	2.6	0.15%
Southern	98.5	101.3	2.8	0.03%
Wessex	8.1	9.6	1.5	0.04%

Source: CMA analysis of data from Ofwat (2024) [PR24-FD-CA99-Meter-renewals-cost-adjustment-model.xlsx](#).

Network reinforcement

- 4.378 Network reinforcement includes the provision or upgrading of network assets to supply new customers with no net deterioration of existing levels of service. Historical network reinforcement expenditure is within the scope of modelled base costs.⁵⁹³
- 4.379 Ofwat made an adjustment above base allowances for additional base costs in areas where the growth of the network was higher than historical averages. It estimated the allowance for reinforcement spend as the forecast amount of network reinforcement spend in the company business plan less an estimate of the reinforcement expenditure that was already implicitly funded in the base models or what base buys.
- 4.380 Although the base cost models already contain scale drivers (eg properties connected, mains length and load), it is likely that the network reinforcement costs incurred by companies in a given period depend on both scale (the number of properties connected) and growth (the increase in the number of properties connected). This happens where the cost of serving a customer is not constant over time - eg there is a large cost upfront to connect the customer, and then a lower annual cost to deliver the service and maintain the asset. If the base cost models omit a growth variable, differences in growth will not be fully accounted for through the base cost models and therefore an increase to allowances above modelled cost is justified. In principle, the base models fund the costs of an efficient company growing at the average industry growth rate.
- 4.381 Ofwat said that, unlike for meter replacement and water mains renewals, it is very difficult to identify an activity level driver of network reinforcement costs. This is

⁵⁹² There was an error in how Ofwat calculated the rates of meter replacement for water companies in its PR24 FD model: Ofwat (2024) [Meter-renewals-cost-adjustment-model](#). This was acknowledged by Ofwat, Ofwat response to Ofwat RFI013, Q3. Ofwat will correct this error through the blind year adjustment process. Across all companies it will reduce the amount of the allowance they receive through this sector-wide cost adjustment by around £120 million.

⁵⁹³ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p56.

because the activity is very complicated and could include, for example, some or all of, laying mains, upgrading a booster pumping station or upgrading a service reservoir depending on the circumstances. Ofwat therefore used a different approach to estimating what base buys for network reinforcement: instead of considering historical volumes of activity as it did for mains and meters, it considered the total amount spent by companies on network reinforcement.⁵⁹⁴ Specifically, Ofwat calculated what base buys as an average of:

- (a) five years of company outturn (2018/19 to 2023/24) spend on network reinforcement adjusted for an efficiency challenge; and
- (b) industry network reinforcement spend over the historical modelling period (2012/13 to 2023/24 as a % of industry base spend* company base allowance for PR24 period.⁵⁹⁵

4.382 We agree with Ofwat that growth in connections is an imperfect activity based cost driver for network reinforcement costs, and that for this activity what base buys is better assessed by reference to historical spend.

4.383 However, unlike Ofwat we do not use a measure of individual company outturn expenditure in our estimates of what base buys for network reinforcement (the method set out in paragraph 4.381(a) above). Under this method if a company has had to fund a higher-than-average growth rate in the past (leading to higher-than-average outturn expenditure) it is assessed as having a higher what base buys, and therefore as needing less additional funding to continue funding this activity in AMP8. This is incorrect: the base models fund the costs of an efficient company growing at the average industry growth rate. In this context, the observation that some companies had to meet a need does not amount to evidence that they were funded to do so. This is particularly true of network reinforcement activities, which for the most part are not discretionary. Therefore, our final view is that we will base our estimates of what base buys only on historical network reinforcement expenditure as a proportion of total base expenditure.

Our final decision

4.384 Our final decision is to estimate what base buys as the industry average historical network reinforcement expenditure as a percentage of base expenditure. Consistent with our approach for water mains renewal and meter replacement we:

- (a) rely on data from the whole base modelling period (2011/12 to 2023/24);

⁵⁹⁴ (Non-Confidential) Transcript of hearing for Ofwat on 10 July 2025, p34, lines 5–9.

⁵⁹⁵ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p60.

- (b) estimate a representative value for each company by using a within-company mean, to give equal weighting to each year of data in calculating the average performance for each company over the period; and
- (c) estimate a representative value for the sector by using a between-company median, to avoid giving undue weighting to companies which are outliers.

4.385 We estimate what base buys for network reinforcement as set out below.

- (a) Step 1 – estimate historical average network reinforcement spend as a proportion of base costs for each company over AMP5, AMP6 and AMP7 (Network reinforcement cost share).
- (b) Step 2 – estimate the median industry network reinforcement costs share.
- (c) Step 3 – multiply the median industry network reinforcement cost share by the modelled base costs for each company.

4.386 In Table 4.17 below, we set out the differences between our estimates of what base buys for network reinforcement and those used by Ofwat at PR24 FD. There are some material changes for some Disputing Companies. This is because, unlike Ofwat, we do not use a measure of company outturn network reinforcement expenditure in our calculations.⁵⁹⁶

Table 4.17: Ofwat PR24 FD and CMA estimates of what base buys for network reinforcement

	<i>Water</i>		<i>Wastewater</i>	
	<i>Ofwat PR24 FD</i>	<i>CMA WBB</i>	<i>Ofwat PR24 FD</i>	<i>CMA WBB</i>
	<i>WBB</i>		<i>WBB</i>	
	<i>£m</i>	<i>£m</i>	<i>£m</i>	<i>£m</i>
Anglian	40.83	16.83	36.26	21.89
Northumbrian	12.37	13.57	8.79	9.48
South East	18.99	7.67	N/A	N/A
Southern	3.84	7.96	37.22	21.52
Wessex	3.61	4.90	13.57	10.79

Source: CMA analysis of data from Ofwat (2024) [Network reinforcement cost adjustment model](#).

4.387 Table 4.18 shows the change to the sector-wide cost adjustments for network reinforcement for Disputing Companies on what base buys compared to Ofwat's PR24 FD resulting from our decision.

⁵⁹⁶ Under the Ofwat methodology companies which had relatively high recent outturn network reinforcement would be assumed to have a higher amount of AMP8 expenditure funded through base costs. However, this is not the case with our methodology. Therefore, for companies such as Anglian which had relatively high recent outturn expenditure the estimate of what base buys under the methodology we apply is lower than in Ofwat's PR24 FD.

Table 4.18: Change in network reinforcement sector-wide cost adjustment for Disputing Companies due to our final decision on what base buys only

	Water				Wastewater			
	Ofwat PR24 FD adjustment	CMA adjustment	Change in adjustment	Change as % water and wastewater totex	Ofwat PR24 FD adjustment	CMA adjustment	Change in adjustment	Change as % water and wastewater totex
	£m	£m	£m		£m	£m	£m	
Anglian	11.7	33.3	21.6	0.21%	43.5	56.5	12.9	0.13%
Northumbrian	0.12	0.00	-0.12	0.00%	0.0	0.0	0.0	0.00%
South East	32.2	41.2	9.1	0.52%				
Southern	21.7	18.0	-3.7	-0.05%	24.1	38.9	14.8	0.19%
Wessex	4.4	3.1	-1.3	-0.03%	15.6	18.3	2.8	0.07%

Source: CMA analysis of data from Ofwat (2024) [Network reinforcement cost adjustment model](#).

Water mains and meter replacement unit costs

4.388 In this section we set out Ofwat's PR24 FD approach and redetermination submissions and the South East and Southern submissions on the unit costs which Ofwat used within its calculation of the sector-wide cost adjustments for:

- (a) water mains renewals; and
- (b) meter replacement.

4.389 We then set out our assessment of these issues and final decision.

Water mains renewals

Ofwat PR24 FD approach and CMA redetermination submissions for water mains renewals unit costs

4.390 Ofwat applied a median industry unit cost of £292 per metre at PR24 DD for all companies except Thames.⁵⁹⁷ It said that 11 water companies supported the proposal to apply the median unit cost across the sector. Most of these companies also provided evidence of unit costs that were either in line with, or below, the PR24 DD unit cost.⁵⁹⁸ Five water companies (Dŵr Cymru, South East, Southern, Thames and Yorkshire) stated that the unit cost was too low.⁵⁹⁹

4.391 In responses to Ofwat's PR24 DD most companies provided their view of an appropriate unit cost, either explicitly stating what they considered this cost to be or incorporating Ofwat's PR24 DD unit cost into their proposed costs.⁶⁰⁰ These

⁵⁹⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p32.

⁵⁹⁸ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p33.

⁵⁹⁹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p33.

⁶⁰⁰ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.224.

costs included a mix of types of works (materials, pipe diameters etc) as well as outturn and forecast costs.⁶⁰¹ Ofwat included all unit costs submitted in business plans and PR24 DD representations in the unit cost calculation at PR24 FD.⁶⁰²

- 4.392 At PR24 FD, Ofwat applied a single median unit cost of £300 per metre for all companies (except Thames) for mains renewals.⁶⁰³ Ofwat said that it considered this appropriate as across a programme of work some works will be more or less complex than others, and subsequently more or less costly.⁶⁰⁴ Benchmarking these costs allowed them to be challenged to avoid customers overpaying, and where companies expected to deliver more complex programmes they should submit compelling evidence of this.⁶⁰⁵
- 4.393 Ofwat said that the unit costs reported by companies included a mix of outturn and forecast costs, but that it expected that forecast unit cost would be broadly in line with the costs faced by companies historically.⁶⁰⁶
- 4.394 Overall, Ofwat said that neither South East nor Southern had provided compelling evidence on why their efficient unit cost of mains renewals was higher than other companies. In addition, Southern's unit cost included the cost to replace its communication pipes at the same time, and it was Southern's decision to do both. However, the unit cost and adjustment was solely for the replacement of the mains pipes.⁶⁰⁷ Ofwat said that mains renewal unit cost should not be inherently different between base and enhancement activities. The costs of replacing 1km of polyethylene pipe should be the same regardless of the driver.⁶⁰⁸
- 4.395 Ofwat said that companies had typically not referred to regional wage pressures as a material driver of mains renewal unit costs. Companies had tended to highlight differences in mains renewal complexity, which may be impacted by factors such as urbanity. This was why Ofwat applied an adjustment to Thames Water's unit cost for mains renewals undertaken in central London.⁶⁰⁹ Ofwat said that if the CMA decided to apply a unit cost regional labour adjustment, it should also explore accounting for other, perhaps more material, factors identified by companies that were included in the base cost models such as density and rurality.⁶¹⁰

⁶⁰¹ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.225.

⁶⁰² Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.225.

⁶⁰³ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.225.

⁶⁰⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.226.

⁶⁰⁵ Ofwat response to Ofwat RFI09, Q2(a).

⁶⁰⁶ Ofwat response to Ofwat RFI09, Q1(b).

⁶⁰⁷ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.227.

⁶⁰⁸ Ofwat response to Ofwat RFI09, Q1(c).

⁶⁰⁹ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 3.

⁶¹⁰ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 3.

- 4.396 Ofwat said that if the CMA considered that a regional wage adjustment was needed, it should be applied consistently to all cost areas. This would ensure a fair and systematic approach to redetermining cost allowances.⁶¹¹
- 4.397 Ofwat said that an alternative approach to making a regional wage adjustment 'would better reflect the true impact of wage levels'. This alternative approach would:
- (a) first normalise the reported company specific unit costs to remove the impact of regional wages; and
 - (b) redetermine the median unit cost and then apply a regional wage adjustment to reflect different company circumstances.⁶¹²

South East and Southern submissions on water mains renewals unit costs

- 4.398 Below we set out South East and Southern submissions on why different unit costs were justified for water mains renewal.

South East

- 4.399 South East said that its proposed unit cost was based on historical outturn costs over a five-year period.⁶¹³ For mains renewals it said that its unit cost of (£[§]/metre) was higher than the median due to regional differences in the south east of England.⁶¹⁴ South East made the following points.
- (a) Wages in the south east of England were systematically higher than the country-wide average, and South East was not immune from local labour market pressures.⁶¹⁵
 - (b) It operated in a region with congested roads which resulted in stringent highways permitting processes, costs and requirements.⁶¹⁶ Maximum charges were currently £2,500 per day for road closures and £1,500 per day for lane closures.⁶¹⁷

⁶¹¹ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 3.

⁶¹² Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 3.

⁶¹³ [South East SoC](#), paragraph 4.27.

⁶¹⁴ [South East SoC](#) (confidential), paragraph 4.29(c).

⁶¹⁵ [South East SoC](#), paragraph 4.27.

⁶¹⁶ South East said that it operated in a region with more lane rental schemes than any other region. There were currently five lane rental schemes nationally, operated by Transport for London, Kent, Surrey, West Sussex and East Sussex County Councils. Four of these operated in South East's area. South East response to South East RFI03, paragraph 4.

⁶¹⁷ South East response to South East RFI03, paragraph 6.

- (c) It operated in a region with a high density of environmentally sensitive areas which required increased mitigation when planning and undertaking work.⁶¹⁸ 44% of South East's supply area had some kind of landscape designation, which was double the national average.⁶¹⁹
- (d) Compensation costs related to use of land, loss of business, etc. were higher in the affluent south east and the public were more inclined to seek higher compensation.⁶²⁰

4.400 South East said that the median unit cost may be biased downwards as companies that were also located in the south of England such as Affinity Water, Portsmouth Water and Sutton and East Surrey Water (**SES**) submitted net costs that were the same as Ofwat's PR24 DD unit cost rather than their 'actual' (higher) costs which would reflect similar regional cost pressures to those identified by South East.⁶²¹

4.401 South East said that its overall approach to procurement and competitive sourcing of works and materials ensured that the costs were efficient.⁶²²

- (a) It had frameworks in place which sourced works through a competitive tender process.⁶²³
- (b) It followed a robust tender process in 2019 with the framework contract awarded in 2020. The contract was awarded based on rates after a commercial comparison between all bidders during the process. The process demonstrated that the selected contractor was the best value for money.⁶²⁴
- (c) The contracts had been drafted to have an initial contract period which enabled South East to have a check point to test the market to ensure that prices remained competitive.⁶²⁵

Southern

4.402 Southern said that Ofwat's assessed median unit cost for a metre of mains renewal was £300, significantly lower than its unit cost of £[8<] for its leakage reduction programme.⁶²⁶

⁶¹⁸ [South East SoC](#), paragraph 4.27.

⁶¹⁹ South East response to South East RFI03, Figure RFI3.1.

⁶²⁰ [South East SoC](#), paragraph 4.27.

⁶²¹ [South East SoC](#), paragraph 4.27.

⁶²² South East response to South East RFI03, paragraph 13.

⁶²³ South East response to South East RFI03, paragraph 13(a).

⁶²⁴ South East response to South East RFI03, paragraph 13(b).

⁶²⁵ South East response to South East RFI03, paragraph 24.

⁶²⁶ [Southern SoC](#) (confidential), footnote 78, p272.

- 4.403 Southern said that the main factor driving higher unit costs was the scope of activity – ie that 300km of its 366km programme was intended to deliver long-term leakage reduction rather than end of life mains renewal. This was not an exogenous regional factor, but instead it was to enable Southern to maximise the leakage reduction benefit of its programme. This added more scope and materials to work undertaken than if it were purely a base asset health mains renewal programme. The programme included replacement of all communication pipes and difficult to access joints – excluding the communication pipe replacement would reduce the unit cost by around 13%.⁶²⁷
- 4.404 Southern said that there were other errors in Ofwat's approach.⁶²⁸
- (a) Ofwat's view of the unit cost was based on partial information.
 - (i) Some companies had several unit costs included in the data used to assess median unit cost (eg Dŵr Cymru had six included in the median which ranged from £370/metre to £600/metre.).⁶²⁹
 - (ii) Some companies included Ofwat's calculated PR24 DD median unit cost as part of the costings presented in their responses to the PR24 DD. This meant the data was not a true reflection of actual mains renewal unit costs.⁶³⁰
 - (b) Ofwat's assessment did not take account of legitimate regional differences that meant that efficient costs varied between companies.
 - (i) Ofwat did not evaluate whether there were any regional variations other than for Thames.⁶³¹
 - (ii) Three companies (Affinity, Portsmouth and Sutton and East Surrey) were in the south east but submitted the Ofwat PR24 DD median unit cost rather than their own unit cost numbers.⁶³²
- 4.405 In addition, Southern said that higher unit costs were driven by regional wage disparities. It said that manufacturing wages reported in the ONS ASHE (Ofwat's benchmark for the water sector) reported that wages in the south east were 9% higher than the national average.⁶³³
- 4.406 Southern said that it set out in detail its approach to cost assessment in its business plan documents.⁶³⁴ Southern said that its unit costs were derived from

⁶²⁷ Southern response to Southern RFI06, Q1; [Southern SoC](#), p278, paragraphs 305–306.

⁶²⁸ [Southern SoC](#), p277, paragraph 299.

⁶²⁹ [Southern SoC](#), p278, paragraph 304.

⁶³⁰ [Southern SoC](#), p277, paragraph 300.

⁶³¹ [Southern SoC](#), p278, paragraph 302.

⁶³² [Southern SoC](#), p278, paragraph 303.

⁶³³ Southern response to Southern RFI06, Q1.

⁶³⁴ Southern response to Southern RFI06, paragraph 1.22.

the outturn costs of mains renewal schemes delivered by its contractors in AMP6 and AMP7.⁶³⁵ Southern said that it submitted evidence of third party assurance on its leakage case, including its unit costs, as part of its PR24 DD representations. This concluded:

SWS have updated their unit cost of mains replacement using a more robust assessment of costs and developing a cost benefit assessment tool to support a leakage driven mains renewal programme.

Whilst SWS still remain an outlier, there is evidence to suggest that unit cost benchmarking by Ofwat could be inconsistent with a leakage driven mains renewal programme. If this is the case then it is not appropriate to categorise SWS unit costs as an outlier.⁶³⁶

Meter replacement

Ofwat PR24 FD approach and CMA redetermination submissions

- 4.407 Ofwat's assessment of an efficient unit cost of meter replacement was based on unit cost evidence provided by the sector in response to a PR24 query. This query asked companies to set out the disaggregated costs of the different components and activities associated with new meter installation and upgrades as part of the enhancement smart metering programme. Ofwat issued this query as it was concerned that unit costs were not reported consistently in company business plans. The query was issued with guidance and a supporting template and was followed up with a further query process to validate oddities or outliers.⁶³⁷ From this query, Ofwat identified the costs associated with meter replacement activity versus the enhancement smart metering technology upgrade. Based on this information, it applied the median unit cost to companies' forecast replacements: £123.94 per meter.⁶³⁸
- 4.408 Similar to mains renewals, for meter replacement Ofwat also found it appropriate to use a single unit cost across a programme of work, as some works would be more or less complex than others, and subsequently more or less costly.⁶³⁹
- 4.409 Ofwat said that South East received an adjustment of £28.89 million to its wholesale water allowance to deliver its forecast meter replacement programme. This compared to the company's requested adjustment of £18.15 million in its

⁶³⁵ Southern response to Southern RFI06, paragraph 1.24.

⁶³⁶ Southern response to Southern RFI06, paragraph 1.25.

⁶³⁷ Ofwat response to Ofwat RFI09, Q3(a) and (b).

⁶³⁸ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.278; Ofwat response to Ofwat RFI09, Q3(d).

⁶³⁹ Ofwat response to Ofwat RFI09, Q3(d).

business plan submission. It was therefore unclear why the company was requesting a higher unit cost of meter replacement.⁶⁴⁰

- 4.410 Ofwat also said that South East had not provided compelling evidence to justify why its costs were higher than other companies.⁶⁴¹

South East CMA redetermination submissions on why a different cost to the median is justified for meter replacement unit costs

- 4.411 South East said that its proposed unit cost for meter replacement (£167) was efficient, and a number of its meter replacements would cost significantly more than this unit cost. Ofwat's unit cost assessment was based on an infeasibly wide range of proposed unit costs (from £50.96 to £261.91), which suggested unit costs were being reported inconsistently. It said that unit costs from Hafren Dyfrdwy Cyfyngedig (**HDD**) (at £50.96 per meter) should have been excluded from the benchmark as an outlier.⁶⁴²
- 4.412 South East said that the only factor which drove a higher unit cost in its region was higher labour costs. It said that there was no reason why the other major element of meter installation (the cost of the physical meter itself) should vary across regions.⁶⁴³
- 4.413 South East said that its submitted costs were based on the average blended cost of 'easy' and 'difficult' meter replacements (19.4% were difficult). The costs for 'difficult' replacements were based on actual costs from its competitively tendered Network Maintenance Framework.⁶⁴⁴

Our assessment of unit costs for mains renewal and meter replacement

- 4.414 In this section we assess the following issues.

- (a) What is an appropriate benchmark?
- (b) Is the unit cost data used by Ofwat sufficiently reliable for benchmarking?
- (c) Have Southern and South East submitted compelling evidence that a different cost from the median is justified?

⁶⁴⁰ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.279.

⁶⁴¹ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.280.

⁶⁴² [South East SoC](#), paragraph 4.27.

⁶⁴³ South East response to South East RFI03, paragraph 23.

⁶⁴⁴ South East response to South East RFI03, paragraph 20.

What is an appropriate benchmark?

- 4.415 South East and Southern have asked to use their own submitted unit costs and therefore not benchmark these costs against those of other companies within the industry. However, benchmarking of costs is an important part of the cost assessment process, helping to mitigate the asymmetry of information that exists between regulators and the companies, and therefore helping to avoid customers overpaying where company costs are inefficient. Our view is therefore that it is appropriate to benchmark Southern and South East's unit costs against those of other companies.
- 4.416 Ofwat uses the median unit cost of mains renewals (excluding Thames) and meter replacement (all companies) as its benchmark before considering whether companies have provided compelling evidence of specific circumstances that justify a deviation from this. The unit costs should be reflective of the costs incurred by an efficient company which may be an argument for using a relatively stretching benchmark such as the upper quartile. However, there is substantial variation in the reported water mains renewals and meter replacement unit costs which might suggest that company-specific factors or inconsistent reporting are driving some of this variation rather than the relative efficiency of the companies. As benchmarking is primarily intended to promote cost efficiency our view is therefore, that the median unit cost (rather than something more stretching) is an appropriate benchmark for these sector-wide cost adjustments, except where companies provide compelling evidence for a specific adjustment away from the median (which we discuss below). The use of the median will mitigate the impacts of any outliers on the benchmark whilst ensuring these costs are benchmarked against the costs of other companies to help ensure cost efficiency and protect customers from overpaying.

Is the unit cost data used by Ofwat sufficiently reliable for benchmarking?

- 4.417 Southern and South East said that Ofwat's unit cost data was not sufficiently reliable as there was a wide variation in the reported costs. They said that this was due to a variation in the scope of work undertaken by companies and differences in how the costs were reported. Our view is that the reported unit costs are sufficiently reliable for benchmarking costs.
- (a) For water mains renewals – companies will undertake different complexities of work which will drive some differences in unit costs and this data was not collected on a systematic basis (such as through a query process as with meter replacement unit costs). However, the sector-wide costs allowances are set at a programme level, and this is the level at which almost all companies submitted unit cost information in their business plans and PR24 DD representations as an indication of their expected unit costs for AMP8. In

addition, use of the median mitigates the impact of extreme high and low outliers.

- (b) For meter replacement – our view is that the unit costs used were systematically collected by Ofwat through its query process to minimise reporting differences. Furthermore, the scope of work was relatively specific (upgrade of household and non-household meters from dumb to smart). In addition, the use of the median again mitigates the impact of high and low outliers.

4.418 Disputing Companies also said that some companies had submitted the Ofwat PR24 DD unit costs rather than their actual (higher) costs, which meant that median unit costs were biased downwards. However, our view is that companies had the opportunity to submit their expected unit costs if they thought that they were substantially higher than the Ofwat PR24 DD. In addition, they would have the incentive to do so as, given the relatively small number of water companies, only a small number of additional companies submitting higher than the PR24 DD rate could have an impact the estimate of the median.

4.419 Our view is that the unit cost data used by Ofwat is sufficiently reliable for benchmarking of these costs across the industry.

Is a specific adjustment to the median justified?

4.420 In this section we set out our assessment of whether the Disputing Companies have provided compelling evidence that a different cost to the median is justified in their cases. We first look at regional wage differences and then consider other factors.

Regional wage differences

4.421 A regional wage variable was selected for inclusion in the water base modelling, which includes mains renewals and meter replacement costs (see paragraphs 4.76 to 4.77 and Table 4.5). As a result of this modelled base cost allowances reflect forecast regional labour costs. This suggests that wages levels, including regional wage differences, are an important driver of these costs and not entirely accounted for by other cost drivers.

4.422 These sector-wide cost adjustments for mains renewals and meter replacements are allowances that are in excess of modelled base costs. Therefore, any adjustment for regional wage differences in our base modelling would not be reflected in these additional allowances.

4.423 Both South East and Southern provided evidence that labour costs account for a substantial proportion of meter replacement and mains renewal costs.⁶⁴⁵ In addition, Ofwat assumed that labour costs accounted for between 33.5% and 36.4% of water base costs.⁶⁴⁶

4.424 As our base cost modelling shows that wage levels are important drivers of base costs and constitute a substantial proportion of the costs of these activities, our view is that it is also appropriate to make an adjustment to these unit costs to account for regional wage differences. Our view is also that it is appropriate to adjust allowances for all of the Disputing Companies. Granting increased allowances solely to the Disputing Companies who have disputed the benchmarked costs as being too low would risk over-compensating other companies who have wages below the sector average.

4.425 We decide to make the adjustment as follows.

$(1 + [\text{the percentage difference in regional wage levels to the industry average} \times \text{labour share of costs}]) \times \text{unit costs}$

4.426 For example, if median unit cost was £300 but the regional wage level in a company's region was £20 per hour compared to the average for all water companies of £15 then the adjustment would be calculated as follows.

(a) Calculate % difference in regional wages to average: $((£20 - £15) \div £15) = 33\%$.

(b) Multiply (a) by the labour share of costs: $33.5\% \times 33\% = 11.2\%$.

(c) Multiply 1 plus (b) by the median unit cost = $1.12 \times £300 = £333.50$.

4.427 We accept that there are valid alternative ways to make a regional wage adjustment to unit costs, of which the method suggested by Ofwat (paragraph 4.397) is one. Our view is the approach we have taken is a valid one.

Other factors

South East

4.428 South East submitted evidence of regional factors that it said would result in it incurring a higher unit cost for water mains renewals. However, our view is that the evidence submitted does not clearly show that these factors will result in an increase in South East's average unit cost above the benchmark.

⁶⁴⁵ Southern response to Southern RFI06, Q2; [South East SoC](#), paragraph 4.27; South East response to South East RFI03, Q2 and Q4.

⁶⁴⁶ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), Table 33.

- (a) South East said that there were more lane rental schemes operating in its region than any other region. However, allowances were made for Traffic Management Act and lane rental costs in the PR24 FD.⁶⁴⁷ South East would have had the opportunity to request additional allowances for these costs through its PR24 DD representations if it considered there were additional costs arising from the water mains renewals sector-wide cost adjustment.
- (b) South East said that it operated in a region with a high density of categorised environmentally sensitive areas.⁶⁴⁸ However it also said that ‘This results in avoidance of these areas, where possible’.⁶⁴⁹ These areas are also likely to be less populated areas with a correspondingly lower concentration of water mains. However, South East did not provide sufficient evidence of the extent to which South East will be undertaking water mains renewal activity in these areas or the additional costs associated with this.
- (c) South East said that compensation costs related to use of land, loss of business, etc. were higher in the south east.⁶⁵⁰ However, it only provided evidence for compensation costs relating to three schemes.⁶⁵¹ South East did not provide sufficient evidence of the extent to which compensation costs will be required as part of South East’s mains renewal programme.

Southern

- 4.429 For water mains renewal, Southern said that the difference between its unit cost and the benchmark was driven mainly by the focus of its mains renewals programme on leakage reduction rather than end of life mains renewal.⁶⁵²
- 4.430 Ofwat said that estimates of unit costs for base expenditure (which mainly related to end of life replacement) should not cover communication pipe replacement (which was aimed at leakage reduction), and that it was the company’s choice to undertake this additional work.⁶⁵³
- 4.431 Our view is that, given the water mains renewals sector-wide cost adjustment relates only to base expenditure, it would not be appropriate to allow Southern additional costs through base expenditure due to actions it is taking aimed at improving its leakage performance. To the extent that its leakage reduction activities constitute enhancements, these should be considered in Ofwat’s PR24 enhancement claims process.

⁶⁴⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p71.

⁶⁴⁸ [South East SoC](#), paragraph 4.27.

⁶⁴⁹ South East response to South East RFI03, paragraph 8.

⁶⁵⁰ [South East SoC](#), paragraph 4.27.

⁶⁵¹ South East response to South East RFI03, paragraph 11.

⁶⁵² Southern response to Southern RFI06, Q1; [Southern SoC](#), p278, paragraphs 305–306.

⁶⁵³ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.227.

Other issues

- 4.432 We did, as Ofwat suggested (see paragraph 4.396), assess whether other cost drivers in the base costs model might impact unit costs. For example, we investigated density, which had been mentioned as a potential driver of higher mains renewal unit costs. However, we decided not to make an adjustment to unit costs to account for density differences for the following reasons.
- (a) The relationship between density and the unit cost of mains renewal is relatively complex, with both relatively low and relative high density levels potentially driving higher costs for differing reasons. This is different from labour costs where it can be expected broadly that lower wages lead to lower unit costs and vice versa.
 - (b) There is robust data available on the key factors that influence regional wage differences, such as wages levels and estimated labour shares of base costs. This makes calculating an appropriate scale of adjustment for regional labour cost differences relatively straightforward. This is not the case for density.
 - (c) As Ofwat has acknowledged (see paragraph 4.395), it had already taken density into account in its mains renewal unit costs at PR24 FD where Thames Water – as the mains industry outlier on density – was awarded higher mains renewal unit costs.
 - (d) None of the Disputing Companies specifically raised density as an important driver of higher unit costs as part of the redetermination.
- 4.433 Ofwat view was that, if we applied a regional wage adjustments to mains renewals and meter replacement unit costs, such adjustments should be applied consistently to all cost areas (see paragraph 4.396). In principle there could be a case for applying regional wage adjustments more widely (eg for enhancement costs where cost benchmarking is part of the cost assessment). However, for the most part, we have decided not to do so given Disputing Companies did not make specific claims regarding the impact of regional wages on Enhancement costs. Consistent with our approach to prioritisation, we have only applied regional wage adjustments to enhancement costs areas where: we have assessed costs for other reasons (eg where a claim was made by Disputing Companies); and as part of that assessment we found evidence that regional wages have substantial impact on costs (eg wages a significant variable in the models used) and it was practical to do so.
- 4.434 Our final decision is to apply a regional wage adjustment to the unit costs used for the mains renewals and meter replacements sector-wide cost adjustments. We make this adjustment as set out in paragraphs 4.425 and 4.426. We make no

other changes to the approach to determining unit costs used by Ofwat in its PR24 FD.

4.435 In Table 4.19 and Table 4.20 we set out the unit costs that we have used for the water mains renewals and meter replacement sector-wide cost adjustments.

Table 4.19: Water mains renewals unit costs for Disputing Companies including regional wage adjustments

	Average wages 20219/20 to 2023/24 (from base modelling) £	Percentage difference to median (step 1) ⁶⁵⁴	Adjustment as % of unit costs (step 2)	Adjusted unit costs (step 3) £
Anglian	16.97	2.04%	0.68%	302.05
Northumbrian	16.59	-0.25%	-0.08%	299.75
South East	18.51	11.29%	3.78%	311.35
Southern	18.51	11.29%	3.78%	311.35
Wessex	16.28	-2.12%	-0.71%	297.87

Source: CMA analysis of data from Ofwat (2024) [PR24-FD-CA95-Mains-renewal-cost-adjustment-model.xlsx](#) and ASHE wages data.

Table 4.20: Meter replacement unit costs for Disputing Companies including regional wage adjustments

	Average wages 20219/20 to 2023/24 (from base modelling) £	Percentage difference to median (step 1)	Adjustment as % unit costs (step 2)	Adjusted unit costs (step 3) £
Anglian	16.97	1.93%	0.65%	124.74
Northumbrian	16.59	-0.35%	-0.12%	123.79
South East	18.51	11.18%	3.75%	128.58
Southern	18.51	11.18%	3.75%	128.58
Wessex	16.28	-2.22%	-0.74%	123.02

Source: CMA analysis of data from Ofwat (2024) [PR24-FD-CA95-Mains-renewal-cost-adjustment-model.xlsx](#) and ASHE wages data.

4.436 In Table 4.21 we set out the resulting changes to the water mains renewals and meter replacement sector-wide costs adjustments for Disputing Companies after applying regional wage adjustments only.

⁶⁵⁴ For water mains Thames Water is excluded for the calculation of the median as it is not used in the unit cost benchmarking.

Table 4.21: Change to Ofwat PR24 FD water mains renewals and meter replacement sector-wide costs adjustments for Disputing Companies after applying regional wage adjustments only

	Water mains renewals				Meter replacement			
	Ofwat PR24 FD adjustment	CMA adjustment	Change in adjustment	Change as % water and wastewater totex	Ofwat PR24 FD adjustment (corrected for error) ⁶⁵⁵	CMA adjustment	Change in adjustment	Change as % water and wastewater totex
	£m	£m	£m		£m	£m	£m	
Anglian	144.4	145.4	1.0	0.01%	108.3	109.0	0.7	0.01%
Northumbrian	51.3	51.3	0.0	0.00%	18.9	18.9	0.0	0.00%
South East	29.5	30.6	1.1	0.06%	23.6	24.5	0.9	0.05%
Southern	6.1	6.4	0.2	0.00%	98.5	102.2	3.7	0.05%
Wessex	23.3	23.1	-0.2	0.00%	8.1	8.0	-0.1	0.00%

Source: CMA analysis of data from Ofwat (2024) [PR24-FD-CA95-Mains-renewal-cost-adjustment-model.xlsx](#) and ASHE wages data.

Under-delivery adjustments

4.437 In this section we assess the application of under-delivery adjustments to sector-wide cost adjustments:

- (a) first, we set out Ofwat's PR24 FD approach;
- (b) second, we summarise the Disputing Companies' and Ofwat's submissions;
- (c) third, we set out our assessment; and
- (d) finally, we present our final decision.

Ofwat PR24 FD approach

4.438 When calculating the uplift for each sector-wide adjustment Ofwat netted off an amount for companies who were estimated to have under-delivered over the PR19 period. Ofwat said that water companies have a duty to maintain an efficient and economical system of water supply. Therefore, it said that it was important to consider what companies had delivered in the past and ensure that customers were not paying twice for historical under-delivery.⁶⁵⁶

4.439 The adjustments to hold companies to account were made in the circumstances set out below.

⁶⁵⁵ There was an error in how Ofwat calculated the rates of meter replacement for water companies. This was acknowledged by Ofwat, see Ofwat response to Ofwat RFI013, Q3.

⁶⁵⁶ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.211.

- (a) For meter replacement – where the number of meters a company replaced during PR19 was below the number it forecast in its PR19 business plan.⁶⁵⁷
- (b) For network reinforcement – where company expenditure on network reinforcement during PR19 was below Ofwat’s estimate of the amount funded in the PR19 base models.⁶⁵⁸
- (c) For water mains renewal – where: i) there was evidence that the company’s water mains asset condition had deteriorated between PR09 and PR24; and ii) the rate of mains renewals achieved during PR19 was lower than the sector average.⁶⁵⁹

Summary of submissions

Disputing Companies’ submissions

- 4.440 All of the Disputing Companies objected in principle to Ofwat’s approach to under-delivery adjustments. They said that it imposed new retroactive requirements on water companies that were not made explicit at PR19. This was inconsistent with the approach taken to setting base allowances at PR19 – where Ofwat set a single base totex allowance alongside some high-level PCLs for service levels.⁶⁶⁰
- 4.441 The Disputing Companies also said that any assessment of under-delivery needed to be made ‘in the round’ at the level of all base expenditure rather than focusing on specific activities.⁶⁶¹
- 4.442 Disputing Companies also said that Ofwat’s adjustments were ‘particularly unjustified’ given companies had overspent base expenditure allowances (and therefore had not obviously saved on allowances through underspending).⁶⁶² The Disputing Companies said that they had overspent base allowances, so the money had been spent somewhere. They added that Ofwat did not have the workload and expenditure data to know where it went and which other asset classes benefited from the spending.⁶⁶³
- 4.443 Disputing Companies said that companies put forecasts of activity in business plans, but the base cost models did not take direct account of that.⁶⁶⁴ Companies

⁶⁵⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p41.

⁶⁵⁸ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp61–62.

⁶⁵⁹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p35.

⁶⁶⁰ [Southern SoC](#), p270, paragraph 270; [Northumbrian SoC](#), paragraphs 441–442; [South East SoC](#), paragraph 4.26; [Anglian SoC](#), paragraph 51; [Wessex SoC](#), supporting document WSX-C04 – Retrospective nature of draft determination, p2.

⁶⁶¹ [Anglian SoC](#), paragraph 51; [Wessex SoC](#), supporting document WSX-C04 – Retrospective nature of draft determination, p2; [Southern SoC](#), p271 paragraph 275.

⁶⁶² [Northumbrian SoC](#), paragraph 448.

⁶⁶³ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p76 lines 18–23.

⁶⁶⁴ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p70, lines 14–16.

were held to account to deliver for customers and the environment through the outcomes framework.⁶⁶⁵

Ofwat

- 4.444 Ofwat said that it did not need to ringfence allowances for specific activities to make such adjustments. Under the price review framework, companies had flexibility in how they delivered outcomes, but with the clear expectation that base allowances would be used to maintain asset health and support growth in line with their duties. Final allowances were only 4% below requested costs at PR19 and 1% below requested costs at PR14.⁶⁶⁶
- 4.445 Ofwat said that, despite this, some companies did not deliver the outputs proposed in their business plans.⁶⁶⁷ Where the companies had not, and without sufficient justification, it was right to question whether customers received value for money from the funding provided. Customers should not pay twice for outputs that were funded at previous price reviews.⁶⁶⁸
- 4.446 Ofwat said that it did not expect companies to defer essential capital maintenance or network reinforcements due to unexpected cost pressures, as had happened in AMP7. Doing so risked long-term asset health and again, raised the risk of customers paying twice.⁶⁶⁹ The price control included many uncertainty mechanisms, including cost pass-through to allow companies to mitigate this risk.⁶⁷⁰ This meant any peaks and troughs in expenditure due to wider economic conditions were mitigated by risk sharing mechanisms and should not lead to companies reducing maintenance activity in some areas to prioritise others.⁶⁷¹
- 4.447 Ofwat said that it did not feel the need to introduce PCDs or similar measures at PR19 as there were measures in the regulatory framework to hold companies to account for delivering good outcomes for customers and the environment. But over AMP7 companies had not delivered forecast activity levels.⁶⁷²
- 4.448 In response to our provisional determination, Ofwat said that the CMA should reconsider the sufficiency of the evidence provided by companies to justify under-delivery of outputs, and whether if they were removed we would be satisfied that this provided confidence that customers would not be paying twice during the PR24 period.⁶⁷³ The under-delivery adjustments applied were:

⁶⁶⁵ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p67, lines 13–15.

⁶⁶⁶ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p65, lines 4–11.

⁶⁶⁷ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p65, lines 11–12.

⁶⁶⁸ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p78.

⁶⁶⁹ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p65 lines 15–16.

⁶⁷⁰ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p65 lines 16–17.

⁶⁷¹ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.35.

⁶⁷² (Non-confidential) transcript of the hearing for Base on 24 June 2025, p65 line 25.

⁶⁷³ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.41.

- (a) based on companies' own PR19 business plan submissions, which clearly set out their intended outputs for customers and the environment over the next five years;⁶⁷⁴ and
- (b) targeted at activities where companies had signalled a need for increased delivery during the 2025-30 period; and an example of prospective regulation, not retrospective adjustments.⁶⁷⁵

Our assessment

4.449 The Disputing Companies' requests involve an important principle: whether it is appropriate for Ofwat to reduce the PR24 allowances to reflect any 'under-delivery' in AMP7, if the PR19 settlement did not specify what needed to be delivered. In this section we present an assessment of the appropriateness of under-delivery adjustments.

4.450 In this section we:

- (a) briefly describe the approach taken by Ofwat to set cost allowances and outcome incentives at PR19;
- (b) assess the economic considerations for making under-delivery adjustments; and
- (c) assess how under-delivery can be identified.

Ofwat approach at PR19

4.451 Ofwat's PR19 approach was to set an overall totex allowance for water and wastewater and to set outcome targets based on the needs of customers and the environment.⁶⁷⁶ Under this approach Ofwat specified certain outcomes that the companies were required to achieve (eg in terms of customer service or environmental aspects), but did not mandate any specific means of achieving these outcomes (eg in terms of volumes of asset replacement). This is an approach known as 'outcome-based regulation'. Outcome-based regulation was first introduced at PR14 and was continued at PR19.⁶⁷⁷ At PR19, Ofwat said that:

Alongside the introduction of the total expenditure (totex) approach to cost assessment, the outcomes approach has sharpened companies' focus on delivering what matters to customers and

⁶⁷⁴ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.37.

⁶⁷⁵ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.38.

⁶⁷⁶ Ofwat (2017) [Final methodology for PR19](#), sections 1.2, 1.8.

⁶⁷⁷ Ofwat (2013) [Setting price controls for 2015-20 – final methodology and expectations for companies' business plans](#), section 5.2; Ofwat (2019) [PR19 Final determinations Delivering outcomes for customers policy appendix](#), p3.

society, while giving them greater flexibility in how they deliver them.⁶⁷⁸

- 4.452 Ofwat also considered that its approach would lead to efficiency improvements, saying that ‘one-off efficiency improvements from water companies making greater use of the totex and outcomes framework at PR19’ were a factor in setting frontier shift efficiency targets at PR19.⁶⁷⁹ The CMA agreed that there was potential for additional productivity growth resulting from implementation of the totex and outcomes framework during PR19.⁶⁸⁰
- 4.453 Base totex allowances at PR19 were largely set by using econometric models of historical base expenditure to model efficient expenditure over the PR19 period.⁶⁸¹ Consistent with the outcomes framework these ‘top-down’ models estimated costs at an aggregated level – there were separate cost models for water resources; water wholesale; wastewater wholesale; bioresources and retail.⁶⁸² This was not supplemented by any ‘bottom-up’ analysis of efficient levels of expenditure required to carry out forecast levels of specified activities (such as meter replacement, network reinforcement, or mains renewal) set out in companies’ business plans.
- 4.454 The PR19 outcomes framework set PCLs covering ‘customer key priorities’ along with outcome delivery incentives related to performance against these targets.⁶⁸³ There were no explicit targets or allowances for individual categories of base expenditure, or for volumes of activity such as mains renewal.

Economic considerations related to under-delivery adjustments

- 4.455 As we discuss in paragraphs 4.342 to 4.345 outcome-based regulation directly incentivises outcomes but does not necessarily guarantee that companies maintain the productive capability of their assets. The incentives inherent within this approach can leave scope for companies to ‘game’ the settlement by either deferring expenditure or employing sub-optimal short-term solutions within a price control period, without incurring any penalties for bad outcomes.
- 4.456 Where companies have gamed the settlement in our view there are two plausible arguments for applying under-delivery adjustments: a ‘fairness argument’, which is to ensure that customers do not pay twice; and an ‘efficiency argument’, which is

⁶⁷⁸ Ofwat (2019) [PR19 Final determinations Delivering outcomes for customers policy appendix](#), p3.

⁶⁷⁹ Ofwat (2019) [PR19 Final Determinations Securing cost efficiency technical appendix](#), pp13–14.

⁶⁸⁰ [PR19 Final Report](#), paragraph 4.564.

⁶⁸¹ Ofwat (2019) [PR19 Final Determinations Securing cost efficiency technical appendix](#), pp13–14.

⁶⁸² Ofwat (2017) [Final methodology for PR19](#), Section 1.8.

⁶⁸³ These included performance commitments for water supply interruptions, internal sewer flooding, pollution incidents leakage, per capita consumption, water quality compliance, mains repairs, unplanned outage, sewer collapses, sewer blockages, external sewer flooding, low pressure, water quality customer contacts, risk of severe restrictions in a drought, risk of sewer flooding in a storm and customer experience.

to maintain incentives for companies to make efficient long-term-decisions, in the interests of customers and the environment, in an outcome-based regime.

- 4.457 Before making adjustments based on these arguments, it is first necessary to establish if there is evidence of gaming. It can be very difficult in practice to establish whether a company has indeed gamed the settlement, or whether it has used the flexibility afforded to it by the outcome-based regime for legitimate purposes. We consider this issue in the context of AMP7 below (paragraphs 4.461 to 4.471), but the general point here is that, in the presence of this uncertainty, the application of under-delivery adjustments – and the threat of such adjustments in future reviews – may have some unintended consequences.
- 4.458 The effectiveness of the regulatory regime depends in large part on the regulator's ability and willingness to commit itself to its decisions. If companies suspect that the regulator might claw back any genuine savings they make, they may refrain from making these savings in the first place, and this will result in higher customer bills in the long-term. It could also undermine the willingness of investors to finance the industry if there is a risk of returns being clawed back in an unanticipated way. Therefore, regulators should tread carefully when making retrospective adjustments.
- 4.459 Whilst there are fairness and efficiency arguments for making under-delivery adjustments where companies have gamed the settlement, unjustified adjustments could undermine incentives to make savings, leading to higher bills. Therefore, in our view, these adjustments should be reserved for cases where gaming can be established based on convincing evidence that companies' capital maintenance decisions have not been consistent with what can be expected of a prudent operator.
- 4.460 We note that as part of the PR24 FD Ofwat have made a more direct link between been funding and levels of activity for some aspects of base expenditure, ensuring that customers receive some protection for under-delivery against these levels through the application of a PCD.⁶⁸⁴

Identifying under-delivery

- 4.461 In this section we discuss whether it is possible to identify 'under-delivery' by water companies in these areas of base expenditure in the context of AMP7, and the evidence we have collected on this issue.
- 4.462 Identifying under-delivery is not a simple task. As we discuss in paragraphs 4.451 and following, the PR19 settlement did not include specific activity targets, instead

⁶⁸⁴ Ofwat applied some other base PCDs to specific companies but none of these apply to the Disputing Companies. Ofwat (2025) [PR24 final determinations: Price control deliverables appendix](#) (Ofwat PR24 FD Price Control Deliverables Appendix), pp164–166, section 3.

there was the explicit intention of allowing companies flexibility to adjust their investment plans to best achieve the specified outcomes. Thus, in principle, deciding whether companies have under-delivered would involve considering their investment decisions after the end of the period in question, and deciding whether these decisions were consistent with principles of good management given the information available at the time they were made. Companies may have over-delivered in some other asset categories and/or legitimately prioritised other investment in response to new information.

- 4.463 To understand whether a company has under-delivered requires consideration of activity levels across its asset base ‘in the round’ and the reasons behind the investment decisions they have taken, including whether they were a response to new information. However, it has not been possible to fully understand delivery in the round, as activity data is only available for a subset of assets (see paragraph 4.183(b)). Even if the data were available, it would require complex judgements about how trade-offs between investment in asset categories were made to understand whether the investment was prudent.
- 4.464 We discuss the evidence on both company investments decisions and overall expenditure performance below.

Examples of trade-offs made in company investment decisions

- 4.465 Companies provided us with a limited number of examples of how they had reprioritised investment during AMP7 in response to changing circumstances.
- (a) With respect to main renewals, which only concerns Southern, it is clear that the rate of main renewals delivered by Southern during AMP7 is substantially below that needed to maintain suitable outcomes for customers over the long term and there is already evidence of deterioration in the form of burst rates.⁶⁸⁵ However, Southern said that much of its base spend was directed at the substantial investment required to address compliance with water quality regulation. Southern said that this was due to deterioration in the raw water quality, requiring a step change in treatment. This makes it difficult to draw clear conclusions from this data.⁶⁸⁶
- (b) With respect to meter replacements, which concerns four of the five Disputing Companies, Wessex said that there were reasons for the reduction in activity. First, due to COVID 19, all proactive meter replacements were paused. Second, in the last couple of years, smart metering was being

⁶⁸⁵ Southern’s average mains renewal rate over AMP7 so far is 0.03% implying an average asset life of over 300 years. CMA analysis of data from Ofwat (2024) [Mains renewal cost adjustment model](#).

⁶⁸⁶ [Southern SoC](#), pp231–232, paragraph 68.

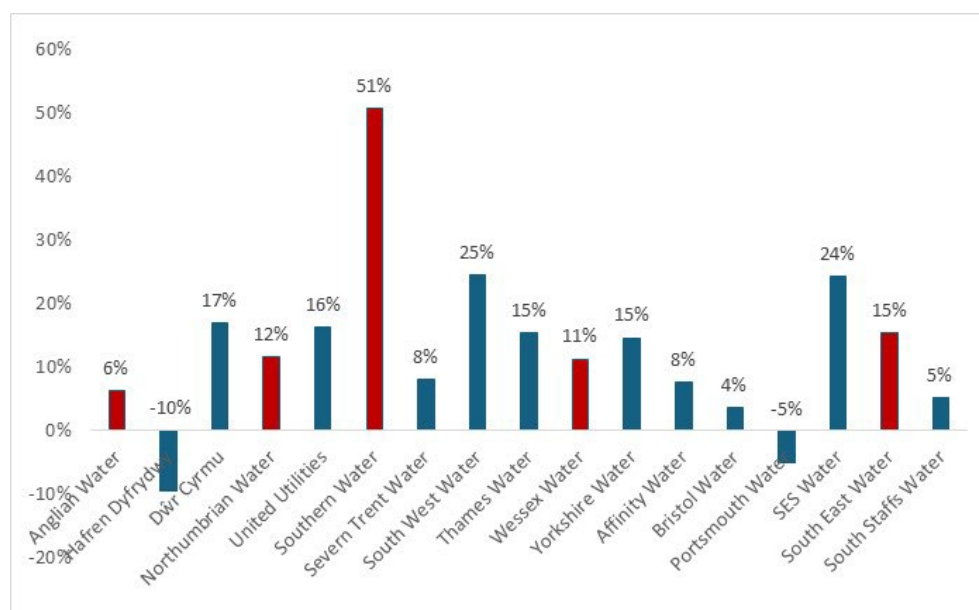
implemented, so replacing one ‘dumb’ meter with another before that would not be efficient.⁶⁸⁷

- (c) More generally South East said that COVID 19 and extreme weather events led to a substantial change in what investment was prioritised for customer needs. One example was a sinkhole appearing underneath a service reservoir in Kent, putting supply to a large area at risk. This led to reprioritisation of investment across its capital programme.⁶⁸⁸

Overall expenditure performance

4.466 All of the Disputing Companies, and nearly all of the other water companies, overspent their PR19 allowances for base costs in AMP7 (see Figure 4.12 below). In and of itself, this does not rule out the hypothesis of gaming: companies are compensated for bearing economic risk by earning a return on capital, and the regulatory settlement would not be coherent, or consistent with regulatory duties, if companies were allowed to offset the effect of adverse conditions by simply reducing capital maintenance activities to an unreasonable level. Nevertheless, there was substantial overspend across most companies and the industry as a whole during AMP7 and, while this may have been driven to an extent by unforeseen events, overall this does not clearly support a conclusion that companies have under-delivered.

Figure 4.12: Cumulative % difference between real base expenditure before cost sharing and allowances 2020-2024 (Disputing Companies in red)⁶⁸⁹



⁶⁸⁷ (Non-confidential) transcript of the hearing for Base on 24 June 2025p71, line 23 to p72, line 11.

⁶⁸⁸ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p72, line 21 to p73, line 4.

⁶⁸⁹ Note that companies will only bear 50% of this overspend due to the cost sharing mechanism: 50% is passed through to customers.

4.467 Based on the evidence set out above, our assessment is as follows.

- (a) As set out in paragraph 4.451 above, in its PR19 FD Ofwat did not set out any specific targets for levels of expenditure or maintenance activities other than high-level top-down totex allowances and outcomes targets. This was done with the explicit intention of allowing water companies greater delivery flexibility in the way in which they focus on delivering what matters to customers and society.
- (b) There are still plausible arguments for applying under-delivery adjustments in cases where companies have gamed the regulatory settlement even where allowances have not been explicitly ringfenced.
- (c) However, in the absence of explicit targets or 'bottom-up' funding allowances given in contemplation of specific named schemes or linked to levels of activity (ie where there is a clear link between funding and schemes or levels of activity), the assessment of whether a company has engaged in gaming is not straightforward. Given there were no specific base funding activity targets in the PR19 settlement, it is not possible to demonstrate definitively under-delivery by comparing company activity data for specific asset categories relative to business plan forecasts and/or the rest of the industry. It is therefore difficult to come to a definitive conclusion on under-delivery. It is possible that some of the observed low levels of mains renewals and meter replacements were the result of companies legitimately reprioritising other investment.
- (d) Making retrospective adjustments without convincing evidence of gaming could undermine incentives for water companies to make savings – resulting in higher bills for customers – or undermine the willingness of investors to finance the industry if they think returns can be clawed back in an unanticipated way. Therefore, the regulator should tread carefully when making retrospective adjustments.
- (e) There was substantial overspend across many companies and the industry as a whole during AMP7 and, whilst this may have been driven to a substantial extent by unforeseen events, overall this does not clearly support a conclusion that companies have under-delivered.

4.468 While there may be a case for making under-delivery adjustments in certain circumstances, our view is that this will only be appropriate if supported by clear evidence of under-delivery. In this case there is not clear evidence in relation to base expenditure on these matters to support making under-delivery adjustments, whereas there is clear evidence on the intentional flexibility in the design of

Ofwat's PR19 framework and on the companies' overall levels of expenditure in AMP7.

- 4.469 We note that as part of the PR24 FD Ofwat has made a more direct link between been funding and levels of activity for some aspects of base expenditure (see paragraph 6.39 in Chapter 6 – Outcomes) ensuring that customers receive some protection for under-delivery against these levels through application of a PCD.

Our final decision

- 4.470 We decide not to apply under-delivery adjustments to sector-wide CACs as part of these redeterminations.
- 4.471 In Table 4.22 we set out the changes to water mains renewal, meter replacement and network reinforcement sector-wide cost adjustments for Disputing Companies resulting from removal of under-delivery adjustments.

Table 4.22: Change to water mains renewal, meter replacement and network reinforcement sector-wide cost adjustments for Disputing Companies from removal of under-delivery adjustments only

	<i>Ofwat PR24 FD adjustment (corrected for acknowledged error)⁶⁹⁰</i>	<i>CMA adjustment</i>	<i>Change in adjustment</i>	<i>Change as % water and wastewater totex</i>
	<i>£m</i>	<i>£m</i>	<i>£m</i>	<i>%</i>
Water mains renewals				
Anglian	144.4	144.4	0.0	0.00%
Northumbrian	51.3	51.3	0.0	0.00%
South East	29.5	29.5	0.0	0.00%
Southern	6.1	27.3	21.2	0.27%
Wessex	23.3	23.3	0.0	0.00%
Meter replacement				
Anglian	108.3	108.3	0.0	0.00%
Northumbrian	18.9	43.8	24.9	0.44%
South East	23.6	28.1	4.5	0.26%
Southern	98.5	109.6	11.1	0.14%
Wessex	8.1	16.0	7.9	0.21%
Network reinforcement (water and wastewater combined)				
Anglian	55.2	62.3	7.1	0.07%
Northumbrian	0.1	0.1	0.0	0.00%
South East	32.2	32.2	0.0	0.00%
Southern	45.9	46.1	0.3	0.00%
Wessex	19.9	21.3	1.4	0.04%

Source: CMA analysis of data from Ofwat (2024) [Mains renewal cost adjustment model](#); Ofwat (2024) [Meter renewals cost adjustment model](#) and Ofwat (2024) [Network reinforcement cost adjustment model](#).

