Anglian Water

8A. RECKON NOTE ON ENHANCEMENT OPEX

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Note on totex benchmarking of enhancements in Ofwat's PR19 IAP

Background

Ofwat is currently carrying out its periodic review of the price controls for English and Welsh water companies to apply in the period from 1 April 2020 to 31 March 2025 (the PR19 review). As part of this review, Ofwat published its initial assessment of water companies' business plans (IAP) on 31 January 2019. One of the major elements of Ofwat's work for the IAP has been its cost assessment, which drew on a range of analysis and approaches to produce provisional allowances for each water company's efficient expenditure requirements over the period 2020-25.

We carried out a short piece of work in February and March 2019, for three companies: Anglian Water, Northumbrian Water and Wessex Water. This concerned one quite specific aspect of Ofwat's wholesale cost assessment for its IAP, which is the treatment of "enhancement operating expenditure". The main output of this work was a report entitled *Review of the treatment of enhancement opex in Ofwat's PR19 initial assessment of business plans* (7 March 2019), which was submitted to Ofwat. We discussed the findings from our review with Ofwat in early March 2019.

The same three companies asked us to carry out further work on the price control treatment of enhancement operating expenditure, which we began at the start of May 2019. We met with Ofwat in early May 2019 to discuss potential avenues for that further work. Following on from this, we agreed with the companies that we would consider further how Ofwat might approach benchmarking comparisons for specific categories of enhancements in a way that can take account of enhancement operating expenditure as well as capital enhancement expenditure.

Structure and scope of this note

The approach to cost assessment for enhancement expenditure in Ofwat's IAP placed emphasis on unit cost benchmarking across companies for individual categories of enhancements. We identified in our report from March 2019 that Ofwat's approach generally focused on benchmarking capital expenditure only. For almost all of the enhancement categories it assessed, the benchmarking analysis did not take account of the operating expenditure associated with enhancement projects or recognise the potential for operating expenditure solutions to be used instead of capital expenditure solutions.

Our focus in this note is on how Ofwat might approach the unit cost benchmarking for specific categories of companies' enhancement forecasts, in a way that recognises the variation – across companies and over time – in the mix of operating expenditure and capital expenditure. During our discussion in early May 2019, Ofwat highlighted that suggestions in this area could be useful.

This note is structured as follows. We first summarise an approach to totex benchmarking of enhancements that Ofwat used for one specific part of its IAP. We then briefly highlight three alternative types of approach for enhancement unit cost benchmarks that might be considered, especially in cases where there is significant variation across companies in the mix of operating expenditure and capital expenditure. We take the following in turn:

- Annualised unit cost measure.
- A volume measure that reflects the duration of benefits arising from expenditure.
- Separation of benchmarking into more comparable sub-categories.

These alternative approaches provide a basis for Ofwat to start to adapt the way that its benchmarking analysis is done, so as to improve on the cost assessment for enhancements for PR19. Each may be relevant in different circumstances, or for difference enhancement categories.

This note is quite brief. It outlines potential approaches to combining data on operating expenditure and capital expenditure, but does not seek to flesh these out in detail or to review their benefits and drawbacks. The alternatives highlighted in this note would not, by themselves, address all of the problems relating to the IAP's treatment of enhancement operating expenditure identified in our report from March 2019, but they could help.

The extent of the development of the material presented in this working paper has been limited by the time available and the desire to provide input to Ofwat ahead of its draft determinations. We have not sought to consider in this note any broader questions about the approach to cost assessment for enhancements, such as those relating to: *(a)* wider aspects of benchmarking analysis such as accounting for cost drivers and explanatory variables; *(b)* whether it is appropriate for Ofwat to place as much emphasis on simple unit cost benchmarks analysis as it did for the IAP; or *(c)* how Ofwat might implement a more evaluative assessment of enhancement expenditure that gives less emphasis to simple unit cost benchmarks and takes account of a wider set of evidence (potentially including more granular benchmarks and recognising differences between operating expenditure and capital expenditure solutions in terms of optionality).

The totex unit cost approach from the IAP

For most enhancement categories, Ofwat's approach to cost assessment and cost benchmarking for its IAP focused on capital expenditure, with no analysis of (or allowance for) enhancement

operating expenditure. One exception concerns enhancements relating to the supply-demand balance (including leakage). Ofwat's approach for this category was a form of "totex unit cost" approach, which was intended to make some allowance for enhancement operating expenditure as well as capital enhancement expenditure.

We consider that, across the various different enhancement categories, Ofwat should adopt an approach to cost assessment that can take account of enhancement operating expenditure as well as capital enhancement expenditure. We do not, however, consider that the totex unit cost approach that Ofwat used for supply-demand balance in the IAP provides a plausible approach.

