PR24 Redetermination

Submission on base costs modelling working paper

12 January 2026

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Overview

1.1 As we reach the end of the redetermination process, we have been reflecting on the reasons why we challenged Ofwat's PR24 Final Determination (**FD**). The decision to refer the determination to the CMA was not one that was taken lightly. AMP7 was extremely challenging for us operationally, as a small water only company, due to climate change causing significantly more frequent and severe weather events as well as unexpected persistent changes to usage patterns post Covid-19. These pressures were exacerbated by a regulatory regime that failed to adequately monitor and recognise the need for investment to maintain the capacity of the water supply system to absorb unforeseen volatility in customer demand. We see PR24 as an important turning point: an opportunity to reset and ensure that, going forward, we are equipped to meet the evolving needs for growth and the communities and customers we serve.

1.2 Ensuring we have adequate base cost funding is essential. Base expenditure includes both operating expenses and our capital maintenance, which forms a key element of maintaining, and increasing where possible, the capacity of the water supply system. Without adequate funding we will not be able to deliver the outcomes for customers that we committed to in our business plan and put at risk the water security of our customers.

1.3 We welcome the CMA's decision to engage in another round of consultation on its approach to a key component part of companies' 2025–30 base costs allowances. We encourage the CMA panel to continue to engage openly on this aspect of its decision in the time that is left until the CMA has to issue its final determination. This submission sets out our response to the CMA's current minded-to position.

1.4 We note from the outset that the CMA's updated proposed allowances are based on a noticeably different cost model to the ones that Ofwat used in its FD and the CMA used in its Provisional Determination (**PD**) three months ago.

1.5 After reviewing the CMA's new water cost model, we welcome the important continuity in the CMA's work as regards the:

(a) recognition that Ofwat's models omitted some of the factors that drive costs in our region;

(b) acknowledgement that regional wage differences are a relevant driver of costs that should be reflected in the allowances;

(c) better modelling of the effect that topography has on costs; and

(d) willingness to account for economies of scale at Water Treatment Works (**WTWs**).

1.6 However, we have significant concerns about the instability in other aspects of the CMA's thinking, especially as regards the CMA's sizing of the overall funding that the industry should have in the 2025-30 regulatory period.

1.7 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. The models proposed in the CMA's working paper would provide SEW with base funding of £825m for AMP8, which equates to a significant cut of £85m compared to the models proposed in our Statement of Case (**SoC**), and of £15m compared to Ofwat's PR24 FD models (without taking into account any Cost Adjustment Claims (**CACs**) or post-modelling adjustments).

1.8 As explained in our SoC, increased levels of expenditure on base activities are required in AMP8 to operate, maintain and replace a larger asset base at risk of deterioration in the absence of funding, while delivering higher levels of service and delivering resilience and water security. The base allowances proposed in the CMA's working paper are wholly insufficient to enable us to deliver the outcomes for customers that we committed to in our business plan, which our customers support. It is a matter of grave concern that the CMA panel appears not to have taken any steps to consider the impact on customers of such dramatic cuts to base allowances.

1.9   We set out our specific observations under three main headings below, covering:

(a)   the absence of triangulation and robust sense-checking in the CMA's work to date, and the difficulties that we have reconciling the basic shape of the CMA's proposed funding with a series of obvious reference points for the likely level of required expenditure;

(b)   the CMA's misapprehensions about the intrinsic impact of its treatment of energy prices on the upper quartile (**UQ**) challenge and consequent misstatement of future efficient costs; and

(c)   a number of other more general shortcomings that our consultants have identified after reviewing the working paper models.

1.10   In response to the CMA's invitation in the working paper, we also provide an updated CAC in respect of economies of scale at WTWs.

1.11   Finally, we summarise the steps that we think the CMA panel can now take in order to protect the interests of customers as it moves towards the finalisation of its FD allowances. In an ideal world, the CMA would address all of the shortcomings that we identify in this submission and the enclosed reports. However, we are also cognisant of the very short timescales that the CMA will be required to work to ahead of its statutory deadline and the likely impossibility of the CMA running a fresh, full consultation on a whole raft of changes to the work that it has published to date. In the circumstances, we think that a pragmatic way forward could be as follows:

(a)   First, we think that the CMA should take input prices out of its models and revert to a more conventional, stand-alone treatment of Real Price Effects (**RPEs**).