⁶⁹⁰ There was an error in how Ofwat calculated the rates of meter replacement for water companies in its Meter renewals costs adjustment model. CMA analysis of data from: Ofwat (2024) [Meter-renewals-cost-adjustment-model](#). Ofwat response to Ofwat RFI013, Q3.

Network reinforcement cost efficiency challenge

4.472 At PR24 FD Ofwat made a sector-wide cost adjustment for network reinforcement costs of a total of around £730 million. It allowed all companies' forecast costs for 2025 to 2030, less what base buys and an under-delivery adjustment. The adjustment was also subject to an efficiency challenge based on each company's unit costs over the 2025 to 2030 period compared to the industry median cost.⁶⁹¹

4.473 In this section on the network reinforcement efficiency challenge we set out:

- (a) a summary of Ofwat's PR24 FD approach and submissions;
- (b) a summary of the Disputing Company submissions; and
- (c) our assessment; and
- (d) and our final decision.

Ofwat PR24 FD approach and redetermination submissions

4.474 To calculate a cost efficiency challenge, Ofwat compared each company's forecast unit cost (forecast network reinforcement expenditure/forecast new connections) to the industry median forecast unit cost, over the 2025 to 2030 period.⁶⁹²

4.475 Rather than apply the median unit cost for every company, Ofwat applied a less stretching cost efficiency challenge by capping the efficiency challenge at:

- (a) 10% when the gap to the median unit cost was less than 50%; and
- (b) 20% when the gap to median unit cost was more than 50%.⁶⁹³

4.476 For example, if a company's unit cost was 25% greater than the median then Ofwat would have set its allowed unit costs under the network reinforcement sector-wide cost adjustment at 90% of what the company put in its business plan.

4.477 In its submissions to the CMA, Ofwat said that its approach to determining the cost efficiency challenge was favourable to companies. Rather than apply the median unit cost for every company and expect companies to provide compelling evidence to justify a higher unit cost, it applied an efficiency challenge. Ofwat said that the efficiency challenge recognised that network reinforcement requirements over 2025 to 2030 were not solely driven by forecast growth over the period and may reflect differences in headroom network capacity between companies, leading to

⁶⁹¹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp59–63.

⁶⁹² Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p60.

⁶⁹³ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p60.

varying unit costs. Ofwat's approach therefore already accounted for the factors which drove cost differences.⁶⁹⁴

Disputing Companies' submissions

- 4.478 South East said that Ofwat took a one-size-fits-all approach to constructing an efficient unit cost ignoring regional and other factors which drove cost differences.⁶⁹⁵
- 4.479 Oxera, on behalf of South East, said that all companies that operated in the south east of England had reported an above-median unit cost. This may reflect the effect of excess capacity and deindustrialisation, as companies operating outside the south east had more excess capacity, following industrial decline in those areas. Therefore the incremental network reinforcement requirements of additional connections were higher in the south east. As such, South East did not consider a median unit cost to be a suitable metric to assess companies' cost efficiency.⁶⁹⁶
- 4.480 Oxera also said that the raw data used to estimate the network reinforcement base cost adjustment was inconsistent with the base cost assessment dataset. In particular, the 'new properties' data did not match the equivalent numbers in the cost assessment dataset.⁶⁹⁷
- 4.481 Southern said that in the absence of robust evidence to suggest that its unit cost proposals were inefficient, the efficiency challenge to those costs should be removed.⁶⁹⁸

Our assessment

- 4.482 As acknowledged by Ofwat and the Disputing Companies, unit cost differences are likely to be driven by legitimate differences in company circumstances, notably the availability of headroom capacity. Where headroom capacity is lower, the incremental costs of network reinforcement will tend to be greater. Areas with less headroom capacity will tend to be areas of historically high growth. As Figure 4.13 shows there is some positive correlation between the forecast network reinforcement unit costs for companies over AMP8 and the historical rate of growth in connected properties in their supply areas.

⁶⁹⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraphs 2.298–2.299.

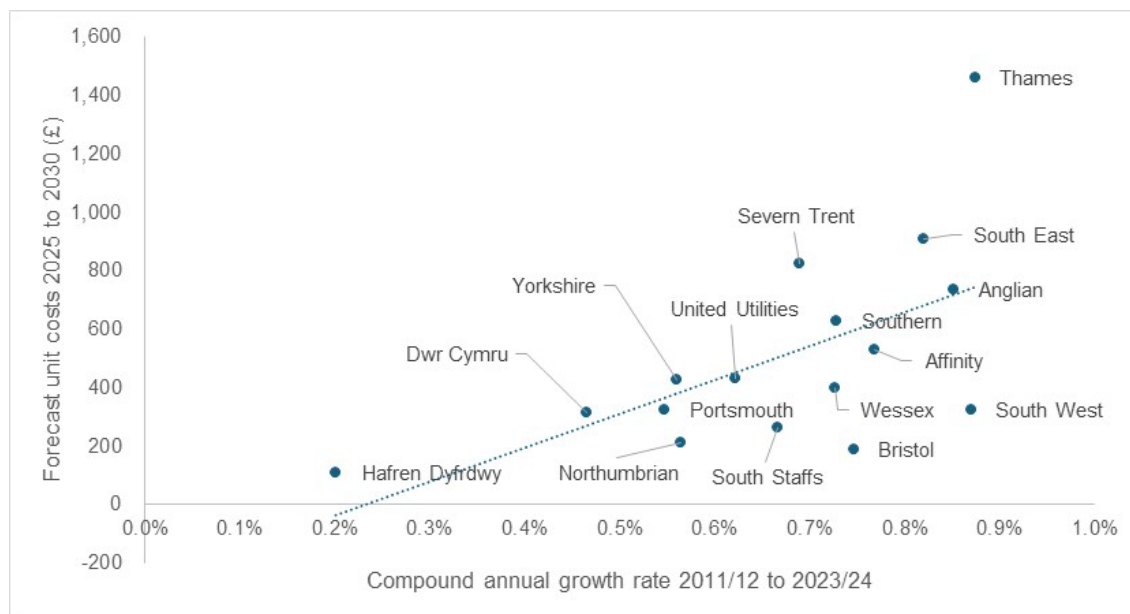
⁶⁹⁵ [South East SoC](#), paragraph 4.27.

⁶⁹⁶ Oxera (2025) Base cost adjustments and cost adjustment claims, pp15–16.

⁶⁹⁷ Oxera (2025) Base cost adjustments and cost adjustment claims, p13.

⁶⁹⁸ Oxera (2025) Base cost adjustments and cost adjustment claims, pp15–16.

Figure 4.13: Growth in connected properties between 2011/12 to 2023/24 and forecast network reinforcement unit costs



Source: CMA analysis of data from Ofwat (2024) [Network reinforcement cost adjustment model](#).

- 4.483 Given the observed positive correlation, differences in forecast unit costs are likely to be substantively driven by legitimate differences in company circumstances. Therefore, it would be inappropriate to allow a single unit costs rate for network reinforcement across all Disputing Companies.
- 4.484 This does not necessarily mean that forecast unit costs should be allowed in full without some form of benchmarking or challenge. Benchmarking of costs is an important part of assessing costs as it mitigates the asymmetry of information that exists between regulators and the companies, and helps to avoid customers overpaying. It is therefore appropriate to apply an efficiency challenge based on a cost benchmarking.
- 4.485 Under the Ofwat approach, companies such as South East which request higher unit costs than the industry median still receive a higher cost allowance, but where the requested unit costs are higher than the median, receive a ‘haircut’ to the requested costs (as described in paragraph 4.475). Without this haircut water companies would otherwise have been allowed their requested network reinforcement costs in full, subject to only limited scrutiny. However, at PR24 FD South East still received higher unit costs than the median for water reinforcement, even after the application of Ofwat’s efficiency challenge. For water network reinforcement, South East received unit costs of £725: 20% lower than its request (£906); but 77% higher than the median (£410).⁶⁹⁹

⁶⁹⁹ CMA analysis of data from Ofwat (2024) [Network reinforcement cost adjustment model](#).

4.486 Our view is that it is appropriate to adopt the same approach to the efficiency challenge for network reinforcement costs as Ofwat at PR24FD. This benefits of this approach are:

- (a) recognises that there are differences in the unit costs of companies due to differences in circumstances, such as available headroom capacity;
- (b) allows for a challenge to efficiency of these costs based on benchmarking to the unit costs of other companies; and
- (c) applies an adjustment to reported unit costs to account for factors such as inefficiency and overestimates of unit costs due to inconsistency in reporting or allocation of costs between companies.

4.487 Ofwat used direct measure of new properties served per year submitted by the company in business plans tables – which it considered more appropriate than estimating new properties based on the change in numbers of properties connected data from the base cost assessment data set.⁷⁰⁰ We find that this is an appropriate approach.

Our final decision

4.488 Our decision is to adopt the same approach for the efficiency challenge for the network reinforcement sector-wide cost adjustment as Ofwat at PR24 FD, including using the same data for connected properties.

Northumbrian's claim for additional water network reinforcement sector-wide cost adjustment allowances

4.489 Northumbrian said that it had understated its forecast for AMP8 water network reinforcement costs and requested that its allowance under the network reinforcement sector-wide cost adjustment be increased to £30.9 million.⁷⁰¹

4.490 In this section we set out:

- (a) a summary of Ofwat's PR24 FD approach;
- (b) a summary of the Disputing Companies' and Ofwat's submissions;
- (c) our assessment; and
- (d) our final decision.

⁷⁰⁰ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.301.

⁷⁰¹ [Northumbrian SoC](#), paragraphs 472 and 475; Northumbrian (2025); [Response to CMA PR24 PD](#), Figure 22.

4.491 Our final decision is to allow Northumbrian updated forecast network reinforcement costs of £48.051 million in full.⁷⁰² We also apply the same network reinforcement cost efficiency challenge that Ofwat used at PR24 FD to these costs. Our final decision increases the sector-wide cost adjustment received by Northumbrian for network reinforcement from £0.12 million to £31.0 million (£48.051 million less what base buys of £13.57 million, with an efficiency challenge of 10% applied).

Ofwat PR24 FD approach

4.492 Ofwat said that 'We will consider cost adjustment claims from companies that expect to deliver a higher amount of network reinforcement work than is funded through the base cost models'.⁷⁰³ At PR24 FD Ofwat allowed all forecast network reinforcement costs in full, subject to an efficiency challenge (see paragraphs 4.474 to 4.476) and under-delivery adjustments.⁷⁰⁴

4.493 Several new or increased CACs were received after PR24 DD.⁷⁰⁵ Ofwat said that it had engaged with companies through a query process to understand the evidence and planned developments underpinning their proposed need for investment.⁷⁰⁶

4.494 Although it still had concerns around the large increase in requests received after PR24 DD, Ofwat said that it was 'satisfied' with the evidence provided. To avoid delays in development growth, it introduced a sector-wide network reinforcement cost adjustment in its PR24 FD of over £700 million in increased allowances above base modelled allowances.⁷⁰⁷

4.495 The sector-wide cost adjustment was calculated as each company's forecast network reinforcement expenditure for 2025-30 less adjustments for what base buys and under-delivery, and subject to an efficiency challenge (see Figure 4.6).

4.496 Ofwat also applied a PCD to the sector-wide cost adjustment so that any difference between forecast expenditure and actual expenditure would be clawed back. It also asked companies to provide a list of projects to enable it to monitor delivery.⁷⁰⁸

⁷⁰² Northumbrian (2025) [Response to CMA PR24 PD](#), Figure 22.

⁷⁰³ Ofwat (2022) [Creating tomorrow, together: Our final methodology for PR24 Appendix 3 Developer services](#), p17.

⁷⁰⁴ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p59.

⁷⁰⁵ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p58.

⁷⁰⁶ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p58.

⁷⁰⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p59.

⁷⁰⁸ [Ofwat PR24 FD Price Control Deliverables Appendix](#), p33.

Summary of submissions

Northumbrian

- 4.497 Northumbrian said that it had understated its forecast for AMP8 water network reinforcement costs. It had forecast £12.5 million for network reinforcement based on historical cost expenditure, giving it an allowance of £0.12 million (its £12.49 million request less what base buys of £12.37 million) under the Ofwat PR24 FD methodology.⁷⁰⁹
- 4.498 Northumbrian said that it now had much more certainty about network reinforcement schemes than when it submitted its business plan in summer 2023.⁷¹⁰ In the summer of 2023, Northumbrian's working assumption had been that at least some of this expenditure could be recovered from developers, but this was no longer the case.⁷¹¹ Northumbrian's updated forecast for network reinforcement expenditure was £52.5 million.⁷¹²
- 4.499 Northumbrian said that it could not find any evidence of Ofwat saying it would consider network reinforcement CACs.⁷¹³ However, it accepted that it should have included this in its business plan and PR24 DD representations.⁷¹⁴
- 4.500 Northumbrian said that most of the additional requested costs related to new developments in the Chelmsford area (9,579 new homes). These upgrades were forecast to cost £31.2 million, including a service reservoir (£15.0 million), upgraded pumping station (£2.0 million), and £14.3 million for new network mains. Northumbrian stated that if it did not carry out these upgrades there would be low pressure and potential loss of supply.⁷¹⁵ To support the need for the Boreham network upgrade, Northumbrian also provided a breakdown of costs and a Chelmsford local planning document which identified around 9,000 new properties due to be built in the Chelmsford area between 2025 and 2030.⁷¹⁶
- 4.501 For other expenditure Northumbrian submitted a spreadsheet which included high-level scheme details including: scheme name (eg 'Belford to Waren Mill Phase 1'); a high-level description of work (eg 'Strategic mains'); and estimated costs per year for 2025 to 2030.⁷¹⁷

⁷⁰⁹ Northumbrian SoC, paragraphs 472 and Figure 38. In Northumbrian's case there was no under-delivery adjustment or adjustment due to the efficiency challenge, see Ofwat (2024) [Network reinforcement cost adjustment model](#).

⁷¹⁰ Northumbrian SoC, paragraph 480.

⁷¹¹ Northumbrian SoC, paragraph 481.

⁷¹² Northumbrian SoC, paragraph 481.

⁷¹³ Northumbrian SoC, paragraph 479.

⁷¹⁴ Northumbrian SoC, paragraph 479.

⁷¹⁵ Northumbrian SoC, paragraph 473.

⁷¹⁶ Northumbrian SoC, Appendix SoC599 Boreham Booster Value Split; Northumbrian SoC, Appendix SoC625 Chelmsford Pre-Submission Reg 19, p425.

⁷¹⁷ Northumbrian SoC, Figure 39.

- 4.502 Following the provisional determination Northumbrian said that it had provided a detailed breakdown of costs and further evidence of the underlying need for other network reinforcement schemes – providing the same level of evidence as for Boreham Booster.⁷¹⁸
- 4.503 Northumbrian said that the list of schemes it submitted in its PD response was updated to remove schemes that were no longer required and include schemes where there were new requirements post-statement of case. Some schemes had already started.
- (a) Across the Essex & Suffolk region, estimated network reinforcement costs, in addition to Boreham Booster, were £7.615 million (in 2022/23 prices). This was broadly the same as the statement of case forecast of £7.705 million.⁷¹⁹
 - (b) Across the North East region, estimated network reinforcement costs were £9.200 million, which was lower than the statement of case forecast of £13.581 million.⁷²⁰
- 4.504 Northumbrian said that there was limited management control over network reinforcement schemes. For example, scheduled work to provide water to a proposed Britishvolt gigafactory was rescheduled and the latest information meant that this was not expected to be required in AMP8. In contrast, large developments had been proposed in the Chelmsford area under the Government growth agenda that were not anticipated at the time of its statement of case.⁷²¹
- 4.505 Northumbrian said that the CMA's approach of allowing only expenditure that had been linked to measurable deliverables meant that allowances for some schemes would be ruled out because there was insufficient certainty that these would be built to a known scope. This did not provide adequate funding for schemes which Northumbrian would be legally obliged to deliver. The current network reinforcement PCD fully protected customers when schemes were not required, but there was no symmetric protection when additional schemes were needed. Any additional costs would have to be shared between customers and shareholders under cost sharing.⁷²²
- 4.506 Northumbrian proposed three alternative approaches the CMA could take.
- (a) Allow Northumbrian's full forecast of network reinforcement costs with the full protection of the current PCD for customers if these costs were not spent.

⁷¹⁸ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 230.

⁷¹⁹ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 239.

⁷²⁰ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 241.

⁷²¹ Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 238.

⁷²² Northumbrian (2025) [Response to CMA PR24 PD](#), paragraph 242.

- (b) Allow the costs of schemes, such as Boreham Booster that were already started or where there was a reasonable certainty that they would go ahead. The CMA could apply a different cost sharing rate for network reinforcement spend to reflect the additional risks due to Northumbrian being allowed less than its forecast costs.
- (c) Allow the costs of schemes where there was a reasonable certainty they would go ahead and also set an expectation that Ofwat should fund the efficient costs of additional required schemes in-period through the CCP.⁷²³

Ofwat

- 4.507 Ofwat said that it would have used the updated numbers if they were in the Northumbrian business plan submissions.⁷²⁴ If the CMA accepted Northumbrian's updated figures, then it should put in place the same PCD as Ofwat did for other companies to protect customers. Northumbrian should also provide a list of schemes that it will deliver with the additional allowance so Ofwat could monitor delivery.⁷²⁵
- 4.508 In the base cost hearing Ofwat said that it clearly stated at PR24 DD that it would consider CACs from companies that expected to deliver a higher amount of network reinforcement work than was funded through the base cost models. In response to that, other companies, including Anglian, submitted new network reinforcement CACs.⁷²⁶

Our assessment

- 4.509 At PR24 FD Ofwat allowed all forecast network reinforcement costs in full, subject only to an efficiency challenge and under-delivery adjustments.⁷²⁷ Ofwat said that it would have used Northumbrian's updated numbers if they have been included in Northumbrian's PR24 submissions.
- 4.510 Our view is that, given Northumbrian has provided some additional evidence to support its forecast costs and that Ofwat has accepted it would have used the updated numbers if they were in the Northumbrian business plan submissions, it is appropriate to allow its forecast costs in full. We also recognise that there would necessarily be additional reinforcement costs over and above the Boreham Booster Scheme and that there is limited management control over these costs.

⁷²³ Ofwat has already written to companies to support the facilitation of new growth expenditure it considers is likely to be needed in-period. See Ofwat (2025) [Supporting Economic Growth – Invitation to Submit Proposals for Additional Enhancement Investment Linked To Demand Growth](#).

⁷²⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.306.

⁷²⁵ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.307.

⁷²⁶ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p105, lines 1–4.

⁷²⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p59.

These costs will be subject to the same efficiency challenge applied to all other companies.

Our final decision

- 4.511 Our final decision is to allow Northumbrian updated forecast network reinforcement costs of £48.051 million in full.⁷²⁸ We also apply the same network reinforcement cost efficiency challenge that Ofwat used at PR24 FD to these costs.
- 4.512 Our final decision increases the sector-wide cost adjustment received by Northumbrian for network reinforcement from £0.12 million to £31.0 million (£48.051 million less what base buys of £13.57 million, with an efficiency challenge of 10% applied).

Cost adjustment claims (CACs) and other claims

- 4.513 In this section we discuss the CACs and other claims submitted by the Disputing Companies related to base costs. Our assessment is split into three parts.
- (a) Four CACs assessed adopting a similar framework to Ofwat (Anglian boundary boxes; Anglian leakage; Southern advanced anaerobic digestion (**AAD**); and Wessex bioresources).
 - (b) Three CACs assessed using an econometric approach (South East economies of scale at water treatment works (**WTWs**); Southern coastal population; and Southern regional wages).
 - (c) Two further Southern claims which were not CACs (Southern boundary box uncertainty mechanism; and Southern energy costs).

Anglian boundary boxes and leakage, Southern AAD and Wessex bioresources

- 4.514 In this section we assess Anglian leakage, Anglian boundary boxes, Southern AAD and Wessex bioresources.
- 4.515 Our assessment of these four CACs adopts a similar framework to Ofwat. In summary, the Ofwat framework assesses whether there is: (i) a need for an adjustment to allowances (referred to as the need criterion); and (ii) whether the companies have submitted a claim which is based on efficient costs (referred to as the efficiency criterion). The need criterion has four sub-criteria: unique circumstances, management control, materiality and adjustment to allowances. The efficiency criterion has three sub-criteria: does the company explain how it

⁷²⁸ Northumbrian (2025) [Response to CMA PR24 PD](#), Figure 22.

arrived at the cost estimate; is there compelling evidence that the cost estimates are efficient; and does the company provide third party assurance for the robustness of the cost estimates.⁷²⁹

4.516 Ofwat provided more detail on its framework in its PR24 FD methodology and in the expenditure allowances section of its PR24 FD.⁷³⁰ We have not received any submissions to suggest that we should adopt a different framework for assessment of these CACs, and we find Ofwat's framework to be a reasonable one. Further, the Disputing Companies have submitted evidence consistent with this framework.

4.517 We have focused our assessments below on the criteria where we had the most immediate concerns. We have not reached a final view on all criteria where this was not necessary to reach an overall final decision.

Anglian boundary boxes

4.518 In this section we assess Anglian's claim for £138 million for the replacement of boundary boxes.⁷³¹ Boundary boxes are containers for housing water meters.⁷³² Anglian said that it had installed meters earlier than other companies, resulting in higher boundary box failure rates, and thus higher repair and replacement costs.⁷³³

4.519 The remainder of this section covers the following topics:

- (a) Ofwat's PR24 FD approach;
- (b) Parties' submissions;
- (c) our provisional assessment and provisional decision;
- (d) responses to the provisional decision; and
- (e) our final assessment and final decision.

4.520 For the reasons set out below, our final decision is to allow this CAC and provide a maximum allowance of £113 million.

⁷²⁹ Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Affinity Water](#), Sheet 'AFW_CAC1'.

⁷³⁰ Ofwat (2022) PR24 Methodology, [Appendix 9: Setting expenditure allowances](#), pp27–30; Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp27–29.

⁷³¹ [Anglian SoC](#), paragraphs 262, 283.

⁷³² [Anglian SoC](#), paragraph 262.

⁷³³ Anglian (2024) [PR24 draft determination representations: Boundary box CAC](#), p2.

Ofwat's PR24 FD approach

- 4.521 Ofwat rejected Anglian's claim, saying that the costs associated with Anglian's proposal would be sufficiently funded through the meter replacement sector-wide cost adjustment, where Anglian had received an additional £119 million.⁷³⁴
- 4.522 Ofwat found that Anglian had not provided compelling evidence to justify either the need for a further company-specific adjustment or that Anglian's costs were efficient.⁷³⁵

Parties' submissions

- 4.523 In this section we summarise the submissions by Anglian, Ofwat, other Disputing Companies and third parties.

Anglian

- 4.524 Anglian said that it rolled out water meters at a much earlier date than the rest of the industry, so boundary box failure was distinct to Anglian.⁷³⁶ Anglian anticipated total costs of £155.4 million, but calculated an implicit allowance of £17.4 million, which led to a claim of £138 million.⁷³⁷ Anglian also proposed a clawback mechanism to protect customers if actual replacement levels diverged from forecast replacement levels.⁷³⁸
- 4.525 Anglian said that its claim differed from the Southern claim related to boundary boxes. First, the Southern claim was largely driven by Southern's smart meter programme, which was not the case for Anglian. Second, Anglian and Southern rolled out meters in different ways. Southern had a compulsory metering programme from 2010. The Anglian approach, offering customers the option of meters, meant that the roll-out was less uniform, so individual streets would have boundary boxes of different ages. Therefore a proactive programme, for example replacing every boundary box in a street, would be inefficient and expensive.⁷³⁹
- 4.526 Anglian said that not replacing the boundary boxes at the rate funded through this cost adjustment claim would lead to an increase in leakage of 70.56 Ml/d above base levels across AMP8. Furthermore, visible leaks affected public safety by causing slip and trip hazards and affected resilience during water shortages. Customers were less likely to reduce their own water usage when they perceived

⁷³⁴ Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Anglian Water](#), Sheet 'ANH_CAC3'.

⁷³⁵ Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Anglian Water](#), Sheet 'ANH_CAC3'.

⁷³⁶ [Anglian SoC](#), paragraph 263.

⁷³⁷ [Anglian SoC](#), paragraph 267.

⁷³⁸ [Anglian SoC](#), paragraph 283.

⁷³⁹ Anglian response to Anglian RF101, Q2, p5.

Anglian was not addressing leaks. Some boundary box failures also led to low pressure and supply interruptions.⁷⁴⁰

Ofwat

4.527 Ofwat said that it rejected the claim for the following reasons.

- (a) Anglian had received a £119 million adjustment to its base expenditure to enable timely and efficient delivery of its meter replacement programme.
- (b) There was high uncertainty relating to the number of required boundary box replacements and how many age-driven replacements had already been undertaken.
- (c) There was scope for efficiencies between the meter replacement and boundary box replacement programmes.
- (d) Anglian did not provide evidence on the efficiency of its unit cost, or evidence of external benchmarking to support its case.
- (e) There were risks of perverse incentives to replace boundary boxes that did not require replacement.
- (f) Anglian did not provide compelling nor robust evidence of leakage benefits.⁷⁴¹

Other Disputing Companies

4.528 Southern said that it agreed with Anglian that companies that had an early roll-out metering programme would face material costs in AMP8. Southern's work suggested there was material uncertainty on replacement volumes. Southern's cost estimate of £634 per unit was close to the Anglian figure of £649.⁷⁴² We assess Southern's separate boundary box claim below (at paragraphs 4.808 to 4.850).

Our provisional assessment and provisional decision

4.529 Our provisional assessment showed that the claim failed the efficiency criterion and therefore we did not assess the need criterion. As the claim failed the efficiency criterion we provisionally decided not to allow this CAC.

⁷⁴⁰ Anglian (2024) [PR24 draft determination representations: Boundary box CAC](#), p18.

⁷⁴¹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 3.2.

⁷⁴² Southern (2025) [Response to other Disputing Companies' SoCs](#), p13, paragraphs 65–67.

Responses to the provisional decision

- 4.530 Anglian said that the CMA had failed to assess need, concluding (contrary to logic and its purported framework) that unless Anglian could demonstrate 100% efficiency, no CAC funding could be granted at all. Anglian asked the CMA to conduct a need assessment and update its efficiency assessment.⁷⁴³
- 4.531 Anglian said that in the provisional decision the CMA incorrectly said that it adopted the same framework as Ofwat for CACs. However, in the Ofwat framework if a claim was judged inefficient then the claim was not automatically awarded zero funding. Anglian provided examples of claims where Ofwat had assessed CACs and awarded funding when the claim had failed or partially fulfilled the cost efficiency criterion. These examples showed companies were awarded from 16% to 100% of the requested allowance when they had not fully fulfilled both need and efficiency.⁷⁴⁴
- 4.532 Anglian said that the CMA provisional decision approach to the boundary box claim was inconsistent with other text in the PD and the CMA approach to enhancement claims where allowances were provided with efficiency challenges.⁷⁴⁵ Anglian said that there was no rationale for treating base less favourably than enhancement.⁷⁴⁶
- 4.533 Anglian said that its boundary box claim fulfilled the need criterion.⁷⁴⁷
- (a) Unique circumstances. The east of England was dry, Anglian had high meter penetration and many of the 500,000 boundary boxes Anglian had installed from 1995 to 2000 were expected to fail during AMP8.⁷⁴⁸
 - (b) Management control. Boundary box repairs were a result of meter installations and were rarely ignorable due to customer harm and water scarcity. Anglian took action, supported by Ofwat, 30 years ago to address water scarcity.⁷⁴⁹
 - (c) Material. Anglian's CAC value claim of £138 million was 5.3% of base allowances and 16.7% of base capex allowances.⁷⁵⁰

⁷⁴³ Anglian (2025) [Response to CMA PR24 PD](#), p8, paragraph 22.

⁷⁴⁴ Anglian (2025) [Response to CMA PR24 PD](#), pp78-79, paragraphs 209-213, Table 6; Anglian (2025) Response to Base Costs Modelling paper, paragraphs 24, 29.

⁷⁴⁵ Anglian (2025) [Response to CMA PR24 PD](#), pp79-80, paragraph 214(i)–(iii).

⁷⁴⁶ Anglian (2025) [Response to CMA PR24 PD](#), p80, paragraph 214(iv).

⁷⁴⁷ Anglian (2025) [Response to CMA PR24 PD](#), pp80-81, paragraphs 216-217; Anglian (2025) [Response to CMA PR24 PD](#), supporting document Chapter B2 Annex 5: Analysis of Ofwat assessment of Anglian's boundary box need claim.

⁷⁴⁸ Anglian (2025) [Response to CMA PR24 PD](#), p81, paragraph 216(i).

⁷⁴⁹ Anglian (2025) [Response to CMA PR24 PD](#), p81, paragraph 216(ii).

⁷⁵⁰ Anglian (2025) [Response to CMA PR24 PD](#), p81, paragraph 216(iii).

(d) Implicit allowance. The implicit allowance was only 1.1% of the gross value of the CAC.⁷⁵¹

4.534 Anglian said that recognising the need for this spend was consistent with the broader PR24 framework. In PR24, Ofwat had acknowledged that ongoing base spend could arise from historical enhancement investment. For example, PR24 included cost adjustments for all wastewater companies to cover new base spend from AMP7 funded P-removal enhancement investments. Funding Anglian's claim was consistent with this common-sense regulatory approach.⁷⁵²

4.535 Anglian said that its claim fulfilled the efficiency criterion. The PD applied unrepresentative efficiency benchmarks. Anglian's claim related to age-related repairs and this restricted Anglian's ability to bundle jobs in close proximity. The CMA's PD analysis did not compare like for like as it compared Anglian's cost for age-related boundary box replacements with smart meter-related boundary box replacement programmes.⁷⁵³

4.536 Anglian provided evidence on the geographic overlap of its smart meter programme and age-related boundary box replacements. This showed that only 45% of open jobs were in areas still to be smart metered.⁷⁵⁴

4.537 Anglian's unit cost of £641.58 was efficient and this was supported by an Aecom report.⁷⁵⁵ Anglian said that even if the CMA found that Anglian's costs were inefficient, it could award a lesser amount. For example, using Ofwat's unit cost figure of £443 would support a CAC of £89 million.⁷⁵⁶ Anglian said that the CMA could impose a clawback mechanism to ensure customers were protected.⁷⁵⁷

4.538 Ofwat supported the provisional decision to not allow this claim. Ofwat said that Anglian did not provide compelling evidence on need nor cost efficiency.⁷⁵⁸

Our assessment and final decision

4.539 In this section we set out our assessment and final decision. We first assess the need criterion and its four sub-criteria. We then assess the efficiency criterion and its three sub-criteria.

⁷⁵¹ Anglian (2025) [Response to CMA PR24 PD](#), p81, paragraph 216(iv).

⁷⁵² Anglian (2025) [Response to CMA PR24 PD](#), p82, paragraph 218.

⁷⁵³ Anglian (2025) [Response to CMA PR24 PD](#), pp82-83, paragraphs 219-224.

⁷⁵⁴ Anglian (2025) [Response to CMA PR24 PD](#), pp83-87, paragraphs 225-227, Figure 9 and Table 7.

⁷⁵⁵ Anglian (2025) [Response to CMA PR24 PD](#), pp87-88, paragraphs 228-229; Anglian (2025) [Response to CMA PR24 PD](#), Annex 4: Aecom (2025) Boundary Box Benchmark report; Anglian (2025) [Response to CMA PR24 PD](#), footnote 51.

⁷⁵⁶ Anglian (2025) [Response to CMA PR24 PD](#), pp88-89, paragraphs 230-233.

⁷⁵⁷ Anglian (2025) [Response to CMA PR24 PD](#), p89, paragraph 234.

⁷⁵⁸ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#) Table 1.

Need assessment

- 4.540 In this section we assess the four need sub-criteria – unique circumstances, management control, materiality and adjustment to allowances.

Unique circumstances

- 4.541 Anglian said that it operated in the driest region of the UK. To manage demand Anglian had rolled out meters, which helped encourage customers to reduce consumption. This was encouraged by Ofwat and financially supported through price controls.⁷⁵⁹ Most of the meters were installed in boundary boxes at the edge of customers' properties.⁷⁶⁰
- 4.542 Ofwat said that the claim failed the need assessment but did not specifically conclude on unique circumstances.⁷⁶¹
- 4.543 We requested information from Anglian and Ofwat on boundary box numbers and boundary box replacement rates.⁷⁶² Anglian said that it had never reported boundary box installations directly.⁷⁶³ Ofwat said that it did not regularly collect data relating to boundary box installation or replacement.⁷⁶⁴
- 4.544 On boundary box numbers, Anglian said that within its region most water meters were housed in a boundary box.⁷⁶⁵ Anglian provided information on the increase in meter penetration over time. This is shown in Figure 4.14 below.

⁷⁵⁹ Anglian (2024) [Boundary box Cost Adjustment Claim](#), pp2, 4 and 6; [Anglian SoC](#), paragraph 263 and Anglian (2025) [Response to CMA PR24 PD](#), p81, paragraph 216(i).

⁷⁶⁰ Anglian (2024) [Boundary box Cost Adjustment Claim](#), p5.

⁷⁶¹ Ofwat (2024) [Base cost adjustment claim feeder model – Anglian Water](#), Sheet ANH_CAC3, Cell D23.

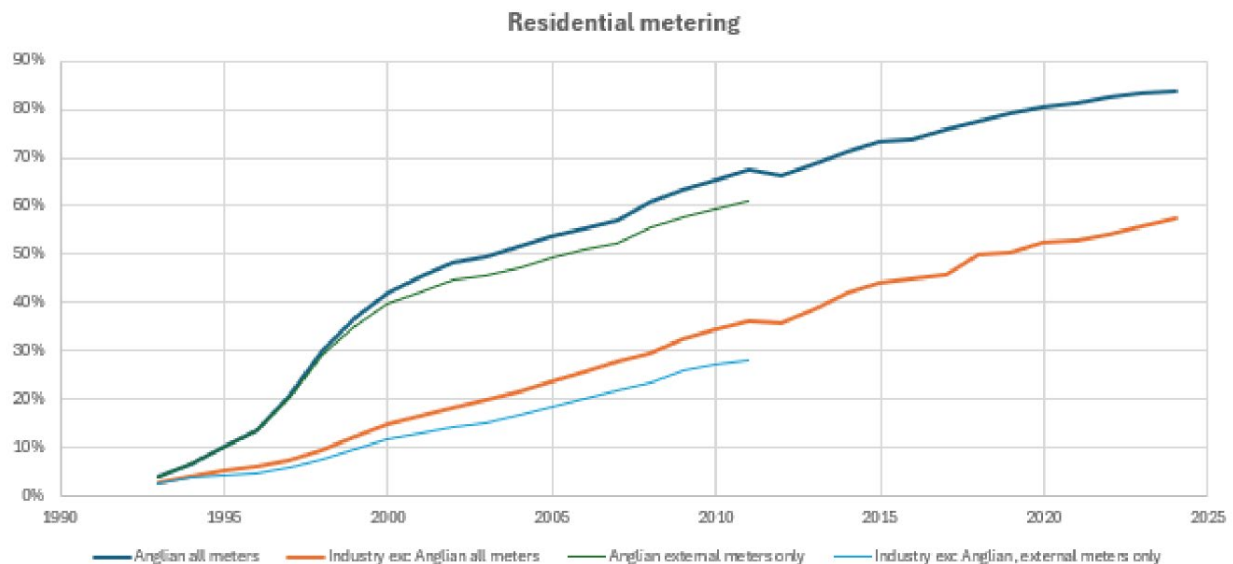
⁷⁶² For example, see Anglian response to Anglian RFI01 and Ofwat response to Ofwat RFI05, Q6–Q8.

⁷⁶³ Anglian response to Anglian RFI01, p1.

⁷⁶⁴ Ofwat response to Ofwat RFI05, Q7, p9.

⁷⁶⁵ Anglian (2024) [Boundary box Cost Adjustment Claim](#), p5.

Figure 4.14: Increase in meter penetration



Source: Anglian SOC, Figure 20.

- 4.545 In our view, the evidence in Figure 4.14 is consistent with the view that Anglian has installed a higher proportion of boundary boxes compared to the average of the rest of the industry.
- 4.546 On boundary box replacements, Ofwat said that Anglian was not the only company that would face these costs over the 2025 to 2030 period. Other companies were expecting to face costs associated with boundary box replacement but considered the meter replacement cost adjustment was sufficient to deliver these.⁷⁶⁶ Ofwat said that it had collected data from five companies with relatively high meter penetration and/or meter replacement rates: Anglian, Severn Trent, South East, South West and Southern. This is shown in Table 4.23 below.

Table 4.23: Boundary box replacements as a proportion of meter households

Company	2019/20	2020/21	2021/22	2022/23	2023/24
Anglian	1.3%	1.6%	1.7%	1.7%	1.7%
Severn Trent	0.2%	0.1%	0.1%	0.1%	0.1%
South East	0.3%	0.3%	0.3%	0.2%	0.2%
South West	N/A	0.0%	0.0%	0.1%	0.4%
Southern	N/A	N/A	N/A	N/A	N/A

Source: Ofwat response to Ofwat RFI05.Sheet Company Data

- 4.547 In our view, the information in Table 4.23 shows that Anglian had a substantially higher average replacement rate for boundary boxes compared to the other companies. This, when combined with the evidence above on meters in Figure

⁷⁶⁶ Ofwat (2024) [Base cost adjustment claim feeder model – Anglian Water](#), Sheet ANH_CAC3, Cell D23.

4.14, is consistent with the view that Anglian has a higher proportion of older boundary boxes installed than the rest of the industry.

- 4.548 Based on the evidence above, our view is that there was compelling evidence to show that the claim fulfils the unique circumstances sub-criterion.

Management control

- 4.549 Anglian said that the boundary box investment was driven by the age of its boundary boxes. Its boundary boxes were older because it responded sooner than other water companies to emerging supply-demand challenges. This was driven by exogenous regional characteristics, such as climate and population growth. Anglian said that its decision to embark on a metering strategy in the 1990s was supported by Ofwat.⁷⁶⁷
- 4.550 Ofwat did not comment specifically on the degree of management control.⁷⁶⁸
- 4.551 Based on the evidence above, our decision is that the need to replace old and failing boundary boxes is not under management control. Therefore, our view is that there was compelling evidence to show that this claim fulfils the management control sub-criterion.

Materiality

- 4.552 Anglian said that the net value of claim was £138 million.⁷⁶⁹
- 4.553 Ofwat in its analysis of the boundary claim agreed that it was material. The value of the claim was £138 million, which was 3.8% of the totex figure of £3,643 million.⁷⁷⁰
- 4.554 Based on the evidence above, and our calculation of a maximum award of £113 million, our view is that there was compelling evidence to show that this claim fulfils the materiality sub-criterion.

Adjustment to allowances

- 4.555 Anglian said that the base cost models were informed by expenditure since 2011/12, which had not featured the cost of boundary box replacement to any

⁷⁶⁷ Anglian (2024) [Boundary box Cost Adjustment Claim](#), p8; Anglian (2025) [Response to CMA PR24 PD](#), paragraph 216(ii).

⁷⁶⁸ Ofwat (2024) [Base cost adjustment claim feeder model – Anglian Water](#), Sheet ANH_CAC3, Cell D23; Ofwat (2025) [Expenditure allowances - cost adjustment claims](#), chapter 3.

⁷⁶⁹ [Anglian SoC](#), paragraph 40.

⁷⁷⁰ Ofwat (2024) [Base cost adjustment claim feeder model – Anglian Water](#), Sheet ANH_CAC3 Cells D8 to D14.

material degree. Therefore, the boundary box replacement costs that would be faced by Anglian in AMP8 were not controlled for in base costs.⁷⁷¹

4.556 Anglian calculated its implicit allowance as follows.

- (a) Assume a boundary box lifespan of 30 years.
- (b) Assume that the base models reflected activity required to replace boundary boxes installed up to the year of 1995 – thirty years before the start of the PR24 period. The data showed that the industry as a whole increased its meter penetration by 3.14 percentage points between 1990 and 1995.
- (c) Assume that Anglian's PR24 costs would be associated with the boundary boxes Anglian installed between 1995 to 2000. Anglian increased its meter penetration by 27.99 percentage points between 1995 and 2000.⁷⁷²
- (d) Assume that base costs cover $3.14 / 27.99 = 11.23\%$ of the expected boundary box replacement costs.
- (e) Reduce the value of the claim by 11.23%, reducing it from £155.4 million to £138 million.⁷⁷³

4.557 With regard to any overlap with the smart-metering programme, Anglian said that Ofwat had wrongly conflated boundary box replacements with metering work. The work could not be combined in any meaningful way.⁷⁷⁴ Anglian said that the PR24 sector-wide smart meter CAC did not have sufficient headroom for Anglian's boundary box replacements. Anglian's boundary box need was over 60% of the total value of the combination of Anglian's Metering CAC and smart metering enhancement allowance (£226 million) and Anglian had to use these funds to deliver around 1,000 meter replacements a day in AMP8. Further, Anglian had forecast that only 18,289 out of around 240,000 boundary boxes it forecast to replace in AMP8 would relate to meter replacements.⁷⁷⁵

4.558 Ofwat said that it rejected the boundary box claim as Anglian should be able to deliver this through the sector wide adjustment for meter replacement. Ofwat said that its analysis showed that the £119 million provided in the meter replacement sector-wide adjustment could fund Anglian's meter replacement in its entirety, with

⁷⁷¹ Anglian (2024) [Boundary box Cost Adjustment Claim](#), p14.

⁷⁷² Anglian said that, based on a 30 year life span, the PR24 base models reflected replacement funding up to the year 1995, which was 30 years before the last year considered in the base cost modelling (2023/24). Boundary boxes installed between 1995 to 2000 were yet to fail and it was for those failures that Anglian requested CAC funding in PR24. Anglian response to Anglian RFI03, Q1(c).

⁷⁷³ Anglian (2024) [Boundary box Cost Adjustment Claim](#), p15. Note that Anglian provided updated figures in response to an RFI, but since the change was minimal Anglian was content for the CMA to use the old figures. See Anglian response to Anglian RFI03, Response to Q1a and Q1b.

⁷⁷⁴ [Anglian SoC](#), paragraphs 269-275; Anglian (2025) Reply to Ofwat's Response, p7.

⁷⁷⁵ [Anglian SoC](#), paragraph 279; Anglian (2025) Reply to Ofwat's Response, pp7–8.

potential excess allowances. Ofwat said that Anglian failed to acknowledge this in its claim, or the potential efficiencies that could be made.⁷⁷⁶

- 4.559 Below we set out our views on the calculation of the implicit allowance and the overlap with metering replacement.
- 4.560 First, on the implicit allowance, the Anglian estimation method is clear and we have not identified alternative data which allows us to calculate an alternative figure. Therefore, for the purposes of this decision, we adopt the Anglian method and reduce the claim by 11.23% to account for the implicit base allowance.
- 4.561 Second, on the overlap with metering, Anglian forecasts replacing 239,331 boundary boxes.⁷⁷⁷ Anglian said that only 18,289 of these will relate to meter replacement.⁷⁷⁸ The historic Anglian data collected by Ofwat shows that for Anglian across the period 2019/20 to 2023/24, the proportion of meter replacements requiring a boundary box replacement was around 2% per year.⁷⁷⁹ Forecast meter replacements for Anglian in PR24 are 354,913.⁷⁸⁰ Applying a 2% figure to gives 7,098. Since Anglian has given a figure of 18,289 we adopt the higher Anglian figure of 18,289 and we therefore reduce the number of boundary boxes in the Anglian claim from 239,331 to 221,042 to account for the overlap with the smart-metering upgrades.
- 4.562 Based on the evidence above our view is that there was compelling evidence to show that this claim fulfils the adjustment to allowance sub-criterion.

Efficiency assessment

- 4.563 In this section we assess the three efficiency sub-criteria – compelling evidence on cost efficiency, third party assurance and cost explanation.

Compelling evidence on cost efficiency

- 4.564 We compared the Anglian figure of £641.58 to the individual company figures supplied by Ofwat. We note that every figure in Table 4.24 below is lower than the Anglian figure. In particular, the Anglian figure of £641.58 is substantially higher than its own figures in previous years.

⁷⁷⁶ Ofwat (2025) Response to Anglian SoC, paragraph 3.14, p24; Ofwat (2025) Expenditure allowances - cost adjustment claims, paragraphs 3.10-3.14.

⁷⁷⁷ Anglian (2024) [Boundary box Cost Adjustment Claim](#), p13.

⁷⁷⁸ [Anglian SoC](#), paragraph 279; Anglian (2025) Reply to Ofwat Response, pp7-8.

⁷⁷⁹ [Ofwat response to Ofwat RFI05](#), Q6, and supporting document '[RFI5 - Q6 - boundary box.xlsx](#)'.

⁷⁸⁰ Ofwat (2024) [PR24-CAC99- Meter renewal cost adjustment model](#). Sheet Adjustment, cell H33.

Table 4.24: Average unit cost of replacement with boundary box – all data in 2022/23 prices

Year	2019/20	2020/21	2021/2022	2022/23	2023/24
Anglian		£498	£494	£575	£506
South East	£459	£468	£539	£635	£606
South West		£559	£488	£459	£181
Water					
Severn Trent	£392	£368	£354	£335	£344

Source: Ofwat response to Ofwat RFI05, Q6 – boundary box, Sheet ‘Company data - 2223 prices’.

- 4.565 In response to the CMA PR24 PD Anglian repeated its view that the figures in Table 4.24 above were not comparable, as its work replacing boundary boxes was age-related, not smart meter related.⁷⁸¹
- 4.566 However, Anglian did not dispute that its delivery partner was able to obtain efficiencies from ‘bundling’ the work and tackling specific areas.⁷⁸² In our view, this suggests that Anglian was able to obtain some efficiencies from replacing multiple boundary boxes in limited geographic areas and therefore it is valid to place some weight on the cost comparison in Table 4.24.
- 4.567 We sought evidence from our engineering consultants WRc on this topic. WRc had little data on the cost of replacing boundary boxes but estimated that the average cost of installing a new boundary box would be around £656 in 2022/23 prices. WRc also said the following.
- (a) There was justification in Anglian’s claim that it would incur an increasing rate of boundary box replacements owing to it having increased meter penetration substantially in the mid and late 1990s.
 - (b) The installations were done through an opt-in programme, so the replacements would be distributed unevenly around the Anglian region.
 - (c) Anglian’s unit costs for boundary box replacement were towards the upper end of the distribution for the industry where such data was available. However, they were within the limits that might be suggested from analysis of previous opt-in programme installations.
 - (d) It was not possible to say with any certainty whether, or by how much, efficiencies may be obtained when replacing faulty boundary boxes alongside the smart metering programme.
- 4.568 Anglian also provided evidence on a cost breakdown for replacing boundary boxes.

⁷⁸¹ Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 219–229; Anglian (2025) [Response to CMA PR24 PD](#), Annex 4: Aecom (2025) Boundary Box Benchmark report.

⁷⁸² (Non-confidential) transcript of the hearing for Anglian on 7 July 2025, p29, lines 11–15.

Table 4.25: Anglian breakdown of forecast costs for CAC (£)

	<i>Unmade</i>	<i>Footway</i>	<i>Carriageway</i>
Fittings	21	21	21
Stores on-cost	5	5	5
Payment to delivery partner	370	559	805
TMA permit fees	25	25	25
Traffic management costs (traffic lights, signage, etc)	17	17	17
Overheads (IT, office accommodation, insurance, enabling back office support, programme support etc)	57	58	60
Total	495	685	933

Source: Anglian response to Anglian RFI03, Response to Q4.

4.569 WRc said that it was only able to provide a limited qualitative opinion on this data as it did not have a comparable cost breakdown.

4.570 We reviewed the following evidence sources on the unit costs of replacing boundary boxes.

- (a) Anglian's observed unit cost of replacing boundary boxes was £987.⁷⁸³
- (b) Anglian's requested figure of £641.58, which was the result being able to exploit economies of scale.⁷⁸⁴
- (c) Aecom's figures for replacing boundary boxes which were from a 'comparable water sector client', split by the different types of ground.⁷⁸⁵ For Carriageway and Footpath Aecom gave a figure of £808 for the comparator company and £809 for Anglian. For unmade ground Aecom gave a figure of £600 for the comparator and £495 for Anglian.⁷⁸⁶
- (d) Southern's figure of £[8].⁷⁸⁷
- (e) A WRc estimate of boundary box installation costs of £656.
- (f) For the cost of replacing a boundary box as part of a smart-meter upgrade programme, Ofwat's average figure of £443.⁷⁸⁸
- (g) For the cost of replacing a boundary box as part of a smart-meter upgrade programme, industry figures which varied from £181 to £635.⁷⁸⁹

⁷⁸³ Anglian (2024) [Boundary Box cost adjustment claim](#), p14.

⁷⁸⁴ Anglian (2025) [Response to CMA PR24 PD](#), footnote 51.

⁷⁸⁵ Anglian (2025) [Response to CMA PR24 PD](#), Annex 4: Aecom (2025) Boundary Box Benchmark report, p1.

⁷⁸⁶ Anglian (2025) [Response to CMA PR24 PD](#), Annex 4: Aecom (2025) Boundary Box Benchmark report, Tables 1-2.

⁷⁸⁷ [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', Section 7.1.1, p14.

⁷⁸⁸ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 3.15–3.18.

⁷⁸⁹ Ofwat response to Ofwat RFI05, Q6 – boundary box, Sheet 'Company data - 2223 prices'.

- 4.571 Based on the evidence above, our view is that this claim partially fulfils the cost efficiency sub-criterion. While the Anglian figure is supported by Aecom analysis, we have minor concerns deriving from the lack of detailed breakdown of the Anglian figure and place some weight on the evidence in Table 4.24 showing lower figures than Anglian's £641.58 figure. Therefore, given our concerns on the evidence supporting the figure of £641.58 and the lack of data to justify an alternative, we impose a 10% efficiency challenge and allow a unit cost of £577 per unit.
- 4.572 Finally, we note that there is currently a lack of information on the cost of boundary box replacements and support Ofwat's plan to collect more data on the costs associated with boundary box replacements.⁷⁹⁰

Third party assurance

- 4.573 In response to the PD, Anglian provided a report by Aecom which undertook a benchmarking exercise for boundary box installations.⁷⁹¹ The Aecom report states: 'This benchmarking exercise has demonstrated Anglian Water's reported boundary box replacement costs to be broadly in line with industry averages.'⁷⁹²
- 4.574 The report does not contain a detailed description of how Aecom has sourced the figures it has used to compare the Anglian figures. Aecom said that: 'In undertaking the benchmarking exercise, AECOM have relied on data from a comparable water sector client, and an AECOM bottom-up benchmark based on delivery methodology and asset standards.'⁷⁹³
- 4.575 We sought evidence from our engineering consultants WRc on this topic. WRc said that it was common in the industry to provide figures on an anonymised basis.
- 4.576 Based on the evidence above, our view is that this claim partially fulfils the third-party assurance sub-criterion.

Explanation of cost

- 4.577 We have reviewed the material submitted by Anglian and understand how Anglian has arrived at its estimate of the value of the CAC.
- 4.578 Based on the evidence above, our view is that there is compelling evidence that this claim fulfils the cost explanation sub-criterion.

⁷⁹⁰ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 3.21.

⁷⁹¹ Anglian (2025) [Response to CMA PR24 PD](#), Annex 4: Aecom (2025) Boundary Box Benchmark report.

⁷⁹² Anglian (2025) [Response to CMA PR24 PD](#), Annex 4: Aecom (2025) Boundary Box Benchmark report, p6.

⁷⁹³ Anglian (2025) [Response to CMA PR24 PD](#), Annex 4: Aecom (2025) Boundary Box Benchmark report, p1.

Final decision

- 4.579 Based on the information above, we have decided to allow partially this CAC. We use a unit cost of £577 and units of 221,042, resulting in a figure of £128 million. We agree with Anglian's calculation of an 11.23% implicit allowance and therefore have reduced the funding to £113 million.
- 4.580 To protect customers, and aligned with Anglian's suggestion for a clawback mechanism to protect customers if actual replacement levels diverged from forecast replacement levels, we impose a PCD.⁷⁹⁴ For further details see Appendix G, paragraphs G.11 to G.26.

Anglian leakage

- 4.581 In this section we assess Anglian's CAC for £67.6 million to enable and maintain Anglian's low leakage levels.⁷⁹⁵
- 4.582 The remainder of this section covers the following topics:
- (a) Ofwat's PR24 FD approach;
 - (b) Parties' submissions;
 - (c) our provisional assessment and provisional decision;
 - (d) responses to the provisional decision; and
 - (e) our assessment and final decision.
- 4.583 For the reasons set out below, we have decided not to allow this claim.

Ofwat's PR24 FD approach

- 4.584 Ofwat assessed this request as a CAC within its PR24 FD.⁷⁹⁶ Ofwat said that Anglian had not provided compelling evidence to demonstrate either the need for an adjustment or that the costs were efficient.⁷⁹⁷

Parties' submissions

- 4.585 In this section we summarise the submissions by Anglian and Ofwat. No other Disputing Company or third party commented on this topic.

⁷⁹⁴ [Anglian SoC](#), paragraph 283.

⁷⁹⁵ [Anglian SoC](#), paragraphs 236, 258–260.

⁷⁹⁶ Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Anglian Water](#), Sheet 'ANH_CAC2'.

⁷⁹⁷ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 2.2–2.5.

Anglian

- 4.586 Anglian said that leakage control was critical to Anglian as the company covering the driest region in the UK, necessitating the minimisation of water wastage for sustainability and resilience. Anglian had a particularly strong need relative to others to maintain low levels, and this was a customer priority.⁷⁹⁸
- 4.587 Anglian said that the Ofwat PR24 FD failed to recognise that industry base leakage funding was insufficient for frontier performers, given the higher increased marginal cost of maintaining lower levels of leakage reductions.⁷⁹⁹
- 4.588 Anglian said that maintaining the same leakage reduction level was significantly more challenging in a low as opposed to high leakage environment. For example, as leakage reduced it became harder to locate leaks as the leaks were smaller, requiring more sophisticated and expensive technology.⁸⁰⁰
- 4.589 Anglian said that companies at the leakage frontier did not benefit from ODI reward payments to fund the costs of sustaining such performance. This differed from other ODIs, such as supply interruptions.⁸⁰¹ Anglian could only recover the costs associated with maintaining leakage performance through a CAC.⁸⁰²
- 4.590 Anglian presented evidence showing an increase in its marginal cost of leakage reduction over time.⁸⁰³ Anglian said that this was consistent with the CMA PR19 view that there was a link between current performance on leakage and the costs of maintaining that performance.⁸⁰⁴
- 4.591 Anglian said that: (i) the £67.6 million was based on adding leakage per km of mains to the relevant base cost models and developing separate models of leakage and non-leakage treated water; (ii) these modelling approaches differed from the CMA's PR19 leakage model, which would have implied an adjustment of around £81 million; and (iii) even though following the CMA approach in its PR19 redetermination would have resulted in a larger estimate, Anglian used the more conservative figure from its modelling data, consistent with its efficient approach to CACs.⁸⁰⁵
- 4.592 Anglian said that Ofwat had raised concerns on the statistical significance of the leakage variables at the PR24 DD stage. In response, Anglian had submitted an Oxera report which identified a statistically significant relationship between total leakage costs and activity to: (i) maintain lower leakage levels; and (ii) to reduce

⁷⁹⁸ [Anglian SoC](#), paragraph 234.

