

Water Redeterminations 2020

2019/20 data for base cost models – Working Paper

13 January 2021

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1. Introduction

1. The base cost models published at Provisional Findings (PFs) were based on data from 2011/12 up to 2018/19, the most up to date data available at the time.
2. In June 2020, the CMA published a document discussing the approach to the redeterminations which stated that ‘where there is additional and updated information available, produced since Ofwat’s determination, and which is relevant to the redeterminations, we will take account of this to inform our redeterminations... However, we will also consider whether information is complete and robust so that we can place reliance on it.’¹ Up-to-date data may improve our assessment, especially when the new data is not affected by reliability or representativeness issues. However, each case needs to be assessed on its own merit.
3. In response to the PFs, all Disputing Companies presented arguments in favour of the inclusion of 2019/20 base cost data. Ofwat presented arguments against the inclusion of 2019/20 data. The 2019/20 data was derived from the companies’ Annual Performance Reports (APRs) which became available in July 2020. The completion of Ofwat’s quality assurance process and the extension of the CMA’s timetable for the redeterminations made it possible for us to consider using this data in our base cost models.
4. The inclusion of 2019/20 data in our base cost models is not unequivocally beneficial to our analysis. In particular, the new data may introduce bias in our estimates and distort our results for the base cost allowances due to investment brought forward from AMP7 to 2019/20. Therefore, in choosing whether to include 2019/20 data, we need to balance the advantages and disadvantages of its inclusion.
5. In this paper, we present our assessment of the advantages and disadvantages of including 2019/20 data. This assessment is strictly related to the use of 2019/20 data in the base cost models. In the rest of the paper, we present:
 - the arguments submitted by the Parties;
 - our assessment of the evidence on this topic; and
 - our provisional decision.

¹ CMA (2020), [PR19 Water redeterminations: Approach to the redeterminations](#), paragraph 58

6. This paper does not discuss the results of any additional analysis carried out by the CMA on base cost modelling before or after PFs.

2. Parties' arguments

7. In this section we present:
- the Disputing Companies' arguments in favour of the use of the 2019/20 data;
 - Ofwat's submissions against its use;
 - the Disputing Companies' responses to Ofwat;
 - the post-December 2020 hearing submissions; and
 - third parties' comments on this topic.

Disputing Companies' submissions

8. All Disputing Companies submitted arguments in favour of including the 2019/20 data into our base cost models. They said that including the new data:²
- increased the number of observations, making the estimation of the coefficients of the models more accurate;
 - included the most recent data, which improved the estimates of the efficiency catch-up challenge;
 - improved, to some extent, the assessment of the capital maintenance cycle as it used a full AMP, 2015/16 to 2019/20;
 - was consistent with what the CMA wrote in PFs regarding its assessment of the consequences of COVID-19 on the industry. In our PFs, we said that 'when taking decisions regarding the determination, we should use the most up to date information available. Therefore, where new information available that was not available at the time of Ofwat's FD is available that has an impact on the water industry and, specifically, the

² See Oxera (October 2020), [On the use of 2019/20 APR data in econometric modelling](#), p2; [Northumbrian's response to the provisional findings](#), paragraphs 36 and 37; [Yorkshire's response to the provisional findings](#), section 5.4; [Bristol's response to the provisional findings](#), paragraph 5

price control, the CMA should take account of these changes in circumstance’;³

- was in line with Ofwat’s approach: between Draft Determination and Final Determination, Ofwat updated its models with newly available 2018/19 data;⁴
- was consistent with other components of the CMA’s Determinations. For example, the CMA considered data from 2019/20 in setting service performance targets;⁵ and
- was necessary in order to avoid a disconnect between AMP7 costs and service targets.⁶

Ofwat’s arguments

9. Ofwat presented arguments against the inclusion of 2019/20 data:

- The PR19 performance targets had an impact on the level of investment made by the companies in 2019/20, therefore increasing the companies’ costs for that year. Ofwat said ‘there is significant risk of using material new information’ which is endogenous to the price control just set on the sector. Ofwat said that in 2019/20, the sector delivered an unprecedented 7% average reduction in leakage, with some companies delivering reductions in excess of 10%. Ofwat said this pace of change was ‘well above that required by a 15% reduction and spending in this period such as installing acoustic loggers will have significant benefits in future years.’
- In wholesale water, atypical spending would lead to the companies’ allowances being increased by a non-credible amount: £980 million higher compared to the allowance under the CMA PFs, or £1.5 billion higher than companies requested in their response to Ofwat’s Draft Determination in August 2019. This was in contrast to wholesale wastewater where expenditure in 2019/20 was not higher than the average of the AMP and the inclusion of 2019/20 data implied a reduction in sector allowances compared to Ofwat’s Final Determination by £300 million.

³ [Provisional findings report](#), paragraph 3.53

⁴ [Anglian’s response to the provisional findings](#), paragraph 76; [Anglian’s reply to responses to the provisional findings](#), paragraph 62

⁵ [Bristol’s response to the provisional findings](#), paragraph 211; [Northumbrian’s response to the provisional findings](#), paragraph 37

⁶ [Bristol’s response to the provisional findings](#), paragraph 179 and 212

- Results from a version of the models which included a dummy variable for the year 2019/20 indicated the uniqueness of this year of expenditure. The dummy variable was significant and greater in magnitude than any dummy related to previous years in the sample.
10. Ofwat said that the commentary companies provided on 2019/20 data suggested substantial investments were brought forward from the period 2020-25, as preparation to meet performance commitments in AMP7.⁷ For example, in response to a CMA request for information (RFI), Ofwat submitted the following commentary from water companies:
- United Utilities confirmed it invested £96 million (roughly 11% of wholesale base costs in 2019/20)⁸ in its 'Flying Start' investment programme, designed to improve performance for both AMP6 and AMP7. United Utilities explained to Ofwat that the investment programme was incremental investment in 2019/20 in readiness for the 2020-25, rather than investment brought forward. The majority of this expenditure was related to improvements in the water network infrastructure, leakage and sewer flooding performance, and IT system.
 - South West indicated capital investments for a total of £19 million (7% of wholesale base costs in 2019/20) to ensure it was 'in the best possible position to deliver 2020-25 targets and customer expectations', in areas such as capital maintenance, leakage, sewer flooding and IT infrastructure.
 - Southern said it invested around £44 million (8% of wholesale base costs in 2019/20) in improving its operational effectiveness, performance and IT capabilities in preparation for AMP7 targets.
 - Dŵr Cymru incurred £9 million (2% of wholesale base costs in 2019/20) of capital investments in readiness for AMP7, most of which related to reducing external sewer flooding.
 - Severn Trent said it 'used the benefit of being fast-tracked to get a head start on our commitments for AMP7'. The company said in its response to Ofwat's queries that 'it is not straightforward to quantify which investment is specifically for 2020-25 targets, as many of our AMP7 performance

⁷ [Ofwat's response to the provisional findings – cost and outcomes](#), paragraph 2.46; [Ofwat's reply to responses to the provisional findings – costs and outcomes](#), paragraph A6.4

⁸ Ofwat noted that while the majority of this expenditure may be base costs, there may be some enhancement as well, so the percentages may not be accurate. This applies to the percentages reported in the next two bullet points too.

commitments continue on from our AMP6 performance commitments as both are aligned to the similar long term outcomes.’

