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Reference of the PR19 final determinations: Outcomes – response to common issues in companies' statements of case

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Outcomes - response to common issues in companies' statements of case

This document provides our response to common issues raised by the disputing companies in relation to outcomes. Outcomes issues which are unique to a specific company are set out in the respective company specific 'Response to statement of case' documents.

Contents

1. Summary of our response

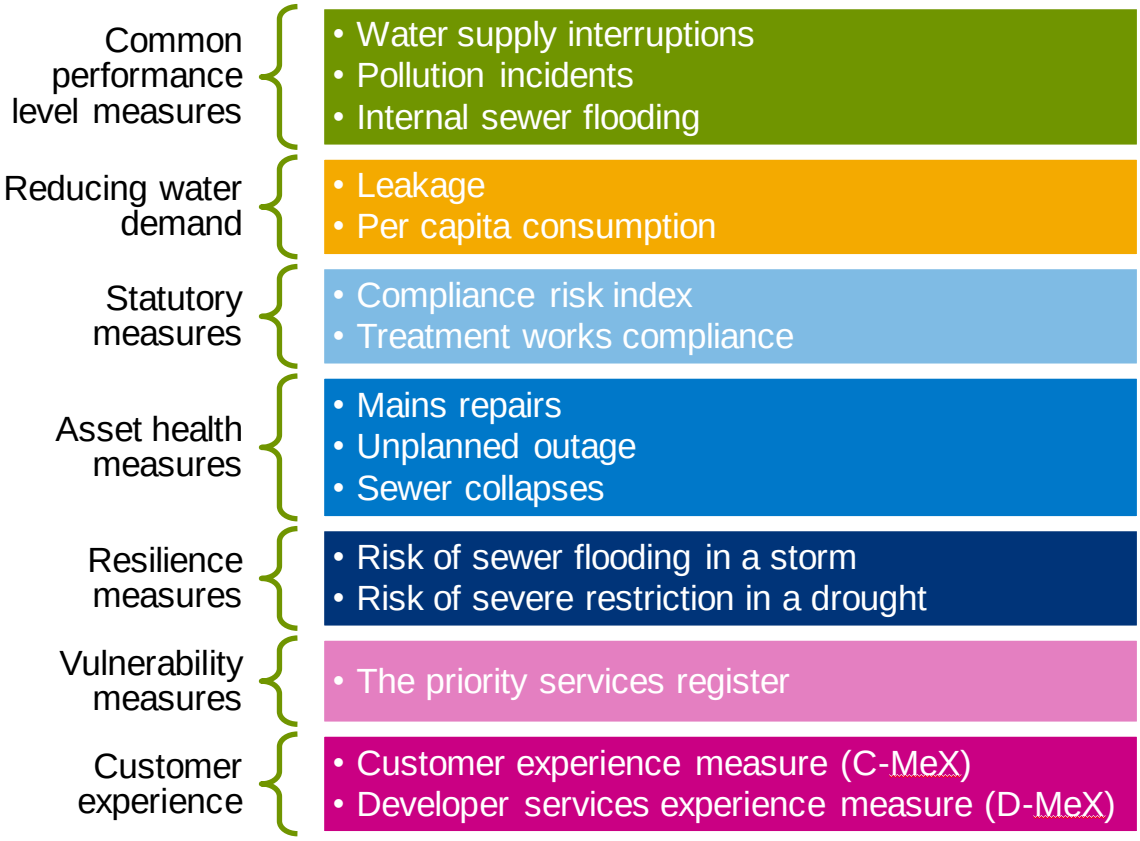
1.1 Any form of price control must determine not only the costs allowed to a company but also the outcomes, or service levels, that the company is expected to deliver with that cost allowance. It is important to customers that both cost allowances and service levels reflect those of an efficient company. A focus on cost efficiency alone could result in a regulated monopoly reducing service in order to cut costs. A well-designed price control will incentivise a company to improve service and cost efficiency.

