

Ofwat
Centre City Tower
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3 May 2018

Dear Sirs,

Cost Assessment for PR19 – a consultation on econometric cost modelling

In response to your recently published consultation on econometric modelling please find our submitted template regarding observations on specific models. We hope in tandem with this consultation that our comments/observations previously submitted with our proposed models for the consultation are also taken into account.

As an overall observation we welcome the process followed to date and the consultation as an opportunity to ensure the final suite of econometric models represents a robust and balanced view to assist in determining efficient company expenditure for the 2020-25 period.

We have worked with Oxera Consulting LLP to understand the models to inform our response to the consultation. Overall while some of the models are strong both statistically and from an operational perspective, we are concerned that principally two key explanatory variables are absent or unsatisfactorily represented in some of the models. Firstly, numbers of assets is a material driver of industry cost, including number of sources and number of treatment works. Ofwat recognises this relationship within the consultation document but this is not reflected in the models proposed consistently. Secondly, the granular measure of treatment complexity, which is another relevant driver of treatment cost, is not consistently utilised. Where treatment complexity is not explicitly accounted for, models tend to place a reliance on source type (i.e. proportion of borehole groundwater) which in our view may be an over-simplification of treatment complexity for some companies given the water treatment categorisation now available via the cost assessment working group exercise. The treatment complexity variable provides a more robust picture of complexity requirements for some companies, which may contradict the historic assumption that borehole water is a low complexity (and therefore cheap) solution. We provide evidence of this relationship in the supporting cost adjustment submission.

We note that a significant number of other companies have offered econometric models that include the above explanatory factors. This includes:

- *Number of sources and or number of treatment plants (aggregate or on a per DI basis or DI/property basis)* - used in resources models submitted by Anglian Water, Bristol Water, Yorkshire Water and Southern Water, and in wholesale water models submitted by Southern Water, Welsh Water, Yorkshire Water and South Staffordshire.
- *Treatment complexity (granular measures)* – used by Anglian Water, Bristol Water, Southern Water, Welsh Water, Severn Trent, Affinity Water, Yorkshire Water and South Staffordshire

South East Water's operating environment, i.e. an area rich in geology that suits water provision via a number of low yield yet complex ground water sources, implies that our costs are likely to be under reflected on some of the proposed models. To account for possible lack or limited use of the geological drivers capturing these operating conditions, we feel it may become necessary to apply a cost adjustment claim. Should Ofwat include the above

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explanatory factors in their final suite of econometric models appropriately, we would have no need for such claims. We believe that the inclusion of these explanatory factors is both statistically and operationally relevant.

In the absence of enhancement econometric models to forecast required funding for WRMP activity, we have not provided any cost adjustment submission for this aspect. We do support the approach suggested by Ofwat that econometric models should focus primarily on botex. We would however make the following points. Any approach particularly related to water resource enhancement assessment needs to consider the regional differences in cost driven by companies being differently placed on the deficit recovery cost curve. Costs assessed need to look at more than deficit resolved in the review period as driver for this cost. Significant costs are likely to be incurred in the next period to resolve deficits that are forecast in future periods.

In addition to the above overarching observations our response sheet provides detailed comments on the models Ofwat has developed and asked for feedback on. A summary of our key findings is set out below for ease of reference.

- **Model quality.** While some models appear to form a good basis in capturing industry-wide issues [to be developed further with 2017/18 APR data and associated refinements], the quality of the models varies considerably requiring further work before they are deemed 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 may require different sets of models and/or approach to triangulation to be considered for different (groups of) companies.
- **Level of Aggregation.** The disaggregated models that Ofwat and companies have developed are helpful from a model development perspective, to assess cost claims and cross-check estimates from aggregate modelling. However, the water resources and water treatment models estimate a large range of residuals across the industry to be deemed credible. Given the general simplicity of these models (in terms of the cost drivers considered; functional form; estimation approach), it is unlikely that the estimated variances represent inefficiency entirely. If these models are considered in a final suite of models, care should be taken in how they are combined to form an aggregate position and the quality of these models in determining an appropriate level of efficiency challenge.
- **Nature of variables.** In top-down models, a particular explanatory variable 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 the principle point, but also general difficulty in limiting to purely exogenous drivers. However, some of the variables considered appear contrived and can potentially lead to bias in the estimation of results and possibly provide perverse incentives.
- **Treatment complexity.** The complexity of water treated is a material driver of costs for the industry and the omission of a variable that captures treatment complexity or an inadequate proxy could lead to biased cost predictions for some. Whilst we acknowledge that water source variables such as the proportion of DI from boreholes may capture differences in treatment requirements for some companies, these measures may be inappropriate for companies whose ground water requires similar levels of treatment as surface water sources. Water treated at different treatment bands as considered by Ofwat in some of the models (and exploring sensitivity of results to the threshold) provides a direct measure of the complexity of companies' treatment processes
- **Geological factors.** The PR19 methodology report, and previous discussions of operational drivers of cost, consider geological factors such as the number of sources and treatment plants as material drivers of costs for the industry. This characteristic only appears to have been captured in some water treatment and water resources plus models, and has been excluded from network plus and wholesale water models. Information on water treated at different treatment bands helps to disentangle the correlation between the

average size of a company' water source/treatment plant and water source variables, mitigating a limitation highlighted in the CMA Bristol inquiry.

- Average pumping head. Whilst average pumping head may capture treatment complexity indirectly through differences in topographical features of a company's service area, there is generally a very weak correlation [empirically and conceptually] between average pumping head and treatment complexity in the data. This variable also has no operational relationship to treatment complexity, instead treatment complexity varies due to geology largely and has no relationship with pumping effort. Average pumping head in water treatment and water resources plus are used in network plus and wholesale water models respectively, thus omitting pumping activity in treated water distribution. Omission of pumping head in treated water distribution requires further examination.

Should you require further clarification or discussion regarding this submission then please do not hesitate to contact me.

Yours faithfully

A handwritten signature in black ink, appearing to read 'DEHINTON'.

David Hinton
Asset and Regulation Director