⁷⁹⁹ [Anglian SoC](#), paragraph 230.

⁸⁰⁰ [Anglian SoC](#), paragraph 243 and Figure 17; Anglian (2024) [Leakage Cost Adjustment Claim](#), p3.

⁸⁰¹ [Anglian SoC](#), paragraph 244.

⁸⁰² [Anglian SoC](#), paragraph 245.

⁸⁰³ [Anglian SoC](#), Figure 17.

⁸⁰⁴ [Anglian SoC](#), paragraph 232.

⁸⁰⁵ [Anglian SoC](#), paragraph 237.

leakage. Anglian's historical spend was consistent with the modelled cost prediction from this model over the historical period, and Oxera's modelling suggested an allowance between £100 million and £195 million. Nonetheless, Anglian maintained the lower CAC claim of around £68 million.⁸⁰⁶

4.593 Anglian said that Ofwat's arguments were not supported by the evidence.⁸⁰⁷

- (a) Ofwat highlighted that some companies with low leakage performance also reported high leakage costs and concluded that there was insufficient evidence that modelled allowances were insufficient to meet the costs of maintaining leading leakage levels. This was erroneous for the following reasons.
 - (i) Anglian, Bristol Water, Sutton and East Surrey Water and Wessex, the companies with the highest level of leakage performance, were ranked as the four least efficient in the treated water distribution models.
 - (ii) The implicit allowance from the base cost models without leakage costs predicted a lower level of funding than Anglian had spent on maintaining leakage costs in recent years.
 - (iii) Companies that reported high leakage costs and low leakage performance were delivering a lower service level relative to frontier companies such as Anglian.
 - (iv) Companies with low leakage performance faced less demanding PCLs than Anglian and received additional funding from this.
 - (v) Ofwat had said that it had provided enhancement allowances for companies that were proposing leakage improvements beyond a baseline leakage level. However, the baseline used was based on company-specific performance, so could not provide any funding for frontier companies to maintain that level.⁸⁰⁸
 - (vi) Ofwat had said that it could not use leakage as an explanatory variable in its PR24 models, so any additional costs required to maintain leakage were already funded. However, this was contradicted by the Oxera analysis.⁸⁰⁹

⁸⁰⁶ Anglian SoC, paragraph 238, 251–252; Oxera (2025) Assessment of the cost to maintain frontier leakage performance.

⁸⁰⁷ Anglian SoC, paragraphs 246–247 and Figure 18.

⁸⁰⁸ Anglian SoC, paragraph 248.

⁸⁰⁹ Anglian SoC, paragraph 249; Oxera (2025) Assessment of the cost to maintain frontier leakage performance.

- (vii) Ofwat had said that any modelling of leakage must include Thames Water, which was inconsistent with the approach Ofwat took in other areas.⁸¹⁰

Ofwat

- 4.594 Ofwat said that it had rejected the claim in Ofwat's PR24 FD and retained this view after reviewing the new Anglian evidence.⁸¹¹
- (a) The conclusions of the PR19 redetermination were no longer relevant since the empirical evidence had improved.⁸¹²
 - (b) It was incorrect to consider marginal costs of leakage reduction in isolation from total wholesale water base expenditure allowances.⁸¹³
 - (c) Ofwat did not find compelling evidence that companies with lower leakage levels incurred higher leakage costs than companies with higher leakage levels.⁸¹⁴
 - (d) Econometric analysis suggested that leakage performance was not a significant driver of base costs or was already explained by the base cost drivers.⁸¹⁵

Our provisional assessment and provisional decision

- 4.595 In this section we set out our provisional assessment and provisional decision. Our provisional assessment showed that the claim failed the need criterion, so we did not assess the efficiency criterion.

Provisional need assessment

- 4.596 In this section we set out our provisional assessment of the evidence on unique circumstances. Our provisional assessment of this sub-criterion led to the provisional view that the claim failed the need criterion, so we did not assess adjustment to allowances, management control nor materiality.

⁸¹⁰ [Anglian SoC](#), paragraphs 253–257.

⁸¹¹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), p1, p7, Table 1.

⁸¹² Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 2.9–2.10.

⁸¹³ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 2.11–2.14.

⁸¹⁴ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 2.15–2.18, Figures 1–2.

⁸¹⁵ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 2.19–2.23.

Unique circumstances

- 4.597 In this section we set out our provisional assessment of whether the Anglian claim fulfilled the unique circumstances sub-criterion.
- 4.598 Oxera, Anglian's advisers, submitted econometric evidence on the relationships between leakage levels and costs.⁸¹⁶ The results of the econometric analysis suggested a negative relationship between leakage levels and leakage totex and a positive relationship between a reduction in leakage levels and leakage totex.⁸¹⁷ Both of these results suggested that, across the industry, as leakage performance improved, leakage expenditure increased.
- 4.599 We identified limitations of this analysis. First, the analysis did not directly address the question of whether Anglian faced unique circumstances on leakage expenditure. Second, the statistical significance of the variables was weak. Many variables were only significant at the 10% level and some were not significant.⁸¹⁸ Third, we had concerns with using endogenous variables as explanatory variables. Management has control over leakage levels as it can decide on investment in this area, although we recognised these decisions were made in the context of exogenous factors. Fourth, there were differences in the datasets used by Oxera and Ofwat. In particular, Oxera appeared to have combined PR24 DD and PR24 FD datasets which used different price bases. Consequently, our provisional view was to place little weight on this analysis.
- 4.600 Anglian also submitted evidence on the relationship between leakage performance and Ofwat's assessment of the companies' cost efficiency in treated water distribution.⁸¹⁹ Oxera said that the results showed that the four companies with the lowest leakage levels were ranked as the four least efficient companies in the relevant cost efficiency models.⁸²⁰ Oxera said that this appeared to be evidence to suggest that the additional costs associated with maintaining frontier leakage were not funded with the core base allowance.⁸²¹
- 4.601 We note that modelled efficiency scores are affected by many factors other than leakage performance. For example, total leakage costs are only a 34% of treated water distribution costs.⁸²² As a cross-check, we used our updated provisional decision models and compared efficiency scores to leakage performance. Our analysis showed a weak and slightly positive relationship between leakage expenditure per km of main and efficiency scores. This result was not consistent

⁸¹⁶ Oxera (2025) Assessment of the cost to maintain frontier leakage performance.

⁸¹⁷ Oxera (2025) Assessment of the cost to maintain frontier leakage performance, Tables 2.1–2.2.

⁸¹⁸ Oxera (2025) Assessment of the cost to maintain frontier leakage performance, Tables 2.1–2.2.

⁸¹⁹ Oxera (2025) Assessment of the cost to maintain frontier leakage performance, Figure 1.2.

⁸²⁰ Oxera (2025) Assessment of the cost to maintain frontier leakage performance, p5.

⁸²¹ Oxera (2025) Assessment of the cost to maintain frontier leakage performance, p6.

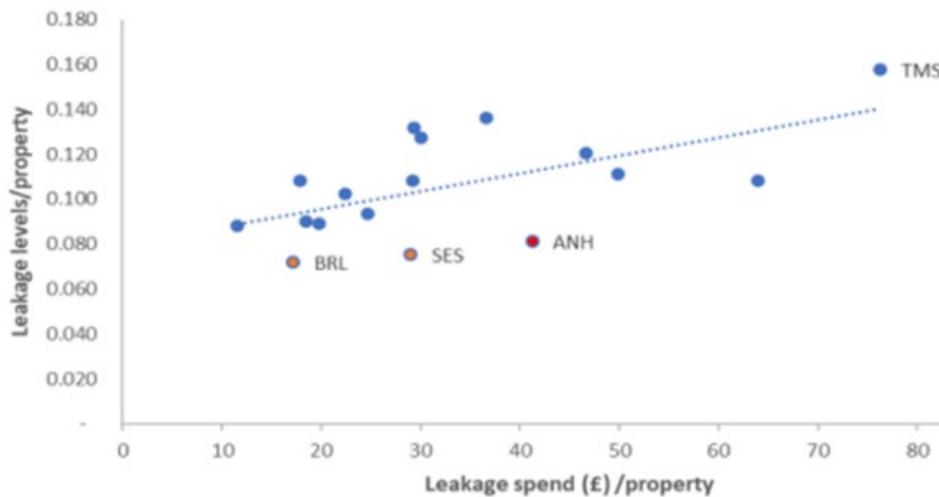
⁸²² CMA analysis of data provided by Ofwat in Response to SoCs CMA Source Databook and Ofwat (2025) [PR24 FD models data](#).

with the results of the Oxera analysis above and consequently, our provisional view was to place little weight on this Oxera analysis.

4.602 Ofwat submitted an analysis of water company leakage spend per property and per kilometre, compared to leakage levels per property and leakage levels per kilometre. This is shown in Figure 4.15 and Figure 4.16 below.

Figure 4.15: Ofwat analysis of leakage spend and leakage levels (per property)

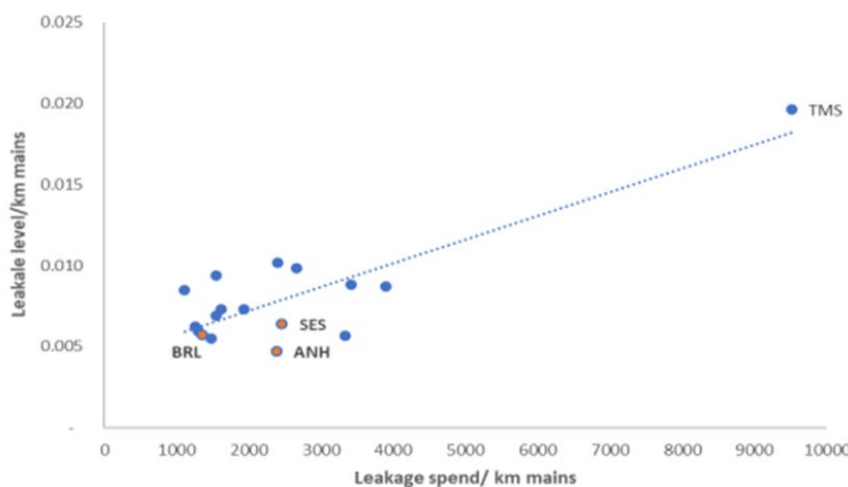
Figure 1: Leakage spend per property vs leakage levels per property



Source: Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), Figure 1.

Figure 4.16: Ofwat analysis of leakage spend and leakage levels (based on main length)

Figure 2: Leakage spend per kilometre of main vs leakage levels per length of main



Source: Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), Figure 2.

4.603 This evidence showed that, when normalised by the number of properties or the length of mains, Anglian was not an outlier on leakage spend. This was inconsistent with the proposition that Anglian faced unique circumstances that had a material impact on its cost base.

- 4.604 Our provisional view was to place more weight on this analysis as it more directly assessed whether Anglian was an outlier on leakage expenditure. Maintaining a lower level of leakage may increase costs all else being equal. However, this data on unit costs indicated that this effect, if it existed, was partially or totally offset by other effects working in the other direction.
- 4.605 Based on the evidence above, our provisional assessment was that Anglian had not provided compelling evidence that it fulfilled the unique circumstances sub-criterion.

Provisional decision

- 4.606 Having reviewed the evidence above, our provisional decision was not to allow Anglian's leakage CAC.

Responses to the provisional decision

- 4.607 Anglian asked the CMA to revisit this CAC. Anglian said that the CMA had incorrectly concluded that Anglian's leakage position was not different to others and the CMA did not address whether Anglian was funded for frontier activities, or explain the inconsistency between the CMA's position that provisional decision base allowances fund only average performance while denying the need for additional funding at the frontier.⁸²³
- 4.608 Anglian said that its need to maintain a frontier leakage position was due to specific regional factors and operational realities.⁸²⁴ Anglian said that the CMA did not explain why the well-established principle of diminishing returns did not apply to leakage and asked the CMA to explain its view on this.⁸²⁵
- 4.609 Anglian said that our provisional decisions appeared to rely on spend data for non-frontier companies and LASSO rankings. This did not adequately address whether the allowance from the base cost models provided sufficient allowances to allow leading leakage performing companies to maintain low leakage levels.⁸²⁶
- 4.610 Anglian said that the CMA had wrongly dismissed Oxera's analysis on the basis of an erroneous claim that the statistical significance of some of the variables were not significant. All the variables included in Oxera's models to assess the cost efficiency of the claim were statistically significant at the 10% level or greater.⁸²⁷

⁸²³ Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 23, 208, p73; Anglian (2025) [Response to CMA PR24 PD](#), Annex 007 Analysis of Ofwat Assessment Of Anglian's Leakage Need Case, p1; Anglian (2026) [Response to Working Paper](#), paragraphs 24 and 29.

⁸²⁴ Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 236 and 237; Anglian (2025) [Response to CMA PR24 PD](#), Annex 007 Analysis of Ofwat Assessment Of Anglian's Leakage Need Case, p1.

⁸²⁵ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 237.

⁸²⁶ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 238.

⁸²⁷ Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 23, 238(ii); p73.

- (a) In the Oxera models used to determine the CAC all explanatory variables were statistically significant at the 5% or 10% level. The CMA's statement that some variables were not statistically significant referred to models which were not used to determine the CAC. Correcting for the price index issue identified by the CMA had no impact on modelling performance nor statistical significance.⁸²⁸
- (b) Oxera had reassessed its models following the provisional determinations and the implicit allowance remained below Anglian's efficient cost requirement for maintaining its frontier leakage performance in AMP8.⁸²⁹

4.611 Anglian also provided evidence which responded to Ofwat's decision to reject the claim on the basis of need in PR24.

- (a) Anglian had submitted detailed evidence explaining why it was appropriate and consistent to exclude Thames Water and neither Ofwat nor the CMA had addressed this evidence.⁸³⁰
- (b) Ofwat found that leakage was not statistically significant in the models, but Anglian's statement of case clearly explained that the models were insufficiently granular to isolate the relationship between frontier leakage and costs.⁸³¹
- (c) Ofwat's analysis was wrong as it deployed a poor and flawed implicit allowance that contradicted its own methodology. Whilst the PR24 final methodology recommended using multiple approaches for a robust implicit allowance assessment, Ofwat employed only one flawed and highly unusual method. Ofwat's calculation contained critical errors.⁸³²
- (d) The CMA had not explained if or how it had calculated Anglian's implicit allowance for leakage.⁸³³
- (e) Anglian's ODI required it to perform at the frontier to avoid a penalty. Ofwat's argument on enhancement funding being available to improve performance beyond the baseline was therefore irrelevant as Anglian was already held to that higher standard.⁸³⁴

⁸²⁸ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 238(ii).

⁸²⁹ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 238(i).

⁸³⁰ Anglian (2025) [Response to CMA PR24 PD](#), Annex 007 Analysis of Ofwat Assessment Of Anglian's Leakage Need Case, p1.

⁸³¹ Anglian (2025) [Response to CMA PR24 PD](#), Annex 007 Analysis of Ofwat Assessment Of Anglian's Leakage Need Case, p1.

⁸³² Anglian (2025) [Response to CMA PR24 PD](#), Annex 007 Analysis of Ofwat Assessment Of Anglian's Leakage Need Case, p1.

⁸³³ Anglian (2025) [Response to CMA PR24 PD](#), Annex 007 Analysis of Ofwat Assessment Of Anglian's Leakage Need Case, p2.

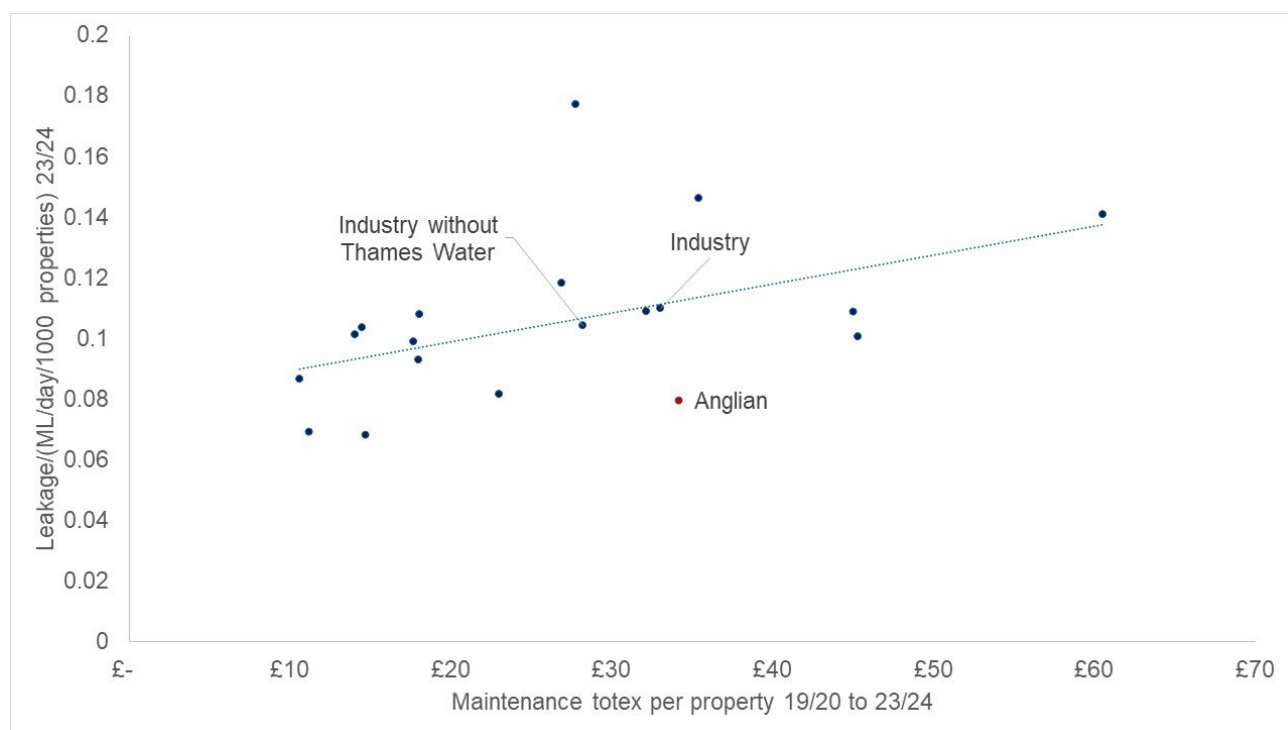
⁸³⁴ Anglian (2025) [Response to CMA PR24 PD](#), Annex 007 Analysis of Ofwat Assessment Of Anglian's Leakage Need Case, p2.

- (f) Neither Ofwat nor the CMA had addressed the management control, materiality and implicit allowance sub-criteria.⁸³⁵ Anglian's claim was also cost efficient.⁸³⁶

Final assessment and final decision

4.612 To inform our final assessment we produced slightly revised versions of Ofwat's analysis from Figure 4.15 and Figure 4.16. Our revised versions in Figure 4.17 and Figure 4.18 use only maintenance (ie base) leakage spend and use only data from the benchmarking period: 2019/20 to 2023/24. This is a more appropriate comparison since our focus is on what is funded by the base cost models. The charts below show industry average base leakage spend (total base leakage spend divided by i) number of properties and ii) km of mains) for comparison with Anglian, including and excluding Thames Water. The most relevant comparison is between Anglian's average leakage spend and the industry average including Thames Water, as Thames Water's spending will influence Anglian's leakage funding through the base models.

Figure 4.17: CMA analysis of leakage spend and leakage levels (per property)

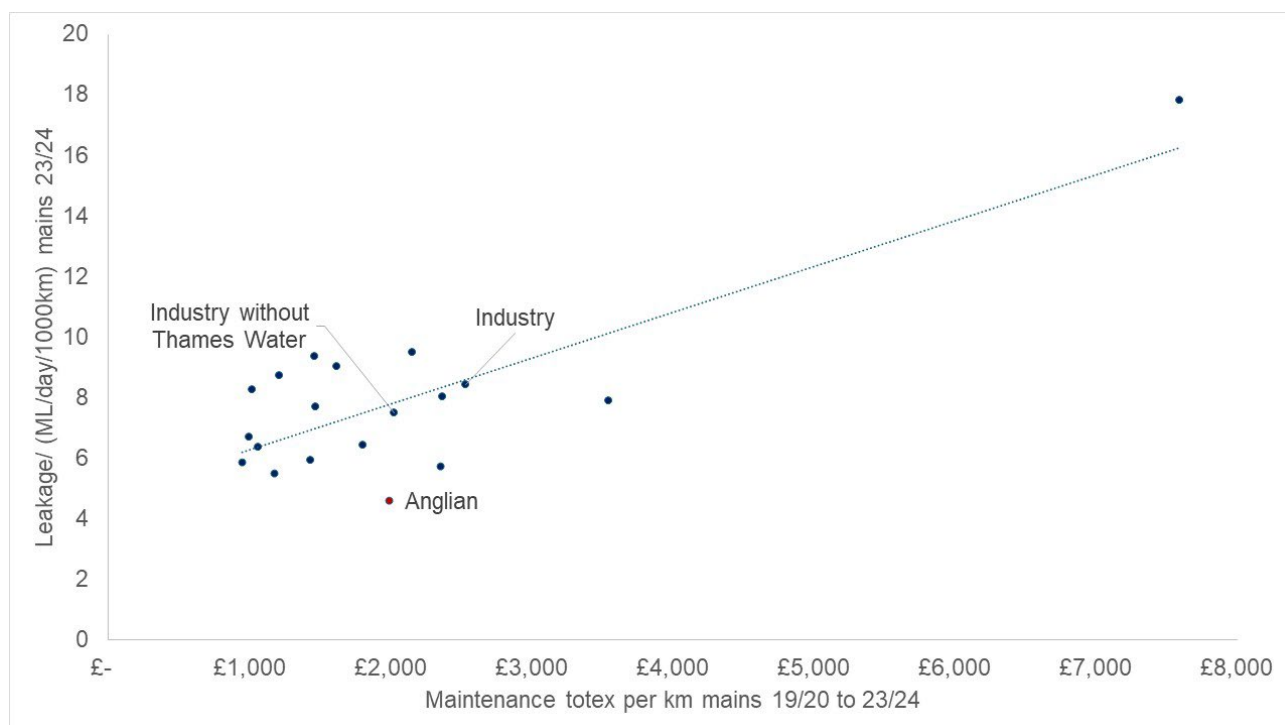


Source: CMA analysis of data provided by Ofwat in Response to SoCs CMA Source Databook.

⁸³⁵ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 240.

⁸³⁶ Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 242-244.

Figure 4.18: CMA analysis of leakage spend and leakage levels (based on mains length)



Source: CMA analysis of data provided by Ofwat in Response to SoCs CMA Source Databook.

- 4.613 Our analysis, consistent with that of Ofwat, shows Anglian's average leakage expenditure is not an outlier compared to average industry leakage spend.
- 4.614 We have also reviewed the Anglian evidence above. Anglian submitted evidence based on estimated leakage costs and an assessment of the implicitly funded leakage spending through the base costs models. However, this evidence does not contradict the evidence in Figure 4.17 and Figure 4.18, which directly compares Anglian's actual average leakage spend with that of the rest of the industry. Examples are given below.
- Anglian said that 'the PDs only fund average performance', whilst Anglian had frontier leakage performance. The relevant framework for assessing CACs is that claims must fulfil the unique circumstances sub-criterion including whether these circumstances lead to higher costs.⁸³⁷ If Anglian was facing unique circumstances which leads to higher costs, we would expect to see this reflected in the average leakage spend data shown in Figure 4.17 and Figure 4.18. However, this evidence shows that Anglian's average leakage costs are close to or below the industry average.
 - Anglian submitted evidence explaining why it was appropriate and consistent to exclude Thames Water and neither Ofwat nor the CMA had addressed this

⁸³⁷ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 238(i).

evidence.⁸³⁸ Figure 4.17 and Figure 4.18 both contain information on Thames Water spend. Including or excluding Thames Water data does not change the conclusions on whether Anglian is an outlier or not.

- (c) Anglian said that its need to maintain a frontier leakage position was due to specific regional factors and operational realities.⁸³⁹ If Anglian maintaining a frontier leakage position resulted in Anglian spending considerably more than other companies then we would expect to see this reflected in Figure 4.17 and Figure 4.18.

- 4.615 We also investigated efficiency scores – using our final decision models to compare efficiency scores to leakage performance. Our analysis showed a weak and slightly negative relationship between efficiency scores and i) leakage per day per km of mains and ii) leakage per day per property. However, this analysis provides no compelling evidence to support a clear relationship between higher levels of leakage and inefficiency. Consequently, we have placed limited weight on the Oxera analysis on efficiency scores and leakage performance.
- 4.616 We also assessed whether it was appropriate to assess this CAC using econometrics, similar to the approach adopted for economies of scale at WTW and coastal population. We did not adopt this approach as we have concerns with using endogenous variables, such as leakage expenditure, as explanatory variables.
- 4.617 Anglian also submitted evidence that it faced diminishing marginal returns (and hence higher marginal costs) of reducing leakage. We recognise that spending on leakage reduction for a water company is likely to be subject to diminishing marginal returns. However, the base models are average cost models and the analysis in Figure 4.17 and Figure 4.18 provides evidence on whether Anglian is an outlier on average leakage spend. The results in Figure 4.17 and Figure 4.18 show that Anglian is not an outlier on average leakage spend.
- 4.618 Consequently, our final decision is not to allow the Anglian leakage claim as Anglian has not provided compelling evidence that it fulfils the unique circumstances sub-criterion.

Southern AAD

- 4.619 In this section we assess Southern's CAC for £101 million to upgrade two sludge treatment centres (**STCs**) to allow AAD.⁸⁴⁰

⁸³⁸ Anglian (2025) [Response to CMA PR24 PD](#), Annex 007 Analysis of Ofwat Assessment Of Anglian's Leakage Need Case, p1.

⁸³⁹ Anglian (2025) [Response to CMA PR24 PD](#), paragraphs 236 and 237, and its supporting Annex 007 Analysis of Ofwat Assessment Of Anglian's Leakage Need Case, p1.

⁸⁴⁰ [Southern SoC](#), p32, paragraph 19; Southern (2024) [SRN-DDR-016: Bioresources AAD Cost Adjustment Claim](#).

4.620 The remainder of this section covers the following topics:

- (a) Ofwat's PR24 FD approach;
- (b) Parties' submissions;
- (c) our provisional assessment and provisional decision;
- (d) responses to the provisional decision; and
- (e) our final assessment and final decision.

4.621 For the reasons set out below, our final decision is not to allow this claim.

Ofwat's PR24 FD approach

4.622 Ofwat assessed this request as a CAC in Ofwat's PR24 FD.⁸⁴¹ Ofwat said that Southern had not provided compelling evidence to demonstrate either the need for an adjustment or that the costs were efficient.⁸⁴²

Parties' submissions

4.623 In this section we summarise the submissions by Southern, Ofwat, other Disputing Companies and third parties. We first focus on the specific issues raised by Southern and Ofwat.

Southern and Ofwat's submissions

4.624 Southern and Ofwat discussed the following issues in their submissions.

- (a) Ofwat's bioresources base models did not capture Southern's high sludge disposal complexity which led to underfunding.⁸⁴³
- (b) Ofwat's bioresources base models underfunded Southern's increasing capital maintenance costs.⁸⁴⁴
- (c) The PR24 base models failed to capture substantial investments in AAD made across the sector.⁸⁴⁵

⁸⁴¹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.1.

⁸⁴² Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Southern Water](#), Sheet 'SRN_CAC5'; Ofwat (2025) [Response to Southern SoC](#), paragraph 3.13 and Table 4.2; Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.2.

⁸⁴³ [Southern SoC](#), pp135–138, paragraphs 107–113. Further detail available at: [Southern SoC](#), p133, paragraphs 92–93; KPMG (2025) Analysis of components of Ofwat's PR24 final determination cost assessment sections 2.1–2.2; Southern response to Southern RFI04, paragraph 2.12.

⁸⁴⁴ [Southern SoC](#), pp138–140, paragraphs 114–121.

⁸⁴⁵ [Southern SoC](#), pp140–143, paragraphs 122–132.

- (d) Ofwat wrongly asserted that AAD upgrades could be delivered within AMP8 base allowances following the inclusion of sludge quality enhancement within base.⁸⁴⁶
- (e) In the PR24 FD Ofwat funded similar AAD investments by Thames Water.⁸⁴⁷
- (f) Southern failed to account for cost sharing in its claim.⁸⁴⁸
- (g) Southern did not account for future opex savings.⁸⁴⁹
- (h) Whether the project should be included in the direct procurement for customers (**DPC**) framework.⁸⁵⁰

Sludge disposal complexity

- 4.625 Southern said that its unique position as a company operating between London and the coast increased the complexity of its bioresources operations and this was outside management control. Key cost drivers included limited land bank availability, a dispersed population, evolving environmental regulations, and decreasing farmer satisfaction with biosolids use. The base models failed to capture these features and therefore underfunded Southern.⁸⁵¹
- 4.626 In response, Ofwat said that it recognised that Southern was subject to higher sludge disposal complexity, but this was under management control. Companies controlled their sludge disposal routes and the distance travelled to disposal sites through the location of STCs. The base cost models captured the location of sewage treatment works relative to STCs. Ofwat said that it recognised that sludge disposal unit costs had increased over the last regulatory period, but these represented less than 20% of bioresources expenditure.⁸⁵²

Bioresources models underfund increasing capital maintenance costs

- 4.627 Southern said that operating costs increased over time. Southern's conventional anaerobic digestion (**CAD**) technologies were approaching the end of their economic lives. Furthermore, the 13-year modelling period did not capture an

⁸⁴⁶ [Southern SoC](#), pp143–145, paragraphs 133–143.

⁸⁴⁷ [Southern SoC](#), pp145–146, paragraphs 144–147.

⁸⁴⁸ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.26; Ofwat response to Ofwat RFI06, p4.

⁸⁴⁹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.25; Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Southern Water](#), Sheet 'SRN_CAC5'; Ofwat response to Ofwat RFI06, p4.

⁸⁵⁰ [Southern SoC](#), p297, paragraph 3.

⁸⁵¹ [Southern SoC](#), p133, paragraphs 92–93, pp135–138, paragraphs 107–113; KPMG (2025) Analysis of components of Ofwat's PR24 final determination cost assessment, section 2.1–2.2; Southern response to Southern RFI04, paragraph 2.12.

⁸⁵² Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 6.10–6.12.

entire sludge treatment asset lifecycle, which was typically 25 years. This meant that the base models did not capture cost drivers related to asset health.⁸⁵³

4.628 Southern said that the base models did not recognise the different sludge treatment technologies. Companies which had adopted AAD were still in the low-cost phase of the asset life. This discrepancy was further amplified by the cost saving features of AAD, as AAD generated heat and power as a byproduct of sludge treatment.⁸⁵⁴ The relationship between costs and cost drivers was not stable because different companies used different technologies.⁸⁵⁵

4.629 In response, Ofwat said the following.

- (a) The bioresources base cost models used data from 2011/12 to 2023/24 to help set efficient expenditure allowances.⁸⁵⁶
- (b) Following consideration of PR24 DD representations, Ofwat amended the PR24 FD bioresources base cost models to include historical sludge quality enhancement costs.⁸⁵⁷
- (c) Investment at STCs tended to be lumpier than other expenditure. Using data from 2011/12 to 2023/24 to set the catch-up efficiency challenge accounted for this and helped to provide a sufficient allowance for long-term bioresources growth including AAD upgrades. It led to a less stretching bioresources catch-up efficiency challenge compared to using the last five years of outturn data.⁸⁵⁸
- (d) Ofwat did not include explanatory variables to capture the types of sludge treatment methods used by wastewater companies as this was within management control.⁸⁵⁹
- (e) Southern did not account for the implicit AAD upgrade allowances it had received in previous regulatory periods.⁸⁶⁰
- (f) There was no evidence that additional expenditure allowances had been provided to water companies for AAD upgrades at PR14, PR19 or PR24 above allowances provided through Ofwat's PR24 base cost econometric models.⁸⁶¹

⁸⁵³ Southern SoC, pp138–139, paragraphs 114–117.

⁸⁵⁴ Southern SoC, pp139–140, paragraphs 118–120.

⁸⁵⁵ Southern SoC, pp140, paragraph 121.

⁸⁵⁶ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.14 and 6.23; Ofwat response to Ofwat RFI06, p2.

⁸⁵⁷ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.15.

⁸⁵⁸ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.27; Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.15; Ofwat response to Ofwat RFI06, p2.

⁸⁵⁹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 6.21–6.22.

⁸⁶⁰ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.28.

⁸⁶¹ Ofwat response to Ofwat RFI06, p4.

Bioresources models fail to capture AAD investments

- 4.630 Southern said that the modelling used data from 2011/12 to 2023/24, which omitted a period when Northumbrian and Dŵr Cymru received additional allowances for switching to AAD.⁸⁶² Northumbrian delivered two AAD facilities worth more than £60 million: Bran Sands in 2007 and Howdon in 2010. Dŵr Cymru received £70 million for AAD plants at Cardiff and Aran in 2011.⁸⁶³
- 4.631 In response, Ofwat said that the 2011/12 start year was decided in collaboration with water companies. It allowed for a long-time series of data, while ensuring historical data was accurate.⁸⁶⁴

Ofwat wrongly asserted AAD upgrades could be delivered following the inclusion of sludge quality enhancement within base

- 4.632 Southern said that KPMG's original analysis showed that the implicit allowance was £11.5 million before catch-up, frontier shift and RPEs. Therefore, Ofwat had made an error when it stated that Southern's implicit allowance estimate of £5.12 million materially underestimated the implicit allowance. The catch-up challenge was also sensitive to the time-period used due to the timings of AAD investment. Furthermore, the inclusion of enhancement spend in the model reduced the r-squared of the bioresources models.⁸⁶⁵
- 4.633 Southern said that in the PR24 FD, Ofwat stated that Southern 'failed to account for AAD upgrades by other companies. However, the information that Ofwat relied upon was not available to Southern, and Ofwat collected the data in September 2024. The implicit allowance in Southern's statement of case was based on known AAD related costs from the PR24 FD models.⁸⁶⁶
- 4.634 Southern said that PR24 was the first time sludge growth and quality enhancement were included in the bioresources model. The omission of historical sludge quality enhancement expenditure from the modelled costs in previous regulatory periods indicated that Ofwat's claim that Southern had been previously funded for AAD upgrades was unfounded.⁸⁶⁷
- 4.635 In response Ofwat said that in Ofwat's PR24 FD it included historic sludge quality enhancement capital expenditure within the scope of base costs. Adding this

⁸⁶² Southern SoC, pp140–143, paragraphs 122–132.

⁸⁶³ Southern (2024) [Southern SRN-DDR-016 - Bioresources AAD Cost Adjustment Claim](#), section 6.2.

⁸⁶⁴ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.23.

⁸⁶⁵ Southern SoC, pp143–145, paragraphs 133–143; KPMG (2025) Analysis of components of Ofwat's PR24 final determination cost assessment, section 2.2.

⁸⁶⁶ Southern (2025) [Reply to Ofwat Response](#), p3.

⁸⁶⁷ Southern response to Southern RFI04, paragraph 2.11.

meant that all spend was treated the same and helped to ensure that the models provided a long-term efficient allowance to invest in AAD.⁸⁶⁸

In the PR24 FD Ofwat funded similar AAD investment by Thames Water

- 4.636 Southern said that Ofwat's decision to reject the Southern CAC was inconsistent with Ofwat's decision to accept a Thames Water CAC for a similar bioresources scheme.⁸⁶⁹ There were similarities between the schemes, including that both were for AAD, both replaced ageing treatment assets and both were considered base expenditure.⁸⁷⁰ Southern said that it faced similar resilience issues to Thames Water.⁸⁷¹
- 4.637 In response, Ofwat said that the Southern and Thames Water CACs were not comparable for two main reasons. First, there was a difference in risk to operational resilience. Beckton made up 17% of Thames Water's capacity, while Ashford and Ham Hill combined represented 12% of Southern's capacity. Furthermore, Thames Water had evidenced the impacts and capacity shortfalls in its proposal, while Southern had not sufficiently evidenced the same resilience needs.⁸⁷² Second, there was a difference in ability to fund with base allowances. Ofwat stated that the implicit allowance for Thames Water's claim was £67 million, compared to a request for £166.8 million. Thames Water also already treated around 54% of sludge via AAD, compared with 0% for Southern. Ofwat concluded that the incremental opex savings from Thames Water's proposed replacement of the sludge powered generator at Beckton was likely to be less significant than for Southern.⁸⁷³

Southern failed to account for cost sharing in the CAC request

- 4.638 Ofwat said that Southern failed to account for cost sharing, which allowed it to recover around 50% of any overspend from customers.⁸⁷⁴
- 4.639 In response, Southern said that this was an erroneous application of the cost sharing mechanism: cost sharing was intended to address instances where actual spend exceeded the predicted efficient spend, not to justify upfront allowances that were insufficient for recovery of known efficient spend.⁸⁷⁵

⁸⁶⁸ Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Southern Water](#), Sheet 'SRN_CAC5'; Ofwat response to Ofwat RFI06, Q3, p4; Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.24.

⁸⁶⁹ [Southern SoC](#), p32, paragraph 19.

⁸⁷⁰ [Southern SoC](#), pp145–147, paragraphs 144–147.

⁸⁷¹ Southern (2025) [Reply to Ofwat Response](#), p4.

⁸⁷² Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 6.36–6.41.

⁸⁷³ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 6.42–6.45.

⁸⁷⁴ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.26; Ofwat response to Ofwat RFI06, Q3, p4.

⁸⁷⁵ Southern (2025) [Reply to Ofwat Response](#), p3.

4.640 Southern said that there was no expectation within the CAC guidance that companies should account for cost sharing when demonstrating the need for adjustment; nor was the point reflected in Ofwat feedback during the CAC development process.⁸⁷⁶

Southern did not account for future opex savings

4.641 Ofwat said that Southern did not account for future opex savings from investing in AAD. The AAD investment would generate more energy, which could offset power costs and/or raise additional revenue. Ofwat estimated cost savings of £61 million for 2030 to 2035.⁸⁷⁷

4.642 Ofwat said that the residual cost facing Southern for the AAD upgrades after accounting for all three elements (AAD upgrade implicit allowance, 2030 to 2035 opex savings, and cost sharing) was around £10 million. This was conservative as it only accounted for opex savings in one AMP and AAD asset life exceeded 20 years.⁸⁷⁸

4.643 In response, Southern said the following:

- (a) speculative opex savings in future periods were not relevant to PR24 funding;⁸⁷⁹
- (b) the AAD upgrades at Ashford and Ham Hill would lead to only 36% of total sludge being treated through AAD. So any savings would be a fraction of what Ofwat asserted;⁸⁸⁰
- (c) Southern would also stop digestion (and electricity generation) at multiple sites, so it would have to pay for additional power at these sites;⁸⁸¹
- (d) Southern's analysis showed that AAD opex would be similar to CAD opex;⁸⁸² and
- (e) Southern's AAD strategy was not focused on reducing opex, but instead planning for the changing demand for sludge.⁸⁸³

⁸⁷⁶ Southern (2025) [Reply to Ofwat Response](#), p3; Southern response to Southern RFI04, paragraphs 2.9–2.10.

⁸⁷⁷ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.25; Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Southern Water](#), Sheet 'SRN_CAC5'; Ofwat response to Ofwat RFI06, Q3, p4.

⁸⁷⁸ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.28.

⁸⁷⁹ Southern (2025) [Reply to Ofwat Response](#), p3.

⁸⁸⁰ Southern (2025) [Reply to Ofwat Response](#), p3.

⁸⁸¹ Southern (2025) [Reply to Ofwat Response](#), p3.

⁸⁸² Southern response to Southern RFI04, paragraphs 2.5–2.8.

⁸⁸³ Southern response to Southern RFI04, paragraphs 2.5–2.8.

Inclusion in DPC framework

- 4.644 Southern said that including the AAD investment in the DPC framework would reduce costs by at least £12 million, as well as supporting the deliverability and financeability of its overall programme.⁸⁸⁴
- 4.645 In response, Ofwat said that the proposed investment was not eligible under the DPC framework as it did not meet the relevant criteria and DPC was not intended to focus on bioresources. No other water companies had used DPC for AAD upgrades.⁸⁸⁵

Our provisional assessment and provisional decision

- 4.646 In this section we set out our provisional assessment and provisional decision. As our provisional assessment showed that the claim failed the need criterion, we did not assess the efficiency criterion.

Provisional need assessment

- 4.647 In this section we set out our provisional assessment of the evidence on unique circumstances. Our provisional assessment of this sub-criterion led to the provisional view that the claim failed the need criterion, so we did not assess management control, materiality, nor adjustment to allowances.

Unique circumstances

- 4.648 In this section we set out our provisional assessment of whether the Southern claim fulfilled the unique circumstances sub-criterion, setting out evidence on: (i) Southern's unique position; and (ii) the extent of AAD investment by other companies.

Southern's unique position

- 4.649 Southern said that its unique position between London and the coast resulted in higher sludge disposal costs. Specifically, Southern said that the ratio of agricultural land area (available for biosolid disposal) to population was lower in the south-east and London than in other regions, and much of this agricultural land consisted of smaller plots. This increased Southern's transport costs as it travelled further to dispose of biosolids.⁸⁸⁶

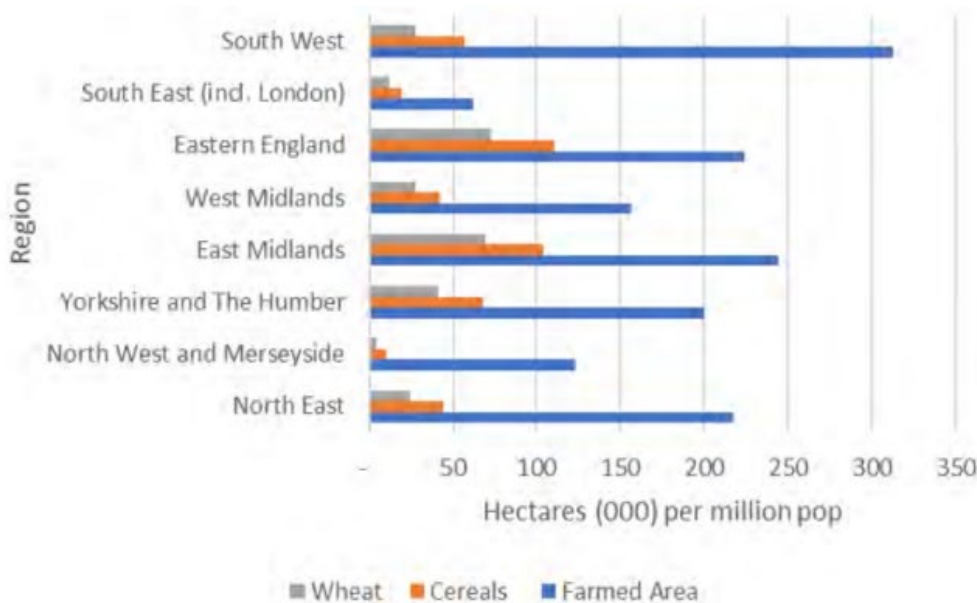
⁸⁸⁴ [Southern SoC](#), p297, paragraph 3.

⁸⁸⁵ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), p42, pp51–52, paragraphs 6.51–6.56; Ofwat (2025) [Response to Southern SoC](#), Table 4.2.

⁸⁸⁶ [Southern SoC](#), pp135–136, paragraphs 107–110; (Non-confidential) transcript of the hearing for Southern on 9 July 2025, p42, line 5 to p47, line 22.

4.650 Figure 4.19 below shows the evidence in the Southern statement of case on available land area for biosolids recycling by region, adjusted for population.⁸⁸⁷

Figure 4.19: Southern assessment of available land area for biosolids recycling by region adjusted for population



Source: [Southern SoC](#), p136, Figure 8.

4.651 We noted that the figures which include Southern were labelled ‘South East (incl. London)’. Including London in this category increased the population figure and was therefore unlikely to represent Southern’s operational areas. Furthermore, the chart did not compare the operating areas of WaSCs and was therefore relatively uninformative regarding the comparative position of Southern. Other WaSCs serving large metropolitan areas are likely to face similar conditions.

4.652 Southern had also not provided compelling evidence to substantiate its view that higher transport costs caused substantial differences in operating costs. We also noted that Ofwat stated that sludge disposal was less than 20% of bioresources costs.⁸⁸⁸

4.653 Finally, consistent with the lack of compelling evidence above, when asked in the hearings about its unique circumstances, Southern did not clearly explain that there were unique circumstances around this investment.⁸⁸⁹

⁸⁸⁷ [Southern SoC](#), p136, Figure 8.

⁸⁸⁸ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), pp44–45, paragraphs 6.10–6.12.

⁸⁸⁹ (Non-confidential) transcript of the hearing for Southern on 9 July 2025, p54, lines 3–26.

Extent of AAD investment by other companies

- 4.654 We requested information from Southern and Ofwat on the extent to which other companies had made investments in AAD and the extent to which funding for AAD investment was provided in the base bioresources models.
- 4.655 Southern said that it did not hold detailed information on specific AAD investments made by other companies as this was not in the public domain.⁸⁹⁰ However, it provided the following information on AAD investment in the UK.
- (a) Cambi, the leading global provider for AAD, listed 25 plants it had installed in the UK, two of which were in Scotland. Of the 23 installed in England and Wales, seven were installed before 2013.⁸⁹¹
 - (b) Anglian's PR04 FD listed six sites where there was investment in AAD.⁸⁹²
 - (c) The CMA in PR19 had allowed Anglian funding for an investment in STC.⁸⁹³
 - (d) In PR19 Ofwat allowed a Yorkshire Water CAC for sludge enhancement activities.⁸⁹⁴
 - (e) There was a case study for a Severn Trent investment in AAD at Finham.⁸⁹⁵
- 4.656 Southern also sent us data on AAD investment from 2011/12 to 2029-2030, showing investment of over £1 billion in AAD.⁸⁹⁶ However, Southern said that there were problems with this data. In particular, it excluded investments before 2011/12 and investments by Dŵr Cymru and Northumbrian.⁸⁹⁷
- 4.657 In response to an RFI, Ofwat provided a summary of AAD investment in the sector.⁸⁹⁸ The summary showed that there had been considerable AAD investment, which had been reported in both base and enhancement. Consequently, this investment would have been included in the Ofwat bioresources model which provided allowances that incorporated past enhancement spend from 2011/12 to 2023/24. This approach differed from the

⁸⁹⁰ Southern response to Southern RFI04, paragraph 1.1.

⁸⁹¹ Southern response to Southern RFI04, paragraph 1.3.1.

⁸⁹² Southern response to Southern RFI04, paragraph 1.3.2.

⁸⁹³ Southern response to Southern RFI04, paragraph 1.3.3. We note that this investment was enhancement investment in additional STC capacity and there is no mention in the CMA report of investment in AAD. [PR19 Final Report](#), paragraph 5.628.

⁸⁹⁴ Southern response to Southern RFI04 paragraph 1.3.4. We note that this investment was for dewatering and handling facilities and there is no mention of investment in AAD. Ofwat (2019) [Sludge quality and growth enhancement feeder model](#), Sheet 'Deep dive_YKY'.

⁸⁹⁵ Southern response to Southern RFI04, paragraph 1.3.5.

⁸⁹⁶ Southern response to Southern RFI04, supporting document 'OF-CA-249-SRN-AAD-cost-adjustment-claim-analysis-v2.xlsx', Sheet 'AAD data (real)'.

⁸⁹⁷ Southern response to Southern RFI04, paragraphs 1.5–1.6.

⁸⁹⁸ Ofwat response to Ofwat RFI06, Table 1.

typical Ofwat approach, which was to split base and enhancement spend and analyse those separately.

- 4.658 Consistent with this investment, Ofwat said that the average share of AAD in the industry had increased from 41% in 2015/16 to 51% by 2019/20.⁸⁹⁹
- 4.659 Our review of this evidence showed that there had been substantial investment in AAD over time, funded through base and enhancement. Ofwat's decision to include sludge quality enhancement capital expenditure within the scope of bioresources costs models meant that the models included substantial enhancement investment by other companies. We acknowledged that some investment was carried out before this time period, but Southern had not provided data to quantify the impact of this and therefore it was insufficient to conclude that the bioresources models provided insufficient funding for AAD investment.
- 4.660 Furthermore, if an activity involved long-lived assets and lumpy capex the allowances generated by Ofwat's methodology were intended to provide long-term allowances that enabled companies to maintain the long-term capability of assets while managing peaks and troughs in expenditure over time. Allowances were not intended to remunerate companies in full for peaks in expenditure. Allowances would be below actual totex requirements for companies in some periods, and above actual totex requirements in other periods, depending on the relative positions in their investment cycles. If a regulator awarded CACs to companies whenever they reached the high point in their investment cycles, companies would over-recover their costs overall, leading to customers overpaying.

Provisional decision

- 4.661 Having reviewed the evidence above, our provisional decision was not to allow Southern's AAD CAC.

Responses to the provisional decision

- 4.662 Southern said that Ofwat had accepted Thames Water's Beckton CAC as part of the large scheme gated process but had not done the same for the Southern AAD CAC. The CMA had not addressed Ofwat's inconsistent treatment of the Southern claim relative to Thames Water's Beckton claim.⁹⁰⁰
- 4.663 Southern said that the CMA should assess whether the Southern AAD claim could also be accepted under the large scheme gated process. The Southern AAD claim was above the £100 million threshold value for the large scheme gated process –

⁸⁹⁹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 6.29.

⁹⁰⁰ Southern (2025) [Response to CMA PR24 PD](#), paragraphs 1.49, 3.88, 3.112–3.115.

although it failed to meet this threshold on a net basis after the implicit allowance was subtracted.⁹⁰¹

4.664 Southern said that it had only included this claim as a CAC because Ofwat directed it to adopt this process.⁹⁰²

4.665 Ofwat said that it supported the provisional decision to not allow the CAC.⁹⁰³

Final assessment and final decision

4.666 The Southern submission contains no new evidence relating to the analysis we set out in our PD. It instead queries whether Ofwat's approach is consistent with a Thames Water scheme that is not under consideration by the CMA as part of the redetermination. Whether the CMA would have agreed with Ofwat's analysis of Thames Water's Beckton scheme is not within the scope of our redetermination. Our analysis has focused on whether there is a need for the Southern scheme within the meaning of the CAC criteria, and Southern's response to our PD does not impact that assessment. Consequently, our final decision is not to allow Southern's AAD CAC.

4.667 We investigated whether this claim could be accepted under the large scheme gated process, consistent with Southern's response to our PD. Ofwat describes the large schemes gated approach as follows:

'The scope and solution are less clear and may be more novel or complex, requiring greater scrutiny in the feasibility/design phase.

Development funding is included in the water company's final determinations. Approval of the remaining funding is through assessment of two company submissions.

Engagement meetings with the water company to review scheme progress and address issues to assist with company submissions.

13 schemes in AMP8.

Total AMP8 requested expenditure for gated schemes is £1,778 million.'⁹⁰⁴

4.668 We note that the majority of schemes which have been accepted into the large scheme gated process are enhancement claims and Thames Water's Beckton

⁹⁰¹ Southern (2025) [Response to CMA PR24 PD](#), paragraphs 3.113–3.114.

⁹⁰² Southern (2025) [Response to CMA PR24 PD](#), paragraph 3.113.

⁹⁰³ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

⁹⁰⁴ Ofwat (2025) [PR24 large scheme process guidance](#), p4.

claim is the only CAC which has been accepted into the large scheme gated process.⁹⁰⁵

- 4.669 To be accepted into the large scheme gated process, we would have had to accept the claim for the scheme within the meaning of the CAC criteria or enhancement criteria, even if there was uncertainty as to scope or costs as outlined above. As stated above, our final decision is not to allow Southern's AAD CAC on the basis of need and therefore the Southern AAD scheme is not eligible for acceptance into the large scheme gated process.
- 4.670 Furthermore, we note that Southern has not asked for this claim to be assessed as an enhancement claim, or presented evidence or arguments as to why it would meet the enhancement criteria. We have not assessed this claim using the enhancement framework, but note that Southern agreed that this investment does not meet Ofwat's enhancement assessment criteria.⁹⁰⁶

Wessex bioresources

- 4.671 In this section we assess Wessex's request for £178 million for investment in bioresources to meet new health and safety obligations arising from the Health and Safety Executive (**HSE**) investigation into an incident at Wessex's Avonmouth Water Recycling Centre in December 2020.⁹⁰⁷
- 4.672 The remainder of this section covers the following topics:
- (a) Ofwat's PR24 FD approach;
 - (b) Parties' submissions;
 - (c) our provisional assessment and provisional decision;
 - (d) responses to the provisional decision; and
 - (e) our final assessment and decision.
- 4.673 For the reasons set out below, our final decision is not to allow this claim.

Ofwat's PR24 FD approach

- 4.674 This claim was not assessed by Ofwat in the PR24 FD.⁹⁰⁸ Wessex submitted that Ofwat said that:

⁹⁰⁵ Ofwat (2025) [PR24 large scheme process guidance](#), p17

⁹⁰⁶ Southern (2024) [SRN-DDR-016: Bioresources AAD Cost Adjustment Claim](#), p9.

⁹⁰⁷ [Wessex SoC](#), paragraphs 2.51(b), 2.19, 11.3b; [Wessex SoC](#) (confidential), chapter 7.

⁹⁰⁸ Ofwat (2025) [Response to Wessex SoC](#), paragraph 4.12.

[REDACTED]⁹⁰⁹

Parties' submissions

4.675 In this section we summarise the following submissions:

- (a) Wessex;
- (b) Ofwat; and
- (c) other Disputing Companies.

Wessex

4.676 Wessex said that the £178 million was required due to meet new health and safety obligations facing Wessex arising from the HSE investigation into the Avonmouth Water Recycling Centre incident in December 2020.⁹¹⁰ An explosion at the site killed four people.⁹¹¹

4.677 [REDACTED]⁹¹²

4.678 [REDACTED]⁹¹³

4.679 [REDACTED]⁹¹⁴

4.680 [REDACTED]⁹¹⁵

4.681 [REDACTED]⁹¹⁶

Ofwat

4.682 Ofwat said that Wessex had provided insufficient evidence for the proposed adjustments.⁹¹⁷ Wessex noted that Ofwat had earlier said that:

[REDACTED]⁹¹⁸

⁹⁰⁹ [Wessex SoC](#), Appendix A197, p16.

⁹¹⁰ [Wessex SoC](#), paragraphs 2.51(b), 2.19, 11.3; [Wessex SoC](#) (confidential), paragraph 7.1, 7.8.

⁹¹¹ MRW (2020) [HSE investigates explosion at Avonmouth recycling complex](#) (accessed 5 March 2026); [Wessex SoC](#) (confidential), paragraph 7.6.

⁹¹² [Wessex SoC](#) (confidential), paragraph 7.7; (Confidential) transcript of the hearing for Wessex on 7 July 2025, p39, lines 18–23.

⁹¹³ Wessex (2025) Reply to Ofwat response, paragraph 1.8.

⁹¹⁴ Wessex (2025) Reply to Ofwat response, paragraph 1.9; (Confidential) transcript of the hearing for Wessex on 7 July 2025, p41, lines 8–13.