The way that Ofwat incorporated operating expenditure and capital expenditure into the unit cost benchmarks for the supply-demand balance is severely problematic. In this section we briefly summarise Ofwat's approach to totex unit cost benchmarks for the supply-demand balance in the IAP and elaborate on the problems with this type of approach.

In the supporting documents for the IAP, Ofwat said that it considered "the totex expenditure for supply and demand options for both critical period and dry year annual average scenarios in a combined supply-demand balance enhancement assessment". It said that it used a unit cost approach for enhancements relating to: *(a)* 2020-25 supply-demand balance; *(b)* long-term supply-demand balance enhancement; and *(c)* leakage.[1] We did not identify in the IAP documents a detailed explanation of the methodology used for the unit cost approach or the approach to benchmarking for these categories of enhancements. From the supporting spreadsheets provided by Ofwat our interpretation is that the approach is approximately as follows:

1. For a particular category of enhancements, a cost measure is calculated for each company by taking the sum of: *(a)* the company's forecast capital expenditure over the 2020-25 period; and *(b)* an estimate of the company's forecast annual average operating expenditure multiplied by the number of years within the 2020-25 period that the operating expenditure is expected to be incurred (e.g. this will be affected by when, during that five-year period, the enhancement is commissioned or commences).[2]

2. Divide the totex measure from (1) by a measure of the scale of benefits or output from the enhancement (e.g. capacity in Ml/d) to produce a unit totex measure.

3. Compare the unit totex measures across companies to get the industry median and use this as the benchmark of efficient unit costs.

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[1] Ofwat (2019) *IAP Technical appendix 2: securing cost efficiency*, pages 48-49.

[2] This approach is more explicitly set out in Ofwat's deep dive assessment of Anglian Water's enhancement costs.

4. Set the allowance for each company at the lower of the allowance implied by the median unit cost and the allowances based on the companies' own unit cost.

An underlying problem with the approach outlined above is that it fails to take account of the likelihood of fundamental economic differences between £1m of operating expenditure incurred in the 2020-25 period and £1m of capital expenditure incurred in the same period. Capital expenditure, by definition, gives rise to significant benefits beyond the year in which the expenditure is incurred. While operating expenditure may sometimes give rise to benefits beyond the year in which the expenditure is incurred, there is no basis for treating this as the standard case and lumping it together with capital expenditure for benchmarking purposes.

We identified in our report of March 2019 that there is likely to be substantial variation across companies, and between projects, in the mix of operating and capital expenditure incurred as part of companies' enhancement projects. This may arise from differences in the types of approaches and solutions that companies adopt. It may also arise from differences in accounting treatment between companies, which will affect the data used by Ofwat for its benchmarking.

Some of the concerns with the IAP approach for the supply-demand balance can be illustrated by the simple illustrative example provided in Figure 1 (overleaf).

The approach followed by Ofwat for the IAP, as we have understood it, does not seem to be defensible in the context in which it is applied. It seems unreasonable to benchmark companies' enhancement projects by comparing this type of metric between companies, without regard to differences in the mix of operating and capital expenditure within companies' enhancement plans. We do not consider that any limitations in the data available can provide a reasonable explanation for this type of approach.

Furthermore, under Ofwat's IAP approach to assessing enhancements and base costs, we see no route through which inaccuracies in the cost assessment arising from the unit totex approach to enhancement benchmarking would be cancelled out over a longer term horizon.

Stepping away from enhancement expenditure, the approach of adding together operating expenditure and capital expenditure in cash terms, for the purposes of benchmarking analysis, is also used for Ofwat's base cost models. However, the problem is far more acute for benchmarking analysis for specific categories of enhancement expenditure. This is for several reasons, such as:

- For expenditure categories used for base costs (e.g. wholesale water or water distribution) the law of large numbers across different elements of these costs means that variation between companies in the mix of operating expenditure and capital expenditure is likely to be lower than the variation in this mix for specific categories of enhancements proposed for the 2020-25 period.

- In the case of enhancement expenditure, any differences between companies in the mix of capital expenditure and operating expenditure will be magnified by looking at expenditure over a five-year time window. Companies' with relatively capex-intensive solutions will have relatively high expenditure in this period due to the upfront nature of capital investment. In the case of base costs, there is more likely to be spread of capital (maintenance) expenditure over time.

We do not consider that the treatment of capital (maintenance) expenditure and operating expenditure in the base cost econometrics can be given a clean bill of health, but the problems of a simplistic totex approach are more acute for enhancement expenditure.

Figure 1 Example to illustrate problems with totex unit cost approach from IAP

Outline of illustrative scenario

Suppose that there are ten similar companies in the industry and all are proposing enhancements that improve quality along a specific dimension, by 10 notional units of quality each year from 2023/24 onwards.