1.2 The outcomes approach, including performance commitments and outcome delivery incentives, is central to aligning company management and shareholder interests with those of their customers. Historically, the sector has earned much of its returns from financing outperformance with little return for good customer service. PR19 builds on the approach developed in PR14 and sets a comprehensive set of outcomes and associated incentives to drive excellent performance over the 2020-25 period and longer term. The disputing companies claim that PR19 demands too much from them and that their customers' interests would be better served by lower service and/or higher prices. As we set out in this document, we reject their claims and consider the PR19 final determinations provide a sound framework for companies to deliver excellent service at an efficient cost.

1.3 Each company's outcomes are specified in a set of performance commitments, with around 40 performance commitments per company. We refer to the service levels set for each performance commitment as Performance Commitment Levels, or "PCLs" as we refer to them throughout this document. We asked all companies to set PCLs for 15 common performance commitments and, of these, three were set at a common level.[1] These common performance commitments, including the three set at common levels, are listed in Figure 1. We also asked companies to set PCLs for their bespoke performance commitments, some of which had standard definitions and were comparable across companies. In total there are over 400 bespoke performance commitments sector-wide, with the number per company varying. Performance commitments are accompanied by outcome delivery incentives (ODIs) for over- or under-delivery against the PCLs, which may be reputational or financial.

[1] Ofwat, 'Reference of the PR19 final determinations: Overview', March 2020, pp. 31-40

Figure 1: Common Performance Commitments



1.4 The disputing companies have raised several issues in relation to PCLs and ODIs including the overall methodologies and framework we have adopted in assessing or intervening in the companies' proposals, as well as the application of the methodologies to particular performance commitments or company circumstances.

1.5 This document sets out why we consider our methodology for setting PCLs is appropriate and why the evidence and judgements we have made support the levels that we have determined both generally and for the disputing companies in particular. In summary, we consider that:

- Companies should, in general, continue to be able to deliver improvements in service levels within their PR19 base cost allowances (section 2);

- It is appropriate for PCLs to be stretching, and require improvement from PR14 levels, but they should also be achievable for an efficient company within the 2020-25 period (section 3);

- PCLs cannot be set purely on the basis of an analysis of marginal costs versus marginal benefits of service increments and decrements – it is generally not possible to precisely identify such a level for each performance commitment (section 4);

- The outcomes package for each company should take account of evidence of customer preferences, but it is not the only factor that we should consider - we also consider other information not available to customers in making our judgements of the appropriate PCLs (section 5);

- The PR14 approach of using historic upper quartile performance to set PCLs turned out to be insufficiently stretching in many cases, and so we have used forward-looking upper quartile at PR19 as a starting point where appropriate to do so, focused on a small proportion of the common performance commitments (sections 6-7); and

- Using a variety of data points, we checked that the proposed stretch for each performance commitment was achievable. Where appropriate to do so, we made interventions in each company's proposed PCLs to make them more or less stretching (sections 8-10).

1.6 Companies have raised further issues relating to ODIs. We explain how:

- Our approach to ODIs aligns company and customer interests (section 11); and

- Our approach to modelling risks associated with ODIs was appropriate given the data available (section 12).

1.7 Overall, we consider that the PCLs and ODIs we have set are aligned to our duties, including that they are in the best interests of customers and the environment, in the short and long term (section 13).

1.8 We consider each of these points in more detail in turn in the sections below. Issues relating to leakage PCLs are dealt with separately in chapter 5 of Cost efficiency – common issues.

2. Our base cost allowance funds service improvements

Final Determination

2.1 Our final methodology stated that, in general, we expected companies to challenge themselves to deliver excellent performance. In many cases this is likely to involve improved performance over the 2020-25 period and setting starting performance levels for 2020 which build on and reflect improvements achieved in the PR14 period. We generally expected companies to submit PCLs which reflected this ambition and could be funded through efficient base cost allowances, although our methodology did allow companies to submit additional cost claims for particular circumstances.

2.2 In line with this, our final determinations did not generally grant additional costs to meet improvements in service levels. However, there were exceptions to this. For example, for the disputing companies, we allowed:

- Enhancement funding to Anglian Water (£71.4m) and Bristol Water (£4.8m) to reduce leakage beyond the forecast upper quartile threshold and to align leakage reduction to their water resource management plans (see chapter 5 of Cost efficiency – common issues for more details);
- £16m for Yorkshire Water to reduce the risk of sewer flooding in Hull (see chapter 3 of our Response to Yorkshire Water's statement of case); and
- £9.4m enhancement funding for Bristol Water to increase meter penetration, which will have a positive impact on leakage reduction and per capita consumption (see chapter 3 of our Response to Bristol Water's statement of case).

