Southern Water comments on main party submissions on base cost modelling

18th November 2025

from Southern Water

1. Introduction

1. Southern Water welcomes this opportunity to comment on the submissions made by the other main parties with respect to base cost modelling in their responses to the CMA's provisional determination (**PD**) (each such response being a **PDR**).
2. Given the CMA's requirement to limit this reply to 5 pages, we have not commented on every point made by the main parties; absence of commentary in this reply should not infer our disagreement to any point made by others.
3. In our PDR, we explained that we stand by our SoC remedies and the resulting base cost allowances that are required to deliver our AMP8 programme and fulfil our statutory duties. These allowances are derived from robust econometric models, subject to extensive industry and regulatory scrutiny. We highlighted significant issues with the CMA's proposed approach and proposed targeted changes to address the lack of confidence with the modelling results[1].
4. Importantly, we offered a solution to the CMA, pointing out the similar results derived through: (i) our SoC, which featured Ofwat's modelling, but included the cost adjustment cases (CACs) that recognise unique cost circumstances and (ii) the corrected LASSO modelling, with more moderate efficiency expectations (that is, moderated to take account of the reduction in certainty that can now be placed on the LASSO framework). In our view, these cross checks offer a comparison which could inform the CMA's FD as to the appropriate level of funding for botex in AMP8.
5. Given the significance of the uncertainty surrounding the LASSO framework caused by the errors identified and the inherent theoretical problems with LASSO, together with the importance of botex funding to maintaining key assets, we said the CMA should re-issue its base cost proposals and we should be given an adequate opportunity to respond substantively to those proposals.
6. In this reply, we highlight: (a) the commonality of issues raised by the disputing companies (DCs); (b) evidence provided by other DCs that supports our proposals; (c) our support for additional changes proposed by main parties; and (d) a way forward for the CMA if it chooses to move away from LASSO modelling.

2. Commonality of issues raised by DCs

7. We see that the **proposed solution in our PDR envelopes most of the comments made by DCs.** All DCs besides WSX highlighted significant issues with the CMA's use of LASSO to specify the base models. These are consistent with the points set out in our PDR[2] and our previous submissions regarding LASSO. While the DCs differ in how they seek to address these significant issues – most responses call for a return to Ofwat's modelling or a similar method of selecting modelling variables PLUS CACs, while others suggest that LASSO could be used, with considerable mitigations to its effect – we consider that our PDR proposals offer a pragmatic way forward that encompasses these varying positions.

[1] Southern Water, Response to the CMA's PR24 Provisional Determination, p66.
[2] Southern Water, Response to the CMA's PR24 Provisional Determination, p56-59.

8. Despite noting these same significant issues, Ofwat's PDR supports the adoption of LASSO for base cost modelling. It says: *"we welcome the use of LASSO in developing the CMA's models and consider that it is a pragmatic approach for selecting models in the context of a time compressed redetermination."*

9. We have a number of serious concerns about Ofwat's latest position, which is in stark contrast with its previous position. That previous position is clearly set out in its response[3] to the CMA's approach and prioritisation document, summarised thus: *"We consider that LASSO would provide most benefit if used in conjunction with other important aspects of our model selection criteria, which would help to avoid perverse and unintuitive results".*[4] Until its PDR, Ofwat stuck by its FD approach to base model selection while recognising LASSO has scope to add value.

10. Ofwat has now abandoned that position. Its decision appears to have been driven by expediency rather than principle. Ofwat is now content with an outcome that results in lower overall base cost allowances because this will discourage frivolous appeals. This is despite having said in its FD that a 19% increase in base expenditure from PR19 to PR24 was needed to support delivery for the benefit of customers and the environment, as well as reflecting higher input price pressures and population growth.[5] In these circumstances, Ofwat's newly acquired views on base cost modelling should be treated with considerable caution by the CMA.

11. We agree with the other DCs that, since the corrected LASSO leads to significant reductions in allowances across the industry compared to Ofwat's FD, this makes the required increases in service performance unviable, especially given the widespread concerns with the sector's level of capital maintenance investment. The DCs present various options for how the CMA can address this serious concern, with a key proposal being that the CMA reverts to the Ofwat FD models but with amendments to reflect CACs and other adjustments proposed in SoCs.

3. Evidence provided by other DCs that supports our proposals

12. In our PDR, we set out a series of targeted changes that were necessary to be adopted by the CMA to give more confidence to the model results. We stand by these changes and the improved model outcomes.

Need for less stretching catch-up challenge

13. WSX[6] and NES[7] agreed with us that the CMA should reassess its catch up challenge, which was significantly stronger than the FD. Ofwat explained previously that it was important for the CMA to consider whether it remains achievable;[8] by contrast, Ofwat's PDR was silent, despite the significant increase in the challenge.