Suppose that five companies are proposing a capital enhancement solution, involving £20m of capital expenditure over the period 2020/21 to 2022/23 becoming operational in 2023/24. The sum of totex over the 2020-25 period for these companies would be £20m, and totex per unit of quality improvement would be £2m.

Suppose that the other five companies are proposing an operating expenditure solution involving annual operating expenditure of £4m from 2023/24 onwards. The sum of totex over the 2020-25 period for these companies would be £8m, and totex per unit of quality improvement would be £0.4m.

The median unit totex across the ten companies would be £1.2m per unit of quality

Discussion of implications of totex unit cost approach from IAP

Our interpretation is that Ofwat's totex unit cost approach would take the median figure of £1.2m per unit and treat it as a benchmark of efficient costs, capping enhancement allowances at this level.

This would not make sense. There is no evidence in this example that the companies with capex solutions having higher totex in the 2020-25 period are inefficient; they simply have a different time profile of expenditure than the companies with opex solutions, which mean more expenditure in the 2020-25 period.

Similarly, there is no evidence in this example that the companies with operating expenditure solutions for quality improvement are planning more efficient approaches for quality improvement than the companies with capital expenditure solutions. The fact that the totex in the 2020-25 period for the companies with operating expenditure solutions is a third of the totex implied by the unit cost benchmark of £1.2m say nothing at all about the efficiency of these companies. Treating the unit totex figure of £1.2m as a benchnmark of efficiency for those companies with operating expenditure solutions seems difficult to rationalise.

Annualised unit cost approach

An alternative way to approach the benchmarking of enhancement costs, in a context where there could be substantial variation across companies in the mix of operating and capital expenditure, is

to use an annualised measure of capital costs rather than using capital expenditure as a cash item. This could be combined with information on operating expenditure to produce an annualised measure of costs. If combined with a relevant volume measure or cost driver it can be used to calculate an annualised measure of unit costs.

An annualised cost measure would help enable more meaningful comparisons of the costs of enhancements by recognising that an amount of capital expenditure incurred provides benefits over future years whereas operating expenditure is normally an annually recurring cost. It has links to concepts of whole-life costs.

For each company, the annualised cost measure could be calculated as the sum of two elements:

- Annual average operating expenditure.
- An annualised measure of capital costs, which takes account of upfront capital expenditure, the cost of capital and the economic asset lives of the assets generated by the capital expenditure.

The calculation would involve forecasts, estimates and approximations. The point is not so much that this type of approach is perfect. Instead it is that even if approximate it might be much better than an approach that treats capital expenditure and operating expenditure as the same thing for the purposes of cost benchmarking.

There is one important qualification that should be taken into account in the approach to annualised unit costs for water company enhancement expenditure. We have seen that some elements of water companies' enhancement programmes involve expenditure that is classified as operating expenditure for accounting purposes (and hence in data provided to Ofwat) but which is similar to capital expenditure in the sense that it provides long-term benefits. Examples of this type of operating expenditure include replacement of lead pipes that are owned by customers or water company contributions to flood protection assets developed by third parties. In these cases, the water company may not have ownership of the asset created from the expenditure and may not be able to record it as capital expenditure for accounting purposes. But, aside from this, the expenditure creates a useful asset that provides benefit in years beyond the expenditure is incurred. In these cases, we suggest that the unit cost calculation is done treating this type of expenditure as if it were capital expenditure. So an annualised measure of the costs would be created which takes account of the "asset life" or period over which the benefits from the expenditure are realised.

Rather than providing a more detailed explanation of the annualised unit cost approach, we can refer to a practical example of an annualised unit cost measure, within Ofwat's PR19 methodology. Reckon provided support to Ofwat in 2016 and 2017 in relation to aspects of the PR19 methodology relating to the creation of a separate control for water resources and the interactions with potential future arrangements for access pricing (in particular, the calculation of equalisation payments). As part of this work we developed an approach to the calculation of an annualised unit cost measure

for post-2020 water resources capacity. Ofwat published our illustrative model[3] and explanatory note[4] as part of its PR19 final methodology in December 2017.

The model we produced for Ofwat is not the simplest type of annualised unit cost calculation. It was designed to accommodate some of the complexities of water resource planning (e.g. multiple schemes within a water resource zone and the potential for new capacity requirements to be driven by different planning scenarios relating to dry year annual average conditions or dry year critical period conditions). It is possible to use the same principles to produce a simpler annualised unit cost model. In any event, we feel that the model and supporting note help to illustrate what we mean by an annualised unit cost measure and show that it has practical application.

This type of annualised unit cost approach is, we think, a good way to produce a cost measure that is suitable for benchmarking purposes for specific parts of water companies' enhancement programmes.