Issues raised by disputing companies

2.3 Yorkshire Water claims that our final determination failed to adequately fund improvements in key common performance commitments. It claims that we have assumed that service improvements can be achieved purely through

efficiency savings[2] and argues that firms at the efficiency frontier "cannot simultaneously reduce costs and improve outcomes performance."[3]

2.4 Anglian Water's statement of case similarly claims that our approach to ODIs is based on a belief that there is no trade-off between cost reduction and quality.[4]

2.5 Yorkshire Water suggests that our approach has created a disconnect between costs and outcomes.[5] The disputing companies claim that we should have explicitly modelled the costs of service improvements (see 'Cost efficiency – common issues').

Our response

2.6 We disagree that the improvements set are not adequately funded.

2.7 Our base models allow efficient companies to fund service improvements. The base expenditure incurred by companies in historical years (which is the input to our base models) includes expenditure on previous performance improvement in areas such as supply interruption, and investment to address internal or external sewer flooding risk and pollution incidents. Therefore the modelled costs should reflect similar improvements. It is important that PR19 PCLs reflect this. If PR19 PCLs were not based on improved performance, then base cost allowances would need to be reduced to avoid over-funding companies.

2.8 Expectations of improved performance also reflect technological progress. Our final determinations set out how estimates of technological progress tend insufficiently to account for improvements in service.[6] In addition, we reduced the extent of the frontier shift applied to our cost models to allow for the fact that we were also requiring improvements in service standards (particularly in leakage).[7]

[2] Yorkshire Water, 'Statement of Case', April 2020, p. 137
[3] Yorkshire Water, 'Statement of Case', April 2020, p. 49
[4] Anglian Water, 'Statement of Case', April 2020, p. 200, paragraph (i) of box.
[5] Yorkshire Water, 'Statement of Case', April 2020, p. 45
[6] Ofwat, 'PR19 final determinations: Overall stretch on costs, outcomes and cost of capital policy appendix', December 2019, pp. 44-45
[7] Ofwat, 'PR19 final determinations; Securing cost efficiency technical appendix', December 2019, pp. 115-117

2.9 If PCLs are not set to take account of a reasonable level of improvement from technological progress, then companies would be able to earn ODI outperformance payments without delivering stretching performance. This would result in companies being overpaid for providing services and would bring the legitimacy of the incentives framework into question. Alternatively they may have limited impetus to innovate in line with technological progress to meet their performance commitments.

2.10 We do not understand Anglian Water's claim that our approach to ODIs is based on a belief that there is no trade-off between cost reduction and quality. Our ODIs are explicitly linked to costs as well as the benefits to customers. They claw back costs when service is not delivered and reflect the additional costs involved in outperforming.

2.11 Turning to the alleged "disconnect" between our approaches to costs and outcomes, as we discuss in chapter 3 of our document 'Cost efficiency – common issues', we have tested service quality variables in our econometric models, and so have the companies. These variables generally do not prove to be significant, nor their effect on cost conclusive.

2.12 Therefore we estimated the scope for outcomes stretch by considering companies' forecasts of improvement and assessing them with reference to a number of factors, including best practice, technological progress, comparative benchmarking, and what has been achieved in previous price control periods.

2.13 In short, we believe that we have taken the most appropriate way to assess the efficient level of outcomes stretch. None of the companies has put forward a better way to model the costs of service improvements. Simply accepting the companies' preferred levels of stretch (or deciding to 'split the difference' between their preferences and our determinations) would not be accurate and may confer upon the companies an arbitrary windfall.