- Hafren Dyfrdwy indicated that it accelerated investments in maintenance activities to deliver immediate improvements as well as benefits into AMP7 and beyond, such as ‘targeted mains renewal to improve leakage, supply interruptions and mains bursts’, but that it was difficult to quantify the elements specifically relating to 2020-25 targets.
 - Also, three Disputing Companies provided similar comments:
 - Anglian said ‘Totex outperformance in the AMP was strong, albeit with a lower level of outperformance in years four and five, as a result of the shareholder decision to reinvest £165 million into resilience in the company’.
 - Yorkshire said it exceeded its internal sewer flooding targets in each year of AMP6, and it invested its outperformance rewards in the latter part of AMP6 in order to undertake an ‘early start’ to improve its internal sewer flooding performance ahead of AMP7. ‘This has put [Yorkshire] on the front foot to meet the challenges ahead.’
 - Bristol said that its analysis of 2019/20 data showed clear evidence, for the water service, that costs were increasing because of the need to meet new and more challenging performance commitments. We note that Bristol said this quote related to the increase in ongoing base costs and that these were not atypical costs.
11. At the Main Party Hearing, Ofwat said that companies felt ‘challenged’ by PR19 performance commitments and that was why they had started investing in 2019/20. Ofwat said this was particularly true in wholesale water where companies had invested to meet a leakage target. It also added that the increase in expenditure may have been driven by some companies finding it more profitable to target performance than they did before, therefore shifting their focus from cost efficiency to achieving higher levels of service. Ofwat also said that bringing forward investment ‘can be disruptive for the purpose of modelling and forecasting’, and that there existed a ‘lagged relationship’ between the investment and the benefit that the investment brought, and that on this particular occasion including 2019/20 data would capture only the former, but not the latter.
12. Ofwat said that it was possible, in theory, to include 2019/20 data, but that the CMA should then ‘recalibrate performance’ in terms of water or wastewater spending. Ofwat said that this would be challenging as the CMA would need to rethink about the efficiency challenge, performance outcomes and the

overall modelling approach. Ofwat said it was unable to suggest an appropriate set of adjustments to accommodate the inclusion of 2019/20 data.

13. Overall, Ofwat's view is not to include 2019/20 data.⁹

Responses from Disputing Companies

14. The Disputing Companies responded to Ofwat's arguments against the use of 2019/20 data. In summary, the Disputing Companies said that:

- Costs in 2019/20 were not atypically high.¹⁰
- There was no evidence to suggest that investments brought forward created a bias in the assessment.¹¹
- There was evidence that bringing forward investment was not unique to 2019/20. Investment was brought forward also at the end of AMP5 as well as in 2018/19.¹² Indeed, this was endemic in the price control mechanism, eg 'fast-track' companies were rewarded by 'receiving an early draft determination in March or April 2019 ... helping to accelerate the delivery of company plans'.¹³
- Ofwat's argument was inconsistent with its own position that there was not a link between costs and performance.¹⁴
- The fact that companies' cost allowances may increase or not with the incorporation of the new data could not in itself be an argument for not using it.¹⁵ In any case, contrary to Ofwat's statements, incorporating the new data still granted lower base allowances than companies had forecast in their plans.¹⁶

⁹ [Ofwat's response to the provisional findings – cost and outcomes](#), paragraph A6.10; [Ofwat's reply to responses to the provisional findings – costs and outcomes](#), annex 6

¹⁰ [Northumbrian's reply to responses to the provisional findings](#), paragraph 36; [Yorkshire's reply to responses to the provisional findings](#), paragraph 4.5.5

¹¹ [Northumbrian's reply to responses to the provisional findings](#), paragraph 36. [Yorkshire's reply to responses to the provisional findings](#), paragraph 4.5.5

¹² [Northumbrian's reply to responses to the provisional findings](#), paragraph 37 and Table 1; [Anglian's reply to responses to the provisional findings](#), paragraph 60

¹³ [Anglian's reply to responses to the provisional findings](#), paragraph 59, quoting Ofwat (2017), *Delivering Water 2020: Our final methodology for the 2019 price review*, p245

¹⁴ [Northumbrian's reply to responses to the provisional findings](#), paragraph 36

¹⁵ [Yorkshire's reply to responses to the provisional findings](#), paragraph 4.5.6; [Northumbrian's reply to responses to the provisional findings](#), paragraph 40

¹⁶ [Anglian's reply to responses to the provisional findings](#), paragraph 65

- The use of several years of data minimised the impact of atypical years and any discontinuities introduced by price control period boundaries.¹⁷
15. Bristol said that Ofwat had not provided convincing arguments against using the 2019/20 cost data and the latest data should be used.¹⁸ Bristol re-iterated its position in favour of using 2019/20 data.¹⁹
16. In the Main Party Hearings, the Disputing Companies added the following points:
- Anglian said that the addition of 2019/20 data was valuable because it provided the most up to date information. It said that the increase in expenditure was a consequence of the sector being asked to deliver a higher level of service.²⁰ It also said that the industry spending in AMP6 was unusual as, instead of following a dome-shaped curve, it increased step-wise across the five years. That would explain the increase in costs in 2019/20.²¹
 - Northumbrian said that the expenditure for transition in PR19 was lower than in PR14 (about £150 million, against £400 million for PR14), and that it was normal for companies to spend more in the last year of the AMP to get ahead on the next AMP.²² Northumbrian said that its increase in expenditure was due to refurbishment of pumps, treatment works, and back-loaded capital expenditure, not investment to improve leakage. It said that the expenditure could be explained by capital maintenance cycles or back loading for capital expenditure. It said that it had not done detailed calculations, but disputed Ofwat's claim that using the 2019/20 data would result in companies receiving £1.5bn more than the companies' asked for. It said that 2019/20 was the most recent information available on current cost pressures and the current scope for efficiency, and therefore the CMA should use the data. It added that, using the 2019/20 would not result in bill increases, but if the CMA was concerned about the overall effect of the new data on the redetermination, it should look at an affordability package for customers. In response to a question in the Hearings, Northumbrian said that the CMA could not conclude that the new data was invalid because some companies had accepted Ofwat's FD.