(b)   The CMA panel members should assure themselves that the FD final models are sufficiently robust for cost assessment purposes. This goes beyond whether the model can explain a significant proportion of historical costs and includes (among other things) the operational and economic interpretation of the models.

(c)   The CMA panel should then evaluate whether it should select an alternative benchmark to the currently proposed UQ benchmark, based on the confidence they have in the modelling work and the level of challenge that it presents to the Disputing Companies' submitted plans.

(d)   Finally, we request that the CMA provides in full for the £26m CAC that we are submitting for economies of scale at WTW (unless these cost pressures are explicitly captured in a robust suite of cost models (again, where robustness includes statistical, economic and operational performance, not just model fit)). In the alternative, if econometric methods are to be used to estimate a CAC, we present a worked example in **Annex 1** of how this could be implemented while making as few changes as necessary to the models presented in the CMA's working paper. Applying this across the CMA's Water Resources Plus (**WRP**) and Wholesale Water (**WW**) models results in an estimated CAC value of c. £23m.

Need for robust sense checking

1.12   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.

1.13   This contrasts with the more balanced, more iterative approach we have recommended in our submissions to the CMA, in which econometric work would inform the judgments that the CMA has to make, but blended with a much more obvious mix of expertise from other disciplines and with the ultimate decision on how much funding to give SEW being much more clearly based on the CMA panel's expert assessment of costs nationally and in our region in the round.

1.14   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 applicable to Ofwat and in the redetermination context. The setting of base cost allowances cannot be considered in isolation or as a purely technical, algorithm-driven exercise, but rather should be determined in light of the panel's expert assessment of the level of funding that a company needs to meet its obligations, including the stretching targets the companies need to achieve and the overall level of risk faced by companies as a result.

1.15   From a layperson's perspective, the headlines that emerge from the CMA's updated provisional decision are that:

(a)   the industry as a whole requires 7% less base funding for its wholesale water costs than Ofwat found was needed in its FD;

(b)   compared to companies' submitted business plans, it is appropriate to cut c. 8% of forecast base expenditure as wasteful and/or unnecessary, compared to a c. 1% challenge that Ofwat applied at PR19;

(c)   companies will collectively need to spend 4% less in AMP8 than they have in the last five years (2019/20 to 2023/24). Given the expected population growth over this period, this equates to a reduced spending per property of c. 8%.[1]

1.16   Focusing directly on SEW's position, we also do not see how the panel has satisfied itself that we have sufficient funding to meet the challenges that we face in our region during the AMP8 period. In our specific case:

(a)   the CMA has cut £85m of base funding from the models presented in our SoC request, equivalent to c. 9%, or c. 185km of mains renewals;

(b)   the CMA's modelling assumes that we can spend c. 8% less base expenditure by the end of AMP8 than we did in 2022/23, before the application of frontier shift.

1.17   We do not see how this is a picture that makes sense for the sector or for SEW, given all the CMA has seen and heard in the last nine months. The CMA has received compelling evidence from companies and from Ofwat about the pressures that have been placed on base costs from rising input prices, more stretching performance commitments and higher capital maintenance requirements. This is not an industry in which companies have a track record of not spending the costs that they asked for in business plans. And yet the CMA is saying again in its working paper that it is proposing to make an unprecedented cut to companies' funding requests.

1.18   The disconnect in the working paper base cost allowances from the reality that we face as companies stems directly from the way in which the CMA has been placing undue reliance on very complex, very technical econometric modelling. In our view, the CMA has thus far fallen into the trap that the Independent Water Commission flagged in its recent report by treating the benchmarking of costs primarily as an academic exercise that generates a 'perfect answer' and by failing to recognise that there are limits on how precise and accurate any benchmarking framework – particularly a framework that purports to predict efficient costs via a single equation – can be.[2]

1.19   Unfortunately, the working paper reflects the procedurally flawed nature of the CMA's process to date by demonstrating the CMA's lack of engagement with the substance of many of the Disputing Companies' arguments about Ofwat's base cost models. Instead, the CMA has sidestepped the issues raised by coming up with wholly new models which only – at most – tangentially address Disputing Companies' positions while changing elements neither the companies nor Ofwat have raised.

1.20   As such, retaining the CMA's base costs allowances as currently set out would leave SEW insufficiently funded to meet its statutory obligations and would result in a breach of the financing

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[1]   Note that this *excludes* the impact of the CMA's frontier shift target, which provisionally stands at an additional 0.7% p.a. challenge.

