CMA, via email to waterPR24references@cma.gov.uk

5 November 2025

Dear CMA,

We welcome the opportunity to submit our views on the PR24 provisional redeterminations, published on 9 October 2025.

Our comments focus solely on the base cost modelling approach that has been adopted by the CMA, where we have concerns over the model selection process and model performance. We have undertaken internal review of these models and engaged with Oxera, a consultant we use on economic matters including econometric modelling, to validate our findings.

Whilst we are not an appellant company, cost benchmarking is an integral part of the price review process and CMAs redeterminations, and it is therefore appropriate for us to submit our views on this area given potential future impacts on the sector.

Our comments are detailed in appendix 1 to this letter.

Yours sincerely,

Director of Economic Regulation
South Staffs Water

Appendix 1: CMA base cost models

Base cost models

We have several concerns at the choice of modelling approach that the CMA has adopted for its provision determinations. The large swings across the sector compared to Ofwat's models have not been explained, and the robustness from a fundamental engineering and economics standpoint has not been evaluated.

Our concerns are as follows.

- **Significant swings in allowances and efficiency compared to previous or alternative modelling:** The CMA cites the improvement in Wessex's cost allowances as evidence that the new approach is valid and more consistent, given it was classed as efficient in historic Ofwat modelling. However, the new CMA models also significantly reduce allowances for both SSC and PRT (a 20% and a 17% reduction respectively), despite both companies historically being consistently classified as efficient as well, including by the CMA's own efficiency assessment during the PR19 redeterminations[1]. These substantial changes in assessed cost efficiency are unexplained and counterintuitive, and cast doubt on the validity or bias of the model selection process more generally.

- **Limited model choice and triangulation:** The small number of models adopted (just two in the wholesale water price control, without any top-down wholesale water model) increases the risk of inappropriate structural form or bias, as there is no triangulation taking place across several models to smooth out any outliers. Ofwat justifies triangulating across a range of models with different cost drivers and levels of cost aggregation to reduce the risk of error and bias in any one model, an approach supported by the sector.[2]

    "Disaggregated cost models can enable a wider range of cost drivers to be captured in our cost assessment approach. But more aggregated models capture interactions between different services and mitigate potential cost allocation issues."

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[1] CMA (2021), 'FM_WW2.xlsx', March, table 'Efficiency', cells T40:U58.
[2] Ofwat (2024), 'PR24 final determinations : Expenditure allowances – base cost modelling decision appendix', December, page 13.

This point was also noted recently by Ofgem in its RIIO-ED3 Sector Specific Methodology Consultation.[3]

We propose to maintain the use of different modelling approaches to ensure efficient ED3 totex allowances are determined by a wide range of models. That helps to reduce the potential for error or bias in any one model. [...] That allows us to identify efficiency more accurately [...] Therefore, triangulation between alternative approaches helps to implement balanced benchmarking adjustments that better capture the unique characteristics of all 14 DNO regions."

- **LASSO:** The LASSO approach appears to be more suitable for large data sets where there is a choice between many explanatory variables. The water sector data does not meet these criteria.

  Firstly, the data set is small, comprising data from around 17 companies across about 13 years, which is also a panel data set (i.e. observations are for the same set of companies over time and thus not independent). It is our understanding from studying the code provided that the CMA has not taken account of the panel structure of sector data, which is a significant structural issue. It is particularly surprising that the CMA has returned to OLS models without offering any explanation, despite having concluded in its PR19 redetermination that "*a random effects model is the most appropriate estimation technique*".[4]

  Secondly the industry is arguably under-represented by appropriate explanatory variables rather than there being a choice of too many - there are significant elements of cost for which there is no explanatory variable available, such as asset condition, and several implicit geographical, demographical and historic factors which have influenced the asset base in operation today.

- **Multicollinearity:** The LASSO approach adopted by the CMA has selected multiple density cost drivers simultaneously in its models, this is not best practice as these will exhibit multicollinearity, making the interpretation of the coefficients difficult/unintuitive. A VIF test for multicollinearity, ran in R against the CMA models (OLS versions), demonstrates high levels of multicollinearity against these variables which confirms this hypothesis.