¹⁷ [Anglian's reply to responses to the provisional findings](#), paragraph 62

¹⁸ [Bristol's reply to responses to the provisional findings](#), paragraph 16

¹⁹ [Bristol's reply to responses to the provisional findings](#), p13

- Bristol said that using 2019/20 data mitigated the need for the CMA to consider making separate allowances for Bristol's starting position of having higher levels of service. It said that if investment was brought forward to improve leakage, it would have been enhancement spending, not base costs. It also said that the 2019/20 expenditure was evidence of the service-cost relationship, and that extra costs in wholesale water were related to more staff employed to fix leaks. Bristol said that the increase in expenditure was due to companies underspending and underachieving in leakage performance in the first two years of the AMP, and compensating after summer 2018. As such, the increase in expenditure in 2019/20 was not due to investment brought forward from 2019/20, but due to reaching a level playing field in performance. Bristol said it was good practice to use the latest data, and that the level of spending in 2019/20 was influenced by the totex regime of PR14.
 - Yorkshire said that the 2019/20 expenditure reflected the improvement in performance. It also said that expenditure was lumpy, and peaks reflected the time it took for investment programmes to move from design to delivery stage. Yorkshire said that it had invested in wastewater as well as well as water and there had been higher investment in wastewater in the last year of the AMP period.
17. We also note that submissions from the Main Parties included other arguments on more practical topics (such as the timely availability of the data, the inclusion of booster pumping stations forecasts instead of outturn, and the exclusion of non-section 185 diversion costs). These have now been superseded by Ofwat's revised data. The only methodological issues on the inclusion of 2019/20 data that are disputed between the Main Parties are the time of application of the allowance for a frontier shift and the modelling of the merger between Severn Trent and Dee Valley. On the latter, Anglian noted that depending on what assumption is made, the predicted allowance may vary by £46m.

Post-December 2020 hearing submissions

18. Anglian said that Ofwat's analysis of wholesale water base cost aggregate spending was misleading because:
- It focused on wholesale water, not wastewater. Wholesale wastewater costs were 0.1% lower in 2019/20 than the average for the rest of the AMP6. Anglian noted that when considering both wholesale water and wastewater services, 2019/20 costs were only 6.5% higher than the first four years and this increase was mostly driven by wholesale water. Anglian said that Ofwat's analysis appeared to imply that, while

expenditure was supposedly brought forward in water, this was not the case for wastewater despite companies also needing to meet stretching targets and performance commitments over AMP7.

- The increase in expenditure in 2019/20 was due to the gradual increase in spending over AMP6, not a sudden increase in costs in 2019/20. According to Anglian, this gradual increase in expenditure was due to:
 - Companies deferring spending from the early years of AMP6 to later years in order to adjust to the new totex regime.
 - Underlying cost drivers increasing costs over the period.
 - Companies investing to meet a larger number of performance commitments in the last year of AMP6.
 - A proportion of the 13% difference between 2019/20 expenditure and the annual average expenditure over the first four years of AMP6 calculated by Ofwat was attributable to real price effects over the period which were higher in AMP6 compared to AMP5.
19. Anglian said that c.40% of botex plus excluding growth, maintenance and renewals could not be brought forward and represented in-period spending. In addition, Anglian said that expenditure in several other areas was already at, or close to, 2019/20 levels by 2018/19 and therefore it could not represent brought forward expenditure.
20. Anglian also re-stated its support for the use of 2019/20. In addition to the arguments presented above, Anglian said:
- The efficiency benchmark would be based on AMP6 only.
 - The additional year would provide valuable new data on how companies had responded to the introduction of the outcome delivery incentive and totex regime, which would continue in AMP7.
 - Alternatively, model estimation and benchmark estimation could both be based only on the data for the AMP6 period – 2015/16 to 2019/20. This would ensure consistency between the estimation period of the model and the calculation of the efficiency benchmark (at the possible expense of some accuracy in cost prediction), while also maintaining all the other advantages of focusing on AMP6.
 - Anglian's allowance remained well below the forecast in its plans, even after adding the impacts of updating models with 2019/20 data calculated

by Oxera. The same was true for Yorkshire, while Northumbrian's allowance exceeded its forecast by a modest amount.

21. Northumbrian said that it was uncontroversial that the 2019-20 wastewater costs were neither atypical nor distortive compared to previous years.
22. Northumbrian said that the increase in wholesale water costs for some companies was due to either meeting AMP6 targets or diversion costs related to High Speed 2. Northumbrian also said that transitional totex²³ for 2019/20 showed that water expenditure in 2019/20 advanced from AMP7 was £24m, 0.6% of 2019-20 water base totex.
23. Ofwat said that transitional totex was irrelevant because it related almost exclusively to enhancement schemes, with base transition expenditure being lower than £1 million.²⁴ Ofwat said that the increase in wholesale water base costs in 2019/20 was unrelated to the transition programme.
24. Bristol and Yorkshire did not submit additional arguments in relation to the inclusion of the 2019/20 data post-hearing.²⁵

Third parties' arguments

25. Water UK said it was 'important to robustly assess the potential for service improvements to result in higher costs on a case-by-case basis, and also to consider the level at which further improvements would impose costs on customers that outweigh the benefits.' Water UK said that considering the most recent industry cost and service data, from 2019-20, was likely to be informative for the CMA and enable an assessment to be made over the full period of AMP6.²⁶
26. Thames Water said it assumed that the CMA will be updating the analysis to include the final year of the price control now available and it 'would encourage it to do so.'²⁷

²³ We understand this to be accelerate capital expenditure companies make to secure delivery of proposed performance commitments in the first years of the next price control period: Ofwat (2013), [Setting price controls for 2015-20 – final methodology and expectations for companies' business plans, Appendix 5: Guidance on business plan tables](#), p15)

²⁴ Ofwat (2020), [Reference of the PR19 final determinations: Costs and outcomes – Ofwat December response](#), paragraph 2.2

²⁵ We acknowledge Yorkshire's arguments about the link between 2019/20 data and leakage, but we do not cover them here.