[2]   Independent Water Commission, 21 July 2025, Final Report, paragraphs 387 to 389 and 417.

duty to which the CMA is subject, which in itself would have adverse consequences for the perceived stability of the regulatory regime applicable to the UK water industry. Critically, this would run contrary to the interests of SEW's customers, in particular in our ability to make sufficient investments to preserve the health of our assets and to ensure resilience and water security.

1.21   Our strong view, therefore, is that the CMA panel needs to take steps in the next nine weeks to show to stakeholders that it is not using the models developed by the staff team in a wholly mechanistic way. This requires, in particular, that panel members demonstrate how, as experts (but not directly in the field of econometrics), and after triangulating to all relevant and available information, they are assured that SEW is adequately funded for the work that it needs to carry on with the job of supplying water to customers in its region.

### The CMA's treatment of energy costs is not a justification for a £3 billion cut in allowances

1.22   The CMA indicates in its working paper that it sees the reduction in cost allowances as a natural and expected consequence of its inclusion of an energy price term within its model specifications.[3] We fundamentally disagree with this explanation.

1.23   The CMA repeatedly confuses correlation and causation throughout its working paper, carrying over an error that was first made at the PD stage of the redetermination process.

1.24   The central issue here is that the industry's expenditure increased materially in AMP7, as evidenced by the significant overspend against allowances during this period. However, the energy price shock is only one driver of this increased expenditure. Indeed, Ofwat has highlighted to the CMA in this redetermination that of the 14% overspend incurred by the industry in AMP7, only c. 2% can be attributed to the increase in energy prices.[4] Similarly, a report commissioned by the Disputing Companies ("The treatment of energy input price inflation in base cost econometric models", the **EI Working Paper Report**) finds that energy prices explain only a minority of the increased expenditure in this period.

1.25   Meanwhile, the CMA's model assumes that *all* of the increased expenditure can be explained by energy prices. This is clear from the CMA's own analysis, which shows that the estimated AMP7 efficiency scores – i.e. the ratio of actual expenditure to a model's predicted level of expenditure – average to 1.10 in Ofwat's models but cluster around 1 following the CMA's addition of its energy price term. Figure 1 below reproduces figure 3.2 in the CMA's working paper.

(NB: in Figure 1 below, a value of more than 1 indicates that models fail to explain a portion of companies' out-turn expenditure and a value of less than 1 indicates that the models over-predict companies' expenditure. A value of exactly 1 indicates that the models have good predictive power for the typical company in that year.)

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[3]   CMA, December 2025, Base Costs Modelling – Working Paper, paragraphs 2.12 and 3.22-3.23.
[4]   Ofwat, April 2025, PR24 redeterminations – expenditure allowances – addressing asset health, page 17.

Figure 1: Ratio of actual industry expenditure to modelled predicted expenditure[5]
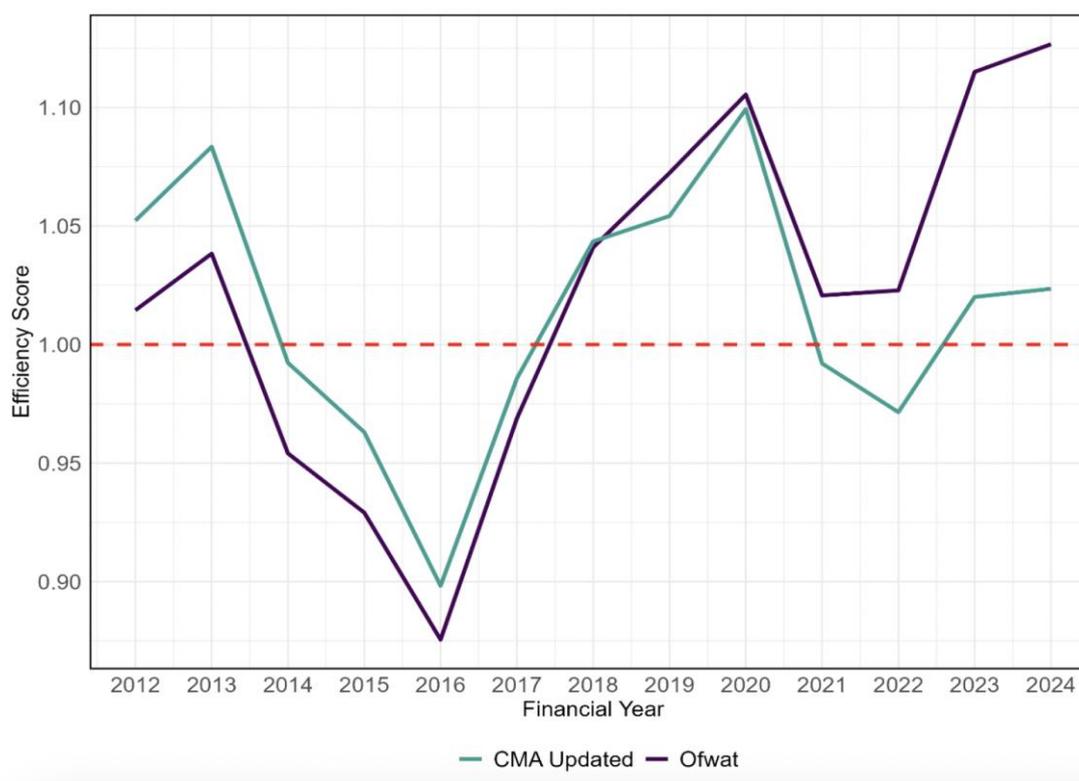
1.26   A comparison between the effect that one would expect higher energy prices to have on water company costs (as set out in paragraph 1.24 above) and the CMA's modelled relationship (as set out in paragraph 1.25 and, in particular, the movement between the purple line and the green line in Figure 1) is prima facie evidence that the inclusion of the energy price index must be capturing something other than (or in addition to) the direct impact of energy prices on base cost requirements.

