Anglian Water

13B. REVIEW OF COST CURVES

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REVIEW OF COST CURVES

A note prepared for Anglian Water

Anglian has produced cost curves for a number of measures ahead of PR19. It has commissioned Frontier to review its approach and to provide feedback. This note summarises our findings.

INTRODUCTION

Anglian is in the process of finalising its package of PCs and ODIs ahead of PR19. One of the inputs used to set PCs and ODIs is cost curves. These are required to:

- set PCs on the basis of CBA; and
- estimate the incremental cost of performing at the PC, which is used as an input to produce unit rates for underperformance payments.

We have been commissioned by Anglian to review its approach and to provide feedback. We have approached the question as a critical friend, giving our views on the extent to which we believe Ofwat would find Anglian's approach reasonable.

This was an iterative process. We first reviewed Anglian's initial approach and issued a note to Anglian summarising our feedback. Anglian then considered how best to respond to our comments. We then reviewed its updated analysis. This note summarises our findings.

SUMMARY OF FEEDBACK

We believe that Anglian's approach performs well against Ofwat's guidance:

- Forecast efficiency: Ofwat has commented that companies should use forecast efficient cost levels for their marginal cost estimates. Anglian has applied a productivity assumption of 2.3% per annum to its current cost levels.
- Common cost allocation: Ofwat has commented that companies should explain how they have treated common costs in their marginal cost estimates. In instances where a single investment impacts on multiple measures, Anglian has allocated the costs on the basis of customer valuations.
- Detailed cost curves based on optimisation: Anglian has used its C55 investment optimisation model to produce its cost curves. Various candidate schemes, along with their associated costs and expected benefits, have been entered into the model and are all considered as part of the optimisation. The model has the functionality to estimate the least cost option of performing at different levels of service quality. Anglian has used this functionality to

produce detailed cost curves made up of multiple points. The model also has the functionality to identify systematically any instances where an investment impacts on multiple measures, meaning that it has dealt with the allocation of common costs in an automated way.

- Assurance: We understand that Anglian has commissioned assurance reports to assure the quality and robustness of the data inputs feeding into the model.

We provide more details below.

Forecast efficiency

Ofwat has commented that:

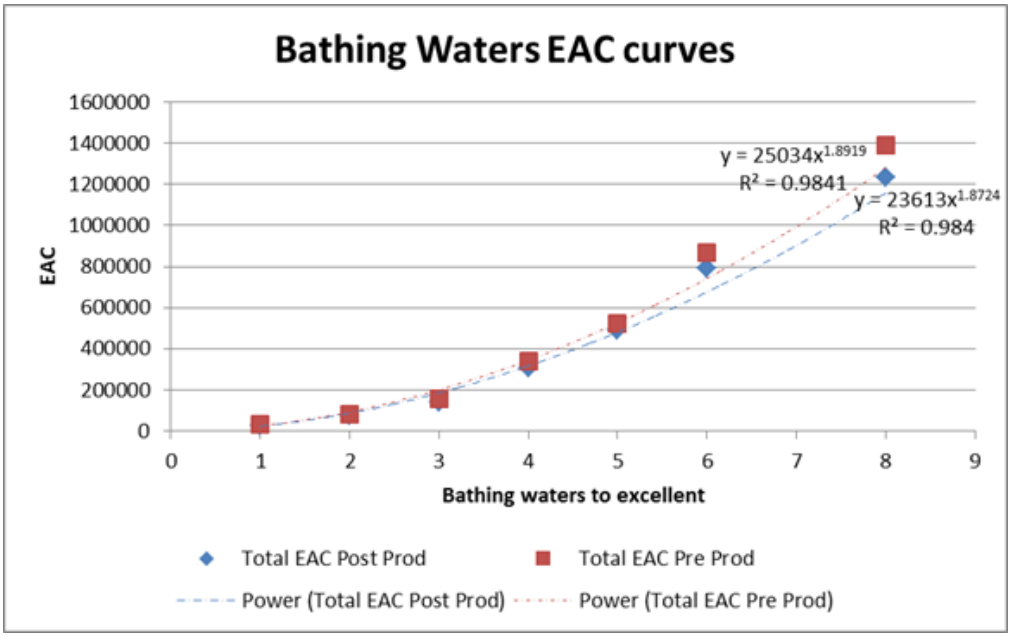
> *"One of the main issues with companies' marginal costs at PR14, was that they reflected current marginal costs to set performance commitment levels for the future. Companies should use forecast efficient cost levels for their marginal cost estimates for PR19, and should explain how they have calculated them."*[1]

Anglian has produced its cost curves using its C55 investment optimisation model. Various candidate schemes, along with their associated costs and expected benefits, have been entered into the model and are all considered as part of the optimisation. However, initially the cost estimates were based on current cost levels, and not future cost levels. We recommended to Anglian that it introduce some element of forecast efficiency into its cost estimates.