²⁶ [Water UK's response to the provisional findings](#), p3

²⁷ [Thames Water's response to the provisional findings](#), paragraph 27

3. CMA assessment

27. In this section, we present our assessment of the arguments on whether to include 2019/20 data. First, we introduce the advantages and disadvantages of including 2019/20 data. Second, we present an analysis of trends in the companies' base costs. Third, we compare 2018/19 and 2019/20 outturn spending to the respective business plans' expectations. Fourth, we review the arguments on investment brought forward from AMP7 to 2019/20. Fifth, we discuss arguments about consistency. Finally, we present topics not disputed by the Main Parties.

Advantages and disadvantages of 2019/20 data

28. From the Parties' submissions presented above, we find that there are both advantages and disadvantages in including 2019/20 data.

29. The advantages include:

- The inclusion of more recent data may be more informative to predict future costs as it may reflect more accurately current expenditure and efficiency levels.
- More observations are likely to lead to more precise coefficient estimates.
- The use of a larger number of years helps account for lumpy cost items, such as capital maintenance.

30. However, we note that while more data increases the precision of our estimates (especially in relatively small data sets like those we used at PFs), it does not necessarily increase the explanatory power of our models.²⁸ Indeed, most of the explanatory power of our models derives from cross-sectional differences across companies, rather than data fluctuations over time.²⁹

31. A disadvantage of using the 2019/20 data is the potential introduction of bias in our estimates of the companies' allowances. We are concerned that companies may have transferred substantial investment from AMP7 to 2019/20. This additional spending would increase the dependent variable of our models, creating an increase in costs that is not explained by changes in the explanatory variables. While this may occur at other points in time (for instance, at the end of AMP5 or due to changes in capital maintenance expenditure), we are concerned that the scale of the investment brought

²⁸ This is proved by the small changes in the R-squared between CMA's PDs models and Ofwat's models with 2019/20 data included.

²⁹ This is proved by the much larger 'between R-squared' relative to 'within R-squared'.

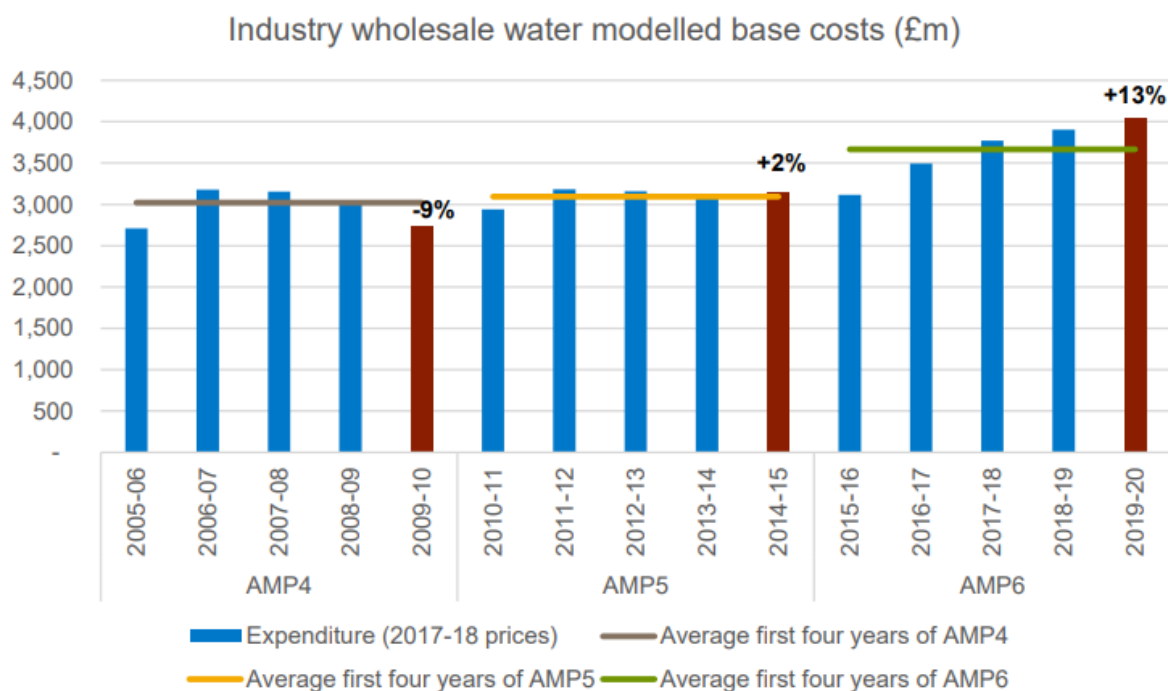
forward reflected in the 2019/20 cost data would substantially distort our estimates of the base cost allowance. The scale of this additional spending (and therefore bias) may be large given that, under several metrics (for example, leakage), PR19 was a substantially more demanding determination than others have been in the past.

32. We note that all arguments made in this regard by the Main Parties focus on wholesale water cost data. None of the Main Parties provided strong evidence to support the view that the use of 2019/20 wholesale wastewater cost data or the use of updated forecasts for the cost drivers would create bias in our estimates. We come back to this point at the end of this section.

Trends in spending

33. We assessed Ofwat’s analysis of base cost data over the course of the last three AMPs. This analysis may be helpful to identify years with particularly high levels of expenditure which may distort our estimates.
34. Ofwat compared the wholesale water industry spending in 2019/20 relative to previous years and previous AMPs. Figure 1 below shows that 2019/20 was a year with high levels of base costs. Figure 1 also shows that there is a positive trend across AMP6 – not only in the last two years.