3. It is appropriate for performance commitment levels ("PCLs") to be stretching but achievable

Final Determination

3.1 Our final determinations aimed to set stretching but achievable performance commitment levels. We said in our final methodology that "To maintain customers' trust and confidence in the outcomes regime it is important that they can be sure that companies' performance commitment levels are appropriately stretching, and that any outperformance payments are only available for outperformance beyond those stretching levels. Stretching performance commitment levels challenge companies to achieve both a higher level of service, and a more resilient service performance. They encourage companies to improve their services to current customers, future customers and the environment. Working together with our cost assessment tests, more stretching performance commitment levels should help drive greater efficiency in service provision."[8]

Issues raised by disputing companies

3.2 Economic Insight, on behalf of Yorkshire Water, implies that we provided no definition of what "stretching" means.[9]

Our response

3.3 We think it is clear what was we meant by stretching. As discussed above, we meant that, for a given level of costs companies should not be able to easily achieve the level of service set. Rather, they should have to challenge themselves in the interests of their customers. However, we also said that PCLs should be achievable, so that the service levels are realistic and companies can continue to finance their services.[10][11]

[8] Ofwat, 'Delivering Water 2020: Our methodology for the 2019 price review; Appendix 2: Delivering outcomes for customers', December 2017, pp. 42-43
[9] Annex 05 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to ODI interventions in the Final Determinations', March 2020, pp. 27-28
[10] Ofwat, 'PR19 draft determinations: Delivering outcomes for customers policy appendix', July 2019, p. 21
[11] Ofwat, 'PR19 final determinations: Overall stretch on costs, outcomes and cost of capital policy appendix', December 2019, pp. 4-6

3.4 In other words, the level of service set should correspond to the level of cost allowance being spent in an economically efficient way. Customers should not pay extra costs to receive an efficient level of service; nor should they receive poorer service due to inefficiency of their monopoly provider.

3.5 As we set out above, we generally expected companies to meet their improved PCLs from base costs. But we allowed for circumstances where additional costs may be granted. In either case, the PCL should be stretching given the costs allowed.[12]

3.6 This does not mean that we expect all companies to achieve all PCLs in every year. Their investment and efficiency in both in PR19 and in previous periods will have an impact. Events outside the companies' control, notably relating to weather, may also affect performance to some extent, but this can be positive or negative, and companies generally can take actions to mitigate any negative impact. If all companies met all PCLs in all years, it would suggest that we had not set performance commitments that were sufficiently stretching and companies would on average outperform. Nonetheless, we expect an efficient company to achieve its PCLs set out in our final determinations on average.

3.7 We note that a number of companies have chosen to invest more in the 2015-20 period – both to address performance shortcomings and to improve outcomes in the anticipation of a need for improved performance in the 2020-25 period (as signalled by us in the final methodology and consultations and discussions leading up to it). This underlines the importance that PR19 performance commitments are set in line with the expectations of the PR19 methodology and that companies are held to account to deliver that improved performance in the 2020-25 period. In the short term, if PCLs are lowered, then companies will potentially earn additional outperformance payments in this period as a result of their earlier investment in the last period. In the longer term, incentives for investment will be reduced if companies do not expect us to follow through on our commitments in the price review methodology.

[12] Ofwat, 'PR19 final determinations: Overall stretch on costs, outcomes and cost of capital policy appendix', December 2019, pp. 42-47

4. PCLs are not intended to be set solely on the basis of a (narrowly defined) cost benefit analysis

Final Determination

4.1 Our final methodology described how PCLs should be set. It said:

> "Our approach to setting stretching performance commitment levels for PR19 is that companies should: engage with their customers on their performance commitment levels; and challenge the level of stretch in their performance commitments with their customers, CCGs and other stakeholders against a range of approaches including: cost benefit analysis; comparative information; historical information; minimum improvement; maximum level attainable; and expert knowledge.
>
> We want companies to challenge themselves against the approaches above so that when engaging with customers they are not using their current performance as the starting point, but starting from what excellent performance looks like.
>
> If a company has not challenged its proposed performance commitment level against each of these approaches, it will need to explain why it has not done so. We are setting out approaches to give companies more flexibility in how they set their performance commitments and because the best approach might vary between different metrics depending on, for example, customers' preferences."[13]

4.2 For common performance commitments, we stated:

> "The approach for common performance commitments is the same as for the other performance commitments. The one exception is that for three of the common performance commitments, which have particularly good quality data and where there is no clear reason why companies should not be achieving the same stretching level of performance, we expect companies to set their commitment levels to at least the forecast upper quartile level in each year of

[13] Ofwat, 'Delivering Water 2020: Our methodology for the 2019 price review; Appendix 2: Delivering outcomes for customers', December 2017, pp. 50-51

the price control. These three are: water supply interruptions; internal sewer flooding; and pollution incidents."[14]

4.3 In preparing their forecasts for these three performance commitments, most companies provided their view of upper quartile, using a combination of expert judgement, current data and trendline analysis. Most companies also cross-checked their estimates using customer views and cost benefit analysis to understand if their proposals were in line with customer interests.