⁹¹⁵ Wessex (2025) Reply to Ofwat response, paragraph 1.11.

⁹¹⁶ [Wessex SoC](#) (confidential), paragraph 7.

⁹¹⁷ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), pp1–2, paragraph 10.1.

⁹¹⁸ [Wessex SoC](#), Appendix A197, p16.

- 4.683 Ofwat said that additional information was required to assess need and cost efficiency for this claim.⁹¹⁹ [§<]⁹²⁰
- 4.684 Ofwat said that it was important to understand whether:
- (a) [§<]
 - (b) [§<]⁹²¹
- 4.685 [§<]⁹²²
- 4.686 Ofwat commissioned a report from Mott McDonald [§<]⁹²³ Mott McDonald, advisers to Ofwat, said that:
- (a) [§<]⁹²⁴
 - (b) the DSEAR had seen no fundamental change in the requirements for risk assessments and risk management since its inception in 2002;⁹²⁵ and
 - (c) [§<]⁹²⁶

Other Disputing Companies

- 4.687 Southern said that Wessex had presented a heavily redacted case for an additional £178 million for bioresources at Avonmouth.⁹²⁷ It was likely any new HSE requirements would be applied across the sector and it may be appropriate for the CMA to set a notified item (within the meaning set out in Condition B of WoC and WaSC licences) for all Disputing Companies relating to any new health and safety requirements and/or recommendations.⁹²⁸

Our provisional assessment and provisional decision

- 4.688 In this section we set out our provisional assessment and provisional decision on need. As our provisional assessment showed that the claim failed the need criterion, we did not assess the efficiency criterion.

⁹¹⁹ Ofwat (2025) [Response to Wessex SoC](#), Table 4.2

⁹²⁰ Ofwat (2025) (Confidential) [Response to Wessex SoC](#), Table 4.2; Ofwat (2025) Response to expenditure allowances - cost adjustment claims, paragraph 10.16.

⁹²¹ Ofwat (2025) (Confidential) Response to expenditure allowances - cost adjustment claims, paragraph 10.11.

⁹²² Ofwat (2025) (Confidential) Response to expenditure allowances - cost adjustment claims, paragraph 10.6.

⁹²³ Mott McDonald are a consultancy firm that Ofwat commissioned to provide technical support [§<].

⁹²⁴ Mott McDonald (2025) Ofwat health and safety technical support, section 3; Ofwat (2025) (Confidential) Response to expenditure allowances - cost adjustment claims, paragraph 10.15.

⁹²⁵ Ofwat response to Ofwat RFI14, Q2; Mott McDonald (2025) Ofwat health and safety technical support, p1; Ofwat (2025) (Confidential) Response to expenditure allowances - cost adjustment claims, paragraph 10.15.

⁹²⁶ Mott McDonald (2025) Ofwat health and safety technical support, p1.

⁹²⁷ Southern (2025) [Response to other Disputing Companies' SoCs](#), paragraph 68.

⁹²⁸ Southern (2025) [Response to other Disputing Companies' SoCs](#), paragraph 69.

Need assessment

- 4.689 In this section we set our provisional assessments of the evidence on the unique circumstances and materiality sub-criteria. Our assessment led to the provisional view that the claim failed the need criterion, so we did not assess the management control nor adjustment to allowances sub-criteria.

Unique circumstances

- 4.690 In this section we set out our provisional assessment of whether the Wessex claim fulfilled the unique circumstances sub-criterion. We first examined the costs related to DSEAR and then [§<].

DSEAR

- 4.691 Mott McDonald, in a 2025 report commissioned by Ofwat, said that the DSEAR had seen no fundamental change in the requirements for risk assessments and risk management since its inception in 2002.⁹²⁹
- 4.692 Ofwat said that it had received no other CACs or enhancement requirements in relation to cost increases for DSEAR compliance – apart from Wessex’s claim.⁹³⁰
- 4.693 We asked the three other WaSC Disputing Companies whether they had incurred costs complying with DSEAR. All three said that they have been involved in collaboration on DSEAR and had incurred compliance costs.⁹³¹
- 4.694 The evidence showed that there had been no major changes in DSEAR regulations since 2002, these regulations applied to all WaSCs, and other companies had incurred costs complying with DSEAR.⁹³² The evidence from Ofwat supported the view that other companies had funded DSEAR compliance from base costs. Consequently, our provisional assessment was that DSEAR compliance costs were not unique circumstances for Wessex.

[§<]

- 4.695 For the purposes of the provisional assessment, we did not take a provisional view on whether the [§<] represented unique circumstances. Instead, we assumed for the purposes of the materiality assessment that it did.

⁹²⁹ Mott McDonald (2025) Ofwat health and safety technical support, p1.

⁹³⁰ Ofwat response to Ofwat RFI14, Q2

⁹³¹ Anglian, Northumbrian and Southern Joint Response to Disputing Companies RFI05, Q1; Anglian response to Disputing Companies RFI05, Q2–Q3; Northumbrian response to Disputing Companies RFI05, Q2–Q3; Southern response to Disputing Companies RFI05, Q2–Q3.

⁹³² Ofwat response to Ofwat RFI14, Q1–Q2.

Materiality

- 4.696 We requested information from Wessex on which costs were associated with [§<] and which costs were associated with DSEAR. Wessex identified only £[§<] of [§<] specific cost. The remaining £[§<] was associated with DSEAR or other activities.⁹³³ For the reasons explained above, our provisional decision was that the DSEAR compliance costs were not unique circumstances and therefore we focused our materiality assessment on the £[§<] of [§<] specific costs.
- 4.697 Wessex's total PR24 FD bioresources allowance was £310 million, before frontier shift and RPEs.⁹³⁴ £[§<] is less than [§<]% of the bioresources PR24 FD totex (substantially lower than the 6% threshold used by Ofwat).⁹³⁵ We saw no reason to suggest that this number would be material in the context of our updated totex allowances. Consequently, our provisional assessment was that the claim failed the materiality sub-criterion of the need assessment.⁹³⁶

Provisional decision

- 4.698 Based on the evidence above, our provisional decision was not to allow the Wessex bioresources CAC.

Responses to the provisional decision

- 4.699 [§<]⁹³⁷
- 4.700 [§<]⁹³⁸
- 4.701 Wessex submitted a report by AtkinsRéalis, which reviewed DSEAR expenditure and compliance across the water industry.⁹³⁹ [§<]

[§<]⁹⁴⁰

[§<]⁹⁴¹

- 4.702 Ofwat said that it supported our provisional decision.⁹⁴²

⁹³³ Wessex response to Wessex RFI01, Q2, paragraph 1.6; Wessex response to Wessex RFI01, supporting document titled 'A431 - Table A8-5 – updated – Detailed cost breakdown of the scope of improvements required at Avonmouth to meet new obligations.xlsx'.

⁹³⁴ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), Table 51.

⁹³⁵ Ofwat (2022) PR24 Methodology, [Appendix 9: Setting expenditure allowances](#), p31.

⁹³⁶ We note that the Ofwat materiality criterion for bioresources is 6%. Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Southern Water](#), Sheet 'SRN_CAC5'.

⁹³⁷ Wessex (2025) [Response to CMA PR24 PD](#), paragraphs 3.1–3.11 and Table 1.

⁹³⁸ Wessex (2025) [Response to CMA PR24 PD](#), paragraph 3.9.

⁹³⁹ AtkinsRéalis (2025) Technical Report.

⁹⁴⁰ AtkinsRéalis (2025) Technical Report, p2.

⁹⁴¹ AtkinsRéalis (2025) Technical Report, p7.

⁹⁴² Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

Final assessment and final decision

- 4.703 The evidence provided by Wessex, including the AtkinsRéalis report, does not contain compelling evidence that the DSEAR expenditure is unique to Wessex. We do not therefore find that it impacts our provisional assessment that Wessex did not face unique circumstances as concerns DSEAR compliance. Therefore, having reviewed the evidence above, our final decision is to not allow the Wessex bioresources claim.

Three econometric CACs

- 4.704 In this section we assess three CACs using an econometric approach: South East economies of scale at WTWs; Southern coastal population; and Southern regional wages.

South East economies of scale at WTWs

- 4.705 In this section we discuss South East's requested CAC for £25.1 million related to the additional costs from operating smaller WTWs.⁹⁴³
- 4.706 The remainder of this section covers the following topics:
- (a) Ofwat's PR24 FD approach;
 - (b) Parties' submissions prior to our provisional decision;
 - (c) our provisional assessment and provisional decision;
 - (d) responses to our provisional decision and base cost working paper; and
 - (e) our final assessment and final decision.
- 4.707 For the reasons set out below, our final decision is to allow this CAC and provide allowances of £17 million for South East, £13.5 million for Southern and £28 million for Wessex.

Ofwat's PR24 FD approach

- 4.708 At PR24 Ofwat concluded that South East had provided compelling evidence to justify the need for a cost adjustment.⁹⁴⁴ However, Ofwat developed an independent view of the claim value by including a water-weighted average treatment size (**water-WATS**) variable in all the WRP base cost models, based on

⁹⁴³ [South East SoC](#), paragraph 4.33(a).

⁹⁴⁴ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 12.5.

the approach suggested by Southern. This led to an allowed cost adjustment of £14.3 million for South East.⁹⁴⁵

Parties' submissions prior to our provisional decision

4.709 In this subsection we summarise the submissions made prior to our provisional decision by South East and Ofwat.

South East

4.710 South East said that Ofwat's WW base models did not explicitly account for WTW size, despite WTW-level economies of scale being a material driver of expenditure. This led to a biased assessment of efficient cost requirements for companies that operated many small WTWs.⁹⁴⁶

4.711 South East said that Ofwat's alternative approach, used to estimate the £14.3 million, was insufficient. Ofwat had focused only on the WRP models and omitted the impact on WW models entirely. If Ofwat had included the WW models in its analysis, the cost adjustment value would increase from £14.3 million to £24 million – similar to South East's original request.⁹⁴⁷

4.712 South East said that Ofwat's alternative models performed poorly from a statistical perspective, such that the estimated CAC value was intrinsically uncertain. More robust methods, which utilised both bottom-up modelling and top-down modelling, demonstrated that the original request of £25.1 million was a conservative estimate and sat within a reasonable range.⁹⁴⁸

Ofwat

4.713 Ofwat accepted the South East CAC due to the strong engineering rationale, but valued the claim at £14.3 million.⁹⁴⁹

4.714 Ofwat said that it had concerns with the statistical performance of the water-WATS driver in the base cost models. However, the water-WATS variable performed better from a statistical perspective compared to other tested variables (such as the number of sources per distribution input, or the share of distribution input treated in different sized treatment bands).⁹⁵⁰ The water-WATS variable's lack of statistical significance in both the WRP and WW models meant that it should not be included in the base cost models for all companies. Furthermore, Southern had

⁹⁴⁵ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 12.6-12.9.

⁹⁴⁶ [South East SoC](#), p41, paragraph 4.33(a).

⁹⁴⁷ [South East SoC](#), p41, paragraph 4.33(a); Oxera (2025) Base cost adjustments and cost adjustment claims, p17; (Non-confidential) transcript of the hearing for South East on 4 July 2025, p22, lines 2–21.

⁹⁴⁸ [South East SoC](#), p41, paragraph 4.33(a); Oxera (2025) Base cost adjustments and cost adjustment claims, p17–18.

⁹⁴⁹ Ofwat (2024) [PR24 final determinations Base cost adjustment claim feeder model – South East](#), Sheet 'SEW_CAC3'.

⁹⁵⁰ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 12.15.

only suggested the variable late in the PR24 process, so other companies could not fully engage with the proposal.⁹⁵¹

- 4.715 Ofwat said that it only included the water-WATS variable in the WRP models as this was where Ofwat had expected the variable to have the largest impact. Economies of scale primarily affected water treatment costs, which were 85% of WRP base costs but only 44% of WW base costs. Southern had also applied this approach.⁹⁵²
- 4.716 Ofwat said that as the econometric results suggested that the overall impact on the costs was not statistically different from zero, it decided to apply the adjustment in-the-round as it recognised the unique operating circumstances faced by South East, Southern and Wessex. Ofwat's view remained that its decision to partially accept the South East CAC was appropriate.⁹⁵³

Our provisional assessment and provisional decision

- 4.717 Our provisional decision was not to allow this CAC. We provisionally decided that the requirement underpinning this claim was met by the inclusion of the average size of WTWs variable in the provisional decision WRP model. This provisional decision also applied to the other Disputing Companies which received related funding. This led to us removing the following allowances: South East (£14.3 million); Southern (£19.4 million); and Wessex (£4.5 million).⁹⁵⁴

Responses to the provisional decision and base cost working paper

- 4.718 In this section we set out relevant responses to the provisional decision and the Working Paper. We have categorised the responses under two headings: approach to assessment; and adoption of water-WATs variable.

Approach to assessment

- 4.719 South East said that Anglian and Northumbrian had proposed expanding the list of candidate cost drivers, arguing that the focus on issues raised by South East and Southern risked biasing the assessment. South East disagreed as the cost drivers proposed by South East were all already used by Ofwat in some form in the FD models, and had been consulted upon and found to capture industry-wide cost pressures.⁹⁵⁵

⁹⁵¹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 12.14.

⁹⁵² Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 12.16.

⁹⁵³ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 12.17.

⁹⁵⁴ Ofwat (2024) [PR24 final determinations: Base cost aggregator model](#), Sheet 'Water-Calculations'.

⁹⁵⁵ South East (2026) [Response to Working Paper](#), paragraph 1.6a.

- 4.720 South East said that the correct response was for the CMA to remove the average volume per WTW variable from the base models. South East's inability to benefit from economies of scale should be recognised through a company specific CAC. South East had requested £25.1 million and had been awarded £14.3 million, and South East asked the CMA to provide a detailed assessment of that difference of opinion.⁹⁵⁶
- 4.721 Oxera, advisers to South East, said that Ofwat had agreed that Ofwat's PR24 FD models may capture the costs associated with WTW-level economies of scale for the average company, but not for South East's unique operating environment. Therefore, a post-modelling adjustment was required. The CMA's implicit assumption that a cost driver was irrelevant or immaterial for all companies if it was not selected by LASSO was inappropriate in this context.⁹⁵⁷
- 4.722 Southern said that the CMA should adopt Ofwat's out of model solutions for economies of scale at WTW, rather than using the LASSO as a catch-all solution.⁹⁵⁸ Southern found that (i) the model performance improved when average size of WTWs was removed from the candidate variable set; and (ii) including the variable led to a lower allowance for South East, Southern and Wessex. The CMA should:
- (a) remove the economies of scale variable from the candidate variable set;
 - (b) reinstate the allowances for South East, Southern and Wessex; and
 - (c) assess the South East claim separately.⁹⁵⁹
- 4.723 Ofwat said that it supported the provisional decision not to allow a further cost adjustment for this claim given that the cost impacts related to economies of scale were captured in the WRP base cost model. Ofwat also supported applying the provisional decision to Southern and Wessex, which received funding in the PR24 FD.⁹⁶⁰
- 4.724 Ofwat said that it supported including economies of scale at WTW in the base cost models where it was supported by strong economic and engineering rationale and robust data. Where the variables did not give reliable results a symmetrical cost-adjustment may be a second-best solution to protect customers.⁹⁶¹

⁹⁵⁶ South East (2025) [Response to CMA PR24 PD](#), paragraphs 2.33-2.36; Oxera (2025) Assessment of the CMA's base cost modelling in the provisional determination, pp30-32.

⁹⁵⁷ Oxera (2025) Assessment of the CMA's base cost modelling in the provisional determination, pp30-32.

⁹⁵⁸ Southern (2025) [Response to CMA PR24 PD](#), paragraphs 1.41 and 3.66-3.67.

⁹⁵⁹ Southern (2025) [Response to CMA PR24 PD](#), paragraphs 3.13, 3.15, 3.28, 3.57-3.66; Southern (2026) [Response to Working Paper](#), paragraph 111.

⁹⁶⁰ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

⁹⁶¹ Ofwat (2026) [Response to Working Paper](#), paragraphs 1.5, 3.1-3.5.

4.725 Ofwat said that at PR24 FD it had accepted the rationale for the economies of scale variable but did not apply it sector-wide due to concerns over robustness and limited stakeholder scrutiny.⁹⁶²

4.726 Ofwat said that consideration of both the water-WATS variable and the average size of treatment works was appropriate.⁹⁶³

Adoption of water-WATS variable

4.727 South East said that if the CMA wished to make another within model attempt to control for economies of scale it should bring water-WATS into the candidate variable list.⁹⁶⁴

4.728 Oxera, advisers to South East, had used water-WATS instead of average WTWs per volume of water treated. This measure better reflected true economies of scale since a simple average measure would overrepresent small high cost WTWs. This was also consistent with the economies of scale measure used in the Working with Natural Processes (**WWNP**) models.⁹⁶⁵

4.729 Southern said that there was merit in including the water-WATs variable proposed by South East in the LASSO candidate variable set.⁹⁶⁶

Our final assessment and final decision

4.730 In our base costs modelling working paper, we set out our intention to use an econometric approach to assessing this CAC.⁹⁶⁷ This is in our view the most appropriate way to assess whether additional funding is required for certain Disputing Companies to account for this factor. This is for the following reasons:

- (a) the information submitted by South East and other parties suggests that there may be economies of scale in water treatment;
- (b) Water-WATS is a suitable explanatory variable which provides information on whether this factor is associated with higher costs for specific companies;
- (c) the results of the econometric analysis, in particular whether the explanatory variables are significant, provide information on whether it is appropriate to allow the CAC and provide additional funding for specific companies; and

⁹⁶² Ofwat (2026) [Response to Working Paper](#), paragraphs 1.5, 3.1-3.5.

⁹⁶³ Ofwat (2026) [Response to Working Paper](#), paragraph 3.3.

⁹⁶⁴ South East (2025) [Response to CMA PR24 PD](#), paragraph 2.36.

⁹⁶⁵ Oxera (2025) Assessment of the CMA's base cost modelling in the provisional determination, p11, 47-48, 56.

⁹⁶⁶ Southern (2026) [Response to Working Paper](#), paragraphs 112-113.

⁹⁶⁷ [Working Paper](#), paragraph 5.8.

- (d) the econometric approach allows us to calculate an allowance for companies, providing evidence on the efficient allowance.

4.731 We recognise that the timings of our process did not allow for substantial consultation on the econometric approach we have adopted for this CAC. For this reason, we have decided not to:

- (a) include a variable controlling for this factor in the candidate variable set for the base cost modelling; and
- (b) apply this cost adjustment claim symmetrically.

4.732 Our final decision models do not include a variable that controls for economies of scale at WTWs. Consequently, potential economies of scale at WTWs are not fully captured in the FD baseline. Therefore, to assess this CAC we adopted the following two-step approach. First, we estimated the baseline WRP model. Second, we regressed the residuals from the WRP model on the following variables:

- log of water-WATS;
- log of number of connected properties;
- an interaction term: log of water-WATS times log of number of connected properties; and
- an intercept.

4.733 This allowed us to isolate the incremental effect of economies of scale at WTWs, conditional on the factors already controlled for in the baseline WRP model. For the purposes of this specific CAC, we included an interaction term between the log of water-WATS and log of number of connected properties. This was because the CAC is specifically used to assess the impact of economies of scale, including the greater complexity of serving a larger population, and the interaction term allows this to be tested explicitly.

4.734 We use water-WATS as this was the only variable that had statistically significant coefficients at the 5% level. This is also consistent with Ofwat's approach to include water-WATS in the WRP model to capture scale effects. We reviewed the underlying water-WATS data and note that this variable was used by Ofwat. In our view the water-WATS variable is sufficiently robust for use in a CAC assessment. Further details are provided in Annex D at paragraphs D.27 to D.34.

4.735 The resulting coefficient on log of water-WATs is negative, consistent with economies of scale in water treatment operations. The resulting coefficient on the interaction term is positive, consistent with the cost-reducing effect diminishing as

network size increases. This is consistent with greater operational or coordination complexity at larger scale.

- 4.736 We estimated the impact of economies of scale at WTW for each Disputing Company. The estimated positive impacts on allowances are South East (£17 million), Southern (£13.5 million) and Wessex (£28 million), reflecting higher costs due to relatively smaller WTWs.
- 4.737 We investigated using an alternative variable: average size of WTWs. This produced statistically insignificant results at the 10% level in the second stage regression, so we did not adopt this approach. We also investigated alternative specifications, including using the CMA's top-down model in the first stage. This resulted in statistically insignificant second-stage coefficients at the 10% level and therefore we did not adopt this approach. Further details are provided in Appendix D: Base Cost Modelling, paragraph D.34.
- 4.738 Our final decision is to allow this claim and provide the following allowances: South East: £17 million, Southern: £13.5 million and Wessex: £28 million.

Southern coastal population

- 4.739 In this section we discuss Southern's CAC for £126 million related to the additional wastewater costs of serving an area with a higher proportion of the population living on the coast.⁹⁶⁸
- 4.740 The remainder of this section covers the following topics:
- (a) Ofwat's PR24 FD approach;
 - (b) Parties' submissions prior to our provisional decision;
 - (c) our provisional assessment and provisional decision;
 - (d) responses to our provisional decision and base cost working paper; and
 - (e) our final assessment and final decision.
- 4.741 For the reasons set out below, our final decision is to allow this CAC and provide allowances of £13.2 million for Northumbrian, £56.8 million for Southern and £14.8 million for Wessex.

⁹⁶⁸ [Southern SoC](#), pp162–177, paragraphs 220–273.

Ofwat's PR24 FD approach

- 4.742 Southern submitted a CAC for coastal population after Ofwat rejected Southern's request to include the proportion of coastal population as a variable in the base cost models.⁹⁶⁹
- 4.743 At PR24 Ofwat said that Southern had not provided compelling evidence to justify either the need for an adjustment or that its costs were efficient. Therefore, it rejected the CAC.⁹⁷⁰

Parties' submissions prior to our provisional decision

- 4.744 In this section we summarise the submissions made prior to our provisional decision by Southern, Ofwat, and other Disputing Companies.

Southern

- 4.745 Southern submitted the following.⁹⁷¹
- (a) Southern had the largest proportion of coastal population of all WaSCs, 41% versus a sector average of 19%, with the next highest being South West Water with 39% and Dŵr Cymru with 28%.⁹⁷²
 - (b) There was a strong positive correlation between the efficiency scores for companies' wastewater operations and their proportion of coastal population.⁹⁷³
 - (c) There were several engineering reasons why coastal wastewater treatment works faced higher costs: space and planning constraints; stricter ultraviolet and total nitrogen consents; higher maintenance costs responding to enhanced corrosion due to salinity and sea outfall infrastructure; high seasonal load variability due to summer tourism; and stricter constraints on coastal discharge.⁹⁷⁴
 - (d) The impact of these engineering factors on unit costs could vary across years. For example, in higher rainfall years some inland works' pumps had to work harder and therefore required more maintenance.⁹⁷⁵

⁹⁶⁹ [Southern SoC](#), pp164–165, paragraphs 224–225.

⁹⁷⁰ Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Southern Water](#), Sheet 'SRN_CAC6', columns B–D.

⁹⁷¹ [Southern SoC](#), pp162–177, paragraphs 220–273.

⁹⁷² [Southern SoC](#), p163, Figure 16. We note that these figures differed slightly, including for Southern and South West Water, from those submitted by Southern in response to a CMA request for information which we based our analysis on.

⁹⁷³ [Southern SoC](#), pp163–164, paragraph 223; Figure 17.

⁹⁷⁴ [Southern SoC](#), pp165–167, paragraphs 226–235.

⁹⁷⁵ (Non-confidential) transcript of the hearing for Southern on 9 July, p25, line 13 to p26, line 3.

- (e) Sewage treatment works benefited from economies of scale. As Southern's coastal works were on average approximately double the size of its inland sites, unit cost analysis underestimated the effect of a coastal location.⁹⁷⁶ Economies of scale should be accounted for by comparing the unit costs of coastal and inland sites in the same size band.⁹⁷⁷
- (f) Ofwat's submission that the magnitude of these economies of scale were approximately equal at both inland and coastal sites was incorrect. Ofwat based this view on an overlap in the confidence intervals between Ofwat's estimates of the relationship between scale and unit costs for coastal and for inland sites. However, this overlap was artificial, resulting from Ofwat having used average unit costs over a four-year period per site, rather than individual site-year datapoints, which widened the confidence intervals. If Ofwat's analysis was reproduced but using individual site-year data instead of an average, the confidence intervals calculated barely overlapped.⁹⁷⁸
- (g) An analysis of water companies' unit costs showed that they were higher at coastal sites than inland sites. Comparing within size bands demonstrated that, with a few exceptions, coastal sites had higher unit costs, including for Southern's sites.⁹⁷⁹
- (h) Ofwat's unit cost analysis, which did not find higher unit costs for coastal sites, was flawed for the following reasons.⁹⁸⁰
 - (i) Ofwat's definition of coastal, based on sites' distance to the coast, was flawed because it identified certain Southern sites which discharged into coastal waters as inland.
 - (ii) Ofwat's analysis did not account for economies of scale.
- (i) Southern estimated the overall coastal cost premium using a variable for the proportion of coastal population in its econometric models. This was appropriate because it captured the interaction between economies of scale and the effect of coastal location.⁹⁸¹ This variable met Ofwat's model

⁹⁷⁶ [Southern SoC](#), p168, paragraph 242 and Table 17. Southern submitted that, while its coastal sites were approximately double the size of its inland sites, these constraints still applied to its coastal sites. Its coastal sites were larger because they served Southern's urban conurbations, which were on the coast. (Non-confidential) transcript of the hearing for Southern on 9 July, p22, line 20 to p23, line 4.

⁹⁷⁷ Southern response Southern RFI09, supporting document 'RFI_Southern_009_Input_Data_and_Calculations.xlsx', Sheet 'Bands'.

⁹⁷⁸ Southern (2025) Response to Hearings (non-confidential), p2.

⁹⁷⁹ Southern response to Southern RFI09, Q2; (Non-confidential) transcript of the hearing for Southern on 9 July, p27, lines 19–26; Southern response to Southern RFI09, supporting document 'RFI_Southern_009_Input_Data_and_Calculations.xlsx', Sheets 'Q2(i) unweighted' and 'Q2(ii) weighted'.

⁹⁸⁰ [Southern SoC](#), pp171–176, paragraphs 253–266. Southern also cited that Ofwat's analysis was based on a single year of data when the impact of the engineering factors identified could vary across years. We note that Ofwat's unit cost analysis in the PR24 FD used a single year of data, but the analysis which Ofwat submitted within its SoC response considered multiple years; Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 8.18.

⁹⁸¹ (Non-confidential) transcript of the hearing for Southern on 9 July, p29, lines 18–24; p30, lines 14–18.

selection criteria, in particular the coefficients on this variable were statistically significant and increased the models' R-squared.⁹⁸²

- (j) It was inappropriate for Ofwat to reject this CAC because Southern already received sufficient allowances from the wastewater base models. The outcomes of the wastewater base models were not efficient for Southern, as evidenced by Southern's low efficiency scores.⁹⁸³

Ofwat

4.746 Ofwat said that it rejected the claim for the following reasons.⁹⁸⁴

- (a) Southern's econometric approach was not robust because the estimated relationship between Southern's coastal population variable and sewage treatment base costs was sensitive to Southern's exclusion from the dataset. This suggested the variable may have been identifying a company-specific effect unrelated to operating in coastal areas. Additionally, Southern's coastal variable was too crude to include in the base costs model because it did not capture some of the specific factors raised by Southern. When Ofwat trialled including variables based on the engineering rationales raised by Southern, such as ultraviolet consents, those variables were not significant.⁹⁸⁵
- (b) Southern was not unique in operating coastal works. South West Water's coastal population proportion of 39% was comparable to Southern's 41%.⁹⁸⁶
- (c) While from an engineering perspective, there may be reasons why operating in coastal areas resulted in higher costs, Southern had not robustly estimated the scale of the impact.⁹⁸⁷
- (d) Ofwat's multi-year analysis of relative unit costs between coastal and inland works was inconclusive. Average unit costs weighted by site load were higher for inland sites than coastal sites for Dŵr Cymru, Southern, South West Water, and Wessex.⁹⁸⁸
- (e) Ofwat's approach to identifying coastal sites was an appropriate accurate proxy, evidenced by how it correctly identified 90% of Southern's works as coastal or inland.⁹⁸⁹ It was not appropriate to compare sector-wide average

⁹⁸² [Southern SoC](#), pp169-170, paragraph 247 and Table 18.

⁹⁸³ [Southern SoC](#), pp176, paragraphs 267–270.

⁹⁸⁴ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 8.1–8.34.

⁹⁸⁵ (Non-confidential) transcript of the hearing for Southern on 9 July, p23, line 24 to p24, line 9.

⁹⁸⁶ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 8.31.

⁹⁸⁷ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 8.19, 8.24–8.28, 8.30.

⁹⁸⁸ Ofwat response to Ofwat RF114, Q3(b); Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), p67, Figure 14.

⁹⁸⁹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 8.20.

coastal and inland unit costs, partly because this included Thames Water which had no coastal sites.⁹⁹⁰

- (f) Sewage treatment works benefited from economies of scale and this should be considered when assessing this CAC.⁹⁹¹ Ofwat had analysed the potential difference in the magnitude of economies of scale for inland and coastal sites. There was no significant difference between coastal and inland sites: the estimated relationships between works size and unit costs largely fell within each other's confidence intervals.⁹⁹² Therefore, economies of scale were accounted for when comparing inland and coastal unit costs across different site sizes. As such, it was not necessary to only compare coastal and inland works of the same size.
- (g) Southern's WWNP base allowance was 10.9% higher within Ofwat's PR24 FD than requested costs before the application of frontier shift efficiency and RPEs. Southern's overall allowance should be considered when assessing this CAC.⁹⁹³
- (h) Southern's calculation resulted in counterintuitive outcomes. For example, the highly coastal South West Water only received a small upwards adjustment but Thames Water with no coastal population received a larger one.⁹⁹⁴
- (i) Were the CAC to be awarded, it should be applied symmetrically to avoid companies that only operated inland works from receiving an implicit allowance for coastal population.⁹⁹⁵

Other Disputing Companies

- 4.747 Anglian said that it recognised the engineering factors Southern identified. However, while these factors may have resulted in higher costs for coastal works, they did not have a material impact for Anglian which was why it had not submitted its own equivalent CAC. Southern's modelling also resulted in perverse results. For example, Thames Water had no coastal sites but received a substantial allowance.⁹⁹⁶
- 4.748 Northumbrian said that the relative unit costs between coastal and inland works depended on the condition of individual works and their individual permit requirements. Northumbrian's analysis of its own sites indicated that it had lower

⁹⁹⁰ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 8.19.

⁹⁹¹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 8.25–8.28.

⁹⁹² Ofwat response to Ofwat RFI14, Q3(b).

⁹⁹³ (Non-confidential) transcript of the hearing for Southern on 9 July, p35, lines 4–11.

⁹⁹⁴ (Non-confidential) transcript of the hearing for Southern on 9 July, p34, line 12 to p35, line 3.

⁹⁹⁵ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 8.33–8.34.

⁹⁹⁶ (Non-confidential) transcript of the hearing for Anglian on 7 July 2025, p41, line 8 to p44, line 6.

operational costs at its coastal sites, which were not accounted for by economies of scale. This may have been due to its coastal sites generally being newer than its inland sites.⁹⁹⁷

- 4.749 Wessex said that sites' unit costs depended on the complexity of site-specific wastewater treatment standards and site-specific characteristics.⁹⁹⁸

Our provisional assessment and provisional decision

- 4.750 Our provisional decision was not to allow this CAC. We provisionally decided that Southern had not provided compelling evidence to fulfil the need criterion. This was because we did not find that Southern had provided compelling evidence:

- (a) of a material relationship between the extent to which companies' operations were coastal and their costs, measured by either Ofwat unit costs or the CMA's wastewater model efficiency scores; and
- (b) that it operated under unique circumstances with respect to operating sites in coastal locations.

- 4.751 Our provisional assessment concluded that the claim failed the need criterion, so we did not assess the efficiency criterion.

Responses to the provisional decision and base cost working paper

- 4.752 In this section we set out relevant responses to the provisional decision and the base costs working paper. We have categorised the responses under four headings: approach to assessment; efficiency scores; engineering rationales for cost differences; and unit cost analysis.

Approach to assessment

- 4.753 Southern said that the CMA's statistical approach had eliminated the bottom-up wastewater models, which made it unable to assess the coastal population claim. Therefore, the claim should be assessed outside the LASSO framework.⁹⁹⁹
- 4.754 Southern said that the CMA should conduct an econometric analysis of the coastal population CAC.¹⁰⁰⁰

⁹⁹⁷ (Non-confidential) transcript of the hearing for Northumbrian on 4 July 2025, p17, line 6 to p19, line 2.

⁹⁹⁸ (Non-confidential) transcript of the hearing for Wessex on 7 July 2025, p24, line 11 to p25, line 23.

⁹⁹⁹ Southern (2025) [Response to CMA PR24 PD](#), paragraphs 3.22, 3.87, 3.93.

¹⁰⁰⁰ Southern (2025) [Response to CMA PR24 PD](#), paragraph 3.92.

- 4.755 Southern said that the CMA should look at the SWT level of aggregation and assess whether the SWT models were systematically excluding a coastal factor.¹⁰⁰¹
- 4.756 Ofwat supported the CMA's use of different coastal measures and that proportion of coastal load had a better engineering rationale than proportion of coastal population.¹⁰⁰²
- 4.757 Ofwat supported testing the coastal population variable in the STW model. However, given the limited engineering rationale linking coastal population directly to costs, it should not be included in the candidate variable list.¹⁰⁰³
- 4.758 In addition to the points above, Ofwat raised more specific points.
- (a) Assess need criterion - Ofwat said that it supported the provisional decision to not to allow this claim and agreed that the claim did not pass the unique circumstances criterion. Southern had not provided compelling evidence of the need for adjustment to allowances nor that the proposed adjustment was cost efficient.¹⁰⁰⁴ Ofwat also said that the modelling should form part of a broader toolkit, considering other criteria such as unique circumstances and cost efficiency.¹⁰⁰⁵
 - (b) Robustness of underlying data - Ofwat supported the testing of coastal load, although the CMA should ensure that the underlying data was sufficiently robust.¹⁰⁰⁶
 - (c) Intuitive results - Ofwat said that whether LASSO chose the coastal variable or not, the CMA should assess whether the modelling outcome was intuitive.¹⁰⁰⁷
 - (d) Symmetric application - Ofwat supported a symmetrical CAC application as this would ensure that customers did not overpay.¹⁰⁰⁸

Efficiency scores

- 4.759 Southern said that CMA has plotted WASC efficiency scores against share of load treated at coastal sites. However, the CMA had conducted this analysis at the top-down WWNP level. Given that coastal location only affected wastewater treatment, and not wastewater collection, it was not surprising that the relationship

¹⁰⁰¹ Southern (2025) [Response to CMA PR24 PD](#), paragraphs 3.106-3.111.

¹⁰⁰² Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

¹⁰⁰³ Ofwat (2026) [Response to Working Paper](#), paragraphs 3.6–3.7.

¹⁰⁰⁴ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

¹⁰⁰⁵ Ofwat (2026) [Response to Working Paper](#), paragraph 3.9.

¹⁰⁰⁶ Ofwat (2026) [Response to Working Paper](#), paragraph 3.12.

¹⁰⁰⁷ Ofwat (2026) [Response to Working Paper](#), paragraphs 3.10-3.11.

¹⁰⁰⁸ Ofwat (2026) [Response to Working Paper](#), paragraph 3.13.

was more limited in this top-down model. Southern's evidence on efficiency scores in the SWT model supported the view that the coastal effect was not being captured effectively in the models.¹⁰⁰⁹

Engineering rationales for cost differences

- 4.760 Southern said that the CMA incorrectly stated 'there remains a lack of consensus amongst WaSCs over the engineering rationale that would underpin a cost differential between coastal and inland sites'. Instead, all companies identified similar engineering factors but noted that these coastal issues were less material to them and that there were other site-specific factors that affected costs.¹⁰¹⁰
- 4.761 Southern said that Ofwat agreed that, from an engineering perspective, there may be reasons why operating in coastal areas may increase costs.¹⁰¹¹

Unit cost analysis

- 4.762 Southern said that there were flaws in the CMA's unit cost analysis.¹⁰¹² First, the CMA grouped together all sites for all companies, irrespective of their location or their size, which did not account for the economies of scale present in WWTW.¹⁰¹³ Second, there appeared to be errors in the CMA's analysis.
- 4.763 Southern said that it was not clear why unit cost differences of around 10% would invalidate its claim.¹⁰¹⁴
- 4.764 Southern said that the more relevant analysis was Southern's analysis controlling for size and that although the CMA had referred to this analysis it had not included this analysis in its assessment.¹⁰¹⁵

Our final assessment and final decision

- 4.765 In our base costs modelling working paper, we set out our intention to use an econometric approach to assessing this CAC.¹⁰¹⁶ This is in our view the most appropriate way to assess whether additional funding is required for certain Disputing Companies to account for this factor. This is for the following reasons.
- (a) The information submitted by Southern and other parties suggests that coastal location may be associated with higher costs for some companies.

¹⁰⁰⁹ Southern (2025) [Response to CMA PR24 PD](#), paragraphs 3.106-3.111.

¹⁰¹⁰ Southern (2025) [Response to CMA PR24 PD](#), paragraphs 3.95-3.99.

¹⁰¹¹ Southern (2025) [Response to CMA PR24 PD](#), paragraph 3.98.

¹⁰¹² Southern (2025) [Response to CMA PR24 PD](#) paragraphs 3.100-3.105.

¹⁰¹³ Southern (2025) [Response to CMA PR24 PD](#) paragraphs 3.100-3.101.

¹⁰¹⁴ Southern (2025) [Response to CMA PR24 PD](#) paragraph 3.104.

¹⁰¹⁵ Southern (2025) [Response to CMA PR24 PD](#) paragraph 3.105.

¹⁰¹⁶ [Working Paper](#), paragraph 5.12.

- (b) Coastal load is a suitable explanatory variable which provides information on whether this factor is associated with higher costs for specific companies.
- (c) The results of the econometric analysis, in particular whether the explanatory variables are significant, provide information on whether it is appropriate to allow the CAC and provide additional funding for specific companies.
- (d) The econometric approach allows us to calculate an allowance for companies, providing evidence on the efficient allowance.

4.766 We recognise that the timings of our process did not allow for substantial consultation on the econometric approach we have adopted for this CAC. For this reason, we have decided not to:

- (a) include a variable controlling for this factor in the candidate variable set for the base cost modelling; and
- (b) apply this cost adjustment claim symmetrically.

4.767 Our final decision models do not include a variable that controls for the impact of coastal location. Consequently, potential cost impacts are not fully captured in the FD baseline. Therefore, to assess this CAC we adopted the following two-step approach. First, we estimated the baseline SWT model. Second, we regressed the residuals from the SWT model on the following variables:

- percentage of coastal load; and
- an intercept.

4.768 This allowed us to isolate the incremental effect of coastal load conditional on the factors already controlled for in the baseline SWT model.

4.769 We used coastal load, defined as the proportion of wastewater treated at coastal location, as this more accurately reflected the impact on costs. We investigated whether companies with high coastal load were in expected locations and whether the variable was stable over time. Where there were substantial changes in the variable we followed up to understand the reasons for changes. In our view the coastal load variable is sufficiently robust for use in a CAC assessment.

4.770 The resulting coefficient on coastal load was positive, consistent with the view that coastal factors lead to higher costs.

4.771 We estimated the impact of coastal load for each Disputing Company. The estimated positive impacts on allowances are Northumbrian (£13.2 million), Southern (£56.8 million) and Wessex (£14.8 million), reflecting higher costs due to a relatively high proportion of coastal load.

- 4.772 We investigated using an alternative variable: the percentage of coastal population. This produced statistically significant results, but we used coastal load as it had a better engineering and economic rationale. We also investigated alternative specifications, including using the CMA's top-down model in the first stage. This resulted in statistically insignificant second-stage coefficients at the 10% level and therefore we did not adopt this approach. Further details are provided in Annex D, paragraph D.34.
- 4.773 Our final decision is to allow this claim and provide the following allowances: Northumbrian: £13.2 million, Southern: £56.8 million and Wessex: £14.8 million.

Southern regional wages

- 4.774 In this section we discuss Southern's requested CAC for £66 million for wastewater and £21 million for water related to the additional costs from higher regional wages.¹⁰¹⁷
- 4.775 The remainder of this section covers the following topics:
- (a) Ofwat's PR24 FD approach;
 - (b) Parties' submissions prior to our provisional decision;
 - (c) our provisional assessment and provisional decision;
 - (d) responses to the provisional decision and base cost working paper; and
 - (e) our final assessment and final decision.
- 4.776 For the reasons we set out below, our final decision is to not to allow this CAC. We decided that the requirement underpinning this claim was met by the inclusion of regional wages in the base cost modelling candidate variable list.

Ofwat's PR24 FD approach

- 4.777 At PR24 FD Ofwat concluded that Southern had not provided compelling evidence that there was a need for an adjustment. Ofwat said that the regional wage levels were highly correlated with population density and therefore the population density cost driver in the base cost models captured regional wage variation.¹⁰¹⁸
- 4.778 Ofwat said that it investigated whether there was a need for an additional adjustment to Southern's allowance to reflect higher wage costs not already

¹⁰¹⁷ Southern SoC, p132, Table 9.

¹⁰¹⁸ Ofwat (2024) PR24 final determinations: Base cost adjustment claim feeder model – Southern Water, Sheet 'SRN_CAC2'.

captured by the population density variable. However, Ofwat's analysis did not support the need for an additional regional wage adjustment.¹⁰¹⁹

Parties' submissions prior to our provisional decision

4.779 In this section we summarise the submissions made prior to our provisional decision by Southern, Ofwat, other Disputing Companies, and third parties.

Southern

4.780 Southern said that it operated in a region with high labour costs compared to the national average.¹⁰²⁰ The regional cost of labour was not accounted for by Ofwat's base cost FD models and was outside of management control.¹⁰²¹

4.781 Southern said that Ofgem had recognised the need to account for regional variance in wages in cost allowances.¹⁰²²

4.782 Southern submitted three different types of analysis to assess the impact of regional wage disparities on base cost expenditure. An accounting method, which estimated net claim values of £22 million in water and £66 million in wastewater.¹⁰²³ A within-model approach, which estimated net claim values of £73 million in water and £85 million in wastewater.¹⁰²⁴ And a pre-modelling adjustment, where KPMG estimated net claims of £19.7 million in water and £1.2 million in wastewater.¹⁰²⁵

4.783 Southern said that there were multiple errors in Ofwat's approach.

- (a) The correlation between wage levels and population density was spurious, reducing dramatically when Thames Water was removed.¹⁰²⁶ Southern was an outlier with similar wage levels to Thames Water, but a lower population density. Therefore, its regional wage costs would not be fully compensated in the base cost models.¹⁰²⁷
- (b) Ofwat used weekly wages, when hourly wages better represented the true price of labour. Hourly wages were not distorted by the number of hours worked.¹⁰²⁸

¹⁰¹⁹ Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Southern Water](#), Sheet 'SRN_CAC2'.

¹⁰²⁰ [Southern SoC](#), p148, paragraph 157.

¹⁰²¹ [Southern SoC](#), p149, paragraph 159.

¹⁰²² [Southern SoC](#), p149, paragraph 158.

¹⁰²³ [Southern SoC](#), p150, paragraph 163(a).

¹⁰²⁴ [Southern SoC](#), p150, paragraph 163(b).

¹⁰²⁵ [Southern SoC](#), p150 paragraph 163(c); [Southern SoC](#), Appendix SOC-002-0065 KPMG (2025) Analysis of components of Ofwat's PR24 Final Determination cost assessment, paragraph 64.

¹⁰²⁶ [Southern SoC](#), pp155–157, paragraphs 187–191; p157, Table 13.

¹⁰²⁷ [Southern SoC](#), p156, paragraph 189.

¹⁰²⁸ [Southern SoC](#), pp157–158, paragraphs 192–196.

- (c) Ofwat used mean wages, when median wages better represented the hourly cost of labour, given the disproportionate presence of high earners due to the south east's proximity to London.¹⁰²⁹
- (d) Ofwat used an index based on occupations which cut across industries, including industries which were not reflective of the water sector, such as insurance and finance. These sectors traditionally had higher wages than the water sector.¹⁰³⁰

4.784 In reply to Ofwat's response to Southern's statement of case, Southern said the following.

- (a) Southern was unable to replicate Ofwat's analysis, which appeared to be based on an incomplete dataset and this materially affected the results.¹⁰³¹
- (b) Ofwat's conclusions were dependent on its wage index assumptions.¹⁰³²
- (c) Ofwat calculated its forecast index using only the most recent five years of data. Southern's results were based on the full modelling period and therefore less affected by the impact of COVID-19 in 2020 and 2021.¹⁰³³
- (d) Ofwat used an 80% locally sourced share of labour compared to Southern's 88%, which was consistent with Ofgem's approach.¹⁰³⁴

Ofwat

4.785 Ofwat said that the pre-modelling adjustment approach was the most appropriate estimation method, following an Ofgem precedent.¹⁰³⁵

- (a) The accounting method did not account for the implicit allowances for labour costs in the base cost models. This approach double-counted the regional labour effect, which would lead to customers paying twice.¹⁰³⁶
- (b) A within-modelling approach may capture other factors which increased wages over time, such as RPEs, as well as differences in regional wages. This would lead to RPEs being captured twice in cost assessments – through the base cost models and through the labour RPEs cost adjustment. Ofwat

¹⁰²⁹ Southern SoC, pp158–159, paragraphs 197–201.

¹⁰³⁰ Southern SoC, pp159–161, paragraphs 202–209.

¹⁰³¹ Southern (2025) [Reply to Ofwat Response](#), p4.

¹⁰³² Southern (2025) [Reply to Ofwat Response](#), p4.

¹⁰³³ Southern (2025) [Reply to Ofwat Response](#), p4.

¹⁰³⁴ Southern (2025) [Reply to Ofwat Response](#), p4.

¹⁰³⁵ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 7.13.

¹⁰³⁶ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 7.9–7.11.

did try a within-modelling approach by including a regional wage index. However, this resulted in insignificant and often counterintuitive results.¹⁰³⁷

4.786 Ofwat said that its pre-modelling approach showed that, once the impact of the other cost drivers had been accounted for, additional regional wage cost adjustments were immaterial and, in some cases, negative. This suggested that regional wage differentials were already sufficiently captured by the inclusion of the population density variable in base cost models.¹⁰³⁸

4.787 Ofwat also responded to points raised by Southern as follows.

- (a) Thames Water should be included when assessing the correlation between population density and wages, since Thames Water was included in the base cost models used to estimate company allowances.¹⁰³⁹
- (b) Mean wages were better than median wages as they reflected the full distribution of water company staff.¹⁰⁴⁰
- (c) Southern's use of industrial codes included the water industry, leading to endogeneity concerns.¹⁰⁴¹
- (d) Ofwat used hourly wages, not weekly as stated by Southern.¹⁰⁴²
- (e) Ofwat questioned KPMG's use of a three-region approach (London, south east, and elsewhere) to assess regional wage differentials.¹⁰⁴³

Other Disputing Companies

4.788 Northumbrian said that it agreed with Ofwat. The models already included density variables which were highly correlated with regional wages. The Southern models with wage variables also had poor levels of statistical significance, particularly for wastewater.¹⁰⁴⁴

4.789 Wessex said that the best approach was to make regional wage adjustments outside of the models.¹⁰⁴⁵

¹⁰³⁷ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 7.11.

¹⁰³⁸ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 7.20.

¹⁰³⁹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 7.35.

¹⁰⁴⁰ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 7.41.

¹⁰⁴¹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 7.42.

¹⁰⁴² Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 7.45.

¹⁰⁴³ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 7.24–7.28.

¹⁰⁴⁴ Northumbrian (2025) [Response to other Disputing Companies' SoCs](#), p15.

¹⁰⁴⁵ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p21, line 24 to p22, line 1.

Third parties

- 4.790 Cadent said that utilities operating in and around London faced higher labour costs.¹⁰⁴⁶ While the inclusion of density drivers helped control for cost pressures in London, utilities faced other unique regional cost pressures which were not correlated with density.¹⁰⁴⁷ Failure to account fully for real cost differences would result in some licensees being systematically underfunded.¹⁰⁴⁸ Furthermore, sole reliance on pre-modelling adjustments could only be effective where it was possible to completely identify and quantify these factors and the impact of the interactions between them. Where this was not possible, a different approach was needed to ensure that regional factors were properly controlled for.¹⁰⁴⁹
- 4.791 Pennon said that adding regional wages was inappropriate as these were assessed and rejected at PR19 and PR24 for sound reasons.¹⁰⁵⁰
- 4.792 Thames Water said that due to its unique regional characteristics its operating costs were higher than those of other water companies and regional wages should be reflected in the modelling.¹⁰⁵¹

Our provisional assessment and provisional decision

- 4.793 Our provisional decision was to use a within-modelling solution for regional labour costs. For regional wage levels we used median hourly wage for Standard Industrial Classification (**SIC**) code Section F (Construction) from Annual Survey of Hours and Earnings (**ASHE**) data.
- 4.794 This wages variable was added to the candidate variable list for the base cost modelling. The regional wage variable was retained by the LASSO in the TWD model. Thus, for TWD, cost predictions explicitly control for regional differences in regional labour costs. The regional wage variable was not retained by the LASSO in the WRP and wastewater models.
- 4.795 Consequently, our provisional decision was not to allow this CAC. We provisionally decided that the requirement underpinning this claim was met by the inclusion of regional wages in the base cost modelling candidate variable list.

¹⁰⁴⁶ Cadent (2025) [Third Party Submission on the Water PR24 References](#), p4.

¹⁰⁴⁷ Cadent (2025) [Third Party Submission on the Water PR24 References](#), p1 and p5.

¹⁰⁴⁸ Cadent (2025) [Third Party Submission on the Water PR24 References](#), p1.

¹⁰⁴⁹ Cadent (2025) [Third Party Submission on the Water PR24 References](#), p4.

¹⁰⁵⁰ Pennon (2025) [Third Party Submission on the Water PR24 References](#), p2. Pennon Group plc is the owner of Bristol Water, South West Water and Sutton and East Surrey Water.

¹⁰⁵¹ Thames Water (2025) [Third Party Submission on the Water PR24 References](#), paragraphs 11, 37(ii).

- 4.796 In this section we set out relevant responses to the provisional decision and the base cost working paper. We have categorised the responses under two headings: approach to assessment and the inclusion of regional wages within the econometric base cost modelling.

Approach to assessment

- 4.797 Anglian said that multiple concerns were raised with the approach to wages and the CMA's approach was unsuccessful.¹⁰⁵²
- 4.798 Ofwat said that it supported the provisional decision not to allow a further cost adjustment in relation to this claim given the inclusion of regional wages in the base cost modelling.¹⁰⁵³
- 4.799 Oxera, adviser to South East, said that it may well be true that, for the average company, the cost-impact of regional wages was captured by the other drivers in the model. However, the CMA did not consider the argument that not all companies were average – a company may operate in a high-wage region that the models assume to have low wages (based on the correlation between wages and the cost drivers included in the models), in which case it may be underfunded by the models.¹⁰⁵⁴
- 4.800 Southern said that the CMA should address wages outside the model.¹⁰⁵⁵
- 4.801 Southern disagreed with Anglian's statement that the Southern wages claim was without merit as the results of the model only related to the average company.¹⁰⁵⁶
- 4.802 Cadent said that it supported the inclusion of variables in the base cost modelling to account for regional wage differences.¹⁰⁵⁷
- 4.803 NERA, advisers to Thames Water, said that by assessing companies' CAC submissions through the LASSO procedure, as opposed to assessing CACs separately, the CMA failed to ensure that all companies were able to finance their statutory functions, and hence the redetermination was not accurately assessing submissions against Ofwat's statutory obligations.¹⁰⁵⁸

¹⁰⁵² Anglian (2026) [Response to Working Paper](#), p2.

¹⁰⁵³ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1; Ofwat (2026) [Response to Working Paper](#), paragraph 3.14.

¹⁰⁵⁴ Oxera (2025) Assessment of the CMA's base cost modelling in the provisional determination, pp31-32.

¹⁰⁵⁵ Southern (2026) [Response to Working Paper](#), paragraphs 28, 31.

¹⁰⁵⁶ Southern (2026) [Response to Working Paper](#), paragraph 30.

¹⁰⁵⁷ Cadent (2025) [Response to CMA PR24 PD](#), p2.

¹⁰⁵⁸ Thames Water (2025) [Response to CMA PR24 PD](#) - Annex 1, pp30-32.

- 4.804 United Utilities said that it was important that the CMA recognised the potential shortcomings of an approach that assessed company-specific claims through the prism of a model estimated according to an industry average.¹⁰⁵⁹

Inclusion of regional wages within the econometric base cost modelling

- 4.805 Respondents to the provisional decision and the base costs working paper raised a number of comments regarding our approach to including a regional wage variable within the base cost modelling. These comments are discussed in the base cost modelling section 'Regional Wage Cost Driver' at paragraph 4.113. We also provide our decision on true ups for wages in the base cost modelling section.

Our final assessment and final decision

- 4.806 The final decision on base cost modelling includes the logarithm of regional hourly construction wages as candidate variables in the WW and WWW models (see paragraph 4.113. Our final decision is not to allow this CAC as the requirement underpinning this claim is met by inclusion of regional wages in the base cost modelling candidate variable list.

Two other claims

- 4.807 In this section we discuss two further Southern claims which are not CACs. These are a Southern claim for a boundary box uncertainty mechanism and a Southern claim related to energy costs.

Southern boundary boxes uncertainty mechanism claim

- 4.808 In this section we assess Southern's uncertainty mechanism claim relating to the volume of boundary boxes replaced in AMP8.
- 4.809 Uncertainty mechanisms are a feature of the Ofwat regulatory regime which are intended to manage risk and uncertainty. They allow companies to share risk with customers if certain outcomes occur (eg by passing through a higher than 50% proportion of costs).
- 4.810 Southern's proposed uncertainty mechanism would allow it additional allowances depending on the number of boundary boxes replaced during AMP8. Southern had already accounted for replacing 6.7% of boundary boxes in its business plan.¹⁰⁶⁰ However, Southern said that there was uncertainty over the volume of

¹⁰⁵⁹ United Utilities (2025) [Response to CMA PR24 PD](#), p35.

¹⁰⁶⁰ [Southern SoC](#), p322, paragraphs 141–143.

likely replacements and replacing 35% of boundary boxes would require approximately an extra £180 million.¹⁰⁶¹ [3<].¹⁰⁶²

4.811 The remainder of this section covers the following topics:

- (a) Ofwat's PR24 FD approach;
- (b) Parties' submissions;
- (c) our provisional assessment and provisional decision;
- (d) responses to the provisional decision; and
- (e) our final assessment and final decision.

4.812 For the reasons set out below, our final decision is not to allow this claim.

Ofwat's PR24 FD approach

4.813 In PR24 Ofwat said that there would be a high bar for accepting bespoke uncertainty mechanisms. This was because uncertainty mechanisms reallocated risk from companies to customers and companies already benefitted from multiple risk sharing and reconciliation mechanisms.¹⁰⁶³

4.814 Ofwat assessed requests for uncertainty mechanisms using three criteria.

- (a) Materiality - companies should provide compelling evidence that the uncertainty would have a material impact. The efficient, net impacts should be demonstrated using return on regulatory equity (**RoRE**) analysis, taking account of the prudent steps that could be taken to manage the effects of that risk.¹⁰⁶⁴
- (b) Efficiency of risk allocation and customer protection - companies should provide compelling evidence as to why the consequences of the risk in question was outside of prudent management control and would be more efficiently allocated to customers than to the company and its investors. This should include details of the company's ability to manage this risk without the uncertainty mechanism.