Figure 1: Wholesale water base costs, comparison of the last year of expenditure to the average of the first four years of each AMP

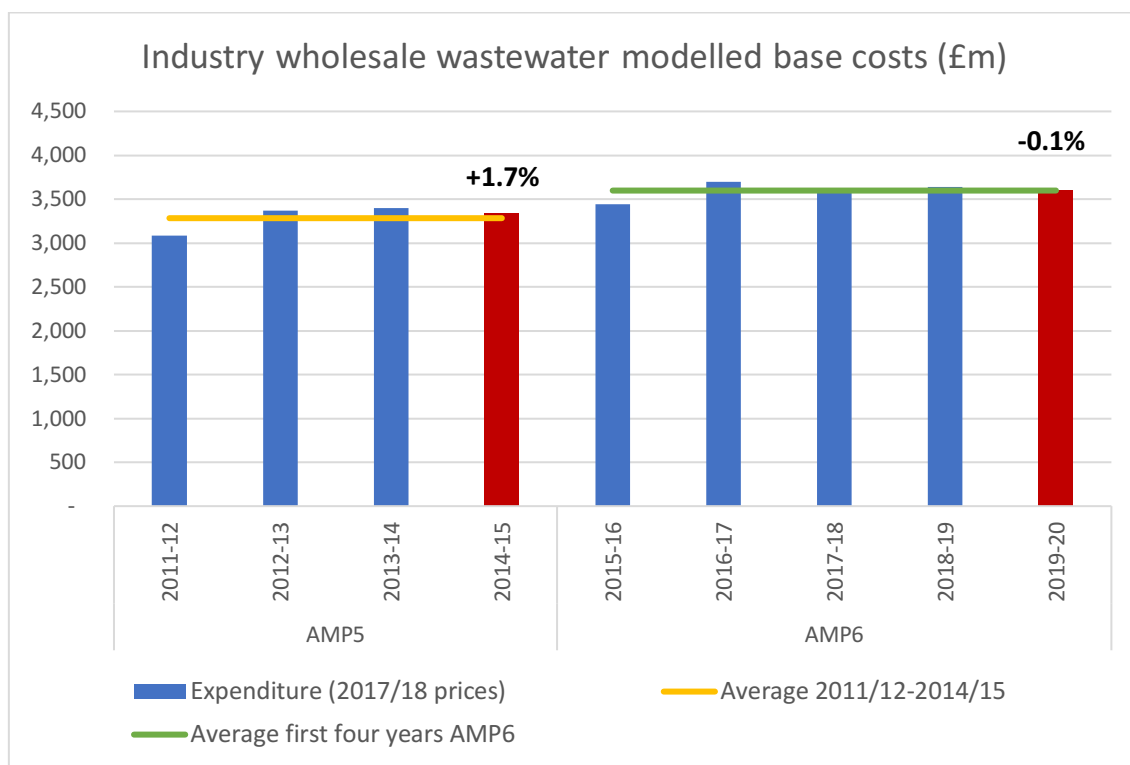


Source: Ofwat Response to Request for Information, Figure 1. [Ofwat's reply to responses to the provisional findings – costs and outcomes](#), annex 6.

35. Anglian and Northumbrian provided some reasons why they thought the base costs increased throughout AMP6 and in particular in 2019/20 (see paragraphs 18 and 22). The reasons included:
- the companies adjusting to the new totex regime;
 - increases in the underlying cost drivers;
 - the need to meet AMP6 performance commitments in 2019/20;
 - higher real price effects in AMP6 than in AMP5; and
 - diversion costs related to High Speed 2.
36. Ofwat said that the dummy variable for 2019/20 in our wholesale water models had a positive and statistically significant coefficient. We find that in several models the coefficient of a dummy variable for 2018/19 is also positive and statistically significant. Moreover, the coefficient dummy variable for 2015/16 is negative and statistically significant. We are therefore wary of using dummy variables to identify years which are likely to introduce bias.³⁰
37. We find that spending in 2019/20 was higher than in previous years. However, from this aggregate analysis, we cannot conclude whether 2019/20 was an 'atypical' year in terms of wholesale water spending. Given the overall trend in spending over AMP6, the growth in costs between 2018/19 and 2019/20 was in line with growth over AMP6. We recognise, however, that this assessment does not preclude the possibility that the increase in costs in 2019/20 may be due to investment brought forward from AMP7. We note that the trend seen in wholesale water costs in AMP6 did not occur in previous AMPs nor in wholesale wastewater (see below).
38. Spending in wastewater for the years included in our base cost models are shown in Figure 2. Wastewater spending in 2019/20 is more in line with spending in previous years.

³⁰ We also tested year dummy variables in wholesale wastewater, but 2019/20 was not statistically significant in any of our models.

Figure 2: Wholesale wastewater base costs, comparison of the last year of expenditure to the average of 2011/12-2014/15 and the first four years of AMP6



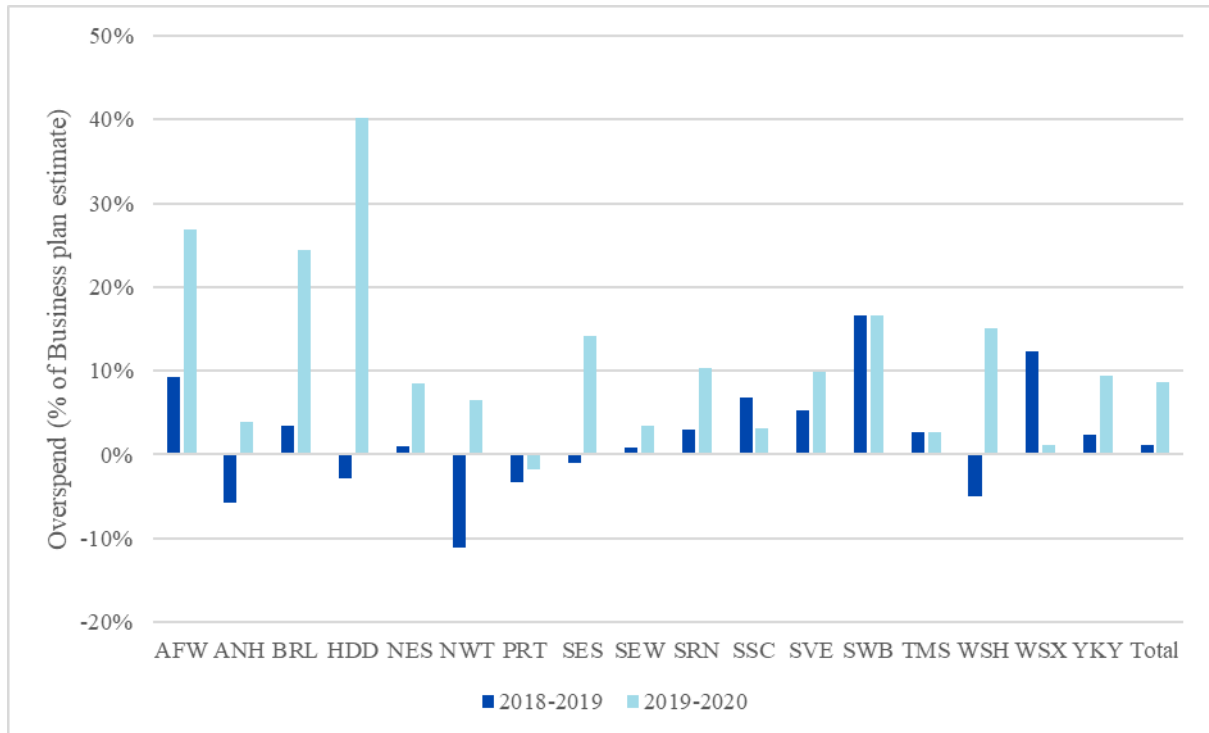
Source: [CMA analysis](#).