1.27   As outlined in both the EI Working Paper Report and a separate Oxera expert report submitted alongside our response, 'Response to the CMA's consultation on base cost modelling' (the **Oxera Working Paper Report**), there have been several simultaneous cost pressures occurring over the same period that the energy price term is likely to be implicitly capturing. In particular, the industry has materially improved its quality of service in this period on a range of metrics, including leakage, supply interruptions, mains bursts and so on. These improvements have been achieved at additional cost, leading to overspend relative to allowances. The timing of this step-change in service performance with the energy price shock is coincidental, but, again, for the avoidance of doubt, it means that the model is capturing general *correlation* rather than *causation*.

1.28   This can also be seen in Figure 1 above. The CMA's analysis implies that the industry as a whole was inefficient in the final years of AMP6, particularly 2019/20. Ofwat has previously highlighted that the increase in expenditure in this year was driven by companies ramping up activity in order to meet the stretching PR19 performance commitments.[6] Importantly, this year comes *before* the energy price shock – for these years, the energy price index is not well correlated with service performance, so the industry appears less efficient. Only when the energy price level has 'caught up' to companies' delivery on service performance during the energy price shock do the efficiency scores appear more 'stable', to use the CMA's language.

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5   CMA, December 2025, Base Costs Modelling – Working Paper, figure 3.2.
6   For example, see Ofwat, January 2021, Reference of the PR19 final determinations: 2019/20 data for base cost models – response to working paper, paragraph 2.8.

1.29   The CMA will have noted CEPA's recommendation, made on behalf of Ofwat, that the energy price index should **not** be included in the base cost models, as it risks capturing unintended effects and may inadvertently act as a *time-trend variable*, explaining the profile of expenditure rather than energy cost pressures alone.[7] As the CMA will be aware, a model grounded in coincidental and spurious historical correlations offers a weak basis for predicting future expenditure requirements.

1.30   This spurious correlation particularly matters in the context of PR24 because energy prices are forecast to decline, while companies are being required to continue to improve service performance into AMP8. As the CMA's model coefficients implicitly capture costs associated with recent improvements in service performance through the energy price index, the resulting model outputs cannot be reliably extrapolated into the future, as these two effects are no longer expected to move together in AMP8.

1.31   Ofwat's approach to modelling energy prices (namely, the post-modelling adjustment and associated real price effect (**RPE**) true-up mechanism), following CEPA's recommendation, does not suffer from this conflation of effects, as there is no cost driver that implicitly captures these general trends in expenditure. By benchmarking over the last five years, the recent impact of all omitted factors on expenditure (including service performance, energy prices and maintenance activity) is implicitly baked into allowances via the starting benchmark. From this starting point, it is conceptually simple to make targeted post-modelling adjustments to reflect the expected structural differences between AMP8 and the last five years, including (but not limited to) the impact that energy prices will have on costs.