Issues raised by disputing companies

4.4 Yorkshire Water submitted representations suggesting that PCLs should all be at levels where (marginal) benefits equal (marginal) costs. Economic Insight, on its behalf, further claims in particular that what is efficient for one company will not be efficient for another because of differences in the costs of solutions available, customer benefits, and the different 'starting points'.[1516] This seems to imply that performance commitments which are set at a common level, in particular, are not set at levels where marginal benefits equal marginal cost.

4.5 Yorkshire Water quotes the Competition and Markets Authority (CMA) in its PR14 redetermination for Bristol Water in support of the position that our upper quartile methodology was unlikely to lead to PCLs being set at the "economic level".[17]

4.6 It states that Ofwat could "have undertaken its own robust economic and engineering analysis (with suitable sensitivity checks) to form a view as to what the economically efficient level of outcomes could reasonably be expected to be".[18]

[14] Ofwat, 'Delivering Water 2020: Our final methodology for the 2019 price review', December 2017, p. 54
[15] Annex 05 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to ODI interventions in the Final Determinations', March 2020, p. 33
[16] Yorkshire Water, 'Statement of Case', April 2020, p. 52, paragraphs 159-160
[17] Yorkshire Water, 'Statement of Case', April 2020, p. 54, paragraph 161
[18] Yorkshire Water, 'Statement of Case', April 2020, pp. 55-57, paragraphs 170, 171, 174

Our response

4.7 As set out above, cost benefit analysis is only one element to inform the setting of performance commitment levels.

4.8 This is different from our approach at PR14, where the methodology set out that PCLs should be set by reference to cost benefit analysis. At PR19 we thought it inappropriate to set PCLs based solely on cost benefit analysis because:

- We use comparative benchmarking across companies to compare performance and help to set a stretching but achievable level of performance. The use of company-specific views on costs would not identify the efficient level of stretch, as it is not clear whether a company's inability to meet a service level is due to operating inefficiency, mismanagement or past failure to invest or other company-specific causes. It could also penalise efficient companies, by setting them a greater stretch in line with a lower cost, and conversely reward inefficient companies;

- We had specific expectations of common service levels for three of the common performance commitments. This reflects the common nature of these key elements of service across companies, the importance of these to customers and the ability to use benchmarking to set efficient levels of service.

- A common level of service is not a new requirement for companies: we set common service levels for the same three performance commitments in PR14. However, these were based on historic upper quartile with a three year glidepath to achieve this level of service from companies' starting levels.[19] Moving away now from a common service level to a lower level of service for some companies would reward them for underperformance or embed inefficiency.

- The level of service can be aligned to customer values by setting appropriate ODIs. If companies can provide service greater than the PCL

[19] At PR14 all performance commitments proposed by the companies were "bespoke"; however, we introduced some elements of commonality, including PCLs, for some of them during the price review process. Nevertheless there were still differences in performance commitment definitions and reporting between companies in PR14 even where common PCLs had been determined. At PR19 we have taken this a step further by introducing "common" performance commitments with common definitions and reporting.

at a cost less than their customer values, then the outperformance payment should provide an appropriate incentive to improve service. Similarly, if the company cost of maintaining the PCL is higher than customer benefit, then the company can provide service less than the PCL and compensate customers for benefit forgone through making underperformance payments.

- In practice, both marginal cost and benefit data are difficult to produce and verify. For example, the evidence from PR19 customer research suggests an apparent broad dispersion of customer values for common elements of service. Marginal cost data can also be variable and are not prepared or audited on a consistent basis. This point was noted in responses to the consultation on our draft methodology, with some respondents citing this as a reason why the industry should cease to rely solely on cost benefit analysis when setting PCLs.[20] So some caution needs to be applied to the assumption that marginal cost and benefit could be used to set appropriate PCLs.