[3] Ofwat, Response to the CMA's Approach and Prioritisation document, Annex A.
[4] Ofwat, Response to the CMA's Approach and Prioritisation document, p11.
[5] Ofwat, PR24 final determinations: Expenditure allowances, p.19.
[6] WSX Water, PR24 CMA Redetermination: Response to Provisional Determination, page 4, para 4.6 (a).
[7] NES, Response to CMA Provisional Findings, pages 36-40, paras 100-112.
[8] Ofwat, Response to the CMA's Approach and prioritisation document, page 12.

14. NES considers a median level of challenge to be more appropriate and in line with the CMA's PR14 approach.[9] We would support this change as an alternative to our proposed moderation of the efficiency challenge calculation.

15. We also support SEW's point that the catch-up challenge will need to be revisited if the inclusion of 2024/25 costs result in a further lowering of allowances.[10]

Removal of APH due to data quality issues

16. Similar to NES, we are surprised that the CMA has implicitly decided that the data quality of all variables is sufficiently high for inclusion, given the issues raised concerning APH.[11]

17. We have previously explained our significant concerns that over a third of all APH company-submitted datapoints have been manually overridden by Ofwat using inconsistent methods with limited explanation behind this decision[12]. The imputed data differed across companies and across years and there were no clear trends with the maintained data points to support a consistent approach. When we instead use company-submitted data, the variable lost statistical significance in Ofwat's models.

18. ANH has pointed out with respect to the weighted average density measure, that three years of data (approximately 23% of the panel data set) were estimated by Ofwat. They explain that this: *"creates a more significant issue under the CMA's framework, which relies mechanistically on a data-driven approach to select explanatory variables, including these estimated proxies for density trends"*[13].

19. We agree with ANH that the CMA's proposed data-driven findings can be: *"heavily and unduly influenced by estimated data.*[14]*"* This issue is more relevant for the APH variable where a greater proportion of the data is imputed by Ofwat and there are less stable historical trends on which to base the imputation. This is evident as the R^2 for APH variable is 0.399, which is significantly lower than all other variables, including the weighted average density variable with the estimated data included. This further supports our recommendation to exclude APH from the candidate set for data quality reasons.

20. On network topography, ANH challenges why the CMA did not include alternative measures within the LASSO candidate set, which it claims would be selected. We understand that the CMA tested only for variables that were included in DCs' SoCs, rather than considering all potential variables that had been discounted by Ofwat previously. In any event, the evidence supporting the inclusion of these topography variables within the CMA's LASSO framework is not compelling, given that the resulting model includes all the various topography options, so may suffer from overfitting, and has a much worse RMSE than is the case if these alternative variables are excluded.

Removal of Economies of Scale at WTWs variable

21. Other DCs have noted the concerns we raised with respect to the sign of the coefficient of the Economies of Scale at WTW variable within the model. ANH explain

[9] NES, Response to CMA Provisional Findings, page 48, para 143.
[10] SEW, PR24 Redetermination: Response to the CMA's Provisional Determinations, page 21, para 2.54.
[11] NES, Response to CMA Provisional Findings, page 17, para 31.
[12] Southern Water, Focused Reply to Ofwat's response to DC' SoC, p3 and Base Cost hearing transcript, p34-35.
[13] ANH, PR24 CMA Redetermination: Response to Provisional Determinations, page 59, para 161.
[14] ANH, PR24 CMA Redetermination: Response to Provisional Determinations, page 59, para 162.

that this makes it difficult to review the CMA's assessment of the relationship[15]. NES note that there is instability in the signs of the WTW coefficient[16] which make it difficult to determine whether to include the variable in the models.

22. SEW suggest that the CMA should bring WATS into the candidate set of cost drivers in place of the WTW variable. This would be consistent with the method that Ofwat originally used to assess the economies of scale CACs brought by both South East and Southern. Whilst the CMA rely on Oxera's previous analysis on this issue to support the use of the WTWs variable,[17] Oxera themselves recommend that WATS would be a more appropriate variable to include in the model[18].

23. We have assessed the model results from including the WATS variable in the model. This leads to an improved model performance as evidenced by a lower RMSE. It also does not lead to the counterintuitive result of lowering the allowance of companies that previously had a CAC. This is clearly an important cost function relationship that should be included in botex allowances and, on that basis, we consider there is merit in including the WATS variable within the LASSO candidate set.

Use a better energy variable or address outside model

24. Other DCs share our view that including the energy term in the model does not address the original reasons for Ofwat's energy adjustment nor our specific claim. ANH is explicit that the CMA's approach counterintuitively leads to us having a lower 'energy adjustment' than at FD.[19]

25. Other DCs also share our concerns with the CMA's chosen energy variable and its interactions with scale. SEW note that this implies *"larger companies are relatively more labour and energy intensive than smaller companies[20]"* which is not borne out in operational reality. We proposed an alternative 'energy intensity' driver that explicitly mitigates these concerns[21].