¹⁰⁶¹ [Southern SoC](#), p322, paragraphs 143–146; [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', section 5.2.

¹⁰⁶² [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', section 5.2, Table 3.

¹⁰⁶³ Ofwat (2022) PR24 Methodology, [Appendix 10: Aligning Risk and Return](#), p21.

¹⁰⁶⁴ Table RR30 is an Ofwat table for the purpose of generating RoRE risk ranges. Ofwat (2022) [PR24 submission table guidance – section 2: Risk and return](#), paragraph 32.1.

- (c) Cost-benefit - the implementation of the mechanism should be proportionate and protect customers' interests. Companies should set out implementation proposals and describe the extent to which risks may already be provided for in cost allowances, any triggers the mechanism may require, and how the proposed mechanism would be applied.¹⁰⁶⁵

4.815 Ofwat rejected Southern's request, stating that the replacement of boundary boxes was already covered through the metering sector wide cost adjustment. The unit rate used to determine that cost adjustment reflected a mix of meter replacement work. Cost sharing sufficiently mitigated the risk that companies needed to deliver a more complex mix of work than forecast.¹⁰⁶⁶

Parties' submissions

4.816 In this section we summarise the submissions by Southern, Ofwat and other Disputing Companies. No third party commented on this proposal.

Southern

- 4.817 Southern said that it had accounted for replacing 6.7% of boundary boxes within its business plan. However significantly more boundary boxes may need repair or replacement.¹⁰⁶⁷ [8].¹⁰⁶⁸
- 4.818 Southern said that the financial implications of this risk were considerable. It may have to replace 35% of boundary boxes and this would require approximately an extra £180 million on top of the £42 million already accounted for within its smart meter replacement programme. The uncertainty mechanism would reduce financeability risks when it was replacing the boundary boxes.¹⁰⁶⁹
- 4.819 Southern said that it had the second highest level of meter penetration and when installing smart meters it often needed to replace the boundary boxes.¹⁰⁷⁰ At the time of its October 2023 business plan submission, Southern did not have information on the condition of its boundary box assets, so could not estimate

¹⁰⁶⁵ Ofwat (2022) PR24 Methodology, [Appendix 10: Aligning Risk and Return](#), pp21–22.

¹⁰⁶⁶ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), Table 44; Ofwat (2025) [Response to Southern SoC](#), paragraphs 4.29–4.30.

¹⁰⁶⁷ [Southern SoC](#), p322, paragraphs 141–143.

¹⁰⁶⁸ [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', section 5.2.

¹⁰⁶⁹ [Southern SoC](#), p322, paragraphs 143–146; [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', section 5.2; Southern (2024) [Response to Ofwat draft determination on Southern Business Plan 25-30](#), p99.

¹⁰⁷⁰ [Southern SoC](#), pp320–321, paragraphs 134–140.

costs.¹⁰⁷¹ Since then it had carried out work that suggested that 6.7% of boundary boxes may require replacement.¹⁰⁷²

4.820 Southern said that Ofwat had erred in the following three ways.

- (a) The metering sector-wide cost adjustment did not address uncertainty in replacement volumes. The sector-wide adjustment provided a simple unit-based allowance without any allowance for uncertainty in the boundary box costs.
- (b) The PCD did not address boundary box uncertainties. The PCD provided for a clawback if a specific volume of meters was not delivered and provided no scope for additional funding if volumes increased.
- (c) While cost sharing rates did provide some degree of mitigation, these were insufficient.¹⁰⁷³

4.821 Southern said that it had a good understanding of boundary box replacement costs – shown by its unit costs being similar to Anglian's. However, the replacement volumes were uncertain and to address this Southern had undertaken a pilot survey and assessed information from other companies.¹⁰⁷⁴

Ofwat

4.822 Ofwat said that the proposed mechanism may need to cover costs of up to £180 million, which was 17% of the company's wholesale water base expenditure request at final determination. Therefore, it was important that Southern provided compelling evidence.¹⁰⁷⁵

4.823 Ofwat said that Southern had not provided new evidence to support its claim. Southern had failed to show good knowledge of its boundary box assets. There was also extreme uncertainty in its proposal and a lack of robustness in its assumptions. Statements such as 'potential associated risk' failed to provide confidence. Statements such as 'our collaboration with other water companies who have aged boundary box estates has confirmed that there was significant uncertainty over the volume of likely boundary box replacement' also did not provide confidence in the company's knowledge, nor did it strengthen its case. Ofwat said that Southern did not provide any further detail on the collaboration. It

¹⁰⁷¹ [Southern SoC](#), p321, paragraph 137; [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', section 7.1

¹⁰⁷² [Southern SoC](#), p322, paragraph 141; [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', sections 5.1–5.2.

¹⁰⁷³ [Southern SoC](#), p322, paragraph 145.

¹⁰⁷⁴ Southern (2025) [Reply to Ofwat Response](#), p7.

¹⁰⁷⁵ Ofwat (2025) [Response to Southern SoC](#), paragraph 4.36.

was therefore unclear why this had led to a robust assessment of the potential costs to customers, which could be more than four times the cost proposed in its draft determination representations.¹⁰⁷⁶

- 4.824 Ofwat said that Southern said that it needed to replace ageing assets that were no longer compatible with smart meters, and/or that may become faulty as a result of new meter installations. Ofwat said that Southern provided no supporting evidence on this. Nor did Southern provide quantifiable evidence of any impacts to performance, customers or the environment.¹⁰⁷⁷
- 4.825 Ofwat said that age was just one important factor when assessing the need for replacement. Assets could often function well beyond the average expected asset life. For example, 100-year-old Victorian sewers were still operating.¹⁰⁷⁸
- 4.826 Ofwat said that Southern had received an appropriate allowance through its modelled base allowance and an additional £104.1 million smart metering programme adjustment. At the time of its business plan submission, Southern submitted a meter replacement cost adjustment claim for £88.8 million. Therefore, Southern had received £15.4 million more than it requested.¹⁰⁷⁹
- 4.827 Ofwat said that it had concerns about the claim often using Anglian evidence and providing no additional Southern-specific evidence to support its claim.¹⁰⁸⁰ Southern had also quadrupled the value of the claim compared to the PR24 DD.¹⁰⁸¹
- 4.828 Ofwat said that it intended to collect more information from companies on boundary box replacements ahead of PR29. This would include installation data, replacement rates, and associated costs.¹⁰⁸²
- 4.829 Ofwat said that its approach in PR24 was to provide more downside protection, compared to PR19, where it exposed companies to upside and downside risk.¹⁰⁸³

Other Disputing Companies

- 4.830 Anglian said the following.
- (a) Southern said that its need for boundary box replacement was largely driven by its smart meter programme. This was not the case for Anglian and

¹⁰⁷⁶ Ofwat (2025) [Response to Southern SoC](#), paragraphs 4.37–4.38.

¹⁰⁷⁷ Ofwat (2025) [Response to Southern SoC](#), paragraph 4.39.

¹⁰⁷⁸ Ofwat (2025) [Response to Southern SoC](#), paragraph 4.40.

¹⁰⁷⁹ Ofwat (2025) [Response to Southern SoC](#), paragraph 4.41.

¹⁰⁸⁰ Ofwat (2025) [Response to Southern SoC](#), paragraph 4.42.

¹⁰⁸¹ Ofwat (2025) [Response to Southern SoC](#), paragraph 4.43.

¹⁰⁸² Ofwat (2025) [Response to Southern SoC](#), paragraph 4.44.

¹⁰⁸³ (Non-confidential) transcript of the hearing for Ofwat on 10 July 2025, p88, lines 17–21.

therefore Anglian had fewer opportunities to leverage efficiencies from the combination of smart meter and boundary box replacement.¹⁰⁸⁴

- (b) Anglian's meter roll-out was done differently to Southern's. Anglian installed meters at the request of customers, which led to a range of boundary box ages in local areas, such as individual streets. In contrast, Southern commenced a compulsory metering programme in 2010, installing meters and boundary boxes. Therefore, in Southern local areas there was likely to be greater homogeneity in the age and condition of boundary boxes, compared to Anglian local areas.¹⁰⁸⁵

4.831 Anglian said that it did not comment on the merits of Southern's case and asked that the CMA assessed it separately.¹⁰⁸⁶

Our provisional assessment and provisional decision

4.832 In this section we set out our provisional assessment and provisional decision. Our provisional assessment of the Southern boundary box claim followed the framework set out by Ofwat, which we found to be reasonable.

Materiality

4.833 Southern estimated the maximum value of the uncertainty mechanism to be an extra c.£180 million if the replacement rate was 35%. Southern said that this would be a RoRE impact of up to 2%.¹⁰⁸⁷

4.834 Southern's water plus network totex in the PR24 FD was £2,741 million.¹⁰⁸⁸ Therefore the claim of c.£180 million represented around 6% of water plus network totex using Ofwat's PR24 FD numbers.¹⁰⁸⁹

4.835 We had, however, two concerns with the Southern figures.

4.836 First, the estimated 35% replacement rate was not based on Southern data. [3<].¹⁰⁹⁰

¹⁰⁸⁴ Anglian response to Anglian RFI01, p5

¹⁰⁸⁵ Anglian response to Anglian RFI01, p5

¹⁰⁸⁶ Anglian response to Anglian RFI01, p5

¹⁰⁸⁷ [Southern SoC](#), p322, paragraph 143.

¹⁰⁸⁸ Ofwat (2024) [PR24 final determinations: Base cost adjustment claim feeder model – Southern Water](#), Sheet 'SRN_CAC1', Cell D12.

¹⁰⁸⁹ We recognise that the 6% differs from the Ofwat figure of 17% given in paragraph 4.822 above. Ofwat used modelled wholesale water base expenditure as the denominator for this calculation. This differs from our approach, which was to use the water network plus figure which includes base and enhancement. We chose this latter figure as this is the figure used to evaluate the materiality of cost adjustment claims. Ofwat response to Ofwat RFI20, p1.

¹⁰⁹⁰ [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', p18, Figure 4. We recognise that following our provisional decision, we received information from WRc stating that it was common in the industry to provide figures on an anonymised basis (see paragraph 4.575). This updated information did not change our final decision on whether to allow this claim, due to the other concerns we outline in this section.

- 4.837 Second, the estimated value of the claim was based on a unit cost of £[8].¹⁰⁹¹ Southern said that this figure was based on historical contractor rates, but there was no third-party assurance of this figure, nor evidence to show that this figure was derived from a representative sample of replacements.
- 4.838 Consequently, our provisional assessment was that Southern had failed to provide compelling evidence that this uncertainty mechanism fulfilled the materiality criterion.

Efficiency of risk allocation and customer protection

- 4.839 The Southern statement of case did not contain a detailed explanation of why it was more efficient that the risk allocation should sit with the customer rather than Southern.
- 4.840 We sent an RFI to Southern asking it to explain, with supporting evidence, whether its claim fulfilled this criterion. In response Southern said the following.
- (a) The purpose of an uncertainty mechanism was to protect customers and companies from material changes in circumstances.¹⁰⁹²
 - (b) If the CMA was to set an uncertainty mechanism for boundary box replacement, then customers would be protected through a downward revenue adjustment if volumes were less than forecast.¹⁰⁹³
 - (c) The uncertainty in this mechanism related to the scope of asset replacement and this was largely outside of management control, particularly in the short to medium term.¹⁰⁹⁴
 - (d) It would be cost-inhibitive to collect further data on the number, location and condition of boundary boxes.¹⁰⁹⁵
 - (e) Through its smart-metering programme Southern would have the opportunity to identify failed, defective or unserviceable boundary boxes.¹⁰⁹⁶
- 4.841 The Southern statements above were not compelling evidence that it was more efficient for risk allocation to sit with the customer rather than Southern. In particular, the statements above did not explain why the standard cost pass-through mechanisms in place did not provide sufficient protection.

¹⁰⁹¹ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraphs 3.15; [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', Section 7.1.1, p14.

¹⁰⁹² Southern response to Southern RFI07, paragraph 1.14.

¹⁰⁹³ Southern response to Southern RFI07, paragraph 1.15.

¹⁰⁹⁴ Southern response to Southern RFI07, paragraph 1.16.

¹⁰⁹⁵ Southern response to Southern RFI07, paragraph 1.17.

¹⁰⁹⁶ Southern response to Southern RFI07, paragraphs 1.18–1.21.

4.842 Consequently, our provisional assessment was that Southern had failed to provide compelling evidence that this uncertainty mechanism fulfilled the efficiency of risk allocation and customer protection criterion.

Cost benefit

4.843 The Southern statement of case did not contain a detailed explanation of the claim's costs and benefits.

4.844 We sent an RFI to Southern asking it to explain, with supporting evidence, whether its claim fulfilled this criterion. In response Southern said the following.

- (a) There was no allowance for boundary box scope uncertainty in Ofwat's cost allowances beyond the standard approach to cost sharing rates.
- (b) An uncertainty mechanism would be proportionate, as it would apply if the company could demonstrate that the costs were material.
- (c) It would be in the interests of customers as customers were protected for any material decreases in scope requirements relative to initial assumptions.
- (d) It would improve the level of precision in allowance setting and protect both customers and Southern from material deviations in required activities.
- (e) Southern would only replace boundary boxes where necessary.
- (f) Customers benefitted from boundary box replacement for the following reasons: reliable meter reads; effective isolation points; consistent back flow prevention at the property interface; reduced likelihood of leakage; and mitigation of water quality issues.¹⁰⁹⁷

4.845 Our provisional assessment was that the Southern statements above did not provide compelling evidence that the benefits outweighed the costs. In particular, the statements did not provide compelling evidence that the application was based on efficient costs. We also noted that the unit cost figure of £[redacted] was higher than other figures supplied by Ofwat. Table 4.24 above shows the figures for different companies across years. Every figure in Table 4.24, apart from the South East figure of 2022/23, is lower than the Southern unit cost figure.

4.846 We also noted that the Southern unit cost figure of £[redacted] was close to the Anglian figure of £641.58 per boundary box.¹⁰⁹⁸ However, Anglian said that Southern, due to its compulsory meter-roll out, should be more likely to have clusters of boundary

¹⁰⁹⁷ Southern response to Southern RFI07, paragraphs 1.22–1.26.

¹⁰⁹⁸ [Southern SoC](#), supporting document titled 'SOC-4-0030_Southern_Water_SRN-DDR-031_Water_Resources_-_Smart_Metering_Enhancement_Cost_Evidence_Case.pdf', Section 7.1.1, p14. Note: We have quoted the updated estimate cost provided by Anglian in Anglian response to Anglian RFI03, Q4.

boxes requiring replacement.¹⁰⁹⁹ Southern did not provide compelling evidence on why its costs were similar to Anglian despite the potential impact of clustering.

- 4.847 Consequently, our provisional assessment was that Southern had failed to provide compelling evidence that this uncertainty mechanism fulfilled the cost-benefit criterion.

Provisional decision

- 4.848 Based on the evidence above, our provisional decision was not to allow Southern's uncertainty mechanism claim.

Responses to the provisional decision

- 4.849 Southern did not submit additional evidence or arguments relating to this claim. Ofwat said that it supported our provisional decision.¹¹⁰⁰

Final assessment and final decision

- 4.850 Based on the evidence above, our final decision is not to allow Southern's uncertainty mechanism claim.

Southern energy costs

- 4.851 In this section we discuss Southern's requested claim for £47 million related to Ofwat's adjustments to account for energy price increases.¹¹⁰¹

- 4.852 The remainder of this section covers the following topics:

- (a) Ofwat's PR24 FD approach;
- (b) Parties' submissions prior to our provisional decision;
- (c) our provisional assessment and provisional decision;
- (d) responses to the provisional decision and base cost working paper; and
- (e) our final assessment and final decision.

- 4.853 For the reasons set out below, our final decision is not to allow this claim. We decided that the requirement underpinning this claim was met by the inclusion of energy in the base cost modelling candidate variable list.

¹⁰⁹⁹ Anglian response to Anglian RFI01, p5.

¹¹⁰⁰ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), Table 1.

¹¹⁰¹ [Southern SoC](#), p109, paragraph 6.

Ofwat's PR24 FD approach

- 4.854 Ofwat said that it had applied a positive energy cost adjustment of £1.3 billion across the sector to recognise energy price increases in recent years. This was based on actual and forecast changes in the seasonally adjusted DESNZ industrial energy price index up to 2029-2030. Ofwat said that it used the DESNZ index to calculate an initial uplift to 2023/24 prices, and then assumed that this uplift would taper to zero by the end of the forecast period (2029-2030).¹¹⁰²
- 4.855 Ofwat said that to calculate the size of the adjustment, it applied the uplift factor based on the DESNZ index to company-specific measures of efficient energy costs. Ofwat used company-specific average power expenditure from 2019/20 to 2023/24 as a percentage of actual base expenditure. This approach recognised that each company had different efficient energy consumption requirements, and that this may change over time.¹¹⁰³
- 4.856 Ofwat said that it would apply a true-up at the end of the period based on the difference between forecast and outturn DESNZ index values.¹¹⁰⁴

Parties' submissions prior to our provisional decision

- 4.857 In this section we summarise the submissions made prior to our provisional decision by Southern, Ofwat, other Disputing Companies, and third parties.

Southern

- 4.858 Southern said that Ofwat had made two errors with the energy adjustment methodology.¹¹⁰⁵
- 4.859 First, Southern said that Ofwat had derived the Southern AMP8 energy cost share using data from 2019/20 to 2023/24, when Southern was well hedged against energy price increases. Ofwat's approach underestimated Southern's AMP8 adjusted power cost allowances by £22.3 million and £8.8 million in the wholesale water and wastewater network plus price controls respectively.¹¹⁰⁶
- 4.860 Second, Southern said that Ofwat had applied unrealistic RPEs that assumed that energy prices would normalise by the end of AMP8. While there was a true-up, Ofwat's approach created an undue cash flow risk until the true-up occurred. KPMG, advisers to Southern, estimated that this created an uncompensated cash-

¹¹⁰² Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.308.

¹¹⁰³ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.309; CEPA (2024) [PR24 Final Determinations – Real Price Effects and the energy crisis cost adjustment mechanism](#).

¹¹⁰⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.310.

¹¹⁰⁵ [Southern SoC](#), p190, paragraph 318.

¹¹⁰⁶ [Southern SoC](#), p190, paragraph 319, pp191–196, paragraphs 324–339; KPMG (2025) Analysis of components of Ofwat's PR24 final determination cost assessment, paragraphs 79–84; (Non-confidential) transcript of the hearing for Southern on 9 July, p61, line 19 to p66, line 16 and p68, line 7 to p70, line 2.

flow risk of £12.1 million and £28.5 million in the wholesale water and wastewater network plus price controls respectively, compared to using a measure of RPEs derived from His Majesty's Treasury (**HMT**) Green Book data tables.¹¹⁰⁷

- 4.861 Southern asked the CMA to use a time series from 2011/12 to 2023/24 to estimate the power share and amend the energy RPEs forecast to be consistent with the HMT energy price forecast.¹¹⁰⁸
- 4.862 Southern said that it was not seeking a symmetrical change in the power cost share to reduce other companies' allowances, only an adjustment for Southern.¹¹⁰⁹

Ofwat

- 4.863 Ofwat said that its decision to calculate average power cost shares using the last five years of outturn data was appropriate and supported by companies. There was a trade-off: a longer period would place less weight on years affected by the energy price crisis; but would include years which may be less reflective of current energy consumption. Southern did not raise this issue at PR24 DD.¹¹¹⁰
- 4.864 Ofwat said that its approach was reasonable and pragmatic. Ofwat chose not to directly rely on energy price forecasts due to continuing uncertainty and volatility in forward wholesale energy markets and challenges in forecasting the 'third party charges' component of delivered energy prices. Ofwat had cross-checked its approach to ensure it would not expose companies to undue cashflow risk.¹¹¹¹
- 4.865 Ofwat said that the Green Book forecasts were inappropriate for use when ex-ante forecasting energy RPEs. First, the forecasts appeared to date from 2022. Second, the data appeared to be scenario forecasts intended for sensitivity analyses, rather than explicit price forecasts.¹¹¹²

Other Disputing Companies

- 4.866 Anglian, Northumbrian and South East supported the use of a five-year period.¹¹¹³

¹¹⁰⁷ [Southern SoC](#), p190, paragraph 320, pp196–198, paragraphs 340–345; KPMG (2025) Analysis of components of Ofwat's PR24 final determination cost assessment, paragraphs 89–98.

¹¹⁰⁸ [Southern SoC](#), p199, paragraphs 346–348.

¹¹⁰⁹ Southern (2025) [Reply to Ofwat Response](#), p5.

¹¹¹⁰ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraphs 2.313–2.316; (Non-confidential) transcript of the hearing for Southern on 9 July, p66, line 21 to p67, line 25.

¹¹¹¹ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraphs 2.317–2.318.

¹¹¹² Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraphs 2.319–2.321.

¹¹¹³ Anglian (2025) [Response to other Disputing Companies' SoCs](#), p9, Section 3; Northumbrian (2025) [Response to other Disputing Companies' SoCs](#), p16; South East (2025) [Response to other Disputing Companies' SoCs](#), p7, paragraph 2.12.

- 4.867 Northumbrian said that Southern may be an outlier due to its hedging strategy and it may be appropriate to make an adjustment for Southern, but not for other companies.¹¹¹⁴

Third parties

- 4.868 Pennon said that it welcomed Ofwat's approach to RPEs, such as energy.¹¹¹⁵

Our provisional assessment and provisional decision

- 4.869 Our provisional decision was to use a within-modelling solution for energy costs. For energy costs we used the seasonally adjusted DESNZ industrial energy price.
- 4.870 This energy variable was added to the candidate variable list for the base cost modelling. The energy variable was retained by the LASSO in all models. Thus, cost predictions explicitly controlled for energy costs.
- 4.871 Consequently, our provisional decision was not to allow this CAC. We provisionally decided that the requirement underpinning this claim was met by the inclusion of energy in the base cost modelling candidate variable list.

Responses to the provisional decision and base cost working paper

- 4.872 In this section we set out the relevant responses to the provisional decision and the base costs working paper. We have categorised the responses under two categories: approach to assessment and the inclusion of energy costs within the econometric base cost modelling.

Approach to assessment

- 4.873 Anglian said that all the Disputing Companies criticised the approach to energy costs.¹¹¹⁶
- 4.874 Ofwat said that it agreed with the decision not to allow the energy CAC as it was captured through the inclusion of energy costs in the base costs modelling.¹¹¹⁷
- 4.875 Southern said that the CMA should adopt Ofwat's out of model solutions for energy, rather than using LASSO as a catch-all solution.¹¹¹⁸
- 4.876 NERA, advisers to Thames Water, said that by assessing companies' CAC submissions through the LASSO procedure, as opposed to assessing CACs

¹¹¹⁴ Northumbrian (2025) [Response to other Disputing Companies' SoCs](#), p16.

¹¹¹⁵ Pennon (2025) [Third Party Submission on the Water PR24 References](#), p6.

¹¹¹⁶ Anglian (2026) [Response to Working Paper](#), p1.

¹¹¹⁷ Ofwat (2026) [Response to Working Paper](#), paragraph 3.14.

¹¹¹⁸ Southern (2025) [Response to CMA PR24 PD](#), paragraph 1.41.

separately, the CMA failed to ensure that all companies were able to finance their statutory functions, and hence the redetermination was not accurately assessing submissions against Ofwat's statutory obligations.¹¹¹⁹

- 4.877 United Utilities said that it was important that the CMA recognised the potential shortcomings of an approach that assessed company-specific claims through the prism of a model estimated according to an industry average.¹¹²⁰

Inclusion of energy costs within the econometric base cost modelling

- 4.878 Respondents to the provisional decision and the base costs working paper raised a number of comments regarding our approach to including an energy cost variable within the base cost modelling. These comments are discussed in the base cost modelling section at paragraphs 4.107 to 4.112. We also provide our decision on true ups for energy in the base cost modelling section.

Our final assessment and final decision

- 4.879 The final decision base cost modelling includes the logarithm of energy prices as candidate variables in the WW and WWW models (see paragraphs 4.107 to 4.112). Our final decision is not to allow this CAC as the requirement underpinning this claim is met by inclusion of energy costs in the base cost modelling candidate variable list.

Frontier shift

- 4.880 In regulated sectors, the aim of applying a frontier shift is to replicate the forces of competition which would otherwise drive efficiency, such that the industry gets more efficient over time. It is intended to protect customers in the water sector as they are supplied by monopoly providers.
- 4.881 Ofwat defined frontier shift as the rate of efficiency improvements that even the most efficient companies in the industry can achieve from improvements in working practices and the introduction of new technology.¹¹²¹ Frontier shift differs from catch-up efficiency gains, where less efficient companies catch up with the performance of the industry leaders.¹¹²²
- 4.882 For PR24, Ofwat applied a frontier shift of 1% per year to wholesale and retail expenditure allowances.¹¹²³ In Statements of cases for our PR24 redeterminations, all Disputing Companies proposed a lower level of frontier shift.

¹¹¹⁹ Thames Water (2025) [Response to CMA PR24 PD](#) - Annex 1, pp30-32.

¹¹²⁰ United Utilities (2025) [Response to CMA PR24 PD](#) p35.

¹¹²¹ Ofwat (2025) [PR24 final determinations: Our approach](#), p3; Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p260.

¹¹²² Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p260.

¹¹²³ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p268.

Anglian and Northumbrian asked for 0.8% per year; South East, Southern and Wessex asked for 0.5% per year.¹¹²⁴

4.883 The remainder of this section covers the following topics:

- (a) Ofwat's PR24 FD approach to the overall level of frontier shift;
- (b) methodological issues raised by parties on the overall level of frontier shift;
- (c) overall level of frontier shift;
- (d) application of frontier shift to enhancement expenditure allowances;
- (e) application of frontier shift to retail allowances; and
- (f) summary of our decision on frontier shift.

4.884 We have decided to apply a frontier shift of 0.7% per year to all expenditure allowances, except for costs that were mostly outside of company control and self-financing costs, for the reasons set out below.

Ofwat's PR24 FD approach to the overall level of frontier shift

4.885 In this section we describe Ofwat's chosen level of frontier shift and the evidence base it used.

4.886 In its PR24 FD, Ofwat set the overall level of frontier shift at 1% per year based on a range of factors, including a CEPA report, which recommended a frontier shift of 0.8% to 1.2% per year, and a Europe Economics report, which explored for Ofwat the forward-looking outlook for productivity across the economy and in the water sector.¹¹²⁵

4.887 Below we summarise these reports and then explain how Ofwat used these reports to determine the level of frontier shift chosen.

CEPA report

4.888 CEPA used the EU KLEMS dataset, which provides information on historical productivity trends, disaggregated by industry.¹¹²⁶ The main results highlighted by

¹¹²⁴ [Anglian SoC](#), paragraph 286; [Northumbrian SoC](#), paragraph 414; [South East SoC](#), paragraph 4.96; [Southern SoC](#), p189, paragraph 314; [Wessex SoC](#), Appendix A119 WSX-C22 - Frontier shift, p1.

¹¹²⁵ CEPA (2024) [PR24 Final Determinations – Frontier shift](#), p5; Europe Economics (2023) [Frontier Shift and Outcomes Stretch at PR24](#), pp17–30; Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp261–262.

¹¹²⁶ CEPA (2024) [PR24 Final Determinations – Frontier shift](#), p11; CEPA (2024) [PR24 Draft Determinations – Frontier Shift, RPEs and the energy crisis cost adjustment mechanism](#), p63.

CEPA are shown below in Table 4.26, which shows total factor productivity (TFP) gross output (GO) measures of productivity estimates.¹¹²⁷

TFP GO productivity estimates

Table 4.26: TFP GO productivity estimates (average annual growth rate) from 2023 EU KLEMS

<i>Industry</i>	<i>1996 to 2008</i>	<i>2009 to 2019</i>	<i>1996 to 2019</i>
Chemicals and chemical products	1.8%	2.5%	2.1%
Construction	-1.0%	-0.2%	-0.4%
Machinery and equipment not elsewhere classified	1.9%	-0.8%	0.9%
Manufacture of furniture; jewellery, musical instruments, toys; repair and installation of machinery and equipment	1.4%	-0.2%	0.9%
Professional, Scientific, Technical, Administrative and Support Service Activities	-0.5%	-0.3%	-0.3%
Total manufacturing	1.6%	0.4%	1.1%
Transportation and storage	-0.2%	-0.8%	-0.3%
Unweighted average	0.7%	0.1%	0.6%
Unweighted average of 4 highest performing industries	1.7%	0.5%	1.3%

Source: CEPA analysis of EU KLEMS data (2023 release). CEPA (2024) [PR24 Final Determinations – Frontier shift](#), p11.

- 4.889 CEPA stated that the analysis suggested a frontier shift range of 0.6% to 1.3%. The bottom of this range was determined by the unweighted average TFP GO productivity estimates for the seven sectors listed above in Table 4.26. The top of the range was determined by the unweighted average TFP GO productivity estimates for the four highest performing industries.¹¹²⁸

TFP VA productivity estimates

- 4.890 Further, the CEPA analysis looked at TFP productivity estimates in value added (VA) terms.¹¹²⁹ These results showed VA productivity estimates for the period 1996 to 2019 varied between -0.5% and 5.9% and the unweighted average of the seven industries was 1.7% per year. CEPA stated that other UK regulators, including Ofgem and the CMA, had previously put some weight on the VA based TFP estimates.¹¹³⁰ Therefore, CEPA stated that this would imply a slightly higher

¹¹²⁷ GO measures aggregate output by one or more companies. The inputs used to make gross output are capital, labour and intermediate inputs, including energy, materials and services. In simple terms, GO assumes that intermediate inputs are a factor in production, along with labour and capital. CEPA (2024) [PR24 Draft Determinations – Frontier Shift, RPEs and the energy crisis cost adjustment mechanism](#), p75.

¹¹²⁸ CEPA (2024) [PR24 Final Determinations – Frontier shift](#), pp11–12.

¹¹²⁹ VA is equivalent to gross output minus the value of intermediate inputs required to produce the final output. VA inputs are therefore labour and capital only. This means that productivity changes resulting from variations in the use of intermediate inputs should not be captured in VA measures. CEPA (2024) [PR24 Draft Determinations – Frontier Shift, RPEs and the energy crisis cost adjustment mechanism](#), p75.

¹¹³⁰ [PR19 Final Report](#), pp245–246.

estimate of frontier shift than was implied by the GO productivity estimates in isolation.¹¹³¹

CEPA's recommendation

- 4.891 CEPA's report recommended that a frontier shift range of 0.8% to 1.2% per year remained appropriate at Ofwat's PR24 FD. The lower end of this range was aligned with the more ambitious water companies and the more cautious approach to frontier shift in the most recent water and sewerage price review in Northern Ireland.¹¹³² The top end of the range was aligned with the highest frontier shift challenges set in recent GB price reviews, whilst the mid-point of the range had been accepted in the most recent CMA appeals.¹¹³³
- 4.892 CEPA also found no evidence to suggest the scope for frontier shift during PR24 was substantially different from that which other UK regulators had set in recent decisions, which clustered around 1%.¹¹³⁴ For example, Ofgem applied a 1% per year frontier shift in RII0-ED2, which was determined in late 2022.¹¹³⁵

Europe Economics report

- 4.893 Europe Economics explored for Ofwat the outlook for productivity across the economy and in the water sector.¹¹³⁶ Europe Economics found reasons in the academic literature for why low economy-wide productivity growth since the 2007-2008 global financial crisis (**GFC**) might not apply to the water sector. Further Europe Economics found that the slow growth in economy-wide labour productivity over 2023 to 2025 forecast by the Bank of England was driven by factors relating to Brexit, COVID-19 and the energy price shock that did not directly apply to the water sector.¹¹³⁷
- 4.894 Europe Economics said that there were also reasons to expect that economy-wide productivity growth would accelerate going forward due to monetary tightening forcing the exit of the most inefficient firms, freeing up inputs for more productive use; and wider use of artificial intelligence, big data and robotics in the water sector and the whole economy.¹¹³⁸

¹¹³¹ CEPA (2024) [PR24 Final Determinations – Frontier shift](#), p12.

¹¹³² In Northern Ireland, the frontier shift for the most recent water and sewerage price review was set at 0.8% (opex) and 0.6% (capex). CEPA (2024) [PR24 Draft determinations – Frontier Shift, Real Price Effects and the energy crisis cost adjustment mechanism](#), p82, Table 4.8.

¹¹³³ CEPA (2024) [PR24 Final Determinations – Frontier Shift](#), p36.

¹¹³⁴ CEPA (2024) [PR24 Final Determinations – Frontier Shift](#), pp12–13; CEPA (2024) [PR24 Draft determinations – Frontier Shift, Real Price Effects and the energy crisis cost adjustment mechanism](#), p82, Table 4.8.

¹¹³⁵ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p262.

¹¹³⁶ Europe Economics (2023) [Frontier shift and outcomes stretch at PR24](#), pp17–30.

¹¹³⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p262.

¹¹³⁸ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p262.

Ofwat's reasoning

4.895 Ofwat applied a frontier shift of 1% per year – in the middle of CEPA's range of 0.8% to 1.2%.¹¹³⁹ Ofwat noted that this was based on multiple reasons.

- (a) Ofwat used TFP in comparable industries but did not use the water sector itself to avoid creating a perverse incentive for the water companies to influence the frontier shift at future price reviews.¹¹⁴⁰
- (b) CEPA found no evidence to suggest frontier shift should be set substantially differently from that which other UK regulators had set in recent decisions – which clustered around 1%.¹¹⁴¹
- (c) 1% was aligned with the frontier shift applied by South Staffordshire Water, Portsmouth Water and Sutton and East Surrey Water in PR24 business plans.¹¹⁴²
- (d) Europe Economics found the reasons suggested in the academic literature for low economy-wide productivity growth since the GFC did not apply to the water sector.¹¹⁴³
- (e) Slow growth in economy-wide labour productivity over 2023 to 2025 forecast by the Bank of England was driven by factors relating to Brexit, COVID-19 and the energy price shock that did not directly apply to the water sector.¹¹⁴⁴
- (f) Economy-wide productivity growth could accelerate due to monetary tightening forcing the exit of the most inefficient firms, freeing up inputs for more productive use.¹¹⁴⁵
- (g) Wider use of artificial intelligence, big data and robotics in the water sector and the economy as a whole. This was reflected in the Office for Budget Responsibility (**OBR**)'s long-term forecast of labour productivity of between 1% and 1.5% per year.¹¹⁴⁶

¹¹³⁹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p261.

¹¹⁴⁰ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p261.

¹¹⁴¹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p262.

¹¹⁴² Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p262.

¹¹⁴³ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p262.

¹¹⁴⁴ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p262.

¹¹⁴⁵ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p262. These inefficient firms were referred to as zombie firms by Europe Economics: Europe Economics (2024) [Response to company representations regarding frontier shift for PR24](#), p29.

¹¹⁴⁶ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p262; OBR (2023) [Long-term economic determinants – March 2023 Economic and fiscal outlook](#).

- (h) Some evidence may have supported a higher and more stretching frontier shift of up to 1.2% per year.¹¹⁴⁷

Methodological issues raised by parties on the overall level of frontier shift

- 4.896 In our provisional determination, we assessed different factors under two core questions.
- (a) How comparable is the water sector to the rest of the economy in terms of productivity changes, and has it also been affected by low productivity growth since the GFC?
 - (b) What are the forecasts for productivity growth in the economy as a whole and for the water sector?
- 4.897 Our provisional view was that there were no convincing reasons to expect productivity growth in the water sector to diverge substantially from the wider economy. Therefore, it was appropriate to put weight on the economy-wide forecasts prepared by the government bodies with suitable expertise: the OBR and the Bank of England.
- 4.898 For our final determination, we refine our provisional determination approach through traditional productivity analysis using EU KLEMS comparator sectors and take into account various relevant factors, including productivity forecasts.
- 4.899 In the remainder of this section we summarise the range of representations made by parties on the each of the following issues:
- (a) wider UK productivity growth;
 - (b) water sector historical productivity growth and investment trends;
 - (c) water sector technological progress;
 - (d) degree of efficiencies of a larger investment programme within the water sector; and
 - (e) water sector overlap between outcomes stretch and frontier shift.

Wider UK productivity growth

- 4.900 In this section we summarise the evidence on wider UK productivity growth, covering the historical changes in UK productivity growth, components of

¹¹⁴⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp262–263, p268; Europe Economics (2024) [Critique of Economic Insight reports on productivity and frontier shift at PR24](#); Europe Economics (2023) [Frontier Shift and Outcomes Stretch](#), pp27–28.

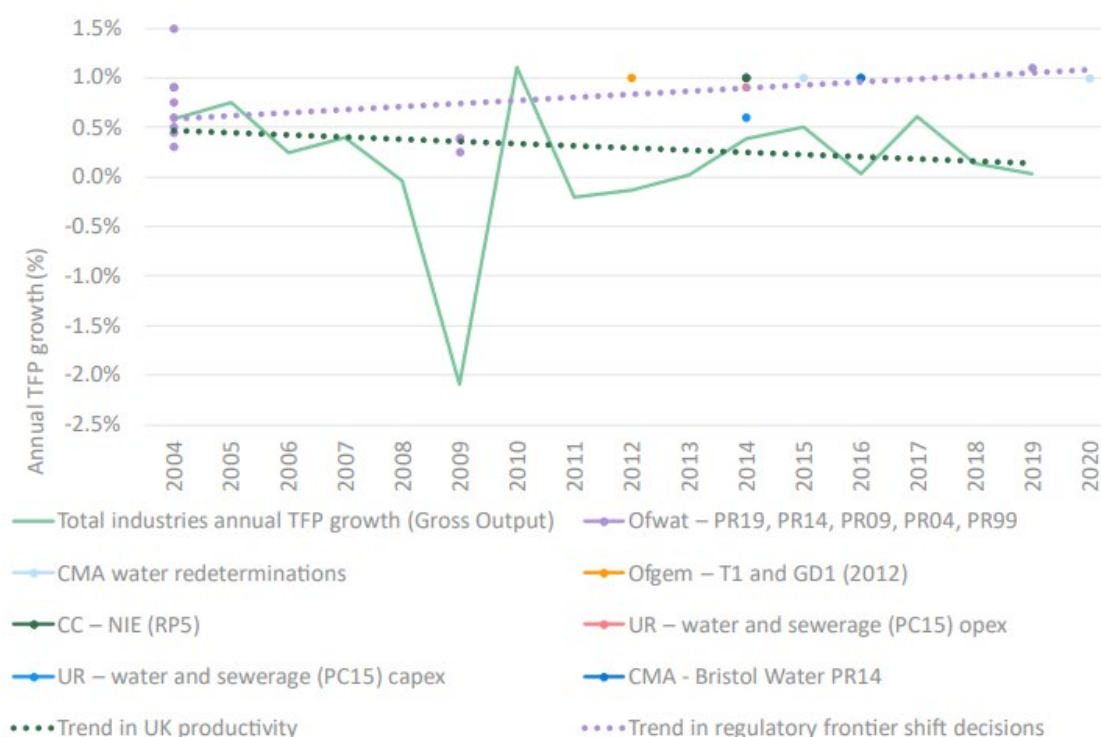
productivity growth and forecasts of UK productivity growth. We first present the evidence from Disputing Companies, then from Ofwat, then from third parties, before setting out our view on wider UK productivity growth.

Disputing Companies

Historical changes in UK productivity growth

- 4.901 In a report provided alongside the Disputing Companies' Statements of cases, Economic Insight, on behalf of the Disputing Companies, stated that 33 out of the 46 sectors in the UK experienced a reduction in productivity growth from 2008 to 2019 (the post-GFC period), compared to 1995 to 2007 (the pre-GFC period).¹¹⁴⁸
- 4.902 Further, Economic Insight stated that as seen in Figure 4.20 below, the UK had now experienced 15 years of falling, and low, productivity performance – as measured by TFP. However, at the same time sectoral regulators had been setting increasingly challenging frontier shift targets.¹¹⁴⁹

Figure 4.20: Falling UK productivity, increasing regulatory frontier shift decisions



¹¹⁴⁸ Economic Insight (2025) Frontier shift at the PR24 redeterminations, p24, paragraph 3.5; [Anglian SoC](#), paragraph 288; [Northumbrian SoC](#), paragraph 412; [South East SoC](#), paragraphs 4.83 and 4.87; [Southern SoC](#), pp180–182, paragraph 287, paragraphs 290–291; [Wessex SoC](#), paragraph 8.37; Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), chapter 3; Economic Insight (2024) [Further evidence on frontier shift at PR24](#), chapter 3; Economic Insight (2023) [Productivity and frontier shift at PR24](#), chapter 1; Economic Insight (2025) Frontier Shift at the PR24 Redeterminations, chapter 2; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p115, line 22 to p116, line 15.

¹¹⁴⁹ Economic Insight (2023) [Productivity and frontier shift at PR24](#), p6, pp19–21; Economic Insight (2025) Frontier shift at the PR24 redeterminations, p12; [South East SoC](#), paragraph 4.7; [Southern SoC](#), p178, paragraph 276(a); [Wessex SoC](#), paragraph 8.37; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p111, lines 15–17.

Source: *Economic Insight analysis of EU KLEMS data and past regulatory frontier shift decisions. Economic Insight (2025) Frontier shift at the PR24 redeterminations*, p12.

Note: There are multiple Ofwat decisions in 2004, reflecting the multiple frontier shift targets set at PR04, including separate targets for base and enhancement, as well as for water and wastewater.

- 4.903 Economic Insight and the Disputing Companies also stated that Ofwat's estimation window placed undue weight on time periods well before the structural break in productivity. In contrast, Economic Insight's estimation window placed more weight on recent years and was a better predictor of overall UK productivity than Ofwat's but still overestimated actual UK TFP growth.¹¹⁵⁰
- 4.904 Northumbrian stated that many of the sectors which its supply chain depended upon had seen negative productivity growth since 2008, including construction, and machinery and equipment. There was no reason why the water sector could deliver higher productivity growth than the rest of the UK economy.¹¹⁵¹
- 4.905 South East, Southern, and Wessex stated that under a benchmarking approach to determining frontier shift, one would generally expect the challenge to be higher at times of high productivity and lower at times of low productivity.¹¹⁵² Therefore, the economy-wide slowdown would be expected to affect the water sector.¹¹⁵³
- 4.906 In response to our provisional determination, the Disputing Companies stated that the CMA should use recent UK productivity data in setting the frontier shift, given the persistency of the UK's 'productivity puzzle'. Further, that the CMA's provisional determination level of 0.7% per year was considerably above what the UK economy had achieved in recent years.¹¹⁵⁴

Components of productivity growth estimates

- 4.907 Economic Insight stated that there was the potential for TFP measures to capture efficiency savings from catch-up efficiency and economies of scale.
- (a) **Catch-up efficiency.** TFP estimates also included catch-up gains, which were distinct from frontier shift gains. All firms within an industry were not already operating at the efficiency frontier and therefore TFP growth could be achieved via a firm 'catching-up' to the frontier. Catch-up efficiency would be present for all industries to some extent, as none were perfectly efficient,

¹¹⁵⁰ Disputing Companies (2025) [Joint reply to Ofwat's Response](#), paragraph 131; Economic Insight (2025) *Frontier shift at the PR24 redeterminations*, pp14–15 and pp42–47; Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), p66; Economic Insight (2023) [Productivity and frontier shift at PR24](#), chapter 4; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p111, lines 21–24 and p132, line 23 to p133, line 12.

¹¹⁵¹ [Northumbrian SoC](#), paragraph 413.

¹¹⁵² [South East SoC](#), paragraph 4.86; [Southern SoC](#), p180, paragraph 287; [Wessex SoC](#), paragraph 8.37; [Wessex SoC](#), Appendix A119 WSX-C22 - Frontier shift, p1; Economic Insight (2025) *Frontier shift at the PR24 redeterminations*, p11.

¹¹⁵³ [Southern SoC](#), p180, paragraph 287; Economic Insight (2025) *Frontier shift at the PR24 redeterminations* paragraph 1.5; Economics Observatory (2024) [What explains the UK's productivity problem?](#).

¹¹⁵⁴ Anglian (2025) [Response to CMA PR24 PD](#), p75, paragraph 203 (i); South East (2025) [Response to CMA PR24 PD](#), p10, paragraph 1.31 and p74, paragraph 4.6; Northumbrian (2025) [Response to CMA PR24 PD](#), p3, paragraph 3; Southern (2025) [Response to CMA PR24 PD](#), paragraph 3.128–3.130; Wessex (2025) [Response to CMA PR24 PD](#), p15, paragraph 6.2 (a).

meaning that there would always be some firms that were operating behind the frontier. This could be mitigated by choosing highly competitive comparator industries.¹¹⁵⁵

- (b) **Economies of scale.** This occurred when unit costs rose or fell, depending on whether a firm's output volume was increasing or decreasing. If an industry benefited from economies of scale, then an increase in inputs would lead to a more than proportionate increase in outputs, as the unit costs of producing the output would fall. This would show an improvement in TFP growth. However, it would not be caused by an outward shift in the production frontier (ie it would not be equivalent to frontier shift). This could be mitigated by choosing comparator industries with similar proportions of fixed costs and output growth rates.¹¹⁵⁶

4.908 Economic Insight stated that when measuring potential frontier shift it was important that both embodied and disembodied technical change were correctly accounted for.¹¹⁵⁷

4.909 Economic Insight stated that Ofwat's PR24 FD arguments for why frontier shift should be set above levels indicated by the raw TFP data were flawed. Ofwat's argument that historical TFP may understate frontier shift, due to it being depressed by increased productivity dispersion since the GFC, was largely speculative and unsupported by empirical evidence. Further, the evidence indicated that dispersion had decreased, rather than increased, over the period in the UK, when focusing on the parts of the economy/comparator industries used to inform the frontier shift level for water companies.¹¹⁵⁸

4.910 Economic Insight also stated that the suggestion that productivity growth would improve due to a reduction in inefficient firms was irrelevant and contradicted by credible sources. Trends in inefficient firms could, in principle, contribute to overall trends in productivity dispersion. However, recent data did not suggest that the number of inefficient firms in the UK was declining.¹¹⁵⁹

¹¹⁵⁵ Economic Insight (2023) [Productivity and frontier shift at PR24](#), pp29–30; Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), chapter 6.

¹¹⁵⁶ Economic Insight (2023) [Productivity and frontier shift at PR24](#), pp29–30.

¹¹⁵⁷ Economic Insight (2023) [Productivity and frontier shift at PR24](#), p30, p35. Embodied technological change relates to productivity gains generated by improvements in the design and quality of new capital equipment, and intermediate products, compared to using older iterations of the same equipment. Embodied change captures the use of new technology and assets. Disembodied technological change relates to gains made without improvements arising from the use of new equipment. Disembodied change captures gains from the use of existing technology and assets.

¹¹⁵⁸ Economic Insight (2025) Frontier shift at the PR24 redeterminations, p18, paragraphs 2.25–2.28 and Annex 2; Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), chapter 6; Economic Insight (2023) [Productivity and frontier shift at PR24](#), chapter 3; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p139, line 22 to p140, line 14.

¹¹⁵⁹ An increase in inefficient 'zombie' firms indicated an increase in dispersion because they had poor productivity growth. Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), chapter 6; Economic Insight (2025) Frontier Shift at the PR24 Redeterminations, pp19–20, paragraphs 2.30–2.33, Annex 2–3.

Forecasts of UK productivity growth

- 4.911 The Disputing Companies also stated that Ofwat presented new evidence from the OBR, forecasting medium term labour productivity of 1.25% by 2029. The same March 2025 OBR report forecasted average labour productivity of 0.82% from 2024-2025 to 2029-2030 (which was below Ofwat's target); and had a range heavily skewed to the downside (low case: 0.30%, high case: 1.06%, over the same period). Further, the Disputing Companies stated that the OBR noted that its forecasts had been persistently over optimistic: 'The main [error] in our... forecasts has been our serial overestimation of productivity'.^{1160 1161}
- 4.912 Anglian stated that recent Bank of England and ONS analysis suggested that UK productivity growth, TFP and labour productivity, were likely to remain weak.¹¹⁶² The Bank of England forecasted average TFP growth of 0.27% for the UK economy from 2025 to 2027.¹¹⁶³ ONS labour productivity analysis suggested that the UK's productivity performance may be deteriorating further.¹¹⁶⁴
- 4.913 In response to our provisional determination, Anglian stated that the Bank of England's track record of forecasting productivity had been superior to that of the OBR and so the CMA should place more weight on the Bank of England's forecasts than those of the OBR.¹¹⁶⁵
- 4.914 In response to our provisional determination, four of the Disputing Companies stated that the CMA should also use recent UK productivity data in setting the frontier shift, given the persistent over-optimism of productivity growth forecasts.¹¹⁶⁶

Ofwat

Historical changes in UK productivity growth

- 4.915 Ofwat stated that CEPA's recommended frontier shift range reflected the wider productivity slowdown. This was because CEPA assessed productivity growth in

¹¹⁶⁰ Disputing Companies (2025) [Joint reply to Ofwat's Response](#), p28, paragraph 124; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p115, lines 1–9. The Disputing Companies referenced Ofwat (2025) [Response to common issues on expenditure allowances](#), p190, paragraph 6.30; OBR (2025) [Economic and fiscal outlook – March 2025](#), p27, paragraph 2.28 and p29, Chart A and underlying Excel data. Stated values are annual averages for Financial Years, other than for 2029/30, which is based on the 2029 calendar year.

¹¹⁶¹ OBR (2023) [Working paper No.19 The OBR's forecast performance](#), paragraph 1.12.

¹¹⁶² [Anglian SoC](#), paragraphs 288–290.

¹¹⁶³ Economic Insight (2025) Frontier shift at the PR24 redeterminations, p16, paragraph 2.21. This is based on an average of the Bank of England's TFP growth projects for 2025 (0.0%), 2026 (0.5%) and 2027 (0.3%). Bank of England (2025) [Monetary Policy Report -February 2025](#), p85; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p115, lines 11–14.

¹¹⁶⁴ Economic Insight (2025) Frontier shift at the PR24 redeterminations, p17, paragraph 2.24.

¹¹⁶⁵ Anglian (2025) [Response to CMA PR24 PD](#), p76, paragraph 204.

¹¹⁶⁶ Anglian (2025) [Response to CMA PR24 PD](#), p75, paragraph 203 (iii); South East (2025) [Response to CMA PR24 PD](#), p74, paragraph 4.6; Southern (2025) [Response to CMA PR24 PD](#), p78, paragraphs 3.128–3.130; Wessex (2025) [Response to CMA PR24 PD](#), p15, paragraph 6.2 (a).

comparator sectors and accounted for productivity performance across the periods before and after the GFC.¹¹⁶⁷ Further, Ofwat, informed by CEPA, stated that the UK productivity growth slowdown was partly driven by sluggish recovery in UK business investment since the GFC.¹¹⁶⁸

- 4.916 Ofwat, informed by Europe Economics, stated that the factors driving the slowdown in UK average productivity growth did not apply to the regulated water sector. Therefore, putting too much weight on the period after the GFC would underestimate frontier shift.¹¹⁶⁹ Further, Europe Economics stated that there were strong reasons to expect reversions to more historically normal levels of productivity growth over the coming years, given monetary tightening and the transformative effects of AI.¹¹⁷⁰
- 4.917 In addition, Ofwat stated that water sector productivity should be comparable to competitive sectors such as manufacturing and construction, and, in general, particularly for manufacturing, these had grown faster than other competitive sectors and the wider economy.¹¹⁷¹

Components of productivity growth estimates

- 4.918 Ofwat said that the EU KLEMS data only looked at disembodied technological change, and one also needed to include embodied technological change when estimating water sector productivity growth.¹¹⁷² Ofwat's frontier shift took into account embodied technological change, which could lead up to a 60% increase in productivity growth compared to disembodied technological change in the EU KLEMS data.¹¹⁷³
- 4.919 Further, Ofwat stated that some weight should be placed on the VA productivity estimates as well as GO productivity estimates, as they were both relevant to frontier shift.¹¹⁷⁴
- 4.920 Europe Economics, on behalf of Ofwat, said that while some measures of the most inefficient firms will mechanically increase if interest rates rise (eg if based on interest cover), higher interest rates should result in the exit of inefficient firms.¹¹⁷⁵ Ofwat stated that this was consistent with data from The Insolvency Service that

¹¹⁶⁷ Ofwat (2025) [Response to common issues on expenditure allowances](#), p191, paragraph 6.27; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p133, line 25 to p134, line 1.

¹¹⁶⁸ CEPA (2024) [PR24 Final Determinations - Frontier Shift](#), p27.

¹¹⁶⁹ Ofwat (2025) [Response to common issues on expenditure allowances](#), p191, paragraph 6.28; Europe Economics (2023) [Frontier Economics and Outcomes Stretch at PR24](#), p3; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p136, lines 21–23.

¹¹⁷⁰ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p138, lines 11–19.

¹¹⁷¹ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p117, lines 15–20.

¹¹⁷² (Non-confidential) transcript of the hearing for Base on 24 June 2025, p117, line 25 to p118, line 10.

¹¹⁷³ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p17, lines 10–21.

¹¹⁷⁴ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p134, lines 18–22.

¹¹⁷⁵ Europe Economics (2025) Report on Frontier Shift for PR24 CMA Redeterminations, p49; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p135, lines 1–24.

presented a material increase in the number of company insolvencies since 2021.¹¹⁷⁶

Forecasts of UK productivity growth

- 4.921 In its statement of case for our PR24 redetermination, Ofwat stated that recent publications by the OBR assumed partial unwinding of the UK productivity slowdown.¹¹⁷⁷ In March 2025, the OBR stated that ‘Trend productivity growth ... returns to 1.25% by 2029, broadly the average of the higher growth in the decade before and lower growth in the decade after the GFC’.¹¹⁷⁸
- 4.922 In response to our provisional determination, Ofwat said that two adjustments would be required if the CMA retained the use of economy-wide productivity forecasts to help set frontier shift. The adjustments should be:
- (a) To exclude public sector drag. Europe Economics, on behalf of Ofwat, stated that the economy-wide productivity forecasts would need to be adjusted to strip out the poor productivity performance of the public sector, given that it was private sector productivity growth which was relevant to the water sector. Europe Economics’ analysis of historical EU KLEMS data over 1996 to 2019 showed that GO TFP growth for the private sector had on average been 0.1 percentage point higher per year than for the overall UK economy, as the latter had been dragged down by the negative TFP growth of ‘Public administration, defence, education, human health and social work activities’. Europe Economics stated that this factor therefore implied that a 0.1 percentage point uplift should be applied to the CMA’s frontier shift figure.¹¹⁷⁹
 - (b) To capture productivity gains from embodied technical shift – improvements embedded in new capital and technology.¹¹⁸⁰ Europe Economics stated that an uplift would also need to be applied to account for embodied technical shift (i.e. technical shift embodied in inputs, such as better machinery). Europe Economics stated that : TFP growth seeks to measure disembodied technical shift, and hence embodied technical shift was additional to forecast TFP growth; and that the water sector had particularly large scope for achieving embodied technical shift over AMP8 due to a step increase in its capital investment programme.¹¹⁸¹ Europe Economics stated that this factor

¹¹⁷⁶ Ofwat (2025) [Response to common issues on expenditure allowances](#), p192, paragraph 6.32; The Insolvency Service (2025) [Commentary - Company Insolvency Statistics February 2025](#), section 2.1 (accessed 26 February 2026).