1.32   In summary, therefore, we disagree strongly with the CMA's assertion that that *"[t]he failure of Ofwat's econometric model [sic] to account for [rising energy prices] led to firms appearing more inefficient and as such resulted in a reduced UQ challenge"* or to consider that its own treatment of energy prices in and of itself *"explains the difference in post-UQ efficiency allowances between our updated models and Ofwat's"*.[8] Rather, the deliberate exclusion of energy prices from Ofwat's models[9] (as well as the models presented by Oxera alongside our submissions at this redetermination) allows the models to better capture the increased cost pressures the sector has faced in recent years and how they are expected to persist into AMP8, while simultaneously permitting the regulator and now the CMA to make a proportionate allowance for the effect that future changes in energy prices will have on costs.

Other modelling issues

1.33   The Oxera Working Paper Report also identifies a number of more general shortcomings in the CMA's econometric modelling. Oxera identifies the following issues, among other things:

(a)   the prioritisation of model fit above all other measures of model quality;

(b)   the CMA's apparent view that only one econometric model can be used when benchmarking costs at any level of aggregation;

(c)   the novel reliance on principal component analysis (**PCA**) to create unintuitive composite scale variables;

(d)   the continued difficulties that all stakeholders (including the CMA) face interpreting and validating the signs and magnitudes of model coefficients;

(e)   the claim that the magnitude of the UQ benchmark is broadly aligned with regulatory precedent; and

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[7]   CEPA, June 2024, PR24 Draft Determinations Frontier Shift, Real Price Effects and the energy crisis cost adjustment mechanism, page 30.

[8]   CMA, December 2025, Base Costs Modelling – Working Paper, December 2025, paragraph 2.12.

[9]   The inclusion of an energy price index in the models was considered but firmly rejected during PR24. For example, see CEPA, June 2024, PR24 Draft Determinations Frontier Shift, Real Price Effects and the energy crisis cost adjustment mechanism, page 30.

(f)   a lack of engagement more generally with the expert advice that the CMA received in the responses to its PD.

1.34   We especially wish to draw the CMA's attention to two specific aspects of Oxera's analysis and recommendations.

Input prices

1.35   As outlined above (paragraphs 1.29 to 1.31), the inclusion of an energy price index was considered but firmly rejected at PR24, in large part due to the very real conflation between the pure impact of energy prices on power costs and other, unrelated cost pressures (like improvements in service performance). Oxera's analysis provides further evidence to support this, including:

(a)   when applying the CMA's model to power expenditure only, the coefficients imply that power expenditure is more responsive to a change in the wage rate than a change in energy prices, despite power expenditure being driven entirely by energy usage and energy prices (i.e. no labour costs);

(b)   when power costs are excluded from the CMA's model, the energy price index is still retained by the LASSO procedure and has a positive coefficient, suggesting that the energy price index captures costs unrelated to power;

(c)   the inclusion of input price indices materially increases the uncertainty in companies' *forward-looking* cost predictions.

1.36   While our principal concern relates to the energy price index, the same conflation could occur with respect to the CMA's regional wage index – this variable is also generally trended upwards and may therefore also capture unrelated cost pressures. Nonetheless, differences in wage rates across England and Wales are clearly an economically relevant driver of expenditure differences between companies. As we highlighted in our PD Response, this could be modelled by *de-trending* the regional wage index, such that it does not capture general cost trends over time by construction but can still capture wage differences between companies.

Accommodating multiple similar cost drivers

1.37   The CMA correctly identifies in its working paper that including multiple highly-correlated cost drivers as explanatory variables within a regression makes cost models unstable and difficult to interpret.

1.38   Oxera has reviewed the CMA's proposed solution of combining cost drivers into composite scale variables, including the CMA's proposed use of PCA. Oxera highlights upfront that this is yet another instance in which the CMA is placing excessive reliance on technical mathematical methods where ideally the CMA panel should be exercising expert judgment. We agree with Oxera's assessment. As non-experts in detailed econometric modelling, we have found it extremely difficult in the time that we had to produce this response to understand the methods that the CMA has used in its working paper and we question whether the new approach to constructing composite scale variables has been adequately reviewed and validated by the panel prior to the publication of the working paper.