Anglian has since applied a forecast productivity assumption to its input costs. It has reduced it cost estimates at a rate of 2.3% per annum. This is the same rate that it used in completing the PR19 business tables where forecasts needed to be made over a 40 year time horizon. A "before and after" example of its cost curve for bathing waters is shown below. This has had the effect of reducing its cost curve by nearly 6%.

[1] Delivering Water 2020: Our methodology for the 2019 price review. Appendix 2: Delivering outcomes for customers. Page 53
https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-2-Outcomes-FM-final.pdf

Figure 1 Forecast efficiency



Source: Provided by Anglian

We have not reviewed the details underlying the productivity assumption of 2.3% per annum, and have instead taken this figure as a given. However, by considering future cost levels rather than just current cost levels, we believe that Anglian's approach is more reasonable.

Common costs

Ofwat has also commented that:

> *"Companies should also explain how they have treated common costs in their marginal cost estimates."*[2]

There is no single correct approach to allocating common costs between measures. Anglian's preferred approach was to allocate the costs on the basis of customer valuations. For example, if an investment is shared between two measures, and the customer valuation for one measure is twice the size of the customer valuation of the other measure, then the former measure is allocated two thirds of the common cost, with the remaining third allocated to the latter measure. We believe that this approach is reasonable. However, upon our initial review, we identified that Anglian was not applying this approach consistently across all affected measures. For example, in some instances it had used more arbitrary rules – such as a high level 50-50 split. We recommended that it apply its preferred approach consistently throughout.

Anglian has since updated its analysis to ensure that it does apply its preferred approach consistently across all affected measures. We also note that Anglian's C55 investment optimisation model has the functionality to identify systematically

[2] Delivering Water 2020: Our methodology for the 2019 price review. Appendix 2: Delivering outcomes for customers. Page 54
https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-2-Outcomes-FM-final.pdf

all instances where an investment impacts on multiple measures. Anglian has used this functionality to automate the process, which ensures that all instances are covered.

We consider Anglian's updated approach reasonable.

Double counting of benefits

For some measures (including internal and external sewer flooding and cat 1-3 pollution incidents) we identified a potential issue with double counting of benefits. In some instances, C55 can contain multiple candidate investments which all lead to similar benefits. In reality, one investment could negate the need for another – i.e. they are competing approaches and not additive: Anglian faces the choice of carrying out one investment or the other, but not both. For example, there could be two competing options to reduce the risk of flooding at a particular household:

- Option 1: £10,000; and
- Option 2: £20,000.

If Option 1 is carried out, Option 2 is no longer relevant. And it would not be appropriate to add these investments together and claim that two properties could be benefitted for £30,000. We recommended that Anglian remove any double counting of this kind.

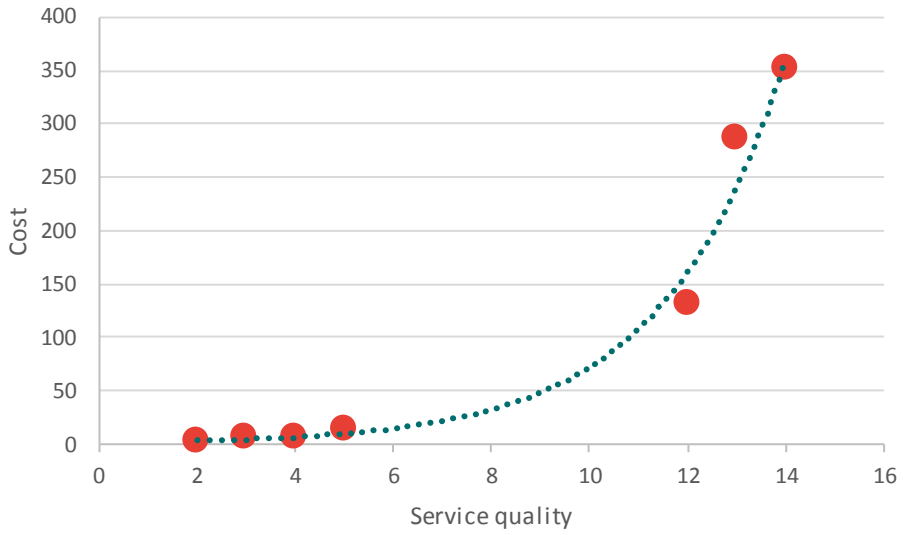
Anglian has since reviewed the investments feeding into the optimisation model and has sense-checked the extent to which different investments are complementary (i.e. can be added together) or competing (i.e. cannot be added together). The outcome is that it has removed instances of double counting of this kind.