¹¹⁷⁷ Ofwat (2025) [Response to common issues on expenditure allowances](#), p191, paragraph 6.30; OBR (2025) [Economic and fiscal outlook](#); OBR (2024) [Economic and fiscal outlook](#); (Non-confidential) transcript of the hearing for Base on 24 June 2025, p114, lines 15–19.

¹¹⁷⁸ OBR (2025) [Economic and fiscal outlook](#), p27, paragraph 2.28.

¹¹⁷⁹ Ofwat (2025) [Response to CMA PR24 PD](#), Supporting document [OF-RTPD-093] ‘Europe Economics, Response to CMA Provisional Determinations - Frontier Shift’, p3, and pp17–19.

¹¹⁸⁰ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p85, paragraph 4.13; Ofwat (2025) [Response to CMA PR24 PD](#), Supporting document [OF-RTPD-093] ‘Europe Economics, Response to CMA Provisional Determinations - Frontier Shift’, p3, and pp17–20.

¹¹⁸¹ Europe Economics, Report on Frontier Shift for PR24 CMA Redeterminations, 28 April 2025, pp34–35.

therefore implied that the CMA needed to apply an uplift of between 0.23 and 1.41 percentage points per year to account for the embodied technical shift that water companies could achieve over AMP8.¹¹⁸²

- 4.923 In response to our provisional determination, Europe Economics, on behalf of Ofwat, stated that applying both of the above adjustments to the CMA's figure of 0.7 per cent would yield a frontier shift in the range of 1.03 to 2.21 per cent per year.¹¹⁸³

Third parties

- 4.924 Cadent, the Energy Networks Association, Future Energy Networks, Thames Water, Yorkshire Water Services Limited (**Yorkshire Water**), and Water UK have generally echoed points made by Economic Insight and the Disputing Companies, namely that Ofwat's frontier shift: was much higher than current levels of productivity improvements in the UK; put too much weight on productivity estimates preceding the GFC; and was too optimistic.¹¹⁸⁴
- 4.925 In response to our provisional determination, Cadent stated that the level of frontier shift should have been significantly lower as the CMA's 0.7% level of frontier shift did not reflect the profile of future productivity growth from the Bank of England or the OBR's forecasts and placed undue weight on the OBR's forecast for 2027 onwards, which the OBR itself accepted was highly uncertain.¹¹⁸⁵
- 4.926 In response to our provisional determination, Thames Water stated that the Bank of England productivity forecasts of around 0.27% per year suggested that UK productivity performance may well be below 0.7% per year during AMP8. Further, TFP was a more appropriate estimate of frontier shift than labour productivity, which can capture increases in capital inputs and capital productivity, so it will be higher than TFP.¹¹⁸⁶

¹¹⁸² Ofwat (2025) [Response to CMA PR24 PD](#), Supporting document [OF-RTPD-093] 'Europe Economics, Response to CMA Provisional Determinations - Frontier Shift', p3, and pp19–20.

¹¹⁸³ Ofwat (2025) [Response to CMA PR24 PD](#), Supporting document [OF-RTPD-093] 'Europe Economics, Response to CMA Provisional Determinations - Frontier Shift', p3.

¹¹⁸⁴ Cadent (2025) [Third Party Submission on the Water PR24 References](#), p1 and p6; Energy Networks Association (2025) [Third party submission on the Water PR24 References](#), p12; Future Energy Networks (2025) [Third party submission on the Water PR24 References](#), p5; Thames Water (2025) [Third Party Submission on the Water PR24 References](#), p8, paragraph 37(iii); Yorkshire Water (2025) [Third party submission on the Water PR24 References](#), p5; Water UK (2025) [Third party submission on the Water PR24 References](#), pp76–79 and p81. Water UK stated that CEPA's own productivity analysis of EU KLEMS showed that average productivity of the PR24 comparator set was 2.5% pre-GFC and 1.5% post-GFC (based on TFP VA) and 1.7% pre-GFC and 0.5% post-GFC. CEPA (2024) [PR24 Final Determinations – Real Price Effects and the energy crisis cost adjustment mechanism](#); Economic Insight (2023) [Productivity and frontier shift at PR24](#), chapter 5.

¹¹⁸⁵ Cadent (2025) [Response to CMA PR24 PD](#), pp1–5.

¹¹⁸⁶ Thames Water (2025) [Response to CMA PR24 PD](#), p21, paragraphs 115–116.

Our view on wider UK productivity growth

- 4.927 In our provisional determination, we reviewed productivity data for the latest business cycle (1996 to 2019) and we continue to do so for our final determination. We note that the EU KLEMS data showed that most sectors had been affected by a substantial and durable slowdown in productivity since the GFC. This slowdown had been observed in the majority of sectors within the economy, including those traditionally used by Ofwat and other utility regulators to assess productivity trends and set the frontier shift. Specifically, for the 1996 to 2019 period, the GO TFP estimates across sectors varied between -0.4% and 2.1%, with an unweighted average of 0.6%, as seen above in Table 4.26.¹¹⁸⁷
- 4.928 However, for the more recent 2009 to 2019 period in the EU KLEMS data, the range of GO TFP estimates was -0.8% to 2.5% and the unweighted average dropped to 0.1%, as seen above in Table 4.26. Further, this slowdown has affected most sectors to some degree, including the water sector. Many of the sectors which the water sector's supply chain depends upon have seen low productivity growth.¹¹⁸⁸ Therefore, given there has been lower UK wide productivity growth in the 2009 to 2019 period, our view is that this would be a reason to choose a lower level of frontier shift relative to the CMA PR24 PD level, and we consider this as a qualitative factor together with other adjustments in the round.
- 4.929 Further, Ofwat stated that some weight should be placed on the VA productivity estimates as well as GO productivity estimates, as they were both relevant to frontier shift (as seen above in paragraph 4.919). We note that our PR19 redetermination as well as other UK regulators including Ofgem, previously had put some weight on VA based TFP estimates, due to the theoretical basis for doing so and that GO estimates may be prone to error.¹¹⁸⁹ The VA productivity estimates from the EU KLEMS data for the period 1996 to 2019 varied between -0.5% and 5.9% and showed a higher unweighted average of 1.7% per year. For the more recent 2009 to 2019 period in the EU KLEMS data, the range of VA TFP estimates was -0.6% to 7.2% and the unweighted average dropped to 1.5%. Our view is that the higher VA measure would be a reason to choose a higher level of frontier shift relative to the CMA PR24 PD level, and we consider this as a qualitative factor together with other adjustments in the round.
- 4.930 We assessed official forecasts of productivity changes in the wider economy in our provisional determination to inform our decision on the frontier shift in AMP8. For

¹¹⁸⁷ CEPA, advisers to Ofwat, stated that 1996 to 2019 could be constructed as the latest business cycle. CEPA (2024) [PR24 Draft Determinations: Frontier Shift, RPEs and the energy crisis cost adjustment mechanism](#), p72.

¹¹⁸⁸ 2023 EU KLEMS data showed that, from 2009 to 2019, TFP GO productivity estimates for the following sectors were low. Construction had a productivity estimate of -0.2%; Machinery and equipment -0.8%; and Total manufacturing 0.4%. CEPA (2024) [PR24 Final Determinations: Frontier shift](#), p11.

¹¹⁸⁹ [PR19 Final Report](#), pp245–246, paragraph 4.544.

our final determination, we continue to assess recent OBR and Bank of England productivity growth forecasts.

- 4.931 In our provisional determination, we noted that in February 2025 the Bank of England forecasted average TFP growth of 0.27% for the UK economy from 2025 to 2027.¹¹⁹⁰ We note that, there has been no updated figures for this forecast, as of 30 November 2025, which was our cutoff date for market data.
- 4.932 In August 2025, the Bank of England stated that labour productivity growth remained weak.¹¹⁹¹ Further, in November 2025, the Bank of England updated its labour productivity forecast, and the average for the period 2024 to 2027 fell by 0.1 percentage points when compared to the August 2025 figures, as seen below in Table 4.27.¹¹⁹²

Table 4.27: Bank of England's recent labour productivity forecasts¹¹⁹³

Years	February 2025 forecast	May 2025 forecast	August 2025 forecast	November 2025 forecast
2024	0.0	0.3	0.3	0.3
2025	-0.5	-0.2	-0.1	-0.2
2026	0.7	0.9	1.1	0.8
2027	0.7	0.9	0.9	1.1
2028				1.0
Average (2024-2027)	0.2	0.5	0.6	0.5

Source: Bank of England (2025) [Monetary Policy Report November 2025, Charts, slides, and data](#): Projections Databank - November 2025 MPR.xlsx, tab: 22. Labour productivity

Note: Labour productivity growth forecasts, measured output per hour worked.

- 4.933 In our provisional determination, we noted that in March 2025 the OBR predicted that labour productivity growth (measured output per hour worked) would be 0.3% in 2024, 0.3% in 2025, 0.9% in 2026, 1.1% in 2027 1.2% in 2028, and 1.3% in 2029.¹¹⁹⁴ However, the OBR noted that:

The outlook for trend productivity is one of the most important and uncertain forecast judgements. Successive past forecasts for trend productivity have proven to be too optimistic as productivity growth

¹¹⁹⁰ This is based on an average of the Bank of England's TFP growth projects for 2025 (0.0%), 2026 (0.5%) and 2027 (0.3%). Bank of England (2025) [Monetary Policy Report February 2025](#), p85.

¹¹⁹¹ Bank of England (2025) [Monetary Policy Report August 2025](#), pp66–67, Chart 2.16.

¹¹⁹² Bank of England (2025) [Monetary Policy Report November 2025, Charts, slides, and data](#): Projections Databank - November 2025 MPR.xlsx, tab: 22. Labour productivity.

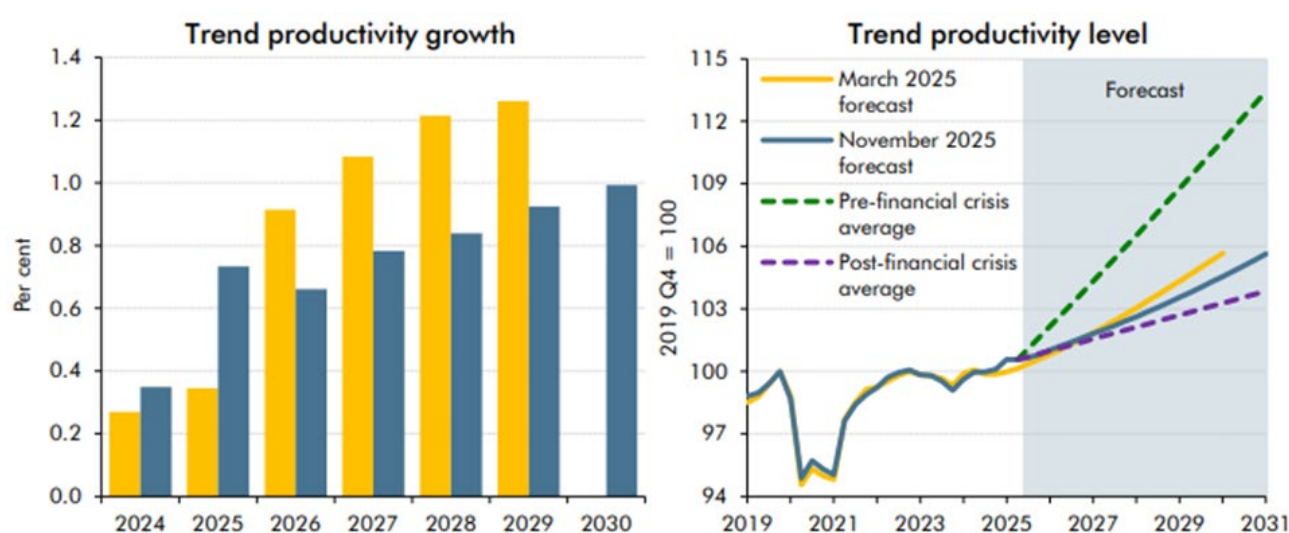
¹¹⁹³ Note that we have applied a cut-off date for market data of 30 November 2025.

¹¹⁹⁴ OBR (2025) [Economic and fiscal outlook – March 2025](#), p28, Chart 2.7.

has continued to disappoint ... the uncertainty around our productivity assumption remains high.¹¹⁹⁵

- 4.934 Compared to the OBR's previous forecast in October 2024, its March 2025 forecast showed lower labour productivity growth in the short-term, but a similar labour productivity growth of roughly 1.25% by 2029.¹¹⁹⁶
- 4.935 Since our provisional determination, the OBR has released an updated labour productivity forecast. In November 2025, the OBR revised down its estimate of underlying medium-term labour productivity growth, as seen below in Figure 4.21.¹¹⁹⁷

Figure 4.21: OBR November 2025 trend labour productivity



Source: OBR (2025) *Economic and fiscal outlook – November 2025*, p27, Chart 2.7.

- 4.936 However, the OBR noted that labour productivity growth was inherently difficult to forecast, and the outlook was subject to significant uncertainty.¹¹⁹⁸ Further, the OBR stated that to illustrate the uncertainty around its central estimate, it presented two alternative productivity scenarios:
- (a) In the upside scenario, more of the recent weakness in labour productivity growth was due to temporary shocks, and there was a larger boost from AI, pushing potential productivity growth up to 1.5 per cent in the medium term.
 - (b) In the downside scenario, labour productivity growth stayed around its post-financial crisis average of 0.5 per cent over the forecast.¹¹⁹⁹

¹¹⁹⁵ OBR (2025) *Economic and fiscal outlook – March 2025*, p28, Box 2.1.

¹¹⁹⁶ OBR (2025) *Economic and fiscal outlook – March 2025*, pp26–29.

¹¹⁹⁷ OBR (2025) *Economic and fiscal outlook – November 2025*, p28, Box 2.1.

¹¹⁹⁸ OBR (2025) *Economic and fiscal outlook – November 2025*, p28, paragraph 2.20.

¹¹⁹⁹ OBR (2025) *Economic and fiscal outlook – November 2025*, p30, Box 2.1.

- 4.937 We note that the OBR and Bank of England forecasts differ in their levels and time coverage. Over the period 2024 to 2028, the Bank of England's labour productivity forecast is more pessimistic than the OBR's.¹²⁰⁰ The revisions down of both the Bank of England's and OBR's latest labour productivity forecasts are substantial. Further, the Bank of England's TFP forecast was lower than its labour productivity forecast. We note that TFP is a more appropriate estimate of frontier shift than labour productivity. This is since labour productivity can capture increases in capital inputs and capital productivity, so it will be higher than TFP forecasts. Therefore, our view is that the recent revisions down of labour productivity forecasts and the lower Bank of England TFP forecast would be reasons to choose a lower level of frontier shift relative to the CMA PR24 PD level, with greater weight placed on the lower TFP forecast. We consider these as qualitative factors together with other adjustments in the round.
- 4.938 Ofwat submitted that if we retained the use of economy-wide productivity forecasts to help set frontier shift, adjustments would be needed to exclude public sector drag and to capture productivity gains from embodied technical shift (as seen above in paragraph 4.922). We consider these in turn below.
- (a) We acknowledge that some adjustment would be required to account for the lower public sector productivity when compared to the private sector. In February 2025, the Bank of England stated that one contributing factor to weakness in measured productivity may be the increasing share of employment accounted for by areas where the public sector is the predominant employer such as education, health and public administration. Employment in these sectors has risen substantially since 2019, particularly in health-related activities, but these sectors have also seen substantial declines in their measured productivity per hour.¹²⁰¹ Our view is that this would be a reason to choose a higher level of frontier shift relative to the CMA PR24 PD level and we consider this as a qualitative factor together with other adjustments in the round.
 - (b) We acknowledge that TFP growth forecasts do not seek to measure changes in productivity growth resulting from changes in embodied technical change. Our view is that this would be a reason to choose a higher level of frontier shift relative to the CMA PR24 PD level and we consider this as a qualitative factor together with other adjustments in the round.
- 4.939 Cadent stated that our 0.7% level of frontier shift did not reflect the profile of future productivity growth from the Bank of England or the OBR's forecasts (as seen above in paragraph 4.925). We consider that setting different levels of frontier shift

¹²⁰⁰ The Bank of England's average labour productivity for the period 2024-2028 is 0.6%. The OBR's average labour productivity for the period 2024-2028 is 0.7%.

¹²⁰¹ Bank of England (2025) [Monetary Policy Report February 2025](#), p87, Box E.

in each year of the AMP8 period would risk overcomplication without clear evidence the approach would yield superior results. Further, this is not an approach suggested by the main parties. In the round, we therefore did not find this an appropriate option to pursue in the redetermination. Our approach aligns with the approach taken within UK regulated sectors and accounts for trends within productivity growth forecasts, along with other qualitative factors considered in the round.

- 4.940 Grant Thornton, adviser to Ofgem, stated that it was not certain on the method used by the CMA to average the OBR and Bank of England forecasts to determine the frontier shift.¹²⁰² We note that our provisional determination level of frontier shift was decided on the assessment of several different qualitative factors considered together in the round.¹²⁰³ It was not the result of a mathematical calculation based solely on official forecasts.

Water sector historical productivity growth and investment trends

- 4.941 In this section we summarise the evidence on water sector historical productivity growth and investment trends. We first present the evidence from Disputing Companies, then from Ofwat, then from third parties. We then set out our view on water sector historical productivity growth and investment trends. In setting out our view, we summarise our provisional determination analysis on estimating productivity changes for English and Welsh water companies between 2013 and 2024, then we set out the views on our estimated productivity change analysis, before setting out our view separately on water sector historical productivity growth and water sector investment trends.

Disputing Companies

- 4.942 Economic Insight, on behalf of the Disputing Companies, stated that the generally 'low' productivity performance of the water sector, including a decline in productivity around the GFC, was apparent even when using quality adjusted measures of output.¹²⁰⁴ Frontier Economics had estimated quality adjusted TFP for the regulated water and wastewater companies. It found that the average productivity growth of the water sector was 3.2% per year from 1994 to 2008 and 0.1% per year from 2009 to 2017.¹²⁰⁵

¹²⁰² Grant Thornton (2025) [Second Independent Report on Ongoing Efficiency](#), p47, paragraphs 7.18–7.20.

¹²⁰³ [CMA PR24 PD Volume 1](#), pp85–86, paragraph 4.173.

¹²⁰⁴ Economic Insight (2025) Frontier shift at the PR24 redeterminations, p13, paragraph 2.6.

¹²⁰⁵ Frontier Economics (2017) [Productivity improvement in the water and sewerage industry in England since privatisation](#), p3, Figure 2; Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), chapter 3.

- 4.943 The Disputing Companies stated that the drivers of UK productivity slowdown were economy-wide and that these must impact the water sector.¹²⁰⁶ Anglian, Southern, and Wessex stated that Ofwat's frontier shift was optimistic based on the low levels of productivity the water sector had delivered historically.¹²⁰⁷
- 4.944 Further, the Disputing Companies stated that that there was a wide consensus that water has an under-investment problem and that the regulatory certainty associated with the water sector had not prevented this underinvestment.¹²⁰⁸ Past water sector investment had remained critically low and had generally been lower than the wider UK economy, and significantly below the targets in recent Ofwat price controls. Further, that this was consistent with the 2023 review by the House of Lords Industry and Regulators Committee, which concluded that 'Ofwat has failed to ensure companies invest sufficiently in water infrastructure, choosing to keep bills low at the expense of investment. Greater investment in the water industry is now urgently needed'.¹²⁰⁹

Ofwat

- 4.945 Ofwat stated that it was inappropriate to calculate TFP growth for the water sector directly because the ONS measured output in the sector by the volume of water delivered, which was not a good measure of what the sector achieved. Most enhancement investment in the water sector was to improve environmental performance rather than increase water volumes.¹²¹⁰
- 4.946 Ofwat stated that the water sector had not suffered from an underinvestment problem post-2008. Water sector investment growth had been faster than the UK economy as a whole pre- and post-GFC. Further, investment by water companies roughly doubled shortly after privatisation and remained at that higher level all the way through to 2019/20, with a slightly positive trend from 1989-1990 to 2019/20.¹²¹¹

¹²⁰⁶ Economic Insight (2025) Frontier Shift at the PR24 Redeterminations, chapter 3; Disputing Companies (2025) [Joint reply to Ofwat's Response](#), p29, paragraph 126; Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), chapter 3–4; Economic Insight (2024) [Further evidence on frontier shift at PR24](#), chapter 3; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p115, line 23 to p116, line 15.

¹²⁰⁷ [Anglian SoC](#), p72, paragraph 290, p74, paragraph 299; [Southern SoC](#), pp181–182, paragraph 290; [Wessex SoC](#), Appendix A119 WSX-C22 - Frontier shift, p1; Economic Insight (2023) [Productivity and Frontier Shift at PR24](#), p21; Economic Insight (2024) [The Importance of a Balanced Approach to Frontier Shift](#), p53; Economic Insight (2025) Frontier Shift at the PR24 Redeterminations, pp15–16.

¹²⁰⁸ Disputing Companies (2025) [Joint reply to Ofwat's Response](#), p29, paragraph 127; Economic Insight (2025) Frontier Shift at the PR24 Redeterminations, paragraph 3.14–3.18; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p131, lines 3–11.

¹²⁰⁹ [Anglian SoC](#), p72, paragraph 290; [Southern SoC](#), p180, paragraph 288; Industry and Regulators Committee (2023) ['The affluent and the effluent: cleaning up failures in water and sewage regulation'](#), p4; Economic Insight (2025) Frontier Shift at the PR24 Redeterminations, p12 and p14; Economic Insight (2024) [The Importance of a Balanced Approach To Frontier Shift](#), p6.

¹²¹⁰ Ofwat (2025) [Response to common issues on expenditure allowances](#), p193, paragraph 6.36; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p108, line 19 to p109, line 14.

¹²¹¹ Ofwat (2025) [Response to common issues on expenditure allowances](#), p193, paragraph 6.37. Ofwat referenced Europe Economics (2024) [Response to Company Representations regarding Frontier Shift for PR24](#), p17; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p131, lines 20–23.

- 4.947 Ofwat also stated that it had allowed total expenditure allowances of up to £104 billion, including contingent allowances at PR24. This represented a 71% increase in expenditure compared to PR19 and there was not an underinvestment problem.¹²¹² Further, the regulatory framework would enable the water sector to drive significant efficiency gains, given the scale, stability, and predictability of investment facilitated through PR24.¹²¹³
- 4.948 Ofwat stated that investment did not affect TFP growth at a theoretical level because TFP growth was the residual increase in output after accounting for changes in the quantity and quality of inputs such as capital.¹²¹⁴

Third parties

- 4.949 Energy Networks Association, Future Energy Networks, the Thames Investor Group, and Yorkshire Water stated that there was no rationale to expect the water sector (and its supply chain) to materially outperform the rest of the economy, given the broader slowdown in UK productivity growth had impacted all sectors.¹²¹⁵
- 4.950 Further, the Thames Investor Group stated that Ofwat had deliberately not looked at water industry efficiency changes for fear of creating perverse incentives. However, this ignored the fact that individual companies would enjoy the whole of the advantage of any efficiency improvements they could achieve; but suffer from those efficiency improvements in any future price review only insofar as their own efficiency improvement fractionally moved the industry average.¹²¹⁶

Our view on water sector historical productivity growth and investment trends

Our estimated productivity changes analysis

- 4.951 In our provisional determination, we noted that an important area of dispute between the Disputing Companies and Ofwat was whether it was reasonable to compare the water sector to other sectors of the economy to assess the potential for productivity changes, and whether the water sector had been affected by the low productivity growth since the GFC to a similar extent. To investigate this issue, we estimated productivity changes for English and Welsh water companies

¹²¹² Ofwat (2025) [Response to common issues on expenditure allowances](#), p193, paragraph 6.38; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p131, lines 14–15.

¹²¹³ Ofwat (2025) [Response to common issues on expenditure allowances](#), p191, paragraph 6.29; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p117, lines 21–24.

¹²¹⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), p194, paragraph 6.41. Europe Economics (2024) [Response to Company Representations regarding Frontier Shift for PR24](#), p2.

¹²¹⁵ Energy Networks Association (2025) [Third party submission on the Water PR24 References](#), p12; Future Energy Networks (2025) [Third party submission on the Water PR24 References](#), p5; Thames Investor Group (2025) [Third party submission on the Water PR24 References](#), Annex 5, paragraph 17; Yorkshire Water (2025) [Third party submission on the Water PR24 References](#), p5.

¹²¹⁶ Thames Investor Group (2025) [Third party submission on the Water PR24 References](#), p4, paragraph 17.

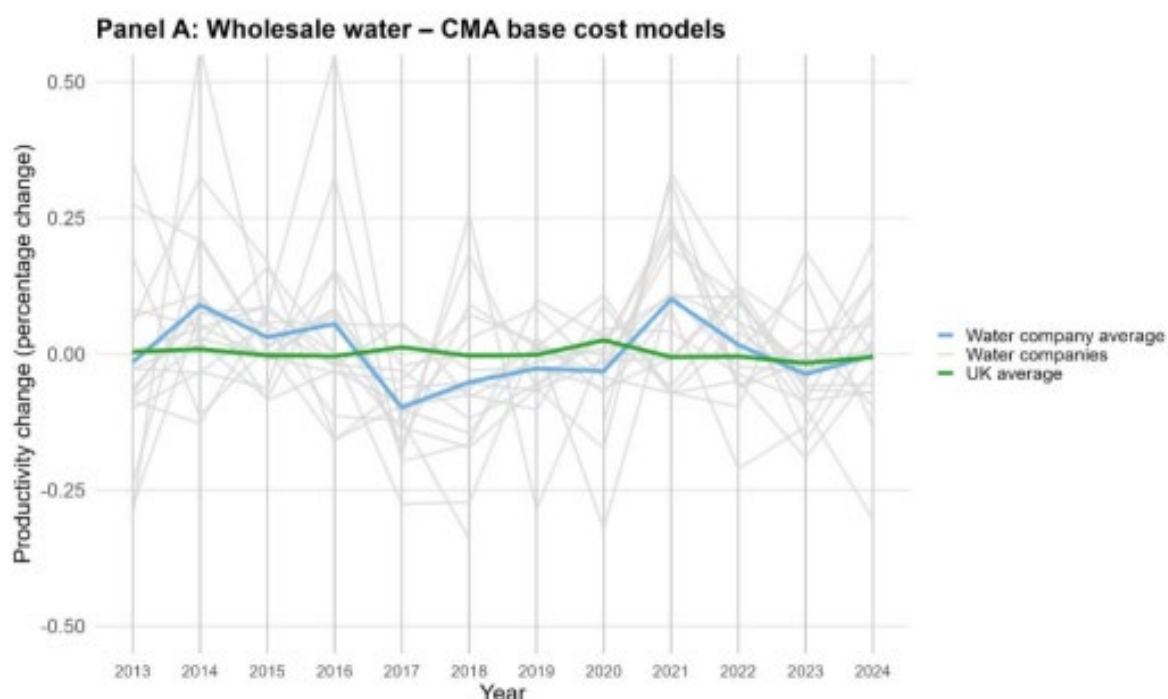
between 2013 and 2024, using our provisional determination base cost model data. We note that our methodology was similar to the methodology used in the KLEMS project to estimate GO TFP, and with the concept of the frontier shift in Ofwat's price control framework.¹²¹⁷

- 4.952 The results illustrated that average productivity changes had been close to zero in most years. This was broadly in line with the KLEMS estimates of GO TFP for benchmark sectors for the 2009 to 2019 period. This supported the view that productivity changes for water companies on average had been in line with the wider economy over the recent period and have been close to zero.

Views on our estimated productivity changes analysis

- 4.953 In response to our provisional determination, South East and Southern reproduced our analysis of water company productivity changes and compared the results to UK productivity growth. They said that in line with the CMA's provisional determination conclusions, they observed that the average productivity growth of the water sector was similar to the UK as a whole, slightly exceeding it in some years and slightly falling below it in others, as shown in Figure 4.22 below.¹²¹⁸

Figure 4.22: Water company productivity changes compared to the UK average



Source: Southern (2025) [Response to CMA PR24 PD](#), p77, Figure 7.

¹²¹⁷ CMA PR24 PD Volume 1, pp79–83, paragraphs 4.156–4.159; and CMA (2025) [Water PR24 References Provisional Determinations Volume 5: Appendices A–F and Glossary \(CMA PR24 PD Volume 5\)](#), pp12–19 for more details on our estimated productivity changes analysis.

¹²¹⁸ South East (2025) [Response to CMA PR24 PD](#), pp73–74, paragraphs 4.3–4.4; Southern (2025) [Response to CMA PR24 PD](#), pp76–78, paragraphs 3.124–3.126.

- 4.954 In response to our provisional determination, Ofwat stated that the CMA had adopted a new approach to determining the frontier shift. Specifically, the CMA had used residuals from cost models to infer productivity trends and then applied economy-wide forecasts, rather than following the established practice of relying on comparator-sector TFP growth from EU KLEMS.¹²¹⁹
- 4.955 Ofwat, informed by Europe Economics, raised four concerns with the CMA's analysis of water sector productivity.¹²²⁰ Ofwat said the following:
- (a) **Interpretation of residuals:**
 - (i) Residuals may not capture productivity trends for two reasons, both rooted in how OLS works. First, productivity growth would imply progressively more positive residuals over time and therefore a widening gap between predicted and actual costs. However, this pattern is unlikely to arise from OLS, which chooses the prediction that keeps differences between actual and predicted costs as small as possible across all observations. Therefore, OLS will not produce more positive residuals in later years, even if productivity is improving. Second, if the explanatory variables trend over time, OLS may absorb that trend into the estimated coefficients rather than leaving it in the residuals, which could cause residual changes to average close to zero even where productivity is improving.
 - (ii) OLS residuals are not a reliable proxy for productivity growth because they are the net impact of unobserved real price effects and efficiency improvements not efficiency alone.
 - (b) **Quality adjustment:** The analysis did not account for service quality and environmental improvements, which represent a significant share of sector expenditure.
 - (c) **Conceptual alignment:** The use of base expenditure is not conceptually aligned with either (i) EU KLEMS TFP estimates or (ii) the totex expenditure allowances to which frontier shift is applied.
 - (d) **Frontier focus:** Frontier shift should have reflected productivity changes of leading firms, rather than sector averages. Firm-level data provided an opportunity to focus on frontier trajectories.¹²²¹

¹²¹⁹ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p83, paragraph 4.4; Ofwat (2025) [Response to CMA PR24 PD](#), Supporting document [OF-RTPD-093] 'Europe Economics, Response to CMA Provisional Determinations - Frontier Shift', p1.

¹²²⁰ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p84, paragraph 4.9; Ofwat (2025) [Response to CMA PR24 PD](#), Supporting document [OF-RTPD-093] 'Europe Economics, Response to CMA Provisional Determinations - Frontier Shift', p2, and pp8–16.

¹²²¹ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), pp84–85, paragraphs 4.8–4.9.

- 4.956 In response to our provisional determination, Cadent stated that the level of frontier shift should have been significantly lower as the CMA's analysis of water company productivity relative to the wider economy did not account for the element of company productivity gains driven by 'catch-up efficiency'. Looking to historical water company productivity improvements was likely to lead to an overestimate of frontier shift as some of the improvement would have been the result of catch-up. Further, by failing to disentangle catch-up efficiency from frontier shift, the CMA had incorrectly ruled out the possibility that the water sector was less productive than the wider UK economy.¹²²²
- 4.957 In response to our provisional determination, Thames Water welcomed the CMA's recognition that the water sector's productivity performance was in line with that of the wider UK economy, and the consequent decision to reduce the frontier shift estimate based on available evidence. Further, Thames Water stated that the recent historical productivity performance of the water sector, which the CMA estimated to be near zero, and the Bank of England's productivity forecasts of around 0.27% per year, suggested that UK productivity performance may well be below 0.7% per year during AMP8.¹²²³
- 4.958 While not submitted to us directly, we have also observed comments made by Ofgem, supported by Grant Thornton, in its RIIO3 Final Determinations. This raised some concerns regarding the analysis:
- (a) As a monopoly sector not subject to the competitive pressures that drive innovation and productivity, relying on the sector's own historical performance may overlook important sources of efficiency improvement. This was the principal reason previous approaches had benchmarked regulated sectors against comparator-sector productivity measures (such as EU KLEMS), rather than relying on the sector's own track record.¹²²⁴
 - (b) Measuring historical efficiency of regulated companies was challenging and residuals may conflate efficiency changes with other unobserved cost drivers (eg delivery of outputs, condition of assets).¹²²⁵
 - (c) The CMA's analysis covered only the period 2013 to 2024, which was heavily influenced by the post-GFC era and may not be representative of productivity trends over the next five years.¹²²⁶

¹²²² Cadent (2025) [Response to CMA PR24 PD](#), pp1–5.

¹²²³ Thames Water (2025) [Response to CMA PR24 PD](#), p21, paragraph 116.

¹²²⁴ Ofgem (2025) [RIIO-3 Final Determinations Overview Document](#), p106, paragraph 8.45; Grant Thornton (2025) [Second Independent Report on Ongoing Efficiency](#), p46, paragraph 7.14.

¹²²⁵ Ofgem (2025) [RIIO-3 Final Determinations Overview Document](#), p106, paragraph 8.45; Grant Thornton (2025) [Second Independent Report on Ongoing Efficiency](#), p46, paragraph 7.15.

¹²²⁶ Ofgem (2025) [RIIO-3 Final Determinations Overview Document](#), p106, paragraph 8.45; Grant Thornton (2025) [Second Independent Report on Ongoing Efficiency](#), p46, paragraph 7.15.

- (d) The CMA's analysis was limited to base costs, capturing only efficiencies in operational and maintenance expenditure and excluding potential productivity gains in enhancement and retail activities. Given the sector's focus on capital investment during AMP8, disregarding the productivity impact of enhancement expenditure may understate efficiency prospects over the price control period.¹²²⁷
- (e) OLS seeks to minimise the sum of squared residuals and therefore the derived estimates of average productivity change will tend to be close to zero by construction, rather than reflecting productivity growth.¹²²⁸
- (f) Using data from the companies within the water sector to effectively set forward-looking productivity for the water sector also risked creating perverse incentives to not drive productivity performance to the greatest extent possible.¹²²⁹

Our view on water sector historical productivity

- 4.959 First, Ofwat, supported by Europe Economics, and Ofgem, supported by Grant Thornton, said that, because OLS minimises the sum of squared residuals across the sample, the average productivity change will tend to be close to zero by construction (see paragraphs 4.955(a)(i) and 4.958(e) above).
- 4.960 We disagree and consider this argument to be econometrically incorrect. An OLS regression with an intercept constrains residuals to average to zero across the full sample, not within subgroups such as individual years. Residuals can therefore display a positive or negative trend over time. Moreover, our analysis focuses on changes in residuals rather than their levels. The fact that residuals average to zero in levels does not constrain the average of changes in residuals to be zero, and our residual-based measure of productivity change can therefore be positive or negative on average.¹²³⁰ We are satisfied that our residual-based measure of productivity change is in principle capable of detecting a productivity trend if one exists.
- 4.961 OLS will not remove a time trend from residuals unless the modelling includes a time trend (which ours does not) or regressors that are correlated with the underlying time trend. Europe Economics said that our modelling included

¹²²⁷ Ofgem (2025) [RIIO-3 Final Determinations Overview Document](#), p106, paragraph 8.45; Grant Thornton (2025) [Second Independent Report on Ongoing Efficiency](#), p46, paragraph 7.15.

¹²²⁸ Ofgem (2025) [RIIO-3 Final Determinations Overview Document](#), p106, paragraph 8.45; Grant Thornton (2025) [Second Independent Report on Ongoing Efficiency](#), p46, paragraph 7.15, footnote 155.

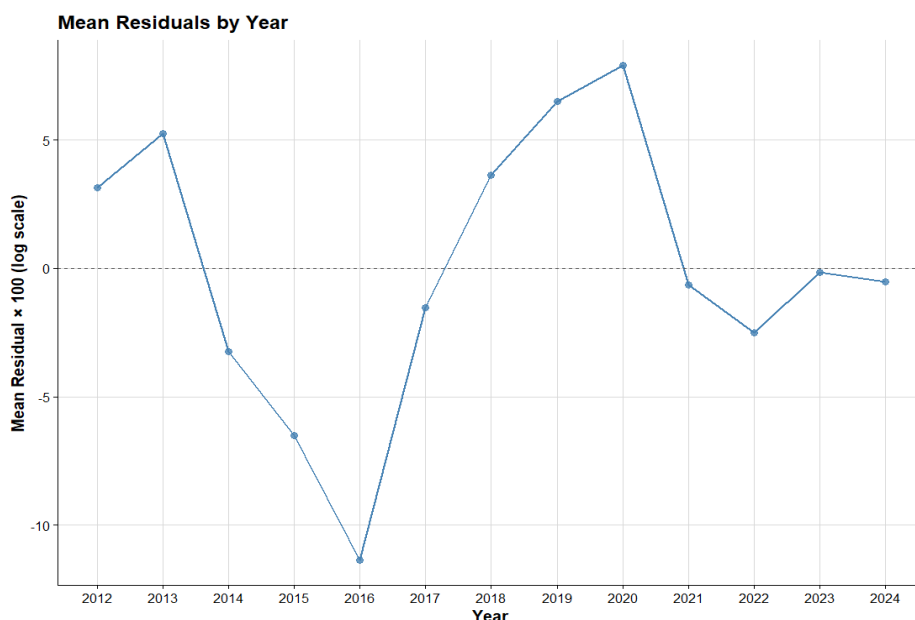
¹²²⁹ Ofgem (2025) [RIIO-3 Final Determinations Overview Document](#), p106, paragraph 8.45; Grant Thornton (2025) [Second Independent Report on Ongoing Efficiency](#), p46, paragraph 7.15.

¹²³⁰ To illustrate, suppose the mean residual is -2 in Year 1, 0 in Year 2, and +2 in Year 3. The average across the three years is $(-2 + 0 + 2)/3 = 0$, consistent with the OLS constraint that residuals average to zero over the full sample. Yet the year-on-year changes are +2 (from Year 1 to Year 2) and +2 (from Year 2 to Year 3), giving an average change of $+2 > 0$. A zero average in residual levels does not imply a zero average in residual changes.

variables that were perfectly, or nearly perfectly, correlated with time, such that the time trend was absorbed into the estimated coefficients rather than left in the residuals. We recognise that Europe Economics' concern is valid in principle: if explanatory variables are correlated with the time trend, OLS may partially or fully absorb that trend into the estimated coefficients, causing residual changes to be muted. We cannot fully rule out this possibility.

- 4.962 However, we examined whether the average residuals for each year were indeed close to zero, as they would be if the modelling were fully absorbing the underlying time trend. We plotted mean residuals across the 24 regressions in Ofwat's water base cost models and found that year-specific mean residuals were significantly different from zero, as shown in Figure 4.23 below. This suggests that the modelling is not fully removing the time trend from the residuals, and therefore that residual changes provide some relevant information about productivity changes in the sector. That said, we acknowledge that partial absorption remains possible, and that our residual-based estimates of productivity change may to some degree understate productivity growth if some of the trend is captured by the coefficients on trending regressors.

Figure 4.23: OLS Mean residuals by year in the Ofwat water base cost model



Source: CMA analysis of Ofwat (2025) [PR24 Final Determination models data](#).

- 4.963 Second, both Ofwat and Ofgem said that OLS residuals may conflate efficiency changes with other unobserved cost drivers (see paragraphs 4.955(a)(ii) and 4.958(b) above).
- 4.964 We acknowledge that residuals reflect factors not explicitly captured in the modelling. However, for this to materially bias our estimates of productivity change, the effect of omitted factors would need to vary systematically over time. If an omitted factor affects residuals in a similar way in each year, its effect will

largely be differenced out when we focus on changes in residuals rather than levels. We therefore consider changes in residuals to be informative about productivity movements, while recognising that time-varying unobserved factors could still affect the estimates.

- 4.965 Third, Ofwat said that the analysis did not account for service quality changes and so our estimates of water sector productivity would be biased downwards. Ofwat stated that productivity is about quality-adjusted output relative to inputs. If output quality improves but the measurement treats output only as volume or scale, then the additional inputs devoted to better outcomes are recorded, while the corresponding quality gains are not. The result is an apparent fall in productivity when, in reality, firms may have delivered higher quality-adjusted output per unit of input (see paragraph 4.955(b) above).
- 4.966 We acknowledge that our estimated productivity changes analysis does not account for quality and that we do not have a measure of quality to include in the modelling. Therefore, as above we recognise that time-varying unobserved factors could still affect the estimates.
- 4.967 Fourth, Ofwat said that using base expenditure as the cost variable made the CMA's productivity figures conceptually different from both EU KLEMS TFP and from the frontier-shift concept that Ofwat applied (see paragraph 4.955(c) above). Further, Grant Thornton, adviser to Ofgem, stated the CMA's analysis only reflected efficiencies achieved in operational and maintenance costs, as it used modelling of water companies' 'base costs'. Any TFP growth in the enhancement area or retail area were not included in the analysis (see paragraph 4.958(d) above).
- 4.968 We acknowledge this limitation within our estimated productivity changes analysis of only focusing on base costs and so our analysis may understate overall TFP growth in the water sector to some extent.
- 4.969 Fifth, Ofwat said that the CMA's water sector productivity analysis focused on industry averages rather than on frontier firms (see paragraph 4.955(d) above). Further, Cadent stated that the level of frontier shift should have been significantly lower as our analysis of water company productivity relative to the wider economy did not account for the element of company productivity gains driven by 'catch-up efficiency' (see paragraph 4.956 above).
- 4.970 We acknowledge that the productivity estimates from our analysis will be affected by both frontier shift and catch-up, given our analysis focused on industry averages rather than frontier firms. To the extent that any productivity gains in the period are due to catch up efficiency, then our analysis would likely overestimate frontier shift, and we acknowledge this is a limitation of our analysis.

- 4.971 Sixth Ofgem, said that since the water industry is a monopoly sector, it is not subject to the competitive pressures that drove innovation and productivity (this was precisely why it is regulated). Therefore, looking at the sector's own historical performance risked failing to capture important sources of efficiency. This was the principal reason that previous approaches had been to benchmark regulated sectors against other sectors (e.g. using EU KLEMS), rather than the sectors themselves (see paragraph 4.958(a) above)
- 4.972 We acknowledge that our analysis of water sector productivity focused on the water sector. However, we also assessed other evidence, including economy-wide forecasts.
- 4.973 Seventh, Ofgem said that CMA's analysis was limited to the period 2013 to 2024, which heavily weighted the post-GFC era and implicitly assumed that any relationship between water sector productivity and that of the wider economy were representative of what such relationships are likely to be for the next five years (see paragraph 4.958(c) above)
- 4.974 We acknowledge that our analysis was conducted on the time period after the GFC. However, our view is that, given that this was the most recent period, this was the most reasonable for making the comparison between water sector productivity and wider economy and that there were not convincing reasons to expect this relationship to change.
- 4.975 Finally, Ofgem said that using data from companies within the water sector to effectively set forward-looking productivity for the water sector risked creating perverse incentives to not drive productivity performance to the greatest extent possible (see paragraph 4.958(f) above).
- 4.976 However, as outlined by the Thames Investor Group, in paragraph 4.950 above, this ignores the fact that individual companies would enjoy the whole of the advantage of any efficiency improvements they could achieve; but suffer from those efficiency improvements in any future price review only insofar as their own efficiency improvement moved the industry average.
- 4.977 Overall, our estimated productivity changes analysis suggested that productivity improvements for water companies have been close to zero over the recent period, in line with the wider economy. However, we acknowledge that there are limitations to our methodology. Therefore, we place less weight on this analysis in our final decision relative to our provisional determination. Placing less weight on this analysis would be a reason to choose a higher level of frontier shift relative to the CMA PR24 PD level, and we consider this as a qualitative factor together with other adjustments in the round.

Our view on water sector investment trends

- 4.978 The Disputing Companies submitted that water sector productivity growth is likely to be lower than in the wider economy, in part due to underinvestment (as seen above in paragraph 4.944).
- 4.979 We have not seen evidence that clearly indicates that investment in the water sector has been lower than in other sectors of the economy. However, we note that in the IWC Final Report, it stated that there was underinvestment in price reviews between 2009 and 2024.¹²³¹ In any case, Ofwat has allowed larger total expenditure allowances at PR24. Further, the effect of capital investment on TFP is ambiguous: while it might increase the level of output produced for a given level of labour and materials, it also increases the level of capital used in the production process, and the net effect on TFP is unclear, especially in the short-term. Therefore, our view is that water sector investment trends would not be a reason to choose a higher or lower level of frontier shift relative to the CMA PR24 PD level.

Water sector technological progress

- 4.980 In this section we summarise the evidence on water sector technological progress. We first present the evidence from Disputing Companies, then from Ofwat, then from third parties, before setting out our view on water sector technological progress.

Disputing Companies

- 4.981 The Disputing Companies stated that technological progress in the water sector was unlikely to lead to the productivity improvements envisioned by Ofwat for the following reasons.¹²³²
- (a) Economic Insight, on behalf of the Disputing Companies, stated that the water industry was not high-tech because it contributed a very small proportion of UK spending on research and development (**R&D**) and employment in R&D. Therefore, the water industry should not be expected to substantially outperform the wider economy.¹²³³
 - (b) Further, Economic Insight conducted a survey of technological experts and found that the majority did not expect the water industry to be significantly

¹²³¹ [IWC Final Report](#), pp201–204.

¹²³² [South East SoC](#), paragraph 4.95; [Southern SoC](#), p187, paragraph 303.

¹²³³ Economic Insight (2025) Frontier shift at the PR24 redeterminations paragraph 4.1, chapter 4; [Anglian SoC](#), paragraph 290; [South East SoC](#), paragraphs 4.93–4.95; [Southern SoC](#), p186, paragraphs 299–300; [Wessex SoC](#), Appendix A119 WSX-C22 - Frontier shift, p1; Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), chapter 5; Economic Insight (2024) [Further evidence on frontier shift at PR24](#), chapter 3; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p112, lines 3–5.

impacted by the technologies identified by Ofwat (AI, big data and robotics).¹²³⁴ The Disputing Companies accepted any survey had limitations, but Ofwat had set a low evidence bar (relying only on examples, which could not inform the sector's relative ability to benefit from technology). The survey participants were selected based on their credentials and it was unlikely any individuals were expert in both the water industry and all relevant technologies. The Disputing Companies stated that the low response rate likely reflected the characteristics of the target respondents.¹²³⁵

- (c) The Disputing Companies stated that the water supply sector also has very long-lived assets compared to high-tech industries. Anglian said that the average asset life in water is about 29 years, compared to information and communication where it is about 4.5 years. Moreover, underground assets are old and could not be replaced by a high-tech alternative. Therefore, the scope for technological advancement across a large proportion of its asset base was very limited.¹²³⁶
- (d) The Disputing Companies also stated that the water industry provided a homogenous product where its core features did not change, compared to pharmaceuticals which relied on constant innovation.¹²³⁷
- (e) The Disputing Companies stated that introduction of new/phasing out of existing technology (and its net productivity impact) was a continuous process that was inherently reflected in TFP data, such that there was a high bar to conclude any one new technology would raise net productivity.¹²³⁸
- (f) Further, the Disputing Companies stated that they had explored or begun to use the technology mentioned by Ofwat. However, they did not see them as revolutionary and in some cases, they had led to higher costs.¹²³⁹

Ofwat

- 4.982 Ofwat stated that it accepted that water was a homogenous product, but this did not mean there was less scope for innovation. Innovation could take multiple forms

¹²³⁴ The survey found that 24 out of the 30 surveyed experts believed AI would not have a significant impact on the regulated water industry (and two experts were not sure). Further, 26 out of 30 experts believed big data would not have a significant impact (and one expert was not sure), and 25 out of 30 experts believed robotics will not have a significant impact (and one expert was not sure). Economic Insight (2025) Frontier Shift at the PR24 Redeterminations, pp21–22, p37, pp63–78.

¹²³⁵ Disputing Companies (2025) [Joint reply to Ofwat's Response](#), p29, paragraph 129.

¹²³⁶ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p116, line 19 to p117, line 8; [Southern SoC](#), p186, paragraph 300.

¹²³⁷ [Southern SoC](#), p186, paragraph 300.

¹²³⁸ Disputing Companies (2025) [Joint reply to Ofwat's Response](#), p29, paragraph 129; Economic Insight (2025) Frontier Shift at the PR24 Redeterminations, paragraph 2.34.

¹²³⁹ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p128, line 3 to p130, line 5.

including reducing the costs of providing water, undertaking capital maintenance or reducing the environmental impacts of water and wastewater services.¹²⁴⁰

4.983 Ofwat said that its £104 billion capex programme was a ‘key driver of embodied technological change’. This would provide opportunity for new technology to be included in any inputs and allows for learning by doing. The scale of these programmes provided a large incentive for companies to make big technological improvements.¹²⁴¹

4.984 Ofwat stated that examples of innovation in the water sector disproved the claim that the water industry was relatively low-tech.¹²⁴² Ofwat provided some examples of innovation that companies should be able to deliver over the 2025 to 2030 period.

- Smart metering projects geared to gathering more granular and frequent data on flow and pressure.
- Smart networks that used AI to help identify early forming blockages and sense anomalies to reduce spillages and pollution events.
- Installation of sewer level monitors in the wastewater network to identify emerging blockage issues.
- The use of AI to predict equipment failures and maintenance needs, leading to improved uptime and reduced downtime.
- The use of digital twins provided companies with the opportunity to stress test and trial operational changes and regimes to drive efficiency gains that would previously have been considered too high a risk or cost.¹²⁴³
- The use of modular construction approaches to effectively deliver complex treatment assets.¹²⁴⁴

4.985 Ofwat said that an ‘AI white paper’ cited Anglian and Yorkshire Water using AI to improve performance:

The water sector is uniquely well positioned by AI transformation with decades of data from infrastructure, customer interactions and

¹²⁴⁰ Ofwat (2025) [Response to common issues on expenditure allowances](#), p195, paragraph 6.47.

¹²⁴¹ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p119, lines 2–7.

¹²⁴² Ofwat (2025) [Response to common issues on expenditure allowances](#), p195, paragraph 6.48.

¹²⁴³ A digital twin is a virtual representation of a process, product or service. It is a digital information model that represents a physical asset. This could be an individual asset like a pump or a group of assets like a treatment works. It could also be a network which includes water mains, sewers and assets like pumping stations.

¹²⁴⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), p195, paragraph 6.49.

environmental monitoring. The sector is data rich, yet insights are often locked in siloed systems.¹²⁴⁵

- 4.986 Ofwat disagreed with the Economic Insight technology experts survey, noting that the survey did not appear to include experts with water sector experience and had a 3.5% response rate.¹²⁴⁶
- 4.987 Ofwat stated that the Economic Insight report was inconclusive when comparing different industries. The report said that the pharmaceuticals industry contributed six times more to the UK's total R&D expenditure than the telecommunications industry. However, TFP growth in the pharmaceuticals industry was 1.15% a year compared to 12.3% a year for telecoms.¹²⁴⁷

Third parties

- 4.988 Water UK stated that unevidenced assumptions around the impact of AI on productivity growth had led to an over-estimate of the frontier shift. The industry's view was that AI applications were not yet proven in the operational environment.¹²⁴⁸
- 4.989 Water UK also stated that at the RIIO-2 appeals, the CMA determined that the impacts of innovation funding in the energy sector should already be reflected in the comparator group, and that this argument applied equally to the water sector.¹²⁴⁹
- 4.990 The Thames Investor Group and its advisers stated that in order for a frontier shift to be justified there would, at the very least, have had to be a plausible intuitive reason to have believed that technological progress was meaningfully likely to exert downward pressure on water industry costs during a construction boom; and evidence to support this hypothesis.¹²⁵⁰

Our view on water sector technological progress

- 4.991 Ofwat provided some examples of innovation that companies could deliver, largely relating to the use of AI and smart meters (as seen above in paragraph 4.984). However, the Disputing Companies expressed doubts about the feasibility or impact of these new technologies, and have pointed out that the water industry

¹²⁴⁵ (Non-confidential) transcript of the hearing for Base on 24 June 2025, p18, lines 3–9.

¹²⁴⁶ Ofwat (2025) [Response to common issues on expenditure allowances](#), p195, paragraph 6.50.

¹²⁴⁷ Ofwat (2025) [Response to common issues on expenditure allowances](#), p195, paragraph 6.51.

¹²⁴⁸ Water UK (2025) [Third party submission on the Water PR24 References](#), p81, chapter 7. Water UK referenced Severn Trent (2024) SVE4.38 Frontier Shift: Draft Determination representations.

¹²⁴⁹ Water UK (2025) [Third party submission on the Water PR24 References](#), p79, chapter 7.

¹²⁵⁰ Thames Investor Group (2025) [Third party submission on the Water PR24 References](#), p41, Annex 5, paragraph 18, and p26, Annex 3, paragraphs 91–92.

relies on old and long-lived assets to deliver output (as seen above in paragraph 4.981).

- 4.992 In our view, the fact that the water industry relies on relatively old and long-lived assets does not automatically imply a lower level of productivity growth. The frontier shift is applied to totex, which is essentially new expenditure and therefore could benefit from the introduction of newer technologies and management practices. Therefore, our view is that the effect of old and long-lived assets alongside introduction of newer technology is ambiguous and so this would not be a reason to choose a higher or lower level of frontier shift relative to the CMA PR24 PD level.

Degree of efficiencies of a larger investment programme within the water sector

- 4.993 In this section we summarise the evidence on degree of efficiencies of a larger investment programme within the water sector. We first present the evidence from Disputing Companies, then from Ofwat, then from third parties, before setting out our view on the degree of efficiencies of a larger investment programme within the water sector.

Disputing Companies

- 4.994 Southern stated that ‘learning by doing’ efficiency gains were less likely to materialise in this AMP. Due to the scale of the increase and the retendering processes required, Southern had to utilise new delivery partners. The initial learning costs associated with new delivery partners meant that envisioned efficiency gains over the AMP may not be realised.¹²⁵¹
- 4.995 The Disputing Companies stated that to the extent the water industry’s delivery partners were exposed to factors causing the slowdown, then so too would the industry be exposed, irrespective of whether the use of delivery partners was ‘typical’. An increase in the use of delivery partners could thus increase industry exposure to such factors.¹²⁵²

¹²⁵¹ [Southern SoC](#), p188, paragraphs 307–313; (Non-confidential) transcript of the hearing for Southern on 9 July 2025, p70, line 14 to p71, line 14.

¹²⁵² Disputing Companies (2025) [Joint reply to Ofwat’s Response](#), p29, paragraph 128; Economic Insight (2024) [Further evidence on frontier shift at PR24](#), chapter 3; Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), chapter 4; (Non-confidential) transcript of the hearing for Southern on 9 July 2025, p71, lines 9–14.