1.39   At a more fundamental level, the Oxera Working Paper Report explains that the criterion that the CMA uses when deciding what weight to give to similar cost drivers within a composite scale variable is the wrong criterion. Specifically, the CMA's weights are selected to maximise the variance of the resulting composite variable. The weights are therefore determined by the correlation among the cost drivers and indicate how much (and in what direction) that cost driver contributes to the common pattern of variation captured by the first principal component. From a cost assessment perspective, a good cost driver is, however, not necessarily one that has the highest variance, but one that has the strongest relationship with costs, both statistically and from economic and operational perspectives. Because of this, the PCA composite cost driver may

perform worse than any individual cost driver, or some other triangulation across models, even along the CMA's own model validation criterion (i.e. model fit).

1.40   Oxera presents evidence in its report that shows that this is precisely what one sees when one compares the CMA's single WRP model (which uses PCA to construct the density variable) to three separate models. The triangulated model fit is higher (i.e. the root mean square error (**RMSE**) is lower) than in the CMA's original model.

1.41   Oxera also identifies that the use of PCA:

(a)   makes the coefficients on composite density variables difficult to interpret and validate;

(b)   conflicts with and weakens LASSO as a variable selection tool; and

(c)   can force the use of variables that have not hitherto been regarded as a natural cost driver. This applies, in particular, to the CMA's forced selection of length of mains as an explanatory variable in the water cost model.

1.42   In any case, the CMA's proposal to use PCA appears to arise from a novel modelling principle that it has introduced in this working paper. Specifically, the CMA suggests that only a single model can be used to predict companies' efficient expenditure requirements. This principle is unprecedented, and we cannot see any justification for it in the CMA's working paper. Once this principle is set aside, the associated remedy is quite clear: if the CMA wants to account for multiple correlated cost drivers, it can do so via triangulation across models, consistent with the extensive precedent on the topic and the proposal outlined in the Oxera Working Paper Report.

1.43   For all these reasons, we do not consider that composite scale variables assembled via PCA should feature in the CMA's FD.

Summary

1.44   In its totality, the message coming from the Oxera Working Paper Report is very similar to the message that the CMA received in stakeholders' responses to the PD, namely that the CMA's modelling work is unorthodox and falls well short of the high standards that the CMA has set in previous redeterminations and in other aspects of its PR24 work.

1.45   We hope that the CMA panel will reflect on this feedback as it assembles its FD. The clear takeaway is that panel members ought to be very cautious about the weight they attach to the econometric modelling carried out during the redetermination and should step back and carry out an in the round assessment of the costs required to deliver services in our region.

Next steps

1.46   We recognise that time is now extremely tight, with only nine weeks to go until the CMA's statutory deadline.

1.47   As noted at the start of this submission, we are keen to work with the CMA in an open book way as it finalises its allowances.

1.48   Our view on the ideal way forward remains as we set out in our PD Response. In that submission we evidenced that the models we presented in our original SoC were validated by an improved application of the CMA's PD modelling. We therefore continue to take the view that the optimal way for the CMA to set its FD allowances is for it to implement the improvements to Ofwat's suite of models that we identified at the outset of the redetermination process.

1.49   That being said, we are concerned about the prospect of the CMA issuing another brand new set of models/equations after it has considered the responses to this consultation, with the attendant risk that there will be further large swings in individual company allowances and little or no time to resolve any new problems which the CMA's new work throws up.

1.50   In the circumstances, we think a pragmatic way forward could be for the CMA to proceed as follows:

(a)   First, we think that the CMA should take input prices out of its models and revert to a more conventional, stand-alone treatment of RPEs.

(b)   The CMA panel members should assure themselves that the FD final models are sufficiently robust for cost assessment purposes for future costs in AMP8. This goes beyond whether the model can explain a significant proportion of historical costs and includes (among other things) the operational and economic interpretation of the models.

(c)   The CMA panel should then evaluate whether it should select an alternative benchmark to the currently proposed UQ benchmark, based on the confidence it has in the modelling work and the level of challenge that it presents to the Disputing Companies' submitted plans.

(d)   Finally, we request that the CMA provides in full for the £26m CAC that we are submitting for economies of scale at WTW (unless these cost pressures are explicitly captured in a robust suite of cost models (again, where robustness includes statistical, economic and operational performance, not just model fit)). In the alternative, if econometric methods are to be used to estimate a CAC, we present a worked example in **Annex 1** of how this could be implemented while making as few changes as necessary to the models presented in the CMA's working paper. Applying this across the CMA's WRP and WW models results in an estimated CAC value of c. £23m.

1.51   We especially elevate the choice of benchmark from the suggestions in this list.

1.52   The selection of a benchmark from an econometric model or suite of econometric models essentially constitutes a value judgment on the part of the decision-maker as regards the robustness and reliability of the predicted level of expenditure.