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[3] Ofgem (2025), 'ED3 Sector Specific Methodology Consultation - Cost assessment Annex', October, paragraphs 1.19 and 1.20.
[4] CMA (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations: Final report', 17 March, paragraph 4.27.

- **Density variables performance:** As well as the issue on multicollinearity, the CMA's treatment of population density in the water models departs from the well-established economic rationale regarding a 'U-shape' relationship between density and costs. While the CMA includes both linear and squared density terms in the models, the simultaneous inclusion of three distinct density measures appears to offset this, resulting in an effectively linear relationship that contradicts the economic expectation of higher costs in both very sparse and very dense areas. Material movements compared to the Ofwat FD appear to be driven by the 'outlier' positions of some companies in the weighted average density (WAD) LAD from MSOA, as shown in Table 1 below.

Table 1 Companies' ranking on WAD LAD MSOA versus impact of CMA PFs

Company	Ranking - WAD LAD from MSOA	Impact of CMA PFs compared to Ofwat FD (water)
Thames Water	1	-11.0%, fourth-largest reduction
Portsmouth Water	2	-17.0%, second-largest reduction
Affinity Water	3	-11.8%, third-largest reduction
South Staffs Water	5	-20.8%, largest reduction
Wessex Water	16	+19.9%, largest increase

Note: Since values beyond 2021/22 are estimated, we use the last actual observed value from 2020/21. Source: CMA (2025), 'WATER PR24 REFERENCES Provisional Determinations Volume 5: Appendices A–F and Glossary', October, Table D.5; Ofwat (2024), 'Base costs – water model 1.xlsx'.

The CMA has made high-level comments on the sign or economic rationale of all other explanatory variables in the TWD and WRP models (paragraphs D.14 and D.15 of Volume 5), but it has not provided any assessment or sense check to confirm whether the density variables capture the intended effect.

- **Energy index and costs:** We do not think the CMA's models correctly interpret the energy cost issue. When energy costs substantially increased between 2021 and 2024, many companies were still protected by existing hedged contracts, so many companies were not immediately exposed to these spikes in prices. The direct correlation between the energy index and water industry costs is weaker during this period and variable by company, for example while energy prices increased by 60% over AMP7, SES has experienced a 20% reduction in power costs between 2020/21 and 2024/25. When existing contracts expire companies are then suddenly exposed to current market rates for new contract periods, which are significant step change increases, for many companies coinciding with the start of AMP8. The Ofwat approach reflected this step change, adopting recommendations from CEPA[5].

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[5] Frontier Shift, Real Price Effects and the energy crisis cost adjustment mechanism, pages 29-30

- **Rising real expenditure trend:** The water sector has an upwards trend in real expenditure over the modelled period, which is due to many underlying factors including the increased pressures on spending driven by regulatory requirements, the outcomes framework, and real input price inflation in several areas. The CMA itself found that across the sector the price review cost allowances were being overspent. Without the underlying cost drivers to represent these factors, it will present as inefficiency due to omitted variable bias, or, with the addition of some form of index variable (such as the new energy index), these rising real costs may hook on to this instead. Therefore, the new energy index variable is likely to act as a proxy time trend variable, detecting the general trend of rising real expenditure, not necessarily the energy related expenditure alone. Adding a time trend alongside the energy index confirms this, as the energy index then becomes statistically insignificant.

- **Repeatability:** The LASSO approach is unlikely to be consistent over time. Even ignoring the shortcomings we have identified above, the LASSO approach is likely to select a different set of cost drivers if ran again on, for example, a data set including 2024/25, or a future data set at PR29. This leads to a repeatability risk over time, with the models being driven primarily by the statistical choices of a function at a snapshot in time, rather than by consistent engineering and economics led explanatory variable choices.

- **Cunliffe views:** Cunliffe found that Ofwat has relied too heavily on a data driven, econometric approach. The CMA models appear to perpetuate and exaggerate that approach, particularly with the LASSO approach and simplified two model set (for water), which is increasing reliance on fewer models with functional form issues as we set out above. While there remains scope for improvement - for example, in better considering asset health, and their interpretation of topography drivers - Ofwat's model selection process is more grounded in sound economic and engineering rationale. By contrast, the CMA appears to be placing less emphasis on company-specific circumstances and greater reliance on a data-driven approach, contrary to Cunliffe's recommendations.