39. Overall, we find it difficult to draw any clear conclusions from this analysis of trends in spending.

Comparison outturn vs business plans

40. Given the limitations of the aggregate analysis of trends in spending, we looked at more granular data. We compared companies' actual spending to the forecasts included in their April 2019 business plans. We called this difference 'overspend'.
41. This comparison provides useful information on actual expenditure relative to the companies' expectations – business plans are not a perfect measure of future costs, but they capture to some extent the companies' expectations and provide a useful comparator. To provide context to our 2019/20 results, we also performed the same comparison for 2018/19.
42. Figure 3 below shows the overspend for wholesale water 2019/20. The total overspend across the wholesale water industry was £319m (9%) in 2019/20, compared to only £42m (1%) in 2018/19. The graph below also shows that the overspend was higher in 2019/20 than in 2018/19 for 13 of the 17 companies.

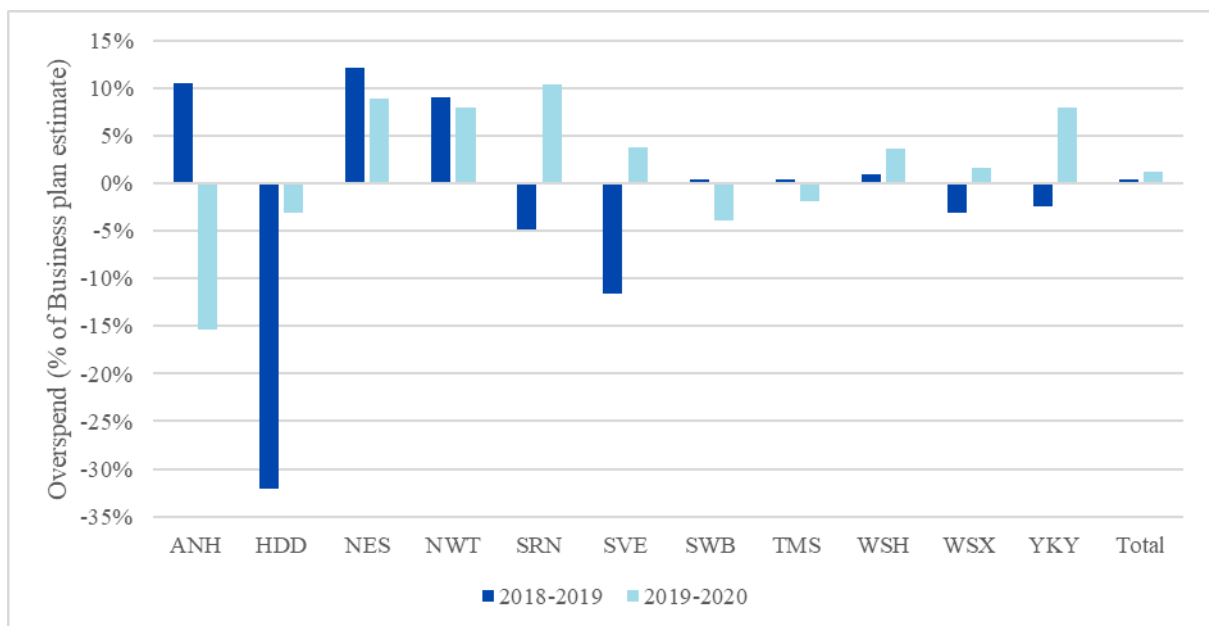
Figure 3 – overspend (as % of BP estimate) for wholesale water in 2018/19 and 2019/20 by company



Source: [CMA analysis](#) of Ofwat wholesale water base cost data
 Note: For the purposes of this analysis, we assume HDD is a continuation of DVW, and SVE is a continuation of SVT.

43. Figure 4 below shows the overspend for wholesale wastewater in 2018/19 and 2019/20. The total overspend across the wholesale wastewater industry was £44m (1.2%) in 2019/20, compared to only £15m (0.4%) in 2018/19. The overspend was higher in 2019/20 than in 2018/19 for five of the 11 companies.

Figure 4 – overspend (as % of BP estimate) for wholesale wastewater in 2018/19 and 2019/20 by company



Source: [CMA analysis](#) of Ofwat wholesale wastewater base cost data

44. Comparing the 2019/20 outturn spending and companies' business plans suggests that the water industry spent substantially more than it expected to. This is particularly true for wholesale water. Overspend occurred also in 2018/19, but to a much lower degree.

Investment brought forward

45. As reported in paragraph 10, the comments from the water companies to Ofwat indicated that their overspend was, at least partly, due to the targets set in PR19. We note that Ofwat reported comments from nearly half (six out of 13) of the wholesale water companies not involved in this appeal. Moreover, the amount of investment transferred from AMP7 to 2019/20 was substantial for some of the companies (see paragraph 10).
46. We also recognise that some companies highlighted the difficulties of identifying what expenditure was brought forward specifically in relation to AMP7 targets. For example, as reported in paragraph 10, Severn Trent said 'it is not straightforward to quantify which investment is specifically for 2020-25 targets, as many of our AMP7 performance commitments continue on from our AMP6 performance commitments as both are aligned to the similar long term outcomes.'
47. Ofwat's submissions seem to connect the increase in costs to performance in leakage (see paragraph 9). However, we also note leakage was not the only reason why some companies brought forward investment from AMP7. For example, Dŵr Cymru mentioned the aim of reducing external sewer flooding; United Utilities mentioned water network infrastructure, leakage and sewer flooding performance, and IT system improvements; South West mentioned capital maintenance, leakage, sewer flooding and IT infrastructure.³¹
48. Anglian and Northumbrian said that bringing forward investment was not unique to 2019/20, that it happened in 2018/19 too, and that this was endemic in the price control mechanism (see paragraph 14). We place little weight on this argument, as the evidence presented above suggests that investment brought forward in 2018/19 was substantially less than in 2019/20. Moreover, if investment in 2019/20 was brought forward in light of PR19 performance commitments, this could not have been the case for investment in 2018/19 when PR19 was still to be determined.
49. In addition, we note that even with the inclusion of 2019/20, our data set would not cover two full AMPs because it misses 2010/11. Therefore, the

³¹ See paragraph 10 above.

higher investment in 2019/20 (the last year of AMP6) cannot be compensated by the potentially lower investment in 2010/11 (the first year of AMP5).