1.53   In this case, there are multiple reasons for the CMA to show caution: the CMA's chosen models are new and untested; a single-equation model is necessarily going to be an imperfect description of the factors that drive each individual company's costs; and there have been unusually violent swings in the CMA's calculated allowances, and very little time for the CMA and consultees to process and understand each new step forward in the CMA's modelling.

1.54   Even more importantly, the industry cannot afford another five years of underfunding for essential operating and maintenance activities.

1.55   Given these considerations, we urge the CMA to set allowances which meet the kinds of sense checks we set out earlier, i.e.:

(a)   the overall challenge in the CMA's FD relative to submitted industry-level plans should be no greater than the degree of challenge that Ofwat and the CMA have historically tabled at the end of previous price reviews;

(b)   industry-wide funding for base activities must be materially higher than actual industry expenditure between 2019/20 and 2023/24 so as to recognise the simultaneous step up that there has been in input prices, performance commitments and capital maintenance requirements; and

(c)   the CMA's allowance for SEW must provide clear and obvious allowance for the region-specific factors (i.e. topography, regional wage levels, and economies of scale at WTW) that the CMA has identified were wrongly omitted from Ofwat's PR24 FD allowances.

1.56   Insofar as this requires setting a less stringent benchmark than the upper quartile, the CMA panel should regard this as a proportionate and necessary response to the circumstances it is dealing with in this specific review and for this specific group of companies.

Annex 1: Cost Adjustment Claim for Economies of Scale at Water Treatment Works

Background

1.57   It is well-established that there are economies of scale in the water and wastewater treatment processes. All of Ofwat's relevant wholesale wastewater models explicitly capture economies of scale at the sewage treatment works (**STW**) level. Meanwhile, there was no equivalent cost driver in Ofwat's water models, nor is there an equivalent cost driver in the CMA's proposed models. As we operate some of the smallest WTWs in the industry, ignoring this factor will underestimate our efficient cost requirements.

1.58   Ofwat has previously argued that the inclusion of its density variable implicitly captures some of the costs associated with operating small WTWs because density and WTW size is correlated in the historical data: companies operating in sparse regions typically have small WTWs and companies operating in urban regions typically have large WTWs. However, SEW is unique in that it operates in a region that is only slightly sparser than the industry average, yet has some of the smallest WTWs in the industry. This is because SEW serves an unusual area that can be described as 'densely populated rural'. Although SEW's area contains no major cities (Ashford, Eastbourne and Bracknell are the largest towns), the area is as densely populated as the areas of companies which do include major cities. This is a result of persistent population growth in south east England and the high land values which have led to ad hoc development. This patten of settlement results in a large number of small WTWs.

1.59   As such, our unique operating environment is not adequately captured through the density driver. Ofwat agreed with this rationale and provided a partial adjustment of c. £14m at the FD. Ofwat's adjustment was only partial, as the issue affects both WRP and WW costs, whereas Ofwat considered its impact solely within the WRP model and diluted the quantified effect through triangulation. As noted in our SoC, our dispute with Ofwat relates to the magnitude of the adjustment, rather than the need, which Ofwat has accepted.

Basis for continued cost adjustment claim

1.60   The basis for our CAC is that the CMA's working paper model still does not control for WTW size. It follows, for the reasons set out above, that any allowances derived from this model would under-remunerate the efficient costs we will incur during the AMP8 period due to our smaller-than-average treatment work size.

1.61   In putting forward this claim, we note that we do not have visibility of the model or models that the CMA will use for its FD. The CMA's working paper asks whether there are good reasons for excluding measures of WTW size from the cost models (paragraph 5.9(c) of the working paper). We consider that the best solution is to include measures of WTW size in the cost models directly, such that a further CAC is unlikely to be required. We note that the resulting model must be robust from economic, operational and statistical perspectives, meaning (at least) that all coefficients are directionally aligned with expectations. For example, the model presented by the CMA at the PD controlled for WTW size, but the coefficient was unintuitive (suggesting diseconomies of scale). In this model, a CAC would still be required. Meanwhile, a CAC is unlikely to be required in the models that Oxera presented alongside our response to the PD and this working paper, as the models robustly account for WTW size (as well as other characteristics).

1.62   However, in the event that this is not how the CMA constructs its FD, a cost adjustment will be required. We set out below how the CMA might need to calculate the value of this adjustment.

