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Sent by email

Date 04/05/18

Subject: Modelling consultation

Dear David,

This letter and its attachments comprise Southern Water's response to Ofwat's 'Cost assessment for PR19: a consultation on economic cost modelling' published on 29 March.

We welcome the level of collaboration and engagement on the development of models so far. The present consultation forms part of a wider process of engagement, including through the working group, which we have found very useful and transparent. As noted in the consultation document, this is a complex area of work, requiring careful consideration in approach and use of judgement and welcome the opportunity to contribute.

Reflecting the challenges, we have not categorised any of the models as 'green' in the pro forma feedback document. This reflects the stage of the model development process and it highlights the need for further work still required to develop robust and fit for purpose models.

In line with Ofwat's comments on the guidance for the feedback document, we recognise that there is no such thing as a perfect model. The application of the results of any model in setting cost allowances must be done with due regard and recognition of this.

Ultimately, the way in which models are used and interpreted is as important as the models themselves and we would welcome more clarity on this to inform our business plan submission. For example, the level of aggregation is critical. There is a significant risk that granular models can miss natural operational trade-offs. This could lead to inappropriate and unachievable efficiency benchmarks. We expand on this point along with other key points of feedback in the enclosed appendix.

With our response we have provided two detailed technical notes prepared by Oxera. The first covers the use of Distribution Input as a cost driver in models. This is an issue we have previously flagged and we were pleased to see this acknowledged in the consultation document. In this note Oxera has outlined the public policy as well as

technical and statical challenges it presents. Oxera have also quantified the potential impact on cost allowances, which demonstrates that this is a material issue for companies like Southern Water who have made good progress on metering and demand management.

The second technical note outlines what we believe are some technical issues in Ofwat's historic approach to funding growth. It reviews how growth has been reflected in Ofwat's approach to cost efficiency and cost allowances to date, and examines the recovery of growth expenditure through regulated revenue allowances. The note identifies a number of potential gaps in the methodology that may benefit from further exploration.

As always, Southern Water would be keen to take part in any further engagement on these issues.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Craig Lonie".

Craig Lonie
Director of Strategy and Regulation

Enclosed: Appendix to letter – Key points of feedback on modelling consultation

Enclosed: Pro Forma consultation response document

Enclosed: Technical note on the use of water volume measures in cost models

Enclosed: Technical note on treat of growth expenditure

Appendix – Key points of feedback on modelling consultation

- **Level of Aggregation.** The disaggregated models that Ofwat and companies have developed are helpful from a model development perspective, to possibly assess cost claims and cross-check estimates from aggregate modelling. It is important to acknowledge that the aggregation of granular models can result in infeasible efficiency frontier as, depending on how this is undertaken, the approach may not appropriately account for operational trade-offs and cost allocation decisions. For example, if a company achieves high levels of treatment efficiency through larger treatment centres, this would likely also require the company to incur higher pumping and sewer network costs. Modelling these components separately and making efficiency adjustments at each level would not account for these operational trade-offs and would imply unachievable benchmarks of efficiency.

We also note that certain aspects of the value chain are particularly challenging to modelling cost performance statistically. In addition to raw water distribution, we find the water resources and water treatment models estimate too large a range of residuals across the industry to be considered credible. Given the general simplicity of these models, it is unlikely that the estimated variances represent inefficiency appropriately. If these models are considered for inclusion in a final suite of models, care should be taken in how they are combined to form an aggregate position and due account should be taken of the quality of these models when determining an appropriate level of efficiency challenge.

- **Model quality.** While some models appear to form a good basis in capturing industry-wide issues, the quality of the models varies considerably. In many cases, further work is required before they can be considered sufficiently robust for cost setting purposes. The models will need to provide an unbiased estimate of companies' cost requirements, and given the heterogeneous nature of the water industry, this will require careful consideration of models, approach to triangulation and determination of suitable benchmark.
- **Nature of variables.** In top-down models, as noted by Ofwat, a particular cost driver could be capturing multiple effects and there is a need to consider alternative measures for a particular factor to understand the sensitivity of the results to the measure used. Ofwat has also stressed the need to avoid using variables within management control. We acknowledge this concern, but also the general difficulty in limiting models to purely exogenous drivers. However, some of the variables considered appear contrived and can potentially lead to bias in the estimation of results and perverse incentives.

- **Treatment complexity/Average pumping head.** There is a weak correlation (empirically and conceptually) between average pumping head and treatment complexity in the data, although average pumping head may capture treatment complexity indirectly through differences in topographical features of a company's service area. Omission of pumping head in treated water distribution in some of the models requires further examination as it is a material driver of costs for the industry. Also, while water source variables such as the proportion of DI from boreholes may capture differences in treatment requirements for some companies, granular measures of complexity may be more appropriate for others; as such, possible bias created through the choice of the treatment complexity variable for companies require further examination.
- **Lack of variation/outliers in data.** Some of the operationally important explanatory factors in the models appear to have little variation across the industry or are driven by outliers. Such factors include proportion of load subject to ammonia consents below 1mg, proportion of sludge disposed to farmland, and the proportion of intersiting work done by truck and tanker. Care should be taken in the treatment of outliers in the data [e.g. in the model development stage] as well as in ensuring that the benchmark is not unduly skewed by some of the outlying companies.
- **Pumping station capacity.** Pumping station capacity instead of number of pumping stations may be a more appropriate driver as it can allow for the scale of pumping requirements to be more appropriately accounted across the industry. This is especially important for companies like Southern Water as the distribution of pumping capacity across the stations is skewed, with a relatively small number of stations accounting for a relatively large proportion of total pumping capacity.
- **Proportion of load treated in WTWs bands 1 to 3.** Ofwat has considered the proportion of load treated in WTWs bands 1 to 3 as a material driver in explaining sewage treatment costs. The grouping of treatment bands and sensitivity of results to the threshold considered require further examinations given variation in the size of works at particular bands.