4. Our support for additional changes proposed by main parties

RPEs should remain, even under the CMA's approach

26. Our PDR discussed the merits of the CMA including energy and wage terms in the model and why an ex-post true-up mechanism was still required, even if the CMA considered there was no need for an RPE[22]. This mechanism will protect both customers and companies if either energy or wage prices end up significantly different to forecast.

27. WSX[23], SEW[24] and NES[25] rightly point out that even if the CMA included these two input prices in the models, RPEs would still be needed to correct for ex-post outturn vs projections used to set allowances. The full original RPE adjustment is still needed for

[15] ANH, PR24 CMA Redetermination: Response to Provisional Determinations, page 52, para 144.
[16] NES, Response to CMA Provisional Findings, pages 114-115, para 375.
[17] CMA, PD, Volume 1, para 4.51(c).
[18] Oxera, Assessment of the CMA's base cost modelling in the PD: Prepared for SEW, pages 47-48.
[19] ANH, PR24 CMA Redetermination: Response to Provisional Determinations, page 42, para 115.
[20] SEW, PR24 Redetermination: Response to the CMA's Provisional Determinations, page 16, para 2.20.
[21] Southern Water, Response to the CMA's PR24 Provisional Determination, page 63.
[22] Southern Water, Response to the CMA's PR24 Provisional Determination, pages 75-76.
[23] WSX Water, PR24 CMA Redetermination: Response to Provisional Determination, page 6, para 4.12.
[24] SEW, PR24 Redetermination Response to the CMA's Provisional Determinations, page 21, para 2.55.
[25] NES, Response to CMA's Provisional Findings, pages 41-43, paras 115 -125.

unmodelled costs, the network reinforcement sector wide adjustment and any areas of modelled costs where the input price is not included in the final model[26]. The CMA proposals have set RPEs to zero across the entirety of base costs and this is inconsistent with the purpose of RPEs.

Regional wages need to be factored in

28. The LASSO model picks a wage driver when included as part of the candidate set, although there are issues in relation to the sign of the coefficient which we noted[27]. We requested that the CMA adjust for wage outside the models.

29. As an alternative, SEW and their advisors Oxera investigated including a detrended wage index in the LASSO model[28], which is intuitive. However, Oxera note similar concerns regarding the sign of the coefficient[29]. Oxera agree that a post-modelling adjustment may be required to account for regional wage differences.

30. ANH mistakenly imply that the inconsistent results from the inclusion of this wage driver suggests that *"Southern's claim was without merit"*[30]. In fact, the only conclusions that can be drawn from the inconsistent results that arise through the inclusion of a specific wage driver in the CMA's LASSO model relate to the average company. No conclusions can be drawn regarding company specific factors, which may necessitate a post-modelling adjustment. As Oxera rightly point out, this is why Ofwat set up the CAC process, as a company's estimated efficient expenditure requirements may be omitted or inappropriately reflected in the models.[31]

31. Our claim was developed with three alternative analyses to calculate the necessary adjustment precisely because this *"is a challenging issue and it is obviously something that Ofwat has struggled to reflect in the models"*[32]. It is helpful that the CMA has investigated including a driver in the LASSO models and it strengthens our claim that it is selected. The CMA should also consider the merits of a post-modelling adjustment, in line with the approaches explained in our CAC.

5. A way forward if CMA chooses to move away from LASSO

32. ANH and NES have proposed that the CMA should revert to using the Ofwat FD models. Our PDR explains that we are content for the CMA to use the original Ofwat FD modelling approach, as long as it robustly assesses our proposed base cost modelling changes and makes such changes as are required.

33. We set out in our SoC changes that would be required to Ofwat's FD base models to provide us with sufficient base allowance. These specific changes relate to the inclusion of the bands 1-3 and APH variables, the assessment of our regional wage and coastal population CACs and the energy adjustment[33]. We would expect the CMA to still robustly assess these under the Ofwat FD modelling framework.

[26] In the CMA's original proposed models, the wage variable was not selected in the WRP and Wastewater models.
[27] Southern Water, Response to the CMA's PR24 Provisional Determination, page 66, Footnote 117.
[28] SEW, PR24 Redetermination: Response to the CMA's Provisional Determinations, page 16, para 2.23.
[29] Oxera, Assessment of the CMA's base cost modelling in the provisional determination: Prepared for SEW, page 49.
[30] ANH, PR24 CMA Redetermination: Response to Provisional Determinations, page 47, para 130.
[31] Oxera, Assessment of the CMA's base cost modelling in the provisional determination: Prepared for SEW, page 31.
[32] Southern Hearing transcript, p38, lines 16-17.
[33] Southern Water, SoC, Base cost Errors 1, 2, 4, 5 and 7.