Given the way that Ofwat calculates the wholesale controls, the annualised unit cost benchmark would probably not be used directly in this calculation. Instead, comparisons can be made of the annualised unit cost for a particular company and a particular enhancement category against an annualised unit cost benchmark taken as an estimate of the efficient level of (annualised) costs. Any differences between the two could be used to calculate an efficiency adjustment factor, which could then be applied as an adjustment to the company's forecast totex for the enhancement category covered by the annualised unit cost measure. Consideration would need to be given to the way that the adjustment is made, given differences between operating expenditure and capital expenditure within totex and risks of creating incentive distortions or anomalies.

The calculation of annualised unit cost measures for PR19 cost assessment would benefit from information that is not available from the business plan data templates. However, even if it were to be applied quite crudely, based on the data available and making assumptions where necessary, it might be significantly better than the type of totex benchmarking approach used for the IAP. For instance, approximate high-level assumptions on weighted asset lives for enhancements might be made based on engineering knowledge available to Ofwat and potentially also drawing on information on companies proposed RCV run-off rates for the post-2020 RCV (if interpreted with care).

This type of approach is not as quick or simple as that used in the IAP of taking totex over the 2020-25 period and dividing by a volume measure or cost driver to produce a unit cost measure.

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[3] https://www.ofwat.gov.uk/publication/reckon-water-resources-annualised-unit-cost-model/

[4] https://www.ofwat.gov.uk/publication/reckon-water-resources-annualised-unit-cost-model-explanatory-note/

However, it is questionable whether a highly simplistic approach can be justified given the amount of money at stake, for both companies and customers.

A volume measure that reflects the duration of benefits arising from expenditure

An alternative to the annualised unit cost approach is to try to take account of differences between operating expenditure and capital expenditure in the volume measure used for the unit cost analysis (e.g. the denominator in a unit cost measure or an explanatory variable in an econometric regression).

To take a simple example, suppose that the focus was on enhancements relating to the supply-demand balance and the output measure was capacity in a water resource zone in Ml/d (ignoring complexities relating to critical periods). Suppose that some companies plan water treatment capital expenditure to increase capacity by 20 Ml/d. Suppose other companies plan to use treated water imports from a neighbouring water companies to provide the additional 20 Ml/d.

Our interpretation of Ofwat's totex unit cost approach from its IAP, is that, in this example it would take the 2020-25 totex for each company and divide it by 20 Ml/d of capacity to produce a unit cost metric to be used for benchmarking across companies. An alternative approach would be to consider the duration of benefits arising from the expenditure under consideration. If the assets arising from the water treatment investment were expected to have an economic life of, say, 20 years, then the capital expenditure from this investment could be seen to give benefits of 20 Ml/d over 20 years. An approximate estimate of the unit cost associated with this investment could be made by taking the totex over the 2020-25 period and dividing by 400 Ml/d of capacity (20 Ml/d multiplied by 20 years). In contrast, the operating expenditure from a procuring treated water from another company might only provide benefits in the year in which it is incurred. Suppose that the import agreement takes effect from 1 April 2023. In that case the expenditure from this import could be seen to give benefits of 20 Ml/d over 3 years. An approximate estimate of the unit cost associated with the import could be made by taking the totex over the 2020-25 period and dividing by 60 Ml/d of capacity (20 Ml/d multiplied by 3 years).

This type of approach is far from perfect. It opens up further questions (e.g. should the quantum of benefits reflect some form of NPV calculation that takes account of the cost of capital as well as duration of benefits?). But we consider it to be much more sensible than the totex approach used for the IAP, and offers an alternative to the annualised unit cost approach described above.

Separation of benchmarking into more comparable sub-categories

We briefly highlight one further approach that Ofwat might consider. If there are significant differences between companies in the mix of operating expenditure and capital expenditure in a specific enhancement category, and these are understood as being driven by differences in the

choice made about the type of approach taken to deliver the enhancement, it might make sense to carry out separate benchmarking analysis for different sub-categories of enhancement solution.

Returning to the example above, separate unit cost benchmarks could be calculated for each of the two approaches: *(a)* water treatment capacity investment and *(b)* imports of treated water from other companies. In this way, the totex data on enhancements for water treatment capacity would not be used for the cost assessment for the enhancements based on water imports, and vice versa.

This type of approach seems worth considering. However, we suspect that difficulties may arise from the extent of variation across companies' enhancement proposals, reflecting differences in the approach and solutions as well as differences in accounting policies. For instance, even where companies are planning to adopt capital-intensive approaches, it may not be reasonable to make comparisons based on five years' totex if these approaches differ significantly (e.g. asset lives for assets produced by the investment).

One limitation of this type of approach is that it would focus the benchmarking on comparisons within similar types of enhancement solution sub-category. It would not involve benchmarking comparisons between different types of solution or sub-categories and may overlook cases of inefficient costs relating to choices about the type of enhancement solution to use. The approaches summarised above involving annualise unit cost measures or a volume measure that reflects the duration of benefits arising from expenditure provide a way to tackle this limitation.