Ofwat

- 4.996 Ofwat said that it was reasonable to assume that companies would increase productivity through a learning by doing effect as they found better ways of working to deliver the increase in workload during AMP8.¹²⁵³
- 4.997 Ofwat stated that onboarding new delivery partners was a business-as-usual activity that water companies should effectively deliver without any negative impact on productivity. In addition, water companies had years to prepare.¹²⁵⁴ For example, companies submitted business plans in October 2023, and draft water resource management plans (**WRMPs**) and drainage and wastewater management plans (**DWMPs**) were mostly completed in 2022.¹²⁵⁵

Third parties

- 4.998 Water UK stated that ‘learning by doing’ was a core driver of overall productivity growth, which was captured in the TFP estimates, and there was no reason to expect water companies to benefit from this driver over and above other sectors.¹²⁵⁶

Our view on degree of efficiencies of a larger investment programme within the water sector

- 4.999 The Disputing Companies submitted that learning by doing efficiency gains may not be realised in AMP8 due to the initial learning costs of working with new partners to deliver the substantially increased enhancement programme (as seen above in paragraph 4.994). Further, the supply chain used by water companies was itself likely to be affected by the ongoing productivity slowdown, and so an increase in delivery partners could increase exposure to factors causing the productivity slowdown (as seen above in paragraph 4.995).
- 4.1000 We note that while there could be some productivity improvements through learning by doing, the frontier shift is applied to expenditure allowances that reflect companies’ forecasts of AMP8 costs. We see no obvious reason to assume that companies did not incorporate their expectations of the effect of working with new partners, or of any potential learning by doing, in these forecasts.
- 4.1001 Further, future schemes may not benefit from learning by doing. For example, our analysis of scheme costs for phosphorus removal (**p-removal**) indicated that the unit cost for future schemes was forecast to be higher than that for delivered schemes (see paragraphs 5.23 to 5.181 in chapter 5 (Enhancement costs)).

¹²⁵³ Ofwat (2025) [Response to common issues on expenditure allowances](#), p197, paragraph 6.62.

¹²⁵⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), p185.

¹²⁵⁵ Ofwat (2025) [Response to common issues on expenditure allowances](#), p197, paragraph 6.63.

¹²⁵⁶ Water UK (2025) [Third party submission on the Water PR24 References](#), p79, chapter 7.

Therefore, our view is that the degree of efficiencies from a larger investment programme planned for AMP8 would not be a reason to choose a higher or lower level of frontier shift relative to the CMA PR24 PD level

Water sector overlap between outcomes stretch and frontier shift

4.1002 In this section we summarise the evidence on water sector overlap between outcomes stretch and frontier shift. We first present the evidence from Disputing Companies, then from Ofwat, then from third parties, before setting out our view on water sector overlap between outcomes stretch and frontier shift.

Disputing Companies

4.1003 Anglian and Northumbrian stated that PR24 involved very significant improvement in outcomes that created significant base over-stretch, and this should be reflected in frontier shift assumptions.¹²⁵⁷

4.1004 In response to our provisional determination, four of the Disputing Companies (Anglian, South East, Southern and Wessex) stated that the frontier shift must be set lower than 0.7% per year as UK TFP reflected the combination of productivity gains made through both reduced costs and increased quality. Therefore, the CMA's approach implied that the water sector could achieve productivity growth of more than 0.7% per year, because of the quality improvements they were also expected to deliver with base funding.¹²⁵⁸

Ofwat

4.1005 Ofwat stated that while there could be a theoretical overlap between outcomes stretch and frontier shift in the water sector, this overlap was likely minimal.¹²⁵⁹ Ofwat stated that this was primarily because only four performance commitments (water supply interruptions, internal sewer flooding, customer contacts about water quality, and external sewer flooding) were relevant to quality adjustments.¹²⁶⁰

4.1006 Ofwat stated that even among these specific outcome measures, only a part of the required stretch reflected frontier shift. The remainder related to catch-up efficiency and potentially an increase in capital inputs. Ofwat stated that it did not

¹²⁵⁷ [Anglian SoC](#), paragraphs 291–297; Economic Insight (2023) [Productivity and frontier shift at PR24](#), p10, pp36–38, Section 3E; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p112, lines 1–13, p113, line 13 to p114, line 5 and p143, line 17 to p145, line 3; [Northumbrian SoC](#), paragraph 415.

¹²⁵⁸ Anglian (2025) [Response to CMA PR24 PD](#), p75, paragraph 203(ii); South East (2025) [Response to CMA PR24 PD](#), p10, paragraph 1.31 and p75, paragraph 4.7; Southern (2025) [Response to CMA PR24 PD](#), p79, paragraph 3.132–3.134; Wessex (2025) [Response to CMA PR24 PD](#), p15, paragraph 6.2(b).

¹²⁵⁹ Ofwat (2025) [Response to common issues on expenditure allowances](#), p198, paragraph 6.68; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p145, line 16 to p146, line 12.

¹²⁶⁰ Ofwat (2025) [Response to common issues on expenditure allowances](#), p199, paragraph 6.68; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p145, lines 15–22. Ofwat also referenced Europe Economics (2023) [Frontier shift and outcomes stretch at PR24](#); Europe Economics (2024) [Europe Economics Response to Company Representations regarding Frontier Shift for PR24](#).

view this as an increase in stretch compared to PR19. Therefore, the theoretical risk of double-counting frontier shift was limited.¹²⁶¹

- 4.1007 Ofwat stated that when setting the 2024-2025 baseline, it had put a greater emphasis on recent performance levels and moved away from the default position of adopting PR19 performance commitment levels. Ofwat had also placed less emphasis on company forecast performance commitment levels at PR24, which helped address potential issues around companies being overly optimistic.¹²⁶²

Third parties

- 4.1008 Yorkshire Water and Water UK stated that the overlap between outcome stretch and the frontier shift was not minimal. Ofwat had typically assumed that companies could deliver significant improvements in performance through base allowances, without providing evidence that such improvements were achievable.¹²⁶³

Our view on water sector overlap between outcomes stretch and frontier shift

- 4.1009 The Disputing Companies submitted that PR24 involved very substantial improvement in outcomes that created base over-stretch (as seen above in paragraphs 4.1003 and 4.1004). However, Ofwat submitted that while there could be a theoretical overlap between outcomes stretch and the frontier shift in the water industry, this overlap was minimal (as seen above in paragraph 4.1005).
- 4.1010 Water companies are expected to deliver improvements in outcomes from their base expenditure. In some instances during the AMP8 period, water companies are expected to deliver fairly substantial improvements in outcomes from their base expenditure, leading to improved quality, such as a 30% reduction in total pollution incidents over the period relative to the base year level it identified (see chapter 6 Outcomes for further discussion).
- 4.1011 There have been no substantial changes to the outcome requirements compared to our provisional determination. Therefore, this would not be a reason to choose a higher or lower level of frontier shift relative to the CMA PR24 PD level and we consider this as a qualitative factor together with other adjustments in the round.

¹²⁶¹ Ofwat (2025) [Response to common issues on expenditure allowances](#), p199, paragraph 6.68; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p145, line 23 to p146, line 2.

¹²⁶² Ofwat (2025) [Response to common issues on expenditure allowances](#), p199, paragraph 6.71.

¹²⁶³ Yorkshire Water (2025) [Third party submission on the Water PR24 References](#), p5; Water UK (2025) [Third party submission on the Water PR24 References](#), pp79–80, chapter 7. Water UK referenced CEPA's report for Ofwat: CEPA (2024) [PR24 Final Determinations – Frontier Shift](#), p34.

Overall level of frontier shift

- 4.1012 In this section we summarise the submissions on the overall level of frontier shift. We first present the evidence from the Disputing Companies, then from Ofwat, and then from third parties, before setting out our decision on the overall level of frontier shift.
- 4.1013 We note that Ofgem has decided to set a frontier shift of 1.0% per annum in its RIIO-3 final determination, based on a quantitative assessment of backward-looking productivity data from EU KLEMS and a qualitative assessment of various factors.¹²⁶⁴ This was the same as in its draft determination, advised by Grant Thornton, who noted that its narrow range was unchanged at 0.1% to 1.3%. Ofgem in its draft determination stated that it found that a frontier shift of 0.7% to 1.3% better reflected the potential for above-average technological change and the need to incentivise productivity growth.¹²⁶⁵ Grant Thornton stated that the price control period in the energy sector lagged the water sector by one year, which meant that forecast average productivity growth over the period linked to RIIO-3 would likely be higher than for the period linked to PR24.¹²⁶⁶ Further, Grant Thornton stated that setting frontier shift targets was inherently challenging, and there were no definitive analytical techniques free of shortcomings which could be used to derive a precise target.¹²⁶⁷

Disputing Companies

- 4.1014 Economic Insight, on behalf of the Disputing Companies, recommended a focused range of 0.3% to 0.7%.¹²⁶⁸
- 4.1015 Anglian and Northumbrian proposed a frontier shift of 0.8% per year and stated that this was at the top end of the 'plausible range' estimated by Economic Insight.¹²⁶⁹
- 4.1016 South East, Southern, and Wessex proposed a frontier shift of 0.5% per year and stated that this was a stretching target.¹²⁷⁰

¹²⁶⁴ Ofgem (2025) [RIIO-3 Final Determinations Overview Document](#), pp97–111.

¹²⁶⁵ Ofgem (2025) [RIIO-3 Draft Determinations Overview Document](#), pp90–95; Grant Thornton (2025) [Independent Report on Ongoing Efficiency](#)

¹²⁶⁶ The PR24 AMP8 period lasts from April 2025 to March 2030 and RIIO-3 T3 period lasts from April 2026 to March 2031. Grant Thornton (2025) [Second Independent Report on Ongoing Efficiency](#).

¹²⁶⁷ Ofgem (2025) [RIIO-3 Final Determinations Overview Document](#), pp97–111; Grant Thornton (2025) [Second Independent Report on Ongoing Efficiency](#).

¹²⁶⁸ Economic Insight (2023) [Productivity and frontier shift at PR24](#), p5; Economic Insight (2024) [The importance of a balanced approach to frontier shift](#), chapter 7; Economic Insight (2025) Frontier shift at the PR24 redeterminations, paragraph 1.5.

¹²⁶⁹ [Anglian SoC](#), paragraph 286; [Northumbrian SoC](#), paragraph 414; [Northumbrian SoC](#), Appendix SOC018, p28.

¹²⁷⁰ [South East SoC](#), paragraph 4.96; [Southern SoC](#), p189, paragraph 314, p179, paragraph 285; Economic Insight (2025) Frontier shift at the PR24 redeterminations, p6; [Wessex SoC](#), Appendix A119 WSX-C22 - Frontier shift, p1.

- 4.1017 In response to our provisional determination, the Disputing Companies welcomed our provisional decision of a 0.7% frontier shift, noting that this was below Ofwat's PR24 FD level of 1%, which was not consistent with wider evidence on productivity trends in the UK economy.¹²⁷¹
- 4.1018 Further, in response to our provisional determination, South East and Southern stated that the factors outlined supported a frontier shift below 0.7%. They stated that this was consistent with the evidence they had previously submitted, and so the final frontier shift level should be set at 0.5%.¹²⁷²

Ofwat

- 4.1019 CEPA, advisers to Ofwat, recommended a range of 0.8% to 1.2%.¹²⁷³
- 4.1020 Ofwat stated that no substantive new issues had been raised by the Disputing Companies. Further, many of the issues raised were in draft determination representations, which Ofwat addressed in its final determinations and in accompanying CEPA and Europe Economics reports.¹²⁷⁴
- 4.1021 Ofwat retained the view that a 1% per year frontier shift was conservative and appropriate.¹²⁷⁵
- 4.1022 In response to our provisional determination, Ofwat stated that not only was the CMA's provisional determination level of frontier shift materially lower than the 1% adjustment applied in Ofwat's final determinations, but it was also lower than the adjustment applied by several water companies, including Anglian and Northumbrian.¹²⁷⁶ This risked customers paying for inefficiency, and could reduce incentives to innovate, adopt new technologies and improve productivity. Companies had a natural bias to propose a low figure for frontier shift, which suggested that the CMA's methodology and provisional view was too low.¹²⁷⁷

¹²⁷¹ Anglian (2025) [Response to CMA PR24 PD](#), p1, paragraph 3, p9, paragraph 27, and pp73–74; Northumbrian (2025) [Response to CMA PR24 PD](#), p3, paragraph 3; South East (2025) [Response to CMA PR24 PD](#), p4, paragraph 1.4 (e), p10, paragraph 1.30, and p73; Southern (2025) [Response to CMA PR24 PD](#), p12, paragraph 1.51, p71, paragraph 3.90, and p76, paragraph 3.122; Wessex (2025) [Response to CMA PR24 PD](#), p15, paragraph 6.1.

¹²⁷² South East (2025) [Response to CMA PR24 PD](#), p5, paragraph 1.6 (c), p10, paragraph 1.31, p73, and p75, paragraph 4.8; Southern (2025) [Response to CMA PR24 PD](#), p12, paragraph 1.51, p71, paragraph 3.90, and p 79, paragraph 3.135.

¹²⁷³ CEPA (2024) [PR24 Final Determinations Frontier Shift](#), p36.

¹²⁷⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), p186, paragraph 6.3.

¹²⁷⁵ Ofwat (2025) [Response to common issues on expenditure allowances](#), p186, paragraph 6.4; (Non-confidential) transcript of the hearing for Base on 24 June 2025, p17, line 14 to p18, line 2.

¹²⁷⁶ Further, Ofwat noted that its FD level of 1% was aligned with the frontier shift applied by South Staffordshire Water, Portsmouth Water and Sutton and East Surrey Water in PR24 business plans (as seen above in paragraph 4.895(c)).

¹²⁷⁷ Ofwat (2025) [Response to CMA PR24 PD: Overview](#), p3, paragraph 1.16; Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p5, paragraph 1.5, and p83, paragraphs 4.1, 4.3 and 4.6; Ofwat (2025) [Response to CMA PR24 PD](#), Supporting document [OF-RTPD-093] 'Europe Economics, Response to CMA Provisional Determinations - Frontier Shift', p1.

- 4.1023 Ofwat acknowledged the CMA's intent to ground frontier shift in recent sector evidence and to test alternative methods. However, it had concerns with the CMA's proposed approach and the resulting 0.7% frontier shift.¹²⁷⁸
- 4.1024 Ofwat stated that it maintained that the established approach to determine the frontier shift was appropriate as:
- (a) setting frontier shift on the basis of the productivity performance of the regulated sector itself would fail to apply a competitive benchmark to regulated monopolies;
 - (b) the scope for productivity growth varied across sectors, and hence it was important to focus on the productivity performance of the most comparable sectors of the economy; and
 - (c) EU KLEMS was widely accepted as a credible dataset on TFP growth in different sectors of the economy.¹²⁷⁹
- 4.1025 Ofwat recommended that the CMA should complement its provisional determination approach with traditional productivity analysis using EU KLEMS comparator sectors, and consider adjustments for quality, cost base alignment, and frontier performance. These steps would provide a more transparent and credible basis for setting frontier shift.¹²⁸⁰

Third parties

- 4.1026 Cadent, Energy Network Association, Future Energy Networks, the Thames Investor Group and its adviser, Thames Water, and Water UK stated that Ofwat's 1% frontier shift assumption was not supported by evidence and was much higher than current levels of productivity improvements in the UK.¹²⁸¹
- 4.1027 Yorkshire Water stated that it set a challenging 0.7% assumption in its PR24 Business Plan which was at the upper end of the plausible range set out by Economic Insight in its independent report to the water industry.¹²⁸²

¹²⁷⁸ Ofwat (2025) [Response to CMA PR24 PD: Overview](#), p3, paragraph 1.16; Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p5, paragraph 1.5, and p83, paragraphs 4.1 and 4.3

¹²⁷⁹ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p83, paragraph 4.5; Ofwat (2025) [Response to CMA PR24 PD](#), Supporting document [OF-RTPD-093] 'Europe Economics, Response to CMA Provisional Determinations - Frontier Shift', p5.

¹²⁸⁰ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p85, paragraph 4.12.

¹²⁸¹ Cadent (2025) [Third Party Submission on the Water PR24 References](#), p1, p3; Energy Networks Association (2025) [Third party submission on the Water PR24 References](#), p12; Future Energy Networks (2025) [Third party submission on the Water PR24 References](#), p5; Thames Investor Group (2025) [Third party submission on the Water PR24 References](#), pp13–30, Annex 3, paragraphs 7, 85, 92, 123; Thames Investor Group (2025) [Third Party Submission on the Water PR24 References - Cover Letter](#), p4, paragraph 12; Thames Water (2025) [Third Party Submission on the Water PR24 References](#), p8, paragraph 37(iii); Water UK (2025) [Third party submission on the Water PR24 References](#), p76, chapter 7.

¹²⁸² Yorkshire Water (2025) [Third party submission on the Water PR24 References](#), p5.

- 4.1028 In response to our provisional determination, Cadent, ENA, Pennon, Thames Water, United Utilities, Water UK, and Yorkshire Water all supported our decision to lower the level of frontier shift. The seven third parties who responded to our provisional determination on frontier shift stated that they welcomed the move away from the 1% frontier shift that had been the default value used in regulatory determinations for several years as 1% was much higher than current levels of productivity improvements in the UK.¹²⁸³
- 4.1029 In response to our provisional determination, Cadent stated that the level of frontier shift should have been around 0.5% per annum (if applied uniformly over the period).¹²⁸⁴
- 4.1030 In response to our provisional determination, Thames Water stated that the frontier shift should have been set around 0.45% per year.¹²⁸⁵

Our decision on overall level of frontier shift

- 4.1031 We have refined our provisional determination approach through traditional productivity analysis using EU KLEMS comparator sectors and took into account various relevant factors: wider UK productivity growth (paragraphs 4.900 to 4.940); water sector historical productivity growth and investment trends (paragraphs 4.941 to 4.979); water sector technological progress (paragraphs 4.980 to 4.992); the degree of efficiencies of a larger investment programme within the water sector (paragraphs 4.993 to 4.1001); water sector overlap between outcomes stretch and frontier shift (paragraphs 4.1002 to 4.1011); and the overall level of frontier shift (paragraphs 4.1012 to 4.1030). Based on the evidence above, we have decided to apply a frontier shift of 0.7% per year. This is lower than the equivalent adjustment made by Ofwat at 1.0% but is in the range of frontier shift levels requested by the Disputed Companies.
- 4.1032 Further, we note that our final decision is relevant for a specific time period with the PR24 AMP8 period lasting from April 2025 to March 2030. Frontier shift decisions should reflect recent evidence and the time period it is being applied to. If productivity growth data and/or forecasts were to change then other regulators may reach different conclusions.

Application of frontier shift to enhancement expenditure allowances

- 4.1033 In this subsection we describe Ofwat's PR24 FD approach to the application of frontier shift, followed by a summary of the submissions by Southern and Ofwat.

¹²⁸³ Cadent (2025) [Response to CMA PR24 PD](#), p1; Energy Networks Association (2025) [Response to CMA PR24 PD](#), p1; Pennon (2025) [Response to CMA PR24 PD](#), p2; Thames Water (2025) [Response to CMA PR24 PD](#), p21, paragraph 114; United Utilities (2025) [Response to CMA PR24 PD](#), p6; Water UK (2025) [Response to CMA PR24 PD](#), p3; Yorkshire Water (2025) [Response to CMA PR24 PD](#), p5.

¹²⁸⁴ Cadent (2025) [Response to CMA PR24 PD](#), pp1–5.

¹²⁸⁵ Thames Water (2025) [Response to CMA PR24 PD](#), p21, paragraphs 116–117.

We then provide our decision on the appropriate application of frontier shift to enhancement allowances, taking into account the evidence below.

- 4.1034 Only Southern raised concerns with Ofwat's application of frontier shift to enhancement costs and therefore we have focused our assessment specifically on whether the frontier shift should be applied to enhancement costs.
- 4.1035 No other Disputing Company or third party raised the application of the frontier shift to enhancement allowances as an issue.

Ofwat's PR24 FD approach

- 4.1036 Ofwat applied the frontier shift to all expenditure allowances, except for costs that were mostly outside of company control and self-financing costs.¹²⁸⁶ Specifically, the frontier shift was applied on an annual basis to all modelled base costs, and to three unmodelled base costs: Traffic Management Act (**TMA**) costs, lane rental costs, and non-household retail costs.¹²⁸⁷
- 4.1037 For the PR24 FD, Ofwat applied a frontier shift challenge to all enhancement expenditure, noting that for PR19 it had applied a frontier shift challenge to common enhancement areas, including WINEP and metering costs. Ofwat stated that it had assessed enhancement expenditure using business plan forecast data before the application of frontier shift efficiency and RPEs to avoid double counting.¹²⁸⁸ Ofwat also used historical cost benchmarking analysis where possible. Ofwat concluded that the potential gains from productivity improvements were likely to be significant for large, relatively homogenous programmes of work that were common across companies. Further, Ofwat stated that the frontier shift assumptions on enhancement expenditure from companies tended to be limited.¹²⁸⁹ Therefore, Ofwat stated that it was entirely appropriate to apply frontier shift to enhancement expenditure allowances.¹²⁹⁰

Disputing Companies

- 4.1038 Economic Insight stated that the frontier shift should be applied to all costs which were inside management control. Further, for enhancement costs, in order to avoid either omitting (or double-counting) the frontier shift, Economic Insight

¹²⁸⁶ Specifically, the frontier shift was not applied to the following costs: abstraction charges; industrial emissions directive; water site specific developer services (Dŵr Cymru and Hafren Dyfrdwy); Bristol Canal and River Trust; business rates; third-party services; developer services and diversions; pensions deficit recovery; and discharge consents. Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p261; Ofwat (2025) [PR24 Base costs aggregator model](#), Sheet 'Controls'.

¹²⁸⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp13–14.

¹²⁸⁸ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p261.

¹²⁸⁹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p267.

¹²⁹⁰ Ofwat (2025) [Response to common issues on expenditure allowances](#), p196, paragraph 6.52; CEPA (2024) [PR24 Final Determinations Frontier Shift](#), pp35–36. CEPA stated that it considered it appropriate to apply frontier shift to the relevant enhancement expenditures in PR24.

recommended that companies should have provided clear evidence on how the frontier shift had been applied. If companies had adjusted for frontier shift, they should have explained why and provided evidence to support that.¹²⁹¹

4.1039 Southern stated that frontier shift should not be applied to all enhancement lines as there was double counting of the efficiency challenge. This was because Southern had already implicitly included an efficiency challenge in its enhancement plans, evidenced by the contracts in place for enhancement spending over PR24.¹²⁹² Further, most of the projects over AMP8 would be delivered using Target Cost contracts, which set a target cost that already incorporated efficiency assumptions. Therefore, applying frontier shift to all enhancement cost categories would impose a second layer of efficiency challenge, creating an unreasonable target.¹²⁹³

4.1040 In response to the provisional determination, none of the Disputing Companies disputed the application of frontier shift to enhancement allowances.

Ofwat

4.1041 Ofwat stated that it was appropriate to apply frontier shift to enhancement expenditure allowances in the PR24 FD.¹²⁹⁴ This prevented customers paying for inefficiency. Ofwat also noted that the CMA applied frontier shift to enhancement expenditure allowances in its PR19 redetermination.¹²⁹⁵

4.1042 Further, Ofwat stated that it assessed enhancement expenditure using business plan forecast data before the application of frontier shift and RPEs.¹²⁹⁶ All companies were required by Ofwat to report on this basis – in line with Ofwat’s published business plan guidance. Ofwat stated that it was therefore unclear why Southern alone did not apply the guidance.¹²⁹⁷

4.1043 Ofwat stated that even if Southern had embedded an efficiency challenge into its requested costs, it was unclear the level of stretch applied by Southern and which enhancement lines it applied to. In addition, evidence of prices obtained through procurement was not sufficient to demonstrate efficiency. Southern may have been charged more than any other company for the same services, which was

¹²⁹¹ Economic Insight (2023) [Productivity and frontier shift at PR24](#), p14, p88.

¹²⁹² [Southern SoC](#), p187, paragraph 305.

¹²⁹³ [Southern SoC](#), p187, paragraphs 304–306.

¹²⁹⁴ Ofwat (2025) [Response to common issues on expenditure allowances](#), p198; CEPA (2024) [PR24 Final Determinations Frontier Shift](#), pp35–36. Where CEPA stated that it considered it appropriate to apply frontier shift to the relevant enhancement expenditures in PR24.

¹²⁹⁵ Ofwat (2025) [Response to common issues on expenditure allowances](#), p199, paragraphs 6.55 and 6.58; [PR19 Final Report](#), paragraphs 4.636–4.637.

¹²⁹⁶ Ofwat (2025) [Response to common issues on expenditure allowances](#), p184.

¹²⁹⁷ Ofwat (2025) [Response to common issues on expenditure allowances](#), p196, paragraph 6.56.

why benchmarking costs between companies was important to ensure that customers did not over-pay.¹²⁹⁸

- 4.1044 In response to our provisional determination, Ofwat stated that it supported our provisional decision to apply frontier shift to enhancement expenditure allowances. Ofwat reiterated that this prevented customers paying for inefficiency and was also applied by Ofwat and the CMA at PR19.¹²⁹⁹

Our decision on the application of frontier shift to enhancement expenditure allowances

- 4.1045 We retain our view that we have not received convincing evidence that an equivalent frontier shift had already been included in Southern's own business plan enhancement costs.
- 4.1046 Therefore, we decide to apply the frontier shift to enhancement costs. This is the same approach as in the CMA's PR19 redeterminations as well as in Ofwat's PR24 FD.

Application of frontier shift to retail allowances

- 4.1047 In this subsection we describe the submissions in response to our provisional determination by Anglian and Ofwat. We then provide our decision on the appropriate application of frontier shift to retail allowances, taking into account the evidence below.

Disputing Companies

- 4.1048 In response to our provisional determination, Anglian stated that the frontier shift should have also been applied to the retail model to ensure consistency with the CMA's stated aim of aligning its approach with Ofwat's PR24 FD and of applying the frontier shift to all expenditure mostly outside management control.¹³⁰⁰ Anglian noted that the CMA applied the frontier shift adjustments for water, wastewater wholesale and bioresources costs, however, the comparable adjustment for retail costs was not made. Anglian stated that the CMA should ensure that, in its calculations for the final determination, the frontier shift was applied to the retail cost allowance.¹³⁰¹

¹²⁹⁸ Ofwat (2025) [Response to common issues on expenditure allowances](#), p196, paragraph 6.57.

¹²⁹⁹ Ofwat (2025) [Response to CMA PR24 PD: Overview](#), p3, paragraph 1.16; Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), p5, paragraph 1.5; p83, paragraph 4.2.

¹³⁰⁰ Anglian (2025) [Response to CMA PR24 PD](#), p10, paragraph 27 and p74.

¹³⁰¹ Anglian (2025) [Response to CMA PR24 PD](#), p74, p77, paragraph 206, and p109, paragraph 290.

Ofwat

4.1049 Ofwat stated that it did not consider retail allowances should be updated for the Disputing Companies.¹³⁰² Further, Ofwat stated that if the CMA decided to apply a lower frontier shift to residential retail allowances than was applied at PR24 final determinations, it may need to consider these allowances more broadly to ensure customers were adequately protected. This was especially important given the absence of cost-sharing arrangements in retail, which would mean companies would retain 100% of any underspend.¹³⁰³

Our decision on the application of frontier shift to retail allowances

4.1050 We have decided to continue to apply a frontier shift of 0.7% per year to all expenditure allowances, except for costs that were mostly outside of company control and self-financing costs. This was the same approach as Ofwat's PR24 FD.

4.1051 Therefore, the frontier shift is applied to retail allowances. We acknowledge that we stated in our provisional determination that we would apply the frontier shift to all expenditure allowances, except for costs that were mostly outside of company control and self-financing costs, however in our application within Ofwat's models, the updating of the frontier shift level to the retail model was not implemented.

4.1052 Table 4.28 below shows how the frontier shift was applied to each expenditure allowance at different stages of the price control determination process and our final decision on the application of the frontier shift in the final row:

Table 4.28: Application of frontier shift

	Base (water and wastewater)	Enhancement	Bioresources	Retail
Ofwat final determination	1%	1%	1%	1%
CMA provisional determination	0.7%	0.7%	0.7%	1%
CMA final determination	0.7%	0.7%	0.7%	0.7%

Source: CMA analysis.

4.1053 Ofwat outlined how to update the frontier shift challenge to residential retail costs within the retail model and how this should be updated in the base aggregator model. Further, Ofwat confirmed that the frontier shift level should be applied in

¹³⁰² Ofwat response to Ofwat RFI26, Q2. Ofwat (2024), Base costs – residential retail model 3.

¹³⁰³ Ofwat response to Ofwat RFI33, Q1.

the models for each year of the 2024-2025 to 2029-2030 period. We have implemented these in our final determination calculations.

Summary of our decision on frontier shift

4.1054 Having assessed the evidence, we have decided to apply a frontier shift of 0.7% per year. The resulting changes to total modelled base cost allowances for the five Disputing Companies are summarised in Table 4.29 below.

Table 4.29: Impact on total modelled base cost allowances of changing frontier shift level from 1% to 0.7%

Disputing Companies	Modelled base cost allowance (£m)		Impact of frontier shift changing from 1% to 0.7%	
	1% Frontier Shift	0.7% Frontier Shift (CMA PR24 FD)	Difference in allowance (£m)	% Change (relative to 1% frontier shift)
Anglian	4,920	4,979	60	1.2%
Northumbrian	2,709	2,741	33	1.2%
South East	1,014	1,027	12	1.2%
Southern	3,534	3,577	43	1.2%
Wessex	1,903	1,926	23	1.2%

Source: CMA analysis. Disputing Companies' total modelled base costs (£m), rounded to zero decimal places; wholesale water, wastewater network plus, bioresources, and retail AMP8 total; after frontier shift and RPEs.

Note 1: We use our modelling updates, outlined in the previous section: Base cost modelling, and apply both a 1% and a 0.7% frontier shift to the modelled base expenditure allowances with an upper quartile efficiency challenge for each Disputing Company. This is to isolate the effect of changing the frontier shift, all other elements remain unchanged.

Note 2: % change rounded to one decimal place.

4.1055 We have decided to apply the frontier shift to all expenditure allowances, except for costs that were mostly outside of company control and self-financing costs.¹³⁰⁴ This is the same approach as Ofwat's PR24 FD. Specifically, the frontier shift was applied on an annual basis to all modelled base costs; to three unmodelled base costs: TMA costs; lane rental costs; non-household retail costs; retail allowances and as well as to all enhancement expenditure. The impact of the application of our frontier shift to all base costs and enhancement costs are shown in:

- (a) Table 10.1 and Table 10.2 for Anglian;
- (b) Table 11.1 and Table 11.2 for Northumbrian;
- (c) Table 12.1 and Table 12.2 for South East;
- (d) Table 13.1 and Table 13.2 for Southern;

¹³⁰⁴ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p261. Specifically, the frontier shift was not applied to the following costs: abstraction charges; industrial emissions directive; water site specific developer services (Dŵr Cymru and Hafren Dyfrdwy); Bristol Canal and River Trust; business rates; third-party services; developer services and diversions; pensions deficit recovery; and discharge consents.

(e) Table 14.1 and Table 14.2 for Wessex.

Efficiency challenge and underfunding claims

Introduction

- 4.1056 In this section we consider the appropriate level of catch-up efficiency challenge to apply to the water and wastewater predicted base costs that we set out in Table 4.6 and Table 4.7. We also assess the Disputing Companies' submissions on underfunding across base costs as a whole and discuss what these concerns mean for our decision on the catch-up efficiency challenge.
- 4.1057 As monopoly providers, water companies do not face competitive market pressures – which in other markets serve to incentivise companies to reduce their costs – for most services they provide. Econometric benchmarking, which allows the relative efficiency of companies to be assessed, is an important tool in assessing whether company costs are efficient and therefore in ensuring that customers do not overpay. The selection of a catch-up efficiency benchmark is an important part of this process, as it sets the target for improvement by less efficient companies.
- 4.1058 In line with regulatory practice, Ofwat, applied a catch-up efficiency challenge to its wholesale water and wastewater modelled costs allowances to protect the interests of current and future customers.¹³⁰⁵ Ofwat explained that the catch-up efficiency challenge encourages lagging companies to catch-up with the leading companies in the sector.¹³⁰⁶ Ofwat implemented in its PR24 FD, in its view, 'an achievable catch-up efficiency challenge (eg it only reduces wholesale water model predicted costs by 1.3 percent)', but noted that it 'will still be stretching for some companies'.¹³⁰⁷
- 4.1059 Ofwat did this by first computing the 'efficiency score' of each company as the ratio between outturn costs over the previous five financial years (2019-24) and predicted cost estimated using its PR24 FD econometric models. A higher efficiency score indicated a company has lower level of cost efficiency (ie higher actual costs compared to predicted costs). Ofwat then set the catch-up efficiency challenge at the Upper Quartile (UQ) or 75th percentile of the efficiency score distribution (the fifth lowest efficiency score for water and the fourth lowest for wastewater). Each company's predicted costs were then adjusted proportionally to align with the UQ efficiency score. This provides an efficiency catch-up challenge for companies whose efficiency scores are higher than the UQ.¹³⁰⁸ Ofwat selected a UQ benchmark, rather than the most efficient company, because, given no

¹³⁰⁵ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), pp25–27.

¹³⁰⁶ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p20.

¹³⁰⁷ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p26.

¹³⁰⁸ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p26.

econometric model is perfect, the difference between predicted costs and actual costs is unlikely to be explained fully by efficiency/inefficiency.¹³⁰⁹

- 4.1060 In the CMA PR24 Approach document, we said we would consider the catch-up efficiency challenge in line with the reliability of the models. We have done this at every step of the PR24 process, with due discussion regarding the level of challenge this implies. We also deprioritised Wessex's request for setting aside the model results. We maintained that while all econometric models are imperfect, they still contain important information about the industry's performance. Econometric benchmarking is a well-established practice and assists in our duty to protect the interests of customers.¹³¹⁰
- 4.1061 At provisional determination, our models implied stronger efficiency challenges than Ofwat's for both wholesale water and wastewater. In our Working Paper, our amended models again resulted in a more stretching efficiency challenge than the Ofwat PR24 FD. One of the main reasons for this was, unlike those of Ofwat, our predicted costs reflected the impact of higher energy prices over AMP7 due to the inclusion of input cost variables in our models.¹³¹¹ This accounted for the sustained shock to energy and other input prices from 2020-2021 onwards which led to overspend in PR19. We did not consider the UQ challenge overly stringent and judged that it sits within the range of decisions from previous price controls.¹³¹²
- 4.1062 As well as catch up efficiency, which requires less efficient companies in the sector to catch-up to the more efficient, all companies are required to get more efficient over time through frontier shift. Frontier shift is an adjustment to the base allowances of all companies, including those with modelled efficiency scores that are the same or lower than the UQ. This replicates the forces of competition which would otherwise drive efficiency, such that the industry gets more efficient over time. Frontier shift represents the rate of efficiency improvements that even the most efficient companies in the industry can achieve, for example, from improvements in working practices and the introduction of new technology. We discuss this in the section on Frontier Shift above.

Submissions on the efficiency challenge and underfunding

Disputing companies

- 4.1063 The issues raised by the Disputing Companies broadly fall into three categories:
- (a) issues with the overall approach to base cost assessment;

¹³⁰⁹ Ofwat (2025) [PR24 final determinations: Expenditure allowances](#), p26.

¹³¹⁰ [CMA PR24 Approach document](#), paragraph 45–46.

¹³¹¹ [CMA PR24 PD Volume 1](#), p60, paragraph 4.78.

¹³¹² [Working Paper](#), paragraph 4.20.

- (b) issues with the reliability of the modelling; and
- (c) concerns that the overall level of funding was inconsistent with reasonable sense checks.

Issues with the overall approach to base cost assessment

4.1064 As we set out in more detail in paragraphs 4.192 and 4.193, the Disputing Companies said that Ofwat’s approach to setting capital maintenance funding allowances – almost solely relying on historical models – was not appropriate and they have submitted that they are underfunded due largely to overreliance on modelling. Disputing Companies cited reports by the NIC, NAO and Independent Water Commission (**IWC**) which they said showed that there has been long-term historical underinvestment in the sector.¹³¹³

Issues with the reliability of the modelling

4.1065 Disputing Companies raised a number of issues with the reliability of the modelling approach which they said supported using a less stretching benchmark than the UQ.

- (a) Northumbrian and Southern submitted that LASSO was not reliable for assessing the efficiency challenge.¹³¹⁴
- (b) Northumbrian submitted that the upper quartile was not sensible given limitations in modelling and risked a downward spiral in allowances in subsequent determinations.¹³¹⁵ It is misleading for the ‘efficiency scores’ that are used to set the upper quartile adjustments being used as proxies for relative efficiency when, in fact, they are influenced by multiple other factors besides efficiency.¹³¹⁶
- (c) Southern said the CMA’s effort to improve the model fit had resulted in material swings in estimated efficiency at the extremes (HDD and TMS) and thereby distorted the mechanically calibrated catch-up challenge.¹³¹⁷ It said the scale of the change in the catch-up efficiency challenge is much more significant than the increase in model precision since Ofwat’s PR24 FD, as measured from the R-squared from the models which increased from 0.96 –

¹³¹³ NIC (2024) [Developing resilience standards in UK infrastructure](#), p9; [Defra White Paper](#) (accessed 26 February 2026), pp37–38; [IWC Final Report](#), Box 28, p204, paragraphs 886, 888–889; National Audit Office (2026) [Regulating for investment and outcomes in the water sector](#), paragraph 23.

¹³¹⁴ Southern (2025) [Response to CMA PR24 PD](#), paragraph 3.32; [Northumbrian SoC](#), p69, paragraph 221.

¹³¹⁵ Northumbrian (2026) [Response to Working Paper](#), paragraph 55.

¹³¹⁶ Northumbrian (2026) [Response to Working Paper](#), paragraph 59.

¹³¹⁷ Southern (2026) [Response to Working Paper](#), paragraph 96.

0.97 in wholesale water and 0.94 – 0.95 in wastewater.¹³¹⁸ Southern also raised concerns about the lack of triangulation.¹³¹⁹

- (d) South East said it believed it inappropriate for the provisional determination to tighten allowances further than Ofwat's PR24 FD.¹³²⁰ It said the CMA should assure themselves that the FD final models were sufficiently robust for cost assessment purposes for future costs in AMP8 and reconsider whether the UQ benchmark remains appropriate given the level of confidence in the modelling.¹³²¹
- (e) Wessex said that the Ofwat PR24 and CMA WP model outcomes were unreliable given that it had been assessed as efficient since PR09, and yet it was found to be inefficient at PR24 despite its costs moving in line with industry costs.¹³²²

4.1066 Disputing Companies expressed concerns about the impact of energy prices on the setting of efficient costs leading to an overly stretching efficiency challenge. Disputing Companies said the CMA's models effectively assume that almost all of the increased expenditure over AMP7 can be explained by energy prices. They argued that this is not credible and suggested that energy price effects in the models are picking up other things.¹³²³

- (a) Anglian submitted that the CMA's PD approach misattributed hedging strategies for energy inefficiency, and therefore risked overstating the catch-up target for companies that underspent in the AMP.¹³²⁴
- (b) Northumbrian submitted that input prices and energy trends could not account for such a large change to final allowances.¹³²⁵
- (c) Southern said it was wrong to imply that the inclusion of energy prices largely explains the difference in post-UQ efficiency allowances. This could be empirically verified through re-running the CMA's models without the energy price variable.¹³²⁶

¹³¹⁸ Southern (2026) [Response to Working Paper](#), paragraph 33.

¹³¹⁹ Southern (2026) [Response to Working Paper](#), paragraphs 28.

¹³²⁰ South East (2025) [Response to CMA PR24 PD](#), paragraph 2.53.

¹³²¹ South East (2026) [Response to Working Paper](#), paragraph 1.11(c).

¹³²² [Wessex SoC](#), pp48–49, paragraph 8.36.

¹³²³ Anglian (2026) [Response to Working Paper](#), paragraphs 111–112; Northumbrian (2026) [Response to Working Paper](#), paragraph 173; Southern (2026) [Response to Working Paper](#), paragraphs 38, 45; South East (2026) [Response to Working Paper](#), paragraphs 1.25–1.26.

¹³²⁴ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 118.

¹³²⁵ Northumbrian (2026) [Response to Working Paper](#), paragraphs 278–279.

¹³²⁶ Southern (2026) [Response to Working Paper](#), paragraph 35.

- (d) South East said it disagreed strongly with the CMA's assertion that its treatment of energy prices in and of itself explains the difference in post-UQ efficiency allowances between the CMA's updated models and Ofwat's.¹³²⁷
- (e) Wessex said it can be demonstrated that other factors were affecting company costs concurrent to the energy shocks. As a result, this could falsely give the impression that the revised models appear to explain the large increase in industry base costs over the last AMP.¹³²⁸

4.1067 The Disputing Companies said that the reductions in allowances due to the UQ challenge were overly demanding. They recommended moderating the challenge to a lower level to better reflect the true efficiency of the sector. Disputing Companies recommended using alternative approaches to the UQ for the efficiency challenge.

- (a) Anglian recommended leaving out energy prices from the baseline models. If energy prices remain included, it encouraged moderating the catch-up challenge through a glidepath or through triangulation between models which include energy and models which do not.¹³²⁹
- (b) Northumbrian suggested moving to the median, choosing other lower benchmarks or deploying a glidepath.¹³³⁰ It said that moving away from UQ was consistent with the approach taken by Ofwat to set the 2024-2025 PCL baselines, where Ofwat chose a median benchmark, and with the approach taken for Enhancements, where Ofwat also chose the median.¹³³¹ Melvyn Weeks' paper on behalf of Northumbrian suggested a reversion to Ofwat's methodology with substantial triangulation.¹³³²
- (c) Southern recommended adopting alternatives such as a glidepath or Ofwat's efficiency challenge.¹³³³ It also suggested the issue could be remedied by either: removing or correcting companies that appear to have an unexpected increase in efficiency; calculating the catch-up efficiency challenge over the full historical sample to alleviate these artificial efficiencies arising from hedging; or moving to a median efficiency challenge.¹³³⁴
- (d) South East stated the UQ was only achievable insofar as other implicit and explicit challenges were corrected.¹³³⁵ It recommended alternative less

¹³²⁷ South East (2026) [Response to Working Paper](#), paragraph 1.32.

¹³²⁸ Wessex (2025) [Response to Working Paper](#), paragraph 2.13(f).

¹³²⁹ Anglian (2026) [Response to Working Paper](#), paragraph 123.

¹³³⁰ Northumbrian (2026) [Response to Working Paper](#), paragraph 100.

¹³³¹ Northumbrian (2026) [Response to Working Paper](#), paragraphs 86–95.

¹³³² Northumbrian (2026) [Response to Working Paper](#), Annex 2, paragraph 5.2.

¹³³³ Southern (2025) [Response to CMA PR24 PD](#), paragraph 3.33.

¹³³⁴ Southern (2026) [Response to Working Paper](#), paragraph 70.

¹³³⁵ [South East SoC](#), p36, paragraph 4.14(b).

stringent benchmarks due to the level of challenge and underfunding the UQ presented to the sector.¹³³⁶

- (e) Wessex stated that the benchmark was not a true reflection of efficient spend. It encouraged reassessing an appropriate challenge, claiming that historical models of underfunding will always generate lower costs than that is required.¹³³⁷ Wessex recommended alternatives such as triangulating between various models, providing uplifts for underfunding, or moderating the challenge using a glidepath or the median.¹³³⁸

Sense checks regarding the overall level of funding

4.1068 The Disputing Companies said that the CMA had relied on technical modelling decisions and had not sense checked its proposed allowances.

- (a) Anglian said the substantial changes between the CMA's provisional decision and Working Paper were not based on transparent and reasonable sense-checks of the adequacy of funding for customer services on the ground, but on highly technical and automated modelling decisions that produce a now (radically different) econometric black-box to that which the CMA Group advanced at PDs.¹³³⁹
- (b) Northumbrian said the CMA should consider the proposed allowances in the real-world context of what is plausible, optimal and achievable.¹³⁴⁰
- (c) Southern said the CMA proposed to set allowances based on one econometric formula for each of the water and wastewater price controls, with no triangulation or cross-checks used to act as a sense check to the outcomes.¹³⁴¹
- (d) South East said a stand-out feature of the CMA's work on base costs throughout the redetermination process has been the CMA's almost exclusive reliance on econometric fit to define and calculate each Disputing Company's efficient costs.¹³⁴² The CMA's failure to take a big, overarching 'step back' and carry out this kind of in the round assessment is both a break from regulatory good practice and is inconsistent with the statutory duties.¹³⁴³

¹³³⁶ South East (2026) [Response to Working Paper](#), paragraphs 1.52–1.56.

¹³³⁷ Wessex (2025) [Response to CMA PR24 PD](#), paragraph 4.6.

¹³³⁸ Wessex (2026) [Response to Working Paper](#), paragraph 3.8.

¹³³⁹ Anglian (2026) [Response to Working Paper](#), paragraph 18.

¹³⁴⁰ Northumbrian (2026) [Response to Working Paper](#), paragraph 10.

¹³⁴¹ Southern (2025) [Response to Working Paper](#), paragraph 28.

¹³⁴² South East (2026) [Response to Working Paper](#), paragraph 1.12.

¹³⁴³ South East (2026) [Response to Working Paper](#), paragraph 1.14.

- (e) Wessex said it was concerned that the Working Paper did not set out how the CMA has taken into account its specific submissions regarding the real-world consequences for customers of setting base cost allowances at this level.¹³⁴⁴

4.1069 The Disputing Companies highlighted water companies' significant overspend of their PR19 base allowances during AMP7.¹³⁴⁵ The Disputing Companies said that only a small proportion of their AMP7 overspend could be accounted for by temporary factors such as higher than expected energy costs, with increased capital expenditure and increased expenditure to meet stretching performance targets being more significant drivers.¹³⁴⁶

4.1070 Disputing Companies said that the Working Paper water and wastewater base allowances after the application of the UQ challenge meant that water industry base funding had effectively been cut compared actual spending over the past five years.¹³⁴⁷

- (a) Anglian said the CMA's Working Paper modelling results assumed an 8% reduction in modelled base allowances after frontier shift in AMP8 vs. AMP7 outturns despite the fundamental step-change in investment, combined with population growth and asset base growth relative to PR19. With the exception of energy, it excludes sector wide costs adjustments from base allowance as the purpose of such adjustments is to account for a 'step change' in base activities, involving additional costs not reflected in AMP7 expenditure.¹³⁴⁸
- (b) Northumbrian said the Working Paper implied an immediate base cost reduction of c.9% (over £3.5 billion) across the sector compared to what companies are spending now.¹³⁴⁹
- (c) South East said that, on the basis of the CMA's base cost modelling, companies will collectively need to spend 4% less in AMP8 than they have in the last five years (2019/20 to 2023/24) and that, given the expected population growth over this period, this equates to a reduced spending per property of c. 8%.¹³⁵⁰

¹³⁴⁴ Wessex (2026) [Response to Working Paper](#), paragraph 1.5.

¹³⁴⁵ Anglian (2025) [Response to CMA PR24 PD](#), paragraph 15.iv; Northumbrian (2026) [Response to Working Paper](#), paragraph 32; [Southern SoC](#), p206, paragraph 372; South East (2026) [Response to Working Paper](#), paragraph 1.24; [Wessex SoC](#), paragraph 8.22.

¹³⁴⁶ Anglian (2026) [Response to Working Paper](#), paragraphs 109–110, tables 5 and 6; Northumbrian (2026) [Response to Working Paper](#), paragraph 40; Southern (2026) [Response to Working Paper](#), paragraph 39; South East (2026) [Response to Working Paper](#), paragraph 1.24.

¹³⁴⁷ Note the working paper base allowance do not include CACs or sector wide costs adjustments of frontier shift.

¹³⁴⁸ Anglian (2026) [Response to Working Paper](#), paragraphs 40 and 43.

¹³⁴⁹ Northumbrian (2026) [Response to Working Paper](#), paragraph 6.

¹³⁵⁰ South East (2026) [Response to Working Paper](#), paragraph 1.15.

4.1071 Disputing Companies also said that the Working Paper water and wastewater base allowances were lower than Ofwat's PR24 FD.

- (a) Anglian said that while Ofwat's proposed modelled AMP8 base cost allowance was only 2.9% lower than equivalent AMP7 outturn for the industry, the CMA's Working Paper assumes a reduction of 8%, which is entirely incompatible with operational realities and the broader industry context.¹³⁵¹
- (b) Northumbrian said across the sector the CMA Working Paper finds that allowances should reduce by 7% compared to Ofwat's PR24 FD (over £2 billion). Given that companies were already concerned that Ofwat's PR24 FD provided insufficient levels of base funding, the additional reduction makes that position worse.¹³⁵²
- (c) South East said the main headline from the Working Paper is the CMA's view that it is appropriate to cut c. £3 billion of base costs from Ofwat's PR24 FD.¹³⁵³

Third parties

4.1072 Thames Investor Group said Ofwat's cost modelling in PR19 significantly underfunded the industry compared to actual spend. Notably, industry modelled cost allowances fell short of actual spend by 16% for wholesale and by 9% for wastewater.¹³⁵⁴

4.1073 Thames Investor Group said it used the CMA Working Paper modelling approach to generate counterfactual allowances for PR19. Again, most companies would have been underfunded, with modelled costs (including UQ catch-up efficiency challenge and frontier shift) as much as 30-40% below the actual realised spend for several companies. Industry spend would have been underpredicted by 16% for wholesale and 13% for wastewater.¹³⁵⁵

4.1074 Thames Investor Group said that the CMA considers its approach is in line with regulatory precedent. However, this argument presupposes, among other things, that catch-up efficiency challenges in previous price review periods were reasonably set. The median companies (in terms of under/overspending their allowance) had actual costs that were 19% and 8% higher than their allowances

¹³⁵¹ Anglian (2026) [Response to Working Paper](#), paragraph 44

¹³⁵² Northumbrian (2026) [Response to Working Paper](#), paragraph 42.

¹³⁵³ South East (2026) [Response to Working Paper](#), paragraph 1.7.

¹³⁵⁴ Thames Investor Group (2026) [Response to Working Paper](#), Annex 1, paragraph 3.2.

¹³⁵⁵ Thames Investor Group (2026) [Response to Working Paper](#), Annex 1, paragraph 3.3–3.5.

for wholesale and wastewater, respectively for PR19. This means that the catch-up efficiency challenge in PR19 was unrealistically strict.¹³⁵⁶

Ofwat

Issues with the overall approach to base cost assessment.

- 4.1075 Ofwat supported the CMA's provisional decision to deprioritise the development (within its PR24 redetermination) of a broader framework on how to evaluate and regulate asset health in the water sector.¹³⁵⁷ Ofwat said that it was important that cost adjustments to address asset condition issues were underpinned by robust and comparable data, ensuring all companies were assessed equally.¹³⁵⁸ It said that it was collecting asset health data via its Asset Health Roadmap (see paragraphs 4.186 to 4.188). Ofwat that said that this approach would align with the IWC's recommendation to develop asset condition methodologies and subsequently collect asset condition data to better understand asset health in the sector.¹³⁵⁹

Issues of confidence in the modelling

- 4.1076 Ofwat supported the application of our upper quartile efficiency challenge at provisional determination.¹³⁶⁰ It stated that the CMA upper quartile was consistent with regulatory precedents and previous price reviews. It did not think that the new challenge was overly stringent, and it said this was the result of the better predictive power of the CMA models.
- 4.1077 In its Working Paper response, Ofwat agreed with the CMA that the higher UQ was largely explained by the inclusion of energy and input prices. Ofwat suggested that an even higher UQ at the 85th percentile in accordance with other regulatory bodies like Ofgem could be used, especially with the reduction in the frontier shift efficiency challenge to 0.7%.¹³⁶¹

Sense checks regarding the overall level of funding

- 4.1078 Ofwat said in its PR24 FD that total base expenditure allowances for the industry (including water, wastewater, retail costs after CACs after RPEs and frontier shift) were £60.1 billion: 19% higher than base allowances at PR19; and 7% more than companies had spent in the past 5 years (2019-24). In addition, Anglian Water and

¹³⁵⁶ Thames Investor Group (2026) [Response to Working Paper](#), Annex 1, paragraph 4.4–4.5.

¹³⁵⁷ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.21.

¹³⁵⁸ Ofwat (2025) [Response to common issues on expenditure allowances](#), paragraph 2.47.

¹³⁵⁹ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.25.

¹³⁶⁰ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.3; Ofwat (2025) [Response to Working Paper](#), paragraphs 2.5–2.7.

¹³⁶¹ Ofwat (2026) [Response to Working Paper](#), paragraphs 2.5–2.7.

Southern Water both received allowances exceeding the amounts originally requested in business plans.¹³⁶²

- 4.1079 Ofwat said that the CMA's provisional base allowances, if applied across the sector, would be broadly aligned with its final determinations, albeit around £4 billion (3.8%) lower. This was broadly in line with the sector's current spending. It said that there was no evidence that companies are currently underspending and therefore the proposed allowances (which are generally similar to or in excess of AMP7 expenditure) are sufficient for an efficient company to maintain long-term asset health while delivering against performance commitment levels.¹³⁶³
- 4.1080 Ofwat said that in most cases, AMP7 outturn expenditure had been in excess of what both it, and the companies, had forecast. This demonstrated that these cost pressures were unforeseen by all parties.¹³⁶⁴ The main factors driving the overspend were:
- (a) unexpected energy price increases – Ofwat estimated that the overspend reduces at an industry level from 14% to 12% when this is accounted for;
 - (b) leakage performance challenge set at PR19 – most companies were required to reduce leakage by 15% with base expenditure allowances; and
 - (c) Southern Water additional investment – expenditure at water and wastewater treatment works to address water quality risks and improve wastewater treatment works compliance.¹³⁶⁵

Our assessment

- 4.1081 Below we assess the key issues raised on underfunding by the Disputing Companies.
- (a) First, we look at broader issues raised about long-term base funding due to 'overreliance' on historical cost models.
 - (b) Second, we look at issues raised around the reliability of the modelling.
 - (c) Third, we sense check our final base cost allowances.

¹³⁶² Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.1.

¹³⁶³ Ofwat (2025) [Response to CMA PR24 PD: Base and Enhancement](#), paragraph 2.2.

¹³⁶⁴ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.16.

¹³⁶⁵ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.18.

Broader issues on long-term base funding

- 4.1082 We set out our approach to the broader issues raised about base funding in more detail in paragraphs 4.220 to 4.229.
- 4.1083 The Disputing Companies note that there have been several recent reports that have touched on the issue of water industry underfunding (see paragraph 4.177). However, there is limited evidence on the extent of any underfunding. Instead, the NAO and IWC reports conclude that there is no clear understanding of the amount of funding that companies require to maintain their assets.
- (a) The NAO said ‘The regulators do not have a shared understanding of the condition of water and wastewater assets, and the level of funding needed to maintain them’. ¹³⁶⁶
 - (b) The IWC said as things currently stand ‘it is not possible to form a clear view on the condition of water industry assets, the adequacy of past renewal and maintenance, and the overall resilience of the sector to current and future pressures’. ¹³⁶⁷
 - (c) The recent Defra White Paper said ‘we need to build a better understanding of asset conditions. We will work with the new regulator to develop a fuller picture of asset health, building on Ofwat’s plans for a data-gathering exercise to provide a snapshot of asset conditions. We will also work with the new regulator to develop forward-looking asset health metrics to ensure this critical infrastructure gets the funding it needs’. ¹³⁶⁸
- 4.1084 Consistent with these findings from the NAO, IWC and Defra White Paper, our view is that the collection of robust and comparable data at the sector level is necessary for understanding asset health requirements, which in turn is necessary for setting base allowances that are sufficient to efficiently fund long-term requirements. As we set out at paragraphs 4.220 to 4.229, the collection of this data and broader base funding issues are better dealt with through the CCP, the Asset Health Roadmap and the ongoing longer-term regulatory reform process than this redetermination.
- 4.1085 The industry may receive additional funding for AMP8 through the CCP. In addition, as we set out in paragraph 4.240, we have considered whether it may be appropriate to facilitate making additional allowances where asset health CAC claims may not fulfil the Ofwat CAC criteria, but where companies can show the

¹³⁶⁶ National Audit Office (2025) [Regulating for investment and outcomes in the water sector](#), paragraph 17.