50. Anglian said that c.40% of botex plus excluding growth, maintenance and renewals could not be brought forward and represented in-period spending. We place little weight on this argument as even if 40% of botex excluding growth, maintenance and renewals cannot be brought forward, this still leaves 60% that could be brought forward.
51. Overall, all water companies' comments suggest that a substantial amount of investment is likely to have been brought forward from AMP7 to 2019/20.

Consistency

52. Anglian said that including 2019/20 data would be in line with the inclusion of 2018/19 data which Ofwat did between Draft Determination and Final Determination.³² We place little weight on this argument, as no party had argued that the 2018/19 data introduced bias. On the contrary, we are concerned that the presence of investment transferred from AMP7 would distort our estimates.
53. Bristol said that including 2019/20 data would be consistent with the CMA considering data from 2019/20 in setting service performance targets.³³ Bristol also said that including 2019/20 was necessary to avoid a disconnect between AMP7 costs and service targets.³⁴ We place more weight on these arguments as we aim to be consistent in our use of data. However, this does not automatically imply it would be appropriate to include the 2019/20 data if that data would substantially distort our results.
54. Ofwat suggested that if 2019/20 data were included, the CMA should then rethink the efficiency challenge, performance outcomes and the overall modelling approach. Yorkshire said that if the CMA included 2019/20 data in the base cost models, it should then modify its approach to leakage.³⁵ Northumbrian suggested that if the CMA was concerned about the overall effect of the new data on bill increases, it should look at an affordability package for customers. We recognise that if we use this data we might have to update other parts of our analysis and ensure our overall approach is

³² [Anglian's response to the provisional findings](#), paragraph 76; [Anglian's reply to responses to the provisional findings](#), paragraph 62

³³ [Bristol's response to the provisional findings](#), paragraph 211

³⁴ [Bristol's response to the provisional findings](#), paragraph 212

³⁵ [Yorkshire's response to the provisional findings](#), paragraph 5.5.1

consistent. While we expect there to be consequential impacts this has not driven our provisional decision.³⁶

55. Ofwat said that the addition of 2019/20 data leads to base cost allowances which are £1.5bn higher than the amounts the companies requested in August 2019. We have given limited weight to this argument because we do not think that the comparison with cost allowances requested in August 2019 is informative for two reasons.
- First, the August 2019 submissions were informed by the Draft Determination and did not reflect the companies' original expectations. Ofwat and Northumbrian both submitted on this topic.³⁷ In our analysis above, we use business plans submitted in April 2019, before Draft Determination. Ofwat said that a comparison of allowed costs with the inclusion of 2019-20 data to the companies' April 2019 business plan requested cost still showed excess allowances of £1 billion for the sector in wholesale water.³⁸
 - Second, while the changes in the estimated allowances may be a symptom of factors distorting our results, we do not find them a valid reason, by themselves, to discard the 2019/20 data if its inclusion leads to improved models.
56. Overall, we do not see any particularly strong argument that highlights consistency issues arising from either including or not including 2019/20 cost data.

Non-disputed topics

57. Most of the arguments submitted by the Main Parties focused on 2019/20 wholesale water cost data. No evidence was provided by the Main Parties against the use of other 2019/20 data.
58. Northumbrian said that it was uncontroversial that the 2019/20 wastewater costs were neither atypical nor distortive compared to previous years. We note, on whether using the 2019/20 wastewater data would result in

³⁶ Albeit recognising the case-specific differences of previous determinations, including the different timelines, we note that the PR14 and the CMA's PR14 Redetermination for Bristol also did not use the last year of data available, see: [Bristol Redetermination Appendices](#), paragraph 223, ppA4(2)-50

³⁷ Northumbrian said that the £1.5bn figure does not relate to what the companies have accepted at Draft Determination. Ofwat said there was no evidence that companies reduced their requested costs, either in their business plans or in the August 2019 submission, beyond what is an efficient level of costs: Ofwat (2020), [Reference of the PR19 final determinations: Costs and outcomes – Ofwat December response](#), paragraph 2.5

³⁸ Ofwat (2020), [Reference of the PR19 final determinations: Costs and outcomes – Ofwat December response](#), paragraph 2.6

substantial bias, the evidence is less clear-cut. We come back to this point in paragraph 65.

59. We also note that no party argued against the use of the updated forecasts for the cost drivers in light of the 2019/20 outturn data. These cost drivers (comprising the explanatory variables of our econometric models) include variables like number of properties or sewer length, and have been provided by Ofwat together with the 2019/20 cost data. The potential for bias for cost drivers is limited because the cost drivers are not substantially under management control. Moreover, the updated forecasts would be informed by the most recent outturn data available.

4. Provisional decision

60. This paper presented and assessed the arguments and evidence on the inclusion of 2019/20 data into the CMA's base cost models.
61. In considering how to account for 2019/20 data, we note that it is common practice for the CMA to exclude data that it finds to be unreliable or unrepresentative. This is consistent with the approach described in our Approaches document where we said 'we will also consider whether information is complete and robust so that we can place reliance on it.'³⁹ For example:
- In PFs, the CMA gave less weight to post-2008 data to determine the frontier shift because the data would not be representative of the entire business cycle of the industry.
 - In the CMA's PR14 Redetermination of Bristol Water, the CMA did not include 2013/14 data due to some explanatory variables not being available and the fact that it had used data to 2012/13 for its provisional findings.⁴⁰
62. The evidence and arguments provided by the Parties on the inclusion of 2019/20 wholesale water cost data suggest that its inclusion offers both advantages and disadvantages.
- On one hand, the inclusion of 2019/20 data may increase the precision of estimates, include more recent information in our data set, cover the

³⁹ CMA (2020), *PR19 Water redeterminations: Approach to the redeterminations*, paragraph 58

⁴⁰ *Bristol Redetermination Appendices*, ppA4(2)-50, paragraphs 217-220 and 223

entire AMP6, and would be consistent with any instances where the CMA considered 2019/20 data in setting performance commitments.