We believe that the cost curves are therefore now more robust and fit-for-purpose.

Gaps

Anglian has used its investment optimisation model to estimate the cost of delivering different levels of service quality for different measures. For each measure, it has then fitted a line of best fit through these estimates to produce a cost curve. Some of the cost curves are based on relatively few data points, such that the distance between points (i.e. the difference in service quality) could be relatively large. For some measures, it is plausible that the PC lies within one of these 'gaps'. The estimate of the incremental cost of performing at the PC would therefore be heavily dependent on the assumed line of the best fit. This is illustrated below (using dummy data).

Figure 2 Gaps in cost curves



Source: Frontier illustration

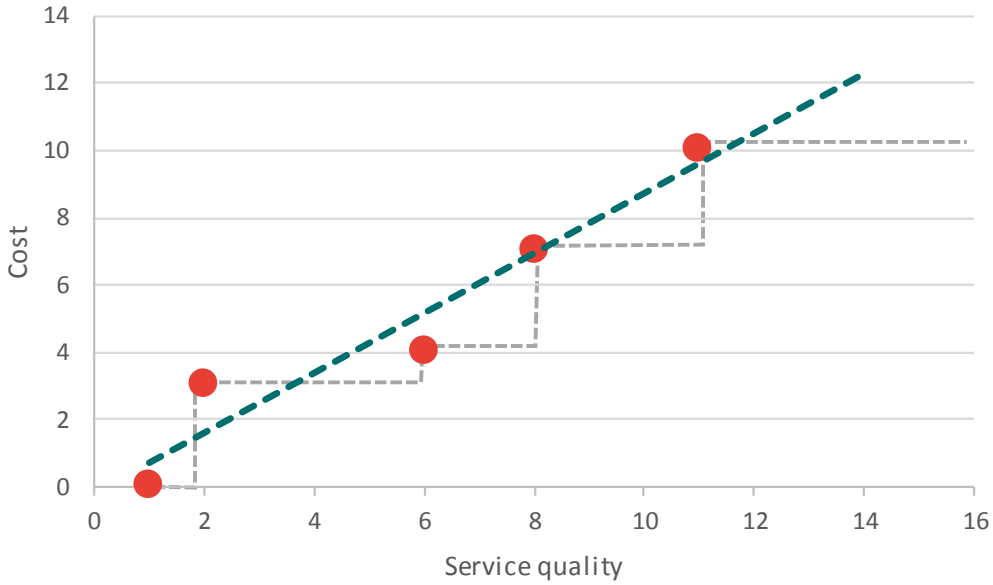
We recommended that if there are instances where Anglian's proposed PC does indeed lie within one of these 'gaps', it should sense check the estimate of incremental cost to ensure that it is indeed a robust estimate, rather than simply relying on an interpolation.

Anglian has taken on board this feedback. It has not changed its cost curves, but where these instances do arise, it has sense-checked the results to ensure that they are indeed reasonable. We believe this approach is reasonable.

Trendlines – and reading off the curve

For some measures, especially those which involve lumpy investments, such as single supply and low pressure, the cost curve may not necessarily be perfectly continuous and 'curvy'. Instead, it may have a series of step changes. For measures of this kind, it may not appropriate to fit a line of best fit through the data points, since it may not actually be possible to perform at a level in between the data points. For measures where this issue arises, we recommended that Anglian apply judgement in producing the cost curves, rather than necessarily having to rely on simple trendlines.

Figure 3 Trendlines



Similar to the above, we understand that Anglian was estimating the incremental cost of performing at the PC based on the line of best fit even in instances where it had a more precise estimate. In these instances, we recommended that Anglian uses the actual point estimate rather than relying on the cost curve.

Figure 4 Reading off curves

Source: Frontier illustration

Anglian has taken on board this feedback. Where this issue does arise, Anglian now takes the actual point estimate rather than taking the estimate based on the line of best fit. We consider this approach to be reasonable.