Overall approach to assessing the required size of the cost adjustment

1.63   The CMA outlines one approach to estimating the CAC, which involves amending the list of candidate cost drivers in the WRP model to include a measure of WTW size. Under the CMA's approach, the CAC is calculated as the difference in a company's predicted efficient cost allowance in a model containing WTW size and a model omitting WTW size. This is similar to the

approach Ofwat adopted at PR24, and one of the approaches we recommended in our SoC submissions.

Selection of additional explanatory variable

1.64   Responding to the CMA's query in paragraph 5.9(a) of the working paper, we consider that weighted average treatment size (**WATS**) is the most appropriate cost driver to capture WTW-level economies of scale. This was used by Ofwat to calculate the CAC at PR24 and both Ofwat and the CMA use an equivalent driver in the wholesale wastewater models.

Importance of selecting the right starting model

1.65   The points that we make in the main body of this response about good practice in model development and model selection apply equally to any econometric work that the CMA uses when calculating the required cost adjustment.

1.66   If the CMA were to proceed in the way set out at paragraph 5.8 of its working paper, and assuming that the CMA uses WATS as its chosen additional explanatory variable, we calculate that the resulting CAC value for SEW could be as low as c. £6m. This is significantly below what Ofwat applied (c. £14m) and our SoC request (c. £26m, with a range of c. £25m–£43m). We consider that the CAC is materially underfunded under the CMA's model, largely as a result of the following factors:

   (a)   First, the underlying WRP model on which the CAC is estimated (i.e. the WRP model presented in the CMA's working paper) is not sufficiently robust. In addition to the general modelling errors outlined in this response, the WRP model also has a negative coefficient on the regional wage index. In other words, the model predicts that companies operating in high-wage regions should have lower efficient costs, all else equal. This is a clear and unambiguous error that requires correction.

   (b)   Second, the CMA proposes to estimate the CAC based on the WRP model, despite setting allowances using WW models. We consider that this is somewhat inconsistent – while alternative models can provide useful cross-checks, the CAC should ultimately be based on the models used to set allowances

1.67   More generally, we consider that the use of econometric methods in this way to estimate a CAC value seems quite problematic. The CMA's assumption is that there should be no CAC if WTW size cannot be captured in the models (i.e. because it was not selected by LASSO). However, if WTW size can be robustly captured in the models, it begs the question of why these models are not being used to set allowances in the first place. In this framework, it is difficult to see how any CAC could be accepted. Therefore, we maintain that less mechanistic and more considered approaches should be considered to estimate the CAC if measures of WTW size cannot be included in the models. We have presented such methods to the CMA through various submissions.

Possible way forward

1.68   If econometric methods are to be used to estimate a CAC, we consider that the CMA should take the following steps, consistent with Ofwat's treatment of the issue at the FD but applied consistently across both WRP and WW costs.

   (i)   Underlying model(s): develop robust 'baseline' models that can be used to set baseline allowances. If these models do not control for WATS, proceed to (ii). If these models do control for WATS, then a CAC may not be required.

   (ii)   Include WATS: include WATS as an additional cost driver in the econometric models identified in (i). If the resulting models continue to be robust (e.g. the coefficient on WATS is aligned with operational expectations, as are other cost drivers), proceed to step (iii).

(iii)   CAC estimation: the CAC value can be determined based on the difference in our allowance between the models developed in (ii) and (i).

1.69   At this stage, we do not know what models the CMA will adopt for the final determination. Therefore, to aid the CMA, we present a worked example of how these steps could be implemented while making as few changes as necessary to the models presented in the CMA's working paper.

(i)   Underlying model(s): we treat the model presented by the CMA as given.

(ii)   Include WATS: when WATS is included in the WW model as an additional cost driver in the models, the coefficient is aligned with expectations. However, the coefficient on the regional wage index becomes negative. We therefore remove the regional wage index from both the underlying model in (i) and the model used to estimate the CAC in (ii).

(iii) CAC estimation: the difference in predicted cost allowances between (ii) and (i) is c. £21m.

1.70   If the CMA were to follow the same process to its WRP model as applied to the WW model, the estimated CAC value would be c. £23m.

Impact on other companies

1.71   The CMA has asked whether this CAC should be applied symmetrically (paragraph 5.9(b) of the working paper). If a post-modelling adjustment is considered instead of including WATS in the CMA's baseline model, it may be appropriate to apply it symmetrically.

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