- On the other hand, the inclusion of 2019/20 may introduce bias in our estimates for the base cost allowances. Our assessment of the evidence presented above, finds that:
 - (i) Companies spent substantially more in wholesale water in 2019/20 than they predicted. Overspend occurred also in 2018/19, but to a much lower degree.
 - (ii) Companies' comments suggest that a substantial amount of this investment is likely to have been brought forward from AMP7 to 2019/20.

63. We explored potential adjustments that would allow our models to benefit from 2019/20 data while mitigating the risks of biasing our estimates. However, we have not found any appropriate adjustment that we were confident would sufficiently address the risks of distortion. For instance, we have considered:

- The use of a dummy variable for the year 2019/20. As explained in paragraph 36, we are wary of using dummy variables to identify 'atypical' years. Moreover, a 2019/20-specific dummy variable would not be able to isolate the effect of the investment brought forward from other increases in expenditure.
- A company-specific adjustment to companies' 2019/20 costs to reflect the investment brought forward from AMP7. However, we have not found a reliable methodology to quantify the amount of investment brought forward and consequently the adjustments we should apply to companies' costs in 2019/20. This is also supported by companies' comments as reported in paragraph 10; for instance, Severn Trent and Hafren Dyfrdwy said it was not 'straightforward to quantify which investment is specifically for 2020-25 targets,' and that it was difficult to quantify the elements specifically relating to 2020-25 targets.

64. While we recognise that we cannot quantify the advantages and disadvantages of including 2019/20 data, on balance, we find that the disadvantages of including 2019/20 wholesale water and wastewater cost data in our base cost models outweigh the advantages. In reaching this provisional view, we give particular weight to the risk of biasing our predicted allowances for companies' base costs. Biased predicted allowances risk consumers overpaying or underpaying for water services. Our provisional

view is that this is a high risk in comparison to the benefits 2019/20 cost data would provide, and we found no adjustment that could be made to the models that would mitigate these risks. Therefore, having carefully considered the competing arguments, our judgement is not to base our estimates on the most up-to-date data and we provisionally decide not to include 2019/20 cost data into our base cost models.

65. Given the observation in paragraph 58 that the evidence on the presence of bias in wastewater is less clear-cut, we have considered including 2019/20 cost data only for wholesale wastewater. However, we provisionally decide not to include it because:
- Some of the companies' comments reported in paragraph 10 suggest that investment was brought forward in light of commitments in wastewater (for instance, sewer flooding performance).
 - Some cost items are common (or highly correlated) across water and wastewater, and some of them (for instance, IT costs) are mentioned in the companies' comments reported in paragraph 10.
 - We consider there is a risk of inconsistency if we take different approaches between water and wastewater. For example, the data would apply only to companies with wastewater activities and not to water-only companies like Bristol. Moreover, we would need to estimate different efficiency challenges and, possibly, apply a frontier shift from different years. This, in turn, would set different challenges to water and wastewater companies and reduce the overall comparability of the results of our water and wastewater base cost models.
66. As noted above, the parties' arguments focused on 2019/20 wholesale water cost data. As explained in paragraph 59, we find the cost drivers not to be substantially under management control and, therefore, under little risk of leading to bias in our estimates. Therefore, we provisionally decide to incorporate 2019/20 outturn data for the cost drivers of our models and update our cost drivers' forecasts for 2020/21-2024/25 accordingly.
67. As discussed above, our provisional decision is not to use the 2019/20 data in our dataset. However, in the event that, following this consultation, we change our provisional decision and use the 2019/20 data or the 2019/20 data related to wholesale wastewater, there are three consequent methodological issues strictly related to base cost models where we would need to make decisions and we invite views on these topics

- **Frontier shift.**⁴¹ Frontier shift is a modelling feature that reflects the progress of productivity in future years. For this reason, our provisional view is that frontier shift should be applied to forecast data, not outturn data. Therefore, our provisional view is that, if we were to incorporate 2019/20 cost data, frontier shift should be applied from 2020/21 – differently from our PFs where it was applied from 2019/20.
- **Merger of Severn Trent and Dee Valley.** Severn Trent (SVT) and Dee Valley (DVW) have merged and re-organised to become Severn Trent (SVE) and Hafren Dyfrdwy (HDD). After the merger, HDD operates water and small wastewater activities, whereas before the merger DVW was a water-only company. The disputing companies and Ofwat modelled the merger in two different ways. Our provisional view is driven by two principles: (i) consistency of our approach in the estimation of cost regressions and the efficiency benchmark, and (ii) a desire to exclude outliers that would skew our results. We recognise these principles may not always lead to the same conclusion and that the estimated allowances are sensitive to the methodology used. Our provisional view, if we were to incorporate 2019/20 cost data, is:
 - In wholesale water, to drop HDD, and to include SVE as a separate entity for 2019/20. We first recognised the differences in wholesale water, in terms of number of connected properties, between SVT and SVE on one side, and DVW and HDD, on the other. Second, we noted HDD has a small presence in wholesale water; this would lead it to be an outlier in our sample.⁴² On the other hand, we noted the substantial size of SVE in wholesale water.
 - In wholesale wastewater, to treat SVE and HDD as a single entity (the Main Parties called this entity SVH), assumed to be a continuation of SVT rather than a separate entity. This is due to the small presence of HDD in wastewater (which would be an outlier), and the lack of any presence of DVW in wastewater.
- **Efficiency challenge.** The evidence submitted to the CMA suggests that incorporating the 2019/20 data would lead to higher allowances for the Disputing Companies. Our provisional view is that we should not change the efficiency challenge solely due to any change in allowances. Rather than seek specific outcomes, instead we should set the efficiency

⁴¹ [Anglian's response to the provisional findings](#), p24; [Northumbrian's response to the provisional findings](#), p12; [Bristol's response to the provisional findings](#), p6 and p46; Ofwat [Reply to Response to PFs, Outputs and Costs](#), p4

⁴² HDD is the smallest company in terms of number of properties (64% less than the smallest company, SES) and length of mains (22% less than the smallest company, PRT).

challenge based on our assessment of the quality of the econometric modelling. We have not received new evidence that would change our conclusions in this respect.

68. The consultation on this working paper will close at 4pm on Monday 18 January 2020.
69. This working paper reflects the CMA's latest thinking on the use of 2019/20 data in base cost models, but do not cover all the issues that relate to base cost models or to the bills that customers will be paying. Nor do they represent the allowance to be awarded in our Final Determination.
70. A final decision on allowances will be taken by the CMA following this consultation process, taking full account of all evidence provided, as part of our 'in the round' redetermination and in light of the applicable duties.