¹³⁶⁷ IWC Final Report, p377, paragraph 877.

¹³⁶⁸ Defra White Paper (accessed 26 February 2026), p37.

CCP would not cover the relevant assets and that there are immediate critical investment needs. None of the CAC claims we assessed demonstrated this.

Issues around confidence in the modelling

4.1086 Table 4.30 sets out the CMA modelled cost allowance after application of the efficiency challenge and RPEs and compares to the Ofwat PR24 FD equivalent. Because of the lower efficiency scores our models produce (see Figure 4.1) the UQ challenge is more stretching and therefore the resulting modelled allowances are lower. Our UQ challenge is 7% for water and 6% for wastewater.¹³⁶⁹ This is higher than that applied in Ofwat's PR24 FD, which applied an upper quartile challenge of 1.3% for water and 0.6% for wastewater.¹³⁷⁰

Table 4.30: Wastewater and wholesale water modelled cost allowances post-efficiency challenge including RPEs (£m, 2022/23 prices)

	Ofwat PR24 FD	Wholesale water CMA PR24 FD	Difference: CMA Updated – Ofwat PR24 FD (%)	Ofwat PR24 FD	Wastewater CMA PR24 FD	Difference: CMA Updated – Ofwat PR24 FD (%)
Anglian	1837	1733	-5.7%	1970	1868	-5.2%
Northumbrian	1484	1365	-8.0%	867	789	-9.0%
South East	840	824	-1.9%	---	---	---
Southern	858	876	2.1%	1921	1847	-3.9%
Wessex	530	529	-0.3%	973	898	-7.8%
All Disputing Companies	5549	5326	-4.0%	5731	5401	-5.7%
Industry	22906	21232	-7.3%	18636	17315	-7.1%

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

Note: Numbers presented do not include blind year reconciliation.

4.1087 Table 4.31 summarises the catch-up efficiency challenge in Ofwat and the CMA decisions in PR14, PR19 and PR24. In those decisions, the benchmark was almost always set at the UQ level or above. The only decision which used a benchmark below the UQ was the CMA's decision on Bristol Water's PR14 redetermination. The level of efficiency challenge in percentage terms ranges from 0.6% (Ofwat PR24 wastewater) to 10.4% (Ofwat PR14 wastewater).¹³⁷¹ A challenge set at the UQ level is therefore in keeping with the majority of recent water regulatory decisions. However, our level of challenge in percentage terms at UQ level (6% for wastewater and 7% for wholesale water) sits at the high end of the range of recent decisions.

¹³⁶⁹ CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

¹³⁷⁰ Ofwat (2025) [Base costs – water model 3](#); Ofwat (2025) [Base costs - wastewater model 3 bioresources](#); Ofwat (2025) [Base costs - wastewater model 3 network plus](#).

¹³⁷¹ Our focus is on recent decisions in water. However, we do note that recent decisions in energy have opted for a challenge involving a glidepath from the 75th percentile to the 85th percentile. See eg Ofgem (2025) [RIIO-GD3 Final Determinations](#), p224; Ofgem (2021) [RIIO-GD2 Final Determinations – GD Sector Annex](#), p8; Ofgem (2022) [RIIO-ED2 Final Determinations Core Methodology Document](#), p220.

Table 4.31: PR14, PR19 and PR24 decisions on catch-up challenge

	<i>Benchmark</i>	<i>Level of challenge</i>	<i>Industry performance in previous period</i>
Ofwat PR14 ¹³⁷²	Upper quartile	6.5% (water); 10.4% (wastewater)	Industry totex overspend of 1.1% ¹³⁷³
CMA PR14 ¹³⁷⁴	Average (mean) efficiency benchmark combined with an assumed cost trend for base expenditure	N/A	Industry totex overspend of 1.1% ¹³⁷⁵
Ofwat PR19 ¹³⁷⁶	Stronger than upper quartile – 4th ranked (water); 3rd ranked (wastewater)	4.6% (water); 2.0% (wastewater)	Industry totex overspend of 1.4% ¹³⁷⁷
CMA PR19 ¹³⁷⁸	Upper quartile	1.4%(water); 2.2% wastewater	Industry totex overspend of 1.4% ¹³⁷⁹
Ofwat PR24 ¹³⁸⁰	Upper quartile	1.3% (water); 0.6% (wastewater)	Industry base overspend of 13.5% - ranging from 4.1% underspend to 55.5% overspend ¹³⁸¹

4.1088 Overall, our models predict AMP7 actual costs more accurately (ie they exhibit better in sample fit) than the Ofwat PR24 FD models. Ofwat's PR24 FD models do not include variables for energy and labour costs. As we set out in paragraphs 4.104 to 4.114 the inclusion of variables representing key input costs in labour and energy as candidate variables for the econometric cost models is justified from an economic point of view. In addition, the selection of these variables through the LASSO process shows that they explain additional variation in costs after other cost drivers have been accounted for.

4.1089 Because Ofwat's PR24 FD econometric models do not directly include energy and other input prices, we consider it likely that the effect of these shocks on AMP7

¹³⁷² Ofwat (2020) [Reference of the PR19 final determinations: Cost efficiency – response to common issues in companies' statements of case](#), Table 6.1.

¹³⁷³ Ofwat (2020) [Reference of the PR19 final determinations: Cost efficiency – response to common issues in companies' statements of case](#), Table 2.2.

¹³⁷⁴ CMA (2021) [Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations Final Report \(PR19 Final Report\)](#), paragraph 4.245.

¹³⁷⁵ Ofwat (2020) [Reference of the PR19 final determinations: Cost efficiency – response to common issues in companies' statements of case](#), Table 2.2.

¹³⁷⁶ Ofwat (2020) [Reference of the PR19 final determinations: Cost efficiency – response to common issues in companies' statements of case](#), paragraph 6.29.

¹³⁷⁷ Ofwat (2020) [Reference of the PR19 final determinations: Cost efficiency – response to common issues in companies' statements of case](#), Table 2.2.

¹³⁷⁸ [PR19 Final report](#), paragraph 4.495.

¹³⁷⁹ Ofwat (2020) [Reference of the PR19 final determinations: Cost efficiency – response to common issues in companies' statements of case](#), Table 2.2.

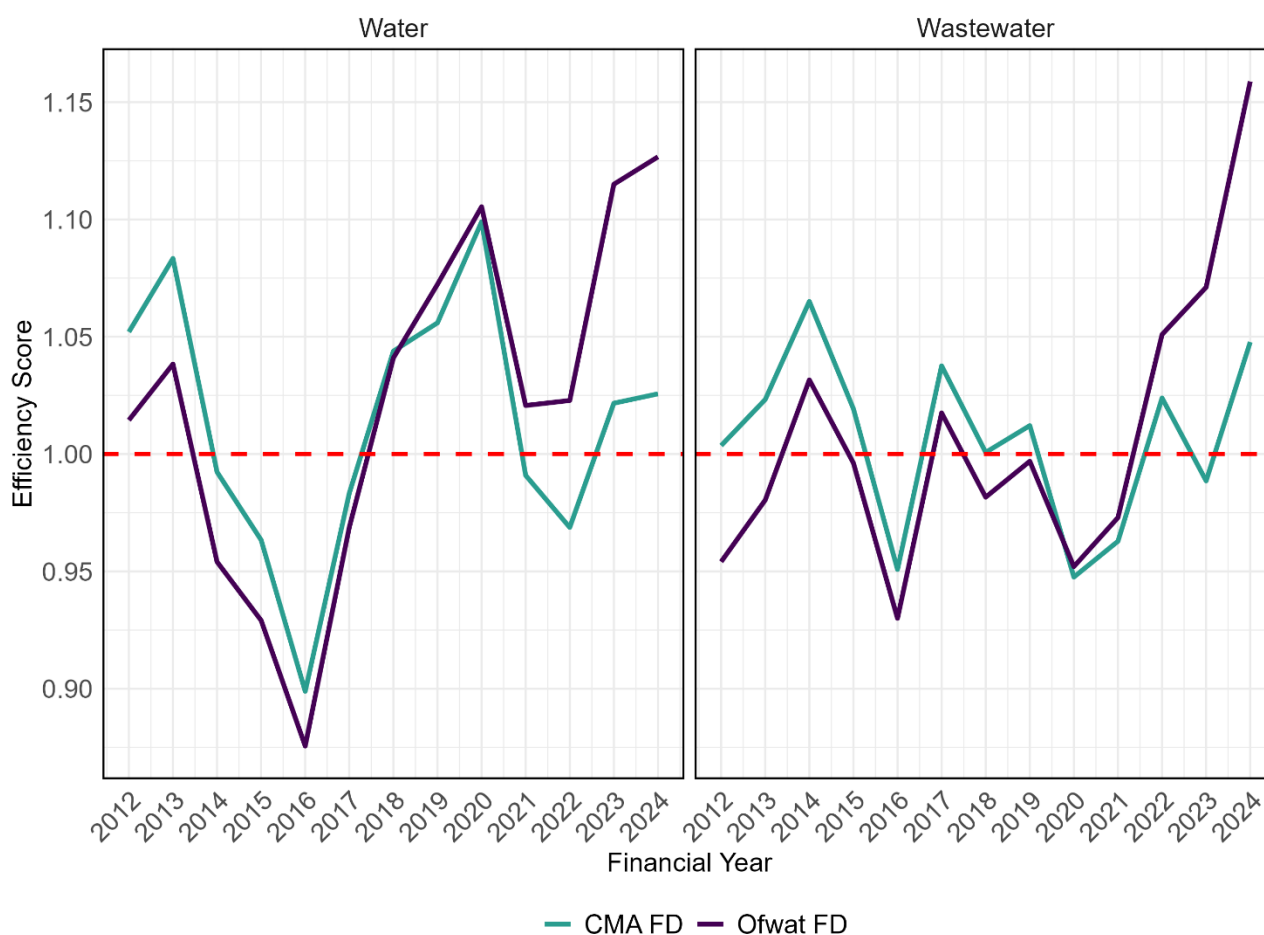
¹³⁸⁰ Ofwat (2025) [Base costs – water model 3](#); Ofwat (2025) [Base costs - wastewater model 3 bioresources](#); Ofwat (2025) [Base costs - wastewater model 3 network plus](#).

¹³⁸¹ CMA analysis of data from Ofwat (2025) [Water Company Performance Report 2024-25](#).

expenditure is less well reflected in its model predictions. Instead, increased sector expenditure in those years due to higher input costs is likely attributed by Ofwat's models to inefficiency rather than explicable increases in cost. Overall, this results in a less stretching catch-up challenge when set at the UQ benchmark.

4.1090 Figure 4.24 illustrates the evolution of average efficiency scores from 2011/12 to 2023/24 from our wholesale water and wastewater models and compares them to efficiency scores from Ofwat PR24 FD models. The two models track relatively closely until 2020-2021, with both varying between around 0.95 and 1.05 for wastewater and between around 0.9 and 1.10 for water. The period prior to 2020-2021 was a period of relatively stable input prices. However, from 2020-2021 onwards Ofwat's average efficiency scores rose sharply, reaching greater than 1.15 for wastewater and greater than 1.10 for by 2024-2025 for water, while our models produce efficiency scores which remain below 1.05 for both wastewater and water.

Figure 4.24: Average wastewater and wholesale water modelled efficiency scores over time (financial years ending in March)

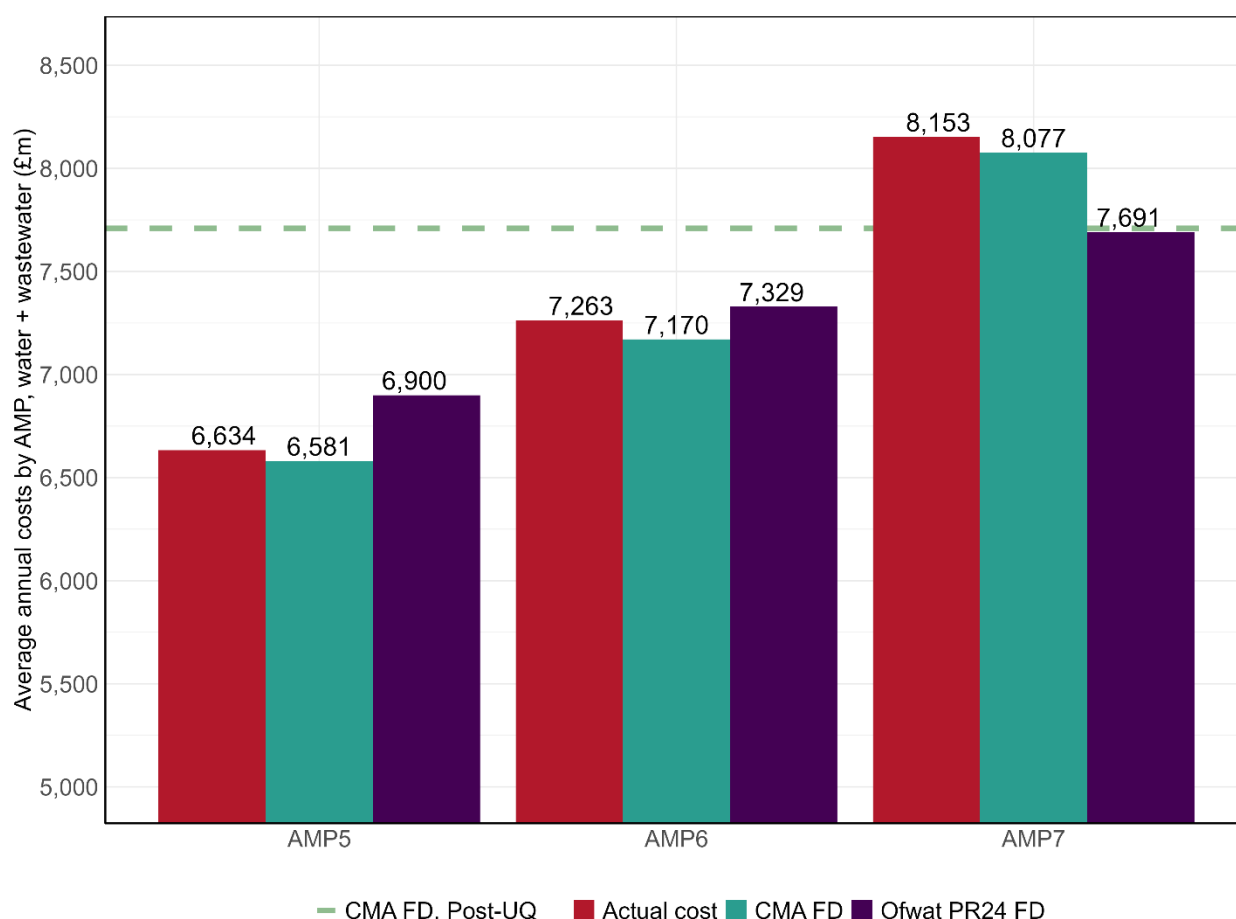


Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and ONS (2025) [ASHE data](#).

4.1091 Figure 4.25 shows the water and wastewater predicted costs for AMP5, AMP6 and AMP7 using our FD base models and compares them to:

- (a) predicted wholesale water and wastewater costs using Ofwat's PR24 FD models; and
- (b) actual 'modelled' wholesale water and wastewater costs (ie the actual costs data used to estimate the CMA's and Ofwat's base cost models).

Figure 4.25: Comparison of CMA wholesale water and wastewater predicted costs to actual expenditure



CMA analysis of Ofwat (2025) [PR24 FD models data](#).

- 4.1092 Both the CMA and Ofwat model predicted costs are slightly lower than actual spend for AMP5 and AMP6. However, for AMP7, while the CMA models again predict costs that are slightly lower than actual expenditure spend (1% lower), the Ofwat models predict costs that are 6% lower than actual expenditure. The inclusion of input costs in the CMA models is likely to be an important reason for this.
- 4.1093 The Disputing Companies have said that because energy costs only explain a part of their overspend in AMP7 the increase in energy costs cannot be a key driver of the difference between Ofwat's PR24 FD models and the CMA models (see paragraph 4.1066). However, this viewpoint conflates the difference between

allowances set at PR19 and AMP7 expenditure with the difference between costs predicted by the Ofwat PR24 FD Models and the CMA models.

- 4.1094 Our analysis of energy overspend for wholesale water and wholesale wastewater only (ie excluding bioresources and retail) over AMP7 estimates average annual industry overspend of £279 million.¹³⁸² This represents 72% of the difference in annual industry predicted costs between the CMA and Ofwat models (£8,077 million minus £7,691 million).¹³⁸³ This is consistent with inclusion of an energy price variable being an important reason for the difference between the predicted costs from the CMA and Ofwat PR24 FD models.
- 4.1095 While energy costs are equivalent to 72% of the difference between Ofwat's PR24 model predictions and the CMA model predictions, they are only equivalent to 25% of overspend of PR19 base allowances.¹³⁸⁴ This difference arises because the Ofwat PR19 FD modelled base allowances were lower than implied modelled base allowances based on predicted costs for AMP7 using Ofwat PR24 FD models and outturn data (annual average of £6,964 million annual average compared to £7,691 million).¹³⁸⁵ The higher implied allowances for AMP7 will reflect changes in model specification, the longer time series of data used to estimate the models and differences between forecast and outturn values for the variables used to estimate the models.
- 4.1096 Northumbrian said that moving away from UQ was consistent with the approach taken by Ofwat to set the 2024-2025 PCL baselines, where Ofwat chose a median benchmark, and with the approach taken for enhancements, where Ofwat also chose the median (see paragraph 4.1067(b)). However, we do not consider this to be a reason for not using a UQ benchmark for base costs because the setting of PCL and enhancement benchmarks reflects the specific approaches taken given the different inputs that are used and different objectives that are involved. We set out our approaches to PCLs and enhancement benchmarks in Chapters 5 and 6.
- 4.1097 Overall, this analysis suggests that at an industry level the CMA PR24 FD base models effectively predict costs that are broadly in line with actual expenditure in previous periods. It also suggests that in aggregate the energy overspend is equivalent to the majority of the aggregate industry difference between predicted cost from the Ofwat PR24 FD models and CMA PR24 FD models.

¹³⁸² CMA analysis of data from: Ofwat (2025) [Water Company Performance Report 2024-25](#); Ofwat (2025) Blind year adjustment data and Ofwat (2025) PR24 FD models data. Energy overspend is estimated by assuming actual energy spend against estimated energy costs if energy costs after 2020/21 remain at 2020/21 levels.

¹³⁸³ CMA analysis of data from: Ofwat (2025) [Water Company Performance Report 2024-25](#); Ofwat (2025) Blind year adjustment data and Ofwat (2025) [PR24 FD models data](#). Energy overspend is estimated by assuming actual energy spend against estimated energy costs if energy costs after 2020/21 remain at 2020/21 levels.

¹³⁸⁴ CMA analysis of data from: Ofwat (2025) [Water Company Performance Report 2024-25](#); Ofwat (2025) Blind year adjustment data and Ofwat (2025) [PR24 FD models data](#). Energy overspend is estimated by assuming actual energy spend against estimated energy costs if energy costs after 2020/21 remain at 2020/21 levels.

¹³⁸⁵ PR19 modelled base allowances sourced from Ofwat (2025) [Base costs-aggregator model \(Updated Metering Adjustment\)](#), PR19_Base.

- 4.1098 Our view is the modelling changes we have made should not prevent us from applying an efficiency challenge set at the UQ level even though this results in more stretching efficiency challenge than the Ofwat PR24 FD. Our model better predicts AMP7 actual costs and our analysis of aggregate energy overspend is consistent with the view that one of the main reasons for the increase in predicted costs across the industry is the inclusion of energy prices in our modelling. Overall, we consider the increase in predicted costs, and the consequential increase in the efficiency challenge to be grounded in observable input-price dynamics.
- 4.1099 Disputing Companies have argued that the application of a UQ challenge results in a challenge that is unachievable and therefore likely to result in underfunding of their requirements during AMP8. We consider this in the next section.

Sense check of our final base cost allowances

- 4.1100 In this section we assess the Disputing Companies arguments (set out in paragraphs 4.1068 to 4.1070) that:
- (a) our base cost allowances have not been appropriately sense checked resulting in underfunding of base allowances; and
 - (b) that this justifies applying an alternative to the UQ catch-up efficiency challenge.

Introduction

- 4.1101 Below we assess specific claims made by Disputing Companies regarding underfunding of base allowances. In particular, we discuss the Disputing Companies' submissions that:
- (a) the industry significantly overspent its base allowances in AMP7;
 - (b) the CMA base allowances represent a significant cut on actual levels of recent spending; and
 - (c) the CMA base allowances represent a significant cut in base funding compared to the Ofwat PR24 FD.
- 4.1102 It is difficult to draw clear conclusions from comparisons of this type. First, there are many elements of base costs to consider (some of which we have made changes to and some of which we have not). Second, there are changes in the scope of base costs and in the circumstances faced by companies across AMPs. Consequently, there are many different ways of making these comparisons by, for example, comparing only specific elements of base costs and/or making adjustments to account for changes in the scope of costs or for company or industry circumstances.

4.1103 The Disputing Companies have presented various comparisons of water, wastewater and bioresources base costs post UQ challenges (with various additions or deductions – see paragraphs 4.151 and 4.152) However, these comparisons typically only reflect part of total base costs given:

- (a) a number of evidence-led adjustments are made, first by Ofwat at the PR24 FD and then by the CMA at this redetermination to water and wastewater post UQ challenge predicted costs to obtain the final water and wastewater base allowances from which actual expenditure will need to be funded (including frontier shift; CACs; and sector wide adjustments) which are applied inconsistently in the Disputing Companies comparisons; and
- (b) base costs also include a number of other elements such as retail as well as unmodelled costs (eg business rates, abstraction charges, etc).

4.1104 Furthermore, sub-dividing the base costs into various elements for comparison purposes may be inconsistent with a totex price control. The price control largely does not allocate base cost allowance to certain areas or activities (albeit there are some PCDs attached to some areas of base costs). Therefore, in principle companies have flexibility over how to spend their allowances.

4.1105 The analysis that we set out in this section represents a broad sense check to see if our final determination base allowance allowances appear reasonable in the context of recent real world industry outcomes. It also sets out at a high level how and why our final determination differs from the Ofwat PR24 FD. Taking into account this analysis we then consider if there is any clear evidence of underfunding that would justify applying an alternative to the UQ efficiency challenge.

AMP7 performance

4.1106 As the Disputing Companies correctly point out, the industry substantially overspent PR19 base allowances during AMP7. Ofwat's 2024-2025 performance report shows that the industry overspent its water and wastewater modelled based totex allowances by 13.5% over AMP7, with 15 of the 17 companies overspending their allowances.¹³⁸⁶

4.1107 Substantial overspend of cost allowances has not historically been the norm. For example, in AMP6 water companies overspent their wholesale totex allowances by only 0.8%, with 9 out of the 17 companies underspending their allowances.¹³⁸⁷

4.1108 The overspend in AMP7 can partly be explained by temporary factors such as the substantial shocks caused by COVID-19 and Russia's invasion of Ukraine. This

¹³⁸⁶ Ofwat (2025) [Water company performance report 2024/25](#), Tab 'Base Modelled data'.

¹³⁸⁷ CMA analysis of data from Ofwat (2020) [Service delivery report model](#).

resulted in substantial input cost pressures that were not anticipated. Most notably energy prices increased at a substantially greater rate than CPIH.

4.1109 Ofwat identified higher than expected energy costs as a key factor in the AMP7 overspend (see paragraph 4.1080(a)). Based on analysis which set the energy costs equal to those in 2020-2021 to remove the increase in energy costs at the end of the period, Ofwat found that at a sector level the energy cost increase added £1,030 million to company overspend for water and wastewater over the period 2019-2024.¹³⁸⁸ This was equal to 22% of the industry's £4,685 million total overspend of water and wastewater base allowances.¹³⁸⁹ The CMA replicated this analysis for AMP7 based on data from Ofwat's latest performance report and its 2024-2025 blind year reconciliation data.¹³⁹⁰ This analysis showed that energy cost increases accounted for £1,378 million or 25% of industry overspend of £5,417 million of modelled water and wastewater base allowances.¹³⁹¹ Water companies will be better protected from energy price shocks during AMP8 due the energy price true up. Equally customers will be protected if energy prices turn out to be lower than forecast.

4.1110 Ofwat also identified Southern Water's additional investment at water and wastewater treatment works, made to address water quality risks and improve wastewater treatment works compliance, as a significant contributor to industry overspend (see paragraph 4.1080(c)). Southern said that this investment was largely 'unforeseen' and driven by enforcement orders from the DWI and adverse weather conditions.¹³⁹² In its 2024-2025 performance report, Ofwat said:

Southern Water decided to overspend on capital maintenance to improve operational performance and compliance. This expenditure was related to enforcement orders and HazRev [Hazard Review] audits issued by the Drinking Water Inspectorate, schemes to prevent pollutions and improve flow compliance at treatment works as well as additional capital maintenance to improve asset health. In the PR24 period, we would expect base expenditure to return to a more sustainable level.¹³⁹³

¹³⁸⁸ Ofwat (2025) [Response to expenditure allowances - cost adjustment claims](#), paragraph 9.25; Ofwat (2025) Response to SoC's, supporting document '[OF-CA-081] PR19 Spend versus allowance energy uplift'.

¹³⁸⁹ CMA analysis of data from: Ofwat (2025) Response to SoC's, supporting document '[OF-CA-081] PR19 Spend versus allowance energy uplift'.

¹³⁹⁰ Ofwat (2025) [Water Company Performance Report 2024-25](#); Ofwat (2025) Blind year adjustment data.

¹³⁹¹ CMA analysis of data from: Ofwat (2025) [Water Company Performance Report 2024-25](#); Ofwat (2025) Blind year adjustment data.

¹³⁹² Southern (2026) [Response to Working Paper](#), paragraphs 40–42, p10.

¹³⁹³ Ofwat (2025) [Water Company Performance Report 2024-25](#), p43.

- 4.1111 Southern overspent its base modelled water and wastewater allowances by £1,461 million (or 55%) during AMP7, accounting for 27% of the total industry overspend.¹³⁹⁴
- 4.1112 In terms of outcomes performance, while there has been widely publicised high profile failure in certain areas and by certain companies, the broader picture is one of stable or improving performance in outcomes metrics over AMP7. Ofwat's 2024-2025 performance report shows:
- (a) improvements in leakage volumes (9% reduction); water quality compliance risk index (34% improvement); unplanned outages as % peak production capacity (2 percentage point reduction - a 52% improvement); number of mains repairs per 1,000km of main in response to leak or burst (6% reduction); sewer collapses per 1,000 km of sewer main (36% reduction) and internal sewer flooding incidents per 10,000km of sewer main (29% reduction); and
 - (b) declining performance for average duration water supply interruptions (8% increase); and the number of pollution incidents of (27% reduction).¹³⁹⁵
- 4.1113 Although not one of the outcomes measures included in the PR19 final determinations, one of the most high-profile areas of service failure has been storm overflows which increased substantially over AMP7.¹³⁹⁶ At PR24 a new performance commitment was introduced for storm overflows, with targets to reduce overflows across the industry by 45% by 2029, and the PR24 FD included £11.3 billion of enhancement spending to fund improvements.¹³⁹⁷
- 4.1114 Asset renewal data is only available for a subset of assets. As Figure 4.26 shows asset renewal rates for water and sewer mains have been below long-term sustainable rates over AMP7 – particularly for water mains and gravity sewers. Average AMP7 renewal rates for water mains, gravity sewers and sewage pumping mains imply asset lives of 728, 1,055 and 348 years respectively – well in excess of reasonable expectations of their true useful asset lives. Whilst the low rates of asset renewal observed in AMP7 may be in part due to some of the temporary factors discussed above, there appears to be a longer-term downward trend in renewal rates for water mains and gravity sewers.

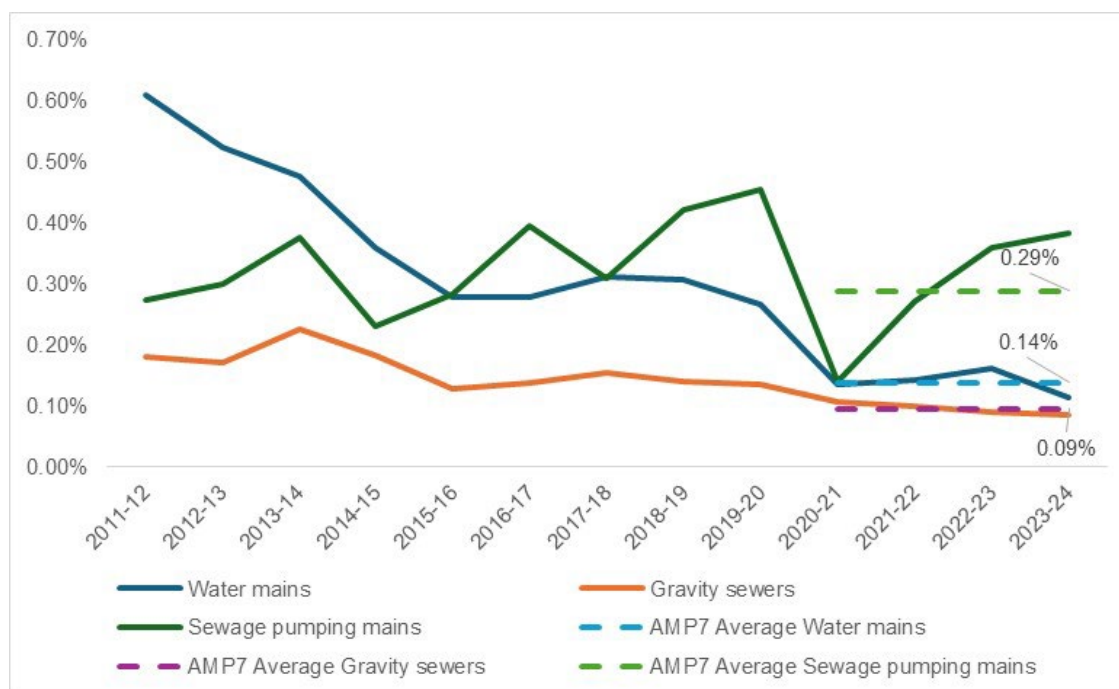
¹³⁹⁴ CMA analysis of data from: Ofwat (2025) [Water Company Performance Report 2024-25](#); Ofwat (2025) Blind year adjustment data.

¹³⁹⁵ Ofwat (2025) [Water Company Performance Report 2024-25](#).

¹³⁹⁶ National Audit Office (2025) [Regulating for investment and outcomes in the water sector](#), paragraph 1.12, Figure 2; Ofwat (2019) [PR19 Final determination: Delivering outcomes for customers policy appendix](#), Table 3.1.

¹³⁹⁷ Ofwat (2024) [PR24 Final Determinations: Delivering outcomes for customers and the environment](#), p155; Ofwat (2025) [PR24 Final Determinations: Expenditure allowances](#), pp5–6.

Figure 4.26: Renewal rates for water and sewage mains



Source CMA analysis of data from Ofwat (2025), Response to SoC, supporting document 'RtSoC CMA Source Databook', tabs 2, Figure 7, 11, Figure 10 and 11, Figure 11.

4.1115 Overall, the high-level picture of AMP7 performance is one of significant overspend driven – at least in part – by temporary cost pressures, broadly stable or improving performance and low and/or declining rates of asset renewal.

4.1116 The Disputing Companies and Ofwat presented two contrasting explanations for the industry's AMP7 performance.

- (a) The Disputing Companies said that this is evidence of underfunding as companies are unable to achieve the stretching costs and outcomes targets.¹³⁹⁸
- (b) Ofwat said that the overspending/underperformance is mainly due to unforeseen cost increases during PR19 – notably energy costs – and stretching leakage targets.¹³⁹⁹ The stable or improving asset condition and performance, despite low rates of renewals and replacement of water and sewerage mains, may indicate that companies are employing shorter term fixes to maintain the life of the asset or to meet performance commitments.¹⁴⁰⁰

4.1117 Our view is that both explanations broadly fit the high-level observations of company performance over AMP7. These observations do not provide clear

¹³⁹⁸ See for example Anglian (2026) [Response to Working Paper](#), paragraph 6; [Wessex SoC](#), paragraph 8.22.

¹³⁹⁹ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.18.

¹⁴⁰⁰ Ofwat (2025) [Response to expenditure allowances - addressing asset health](#), paragraph 3.27.

evidence to support a view that companies are systematically underfunded, nor do they provide definitive evidence that levels of base funding are sufficient over the long-run. However, it is clear that rates of renewal for some assets will need to increase going forward.

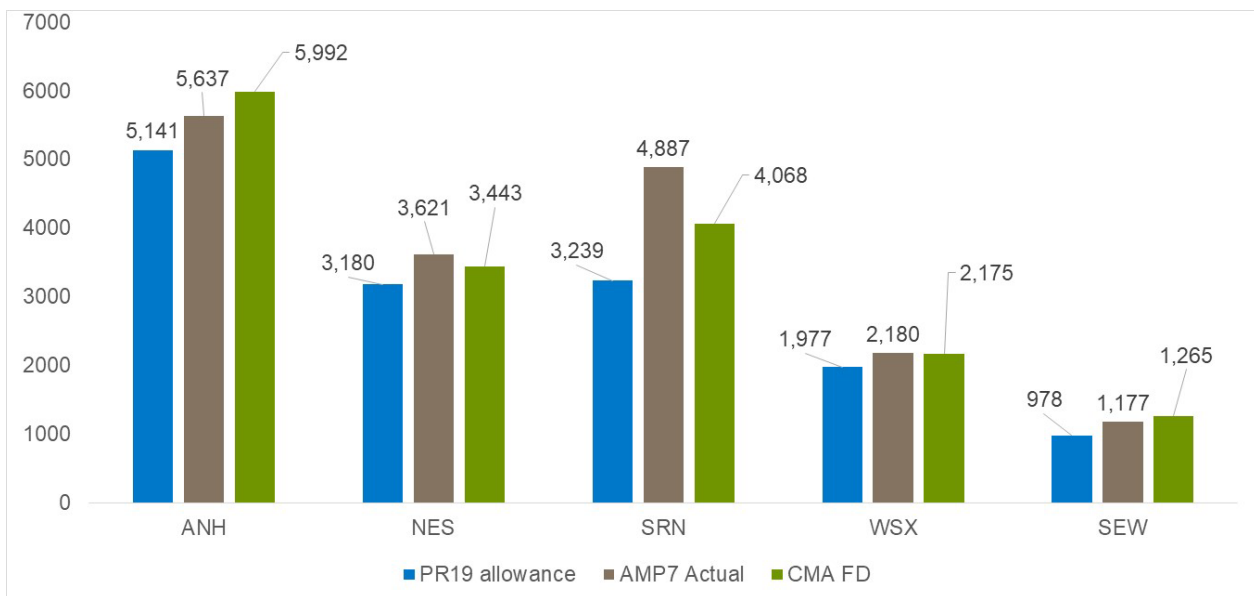
4.1118 At PR24 FD companies received some additional allowances to increase renewals for some assets going forward, through sector wide adjustments (which we have retained and increased – see Table 4.1). We also note that the industry may receive additional funding through the CCP to increase renewal rates for some assets towards more sustainable levels. In addition, as we set out in paragraph 4.240, we have considered whether it may be appropriate to facilitate making additional allowances where asset health CAC claims may not fulfil the Ofwat CAC criteria, but where companies can show the CCP would not cover the relevant assets and that there are immediate critical investment needs. None of the CAC claims we assessed demonstrated this.

Comparing our final base cost allowances to actual expenditure

4.1119 Figure 4.27, Figure 4.28 and Figure 4.28 compare our total base allowances (for water, wastewater, bioresources and retail, including CACs, sector wide adjustments, Frontier shift and RPEs) with PR19 allowances and total AMP7 actual expenditure. They show that:

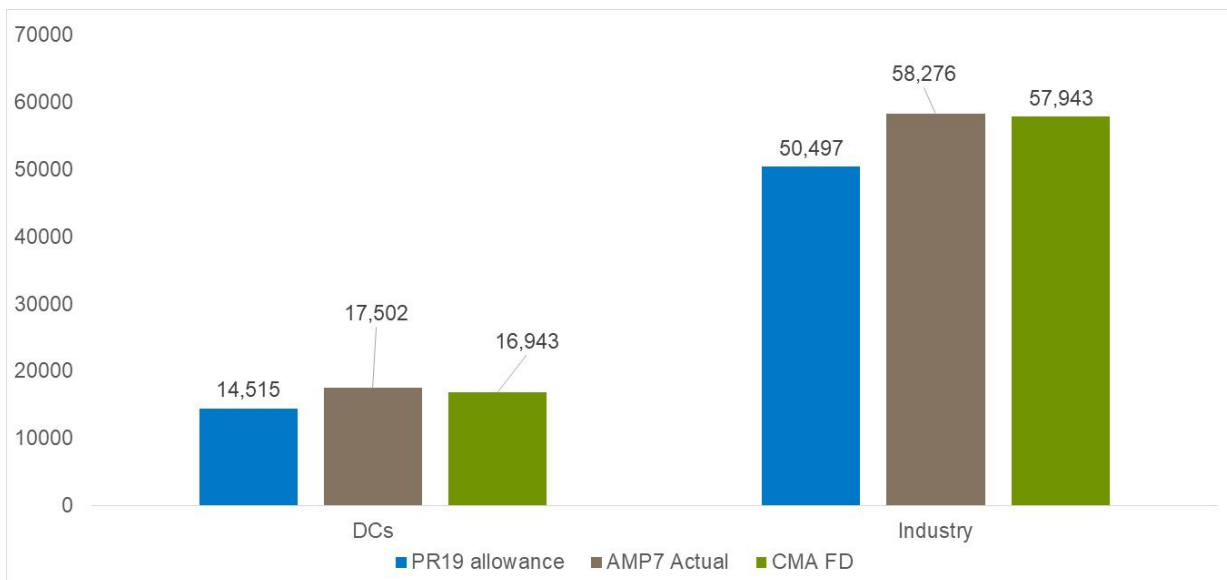
- (a) total industry allowances based on CMA PR24 FD UQ are slightly below AMP7 expenditure for the industry;
- (b) Disputing Company allowances are 3.2% less than actual AMP7 expenditure;
- (c) for three of the five Disputing Companies, CMA PR24 FD UQ allowances are approximately the same or higher than AMP7 actual spend, while for two Disputing Companies allowances are more than 1% below AMP7 expenditure; and
- (d) the allowances for all Disputing Companies and the industry are significantly above the allowances they received for AMP7 at the PR19 review.

Figure 4.27: PR19 allowances, AMP7 actual expenditure and CMA PR24 FD for individual Disputing Companies



Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and Ofwat (2025) [Water company performance report 2024/25](#), Base Modelled data Ofwat (2025) [Base costs-aggregator model \(Updated Metering Adjustment\)](#),

Figure 4.28: PR19 allowances, AMP7 actual expenditure and CMA PR24 FD for Disputing Companies and industry



Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and Ofwat (2025) [Water company performance report 2024/25](#), Base Modelled data; Ofwat (2025) [Base costs-aggregator model \(Updated Metering Adjustment\)](#).

Table 4.32: Percentage difference between CMA PR24 FD total base allowances (inc. CACs, frontier shift and RPEs) and PR19 allowances/AMP7 actual expenditure

<i>Company</i>	<i>CMA PR24 FD UQ base allowance vs. PR19 allowance</i>	<i>CMA PR24 FD UQ base allowance vs. actual expenditure AMP7</i>
Anglian	16.5%	6.3%
Northumbrian	8.3%	-4.9%
Southern	25.6%	-16.8%
Wessex	10.0%	-0.2%
South East	29.3%	7.5%
Disputing Companies	16.7%	-3.2%
Industry	14.7%	-0.6%

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#) and Ofwat (2025) [Water company performance report 2024/25](#), Base Modelled data; Ofwat (2025) [Base costs-aggregator model \(Updated Metering Adjustment\)](#).

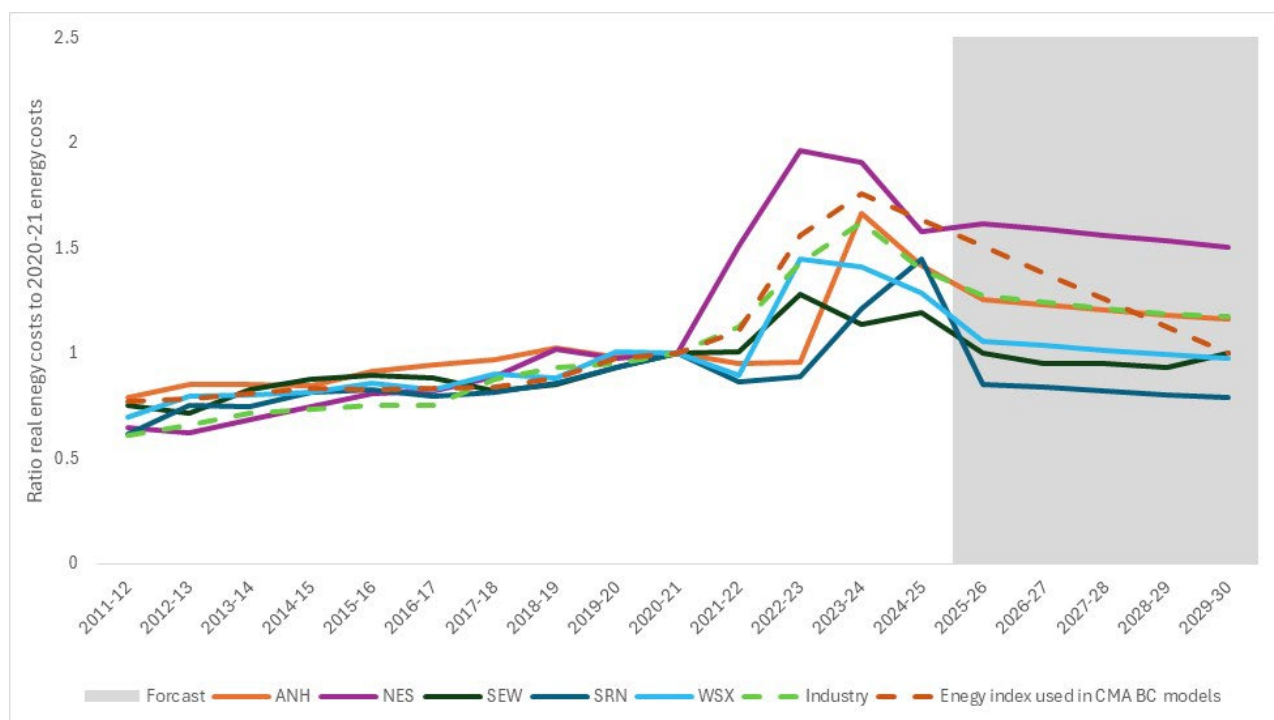
4.1120 The differences between companies reflect the different levels of assessed efficiency between companies in our base models and also our assessed CACs.

4.1121 Of the two Disputing Companies which receive over 1% lower allowances than actual AMP7 spend under the CMA PR24 FD UQ: one is Southern which – for reasons discussed above – is a significant outlier; and the other is Northumbrian. In the case of Northumbrian, the comparison between AMP7 actual spend and CMA PR24 FD UQ allowances for AMP8 may be distorted to some extent by the relatively high energy costs Northumbrian incurred over AMP7.

4.1122 Figure 4.29 shows that over AMP7 Northumbrian experienced a significantly higher increase in its energy costs after 2020-2021 than all of the other Disputing Companies and the industry on average. Its energy costs also increased at a greater rate than the energy price index that we use in our base cost models. If we remove the impact of Northumbrian's relatively high energy costs on its AMP7 spend, then its costs are much closer to the CMA PR24 FD UQ for AMP8. We do this by adjusting its AMP7 spend to reflect a level of energy costs that it might reasonably be expected to incur over AMP8, ie the average level of energy costs relative to 2020-2021 energy costs forecast in water companies PR24 business plans. Our analysis shows that if Northumbrian's energy costs over AMP7 were at the same level as the industry average business plan forecast, then the difference between its AMP7 actual costs and the CMA PR24 FD UQ for AMP8 is minus 2.1% rather than minus 4.9%.¹⁴⁰¹

¹⁴⁰¹ CMA analysis of Ofwat (2025) [Water company performance report 2024/25](#), Base Modelled data and Ofwat (2025) [Ofwat 2024-25 blind year reconciliation data](#).

Figure 4.29: Ratio of annual water and wastewater energy costs to 2020-2021 energy costs



Source: CMA analysis Ofwat 2024-2025 blind year reconciliation data.

4.1123 The comparison of allowances and actual expenditure set out above should be treated with a degree of caution. Making direct comparisons between expenditure and allowances across different AMPs can be difficult for a number of reasons, including those set out below.

- (a) Differences in the scope of base costs - the main differences between AMP7 and AMP8 allowances are the exclusion of site-specific developer services costs and growth at sewage treatment works costs from the base cost models.¹⁴⁰² These costs would be included in actual AMP7 water and wastewater base expenditure but would not be accounted for in base allowances. Industry expenditure on growth at sewage treatment works was £1.32 billion in AMP7.¹⁴⁰³ Some Disputing Companies have argued that sector wide adjustments should be excluded from any comparison of AMP7 expenditure to AMP8 allowances because they account for a 'step change' in base activities compared to AMP7 (see paragraph 4.1070(a)).
- (b) Differences in assumptions about energy costs – our AMP8 allowances assume a lower level of energy costs compared to prices during AMP7. At the end of AMP8 companies or customers will be compensated by off-model true-ups if energy prices during differ from the forecast we use to set base allowances.

¹⁴⁰² Ofwat (2024) [PR24 Final dimensions - Expenditure allowances – base cost modelling decision appendix](#), p11.

¹⁴⁰³ CMA analysis of Ofwat (2025) Blind year adjustment data.

- (c) Differences in quality over time – as noted in paragraph 4.1112 companies have broadly been delivering stable or improving outcomes performance. Neither our models nor Ofwat's directly take into account any additional costs associated with improved outcomes performance. AMP8 PCLs have largely been calibrated to reflect actual performance achieved during AMP7 therefore the AMP8 starting point will reflect what was actually achieved with AMP7 spend.¹⁴⁰⁴ However, companies will be required to achieve some improvements in outcomes performance from base expenditure over AMP8.¹⁴⁰⁵
- (d) Southern outlier – as noted in paragraph 4.1110 Southern was a significant outlier for overspend of base allowances compared with the rest of the industry in AMP7. This overspend was in response to unusual and unexpected circumstances, and therefore might not be expected to be repeated in AMP8. The size of Southern's base overspend was such that it can distort comparisons between AMP7 spend and CMA PR24 FD allowances which are aggregated across Disputing Companies or the industry.

4.1124 In addition, the comparison will differ depending on the which elements of base costs are being compared (eg whether bioresources costs, retail costs and unmodelled costs are included in the comparison). Furthermore, the comparison between actual spend across the industry and CMA allowances must be caveated by the fact that had water companies other than the Disputing Companies sought CMA redeterminations, their allowances may have been different as a result of decisions we would have made. For example, they may have received additional allowances through CACs or sector wide adjustments.

4.1125 Overall, the analysis set out above suggests that CMA PR24 FD total base allowances are broadly consistent with total base AMP7 expenditure at the industry level. Our allowances for Anglian, South East and Wessex are either broadly in line with AMP7 spend or above it. For Southern and Northumbrian allowances are below AMP7 spend but there is evidence of company specific circumstances that explain this. We do not therefore think that this analysis alone raises major concerns that would support departing from the UQ challenge, and in any case we have explained above why AMP7 comparisons need to be treated with some caution.

Comparing our final determination allowances to Ofwat's PR24 FD

4.1126 Table 4.33 and Figure 4.30 show the total base cost allowances after frontier shift and RPEs under CMA PR24 FD UQ compared to Ofwat's PR24 FD. Across the

¹⁴⁰⁴ Ofwat (2024) [PR24 final determinations: Delivering outcomes for customers and the environment](#), Table 5, p10.

¹⁴⁰⁵ Ofwat (2024) [PR24 final determinations: Delivering outcomes for customers and the environment](#), p23.

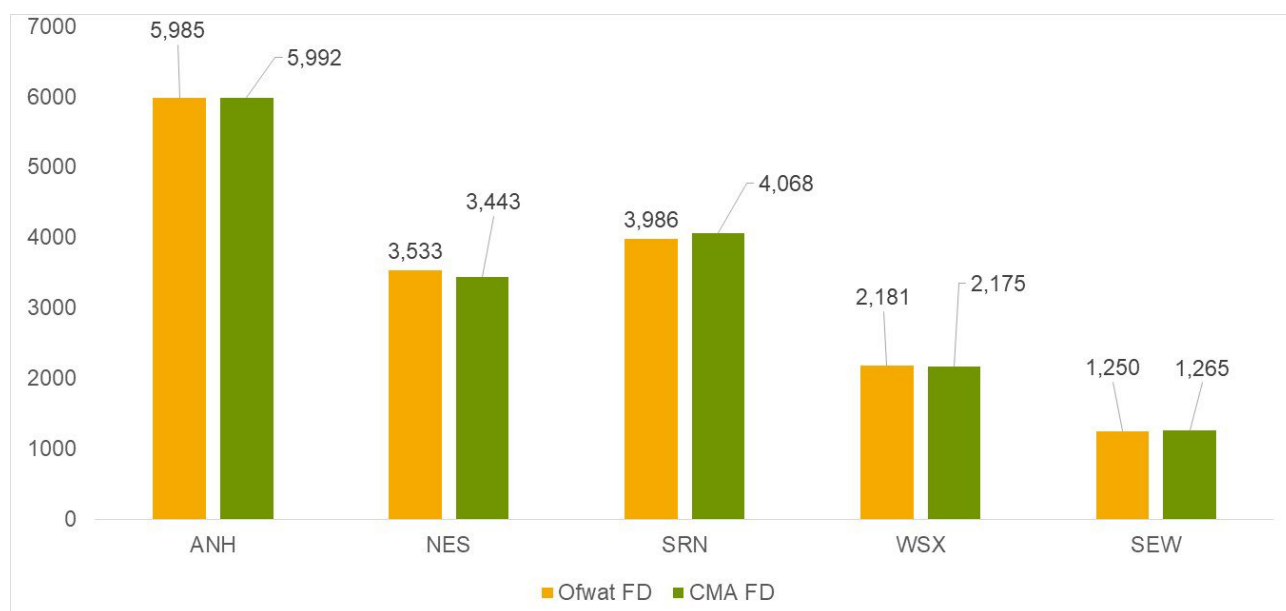
industry, total CMA PR24 FD UQ allowances are 3% lower than base allowances set out in Ofwat's PR24 FD. For Disputing Companies, the differences range between plus 1% and minus 3%. This suggests that the overall CMA PR24 FD allowances are broadly consistent with Ofwat's PR24 FD. The key reasons why the differences in Table 4.33 are lower than those in Table 4.30 (which looks at only water and wastewater predicted costs after the UQ challenge) are:

- (a) the inclusion of retail, bioresources and unmodelled costs;
- (b) the lower level of frontier shift we apply compared with Ofwat; and
- (c) additional allowances we provide due to our decisions on various CACs and sector wide costs adjustments.

4.1127 We also note that we have slightly reduced the level of outcomes stretch that Disputing Companies are expected to achieve with base funding as part of this final determination (see chapter 6 (Outcomes), paragraph 6.9).

4.1128 Again the industry level comparison must be caveated by the fact that had water companies other than the Disputing Companies sought CMA redeterminations their allowances may have been different.

Figure 4.30: Ofwat PR24 FD and CMA PR24 FD total base cost allowances



Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#); Ofwat (2025) [Base costs-aggregator model \(Updated Metering Adjustment\)](#).

Table 4.33: Base cost total allowances after RPEs and frontier shift (£m 2022/23 prices)

Company	CMA PR24 FD minus Ofwat PR24 FD (£m)	CMA PR24 FD UQ compared to Ofwat PR24 FD (as a percentage of Ofwat's PR24 FD)
Anglian	7	0.1%
Northumbrian	-89	-2.6%
Southern	82	2.0%
Wessex	-6	-0.3%
South East	15	1.2%
Disputing Companies	8	0.0%
Industry	-1,993	-3.4%

Source: CMA analysis of Ofwat (2025) [PR24 FD models data](#); Ofwat (2025) [Base costs-aggregator model \(Updated Metering Adjustment\)](#)

Conclusion

4.1129 Econometric benchmarking and the catch-up efficiency challenge is a key tool that regulators have to help ensure that customers of monopoly suppliers do not overpay. Our view is that the evidence supports the application of a UQ efficiency challenge (as opposed to a less challenging efficiency benchmark) for the reasons set out below.

- (a) Any need for increased longer-term funding would be best addressed through the Ofwat AMP8 CCP and longer-term regulatory reform process, which would have the time and resources to develop robust comparable industry wide evidence base. This is the best way to facilitate proportionate additional funding where this is justified by robust evidence. The industry may receive additional funding through the CCP to fund additional spending on asset health in AMP8. In, addition, we have considered whether it may be appropriate to facilitate making additional allowances where asset health CAC claims may not fulfil the Ofwat CAC criteria, but where companies can show the CCP would not cover the relevant assets and that there are immediate critical investment needs. None of the CAC claims we assessed demonstrated this.
- (b) The modelling changes we have made should not prevent us from applying an efficiency challenge set at the UQ level where this results in more stretching efficiency challenge than the Ofwat PR24 FD. Our analysis shows our models better predict AMP7 costs (ie demonstrate a better in sample fit). It also supports the view that one of the main reasons for the increase in predicted costs across the industry is the inclusion of energy prices in our modelling. Overall, we consider the increase in predicted costs, and the consequential increase in the efficiency challenge to be well-grounded in observable input-price dynamics.
- (c) A challenge set at the UQ level is in keeping with most recent water regulatory decisions. However, we acknowledge that the level of challenge in

percentage terms set at the UQ level (7% for wholesale water and 6% for wastewater) sits at the high end of the range of recent decisions.

- (d) AMP7 performance does not provide compelling evidence to support a view that companies are systematically underfunded, nor does it provide definitive evidence that levels of base funding are sufficient over AMP8 or in the longer-run. However, it is clear that rates of renewal for some assets will need to increase going forward. We note that that the industry may receive additional funding through the CCP, building on the additional allowances received through sector wide adjustments at PR24, to increase renewal rates for some assets towards more sustainable levels.
- (e) The CMA total base allowances are broadly consistent with AMP7 actual expenditure but there are differences between companies. These differences largely reflect the different levels of assessed efficiency in our models. We do not therefore think that this analysis alone raises major concerns that would support departing from the UQ challenge, and in any case we have explained above why AMP7 comparisons need to be treated with some caution.
- (f) Adopting a lower efficiency benchmark than the UQ would risk customers overpaying where companies are inefficient by increasing costs to customers without resulting in corresponding clearly defined improvements.