- If we did try to set PCLs such that marginal cost equals marginal benefit, we would have to make numerous adjustments to our base models to ensure allowances corresponded to efficient costs. Where the cost benefit analysis corresponded to a lower level of service than that funded by our base model, we would need to reduce cost allowances to remove any costs associated with this service improvement. This would be a complex and subjective exercise and likely to increase risk of excess or insufficient cost allowances.

4.9 With regard to Yorkshire Water's comment that Ofwat could have conducted its own economic and engineering analysis to determine what the most economic level of outcomes could be, we consider the onus should be on the companies to provide the data and evidence to demonstrate the appropriateness of their PCLs. We can then scrutinise the PCL, rather than us seeking independently to determine the optimal level.

4.10 We recognise, of course, that it would be open to the CMA (which is looking at this matter afresh) to seek to develop its own cost benefit analysis, and to set outcomes relying on that analysis alone. For the reasons set out above, our view from experience remains firmly that the complexities of such an exercise,

[20] Ofwat, 'Delivering Water 2020: Our methodology for the 2019 price review; Appendix 2: Delivering outcomes for customers', December 2017, p. 47

and its inherent vulnerability to subjectivity on the part of the companies, render this an unsuitable approach.

5. Our outcomes package does take account of customer survey evidence although this is not the only factor we consider

Final Determination

5.1 Our methodology strongly encouraged companies to seek customer views, including to shape their outcomes package, and this is reflected in our final determinations.

Issues raised by disputing companies

5.2 Anglian Water, Bristol Water and Yorkshire Water argue that our approach to setting outcomes does not take into account fully their customers' preferences.[21] [22] [23]

Our response

5.3 In our PR19 methodology we set out our expectations that companies should demonstrate ambition and innovation in their approach to engaging customers as they develop their business plans. This included direct engagement with customers to develop a package of performance commitments and ODIs.

5.4 Customer preferences, when estimated through high quality customer research, are an important input into setting performance commitments and their associated ODI rates. They have shaped our final determinations to a very significant extent. This includes, for example, in setting ODI types (i.e. whether they covered outperformance as well as underperformance); in setting ODI rates in line with willingness to pay; in the use of caps; in setting bespoke performance commitments. In Chapter 2 of our responses to Anglian Water's statement of case and Yorkshire Water's statement of case we show the extent to which their ODI rates in their final determinations for their customer-facing common performance commitments align with customer preferences.

[21] Anglian Water, 'Statement of Case', April 2020, pp. 242-243, paragraphs 973-977
[22] Bristol Water, 'Statement of Case', April 2020, pp. 147-151, paragraphs 606-617
[23] Yorkshire Water, 'Statement of Case', April 2020, pp. 50-51, paragraphs 152-155

5.5 Nonetheless, we did override the customer research presented by companies in some cases. But we did this in order to better align with customers' interests and preferences, rather than to move away from them.

5.6 In some cases, we did this by better aligning the outcomes package with high quality evidence of customer preference that companies presented. This could be for example where companies have ignored or poorly weighted evidence from their own research.

5.7 In other cases, this was to make use of a wider set of evidence because their research was low quality or even biased. In yet other cases, it was in recognition that companies' customer research can only ever imperfectly capture customers' actual preferences and even good customer research is at best an estimate of the underlying customer preferences.

5.8 This is manifested in the range of ODI rates we observe proposed by companies, and the differences to 2015-20 rates based on similar research on the same customer base. There are several examples of companies reaching very different customer valuation estimates when using different willingness to pay valuation techniques, even with the same underlying customer base. Neither we nor companies have been able to link differences in companies' estimates of their customer valuations with plausible underlying drivers of these valuations.

5.9 Moreover, customers will find it difficult to assess what is achievable. They do not have access to the in-depth analysis of comparative and historical performance information and engineering expertise that Ofwat has applied to assess PCLs. Companies had the ability to present current comparative performance for common performance commitments to customers in their engagement with them, but did not always do so. Thus we disagree with Anglian Water' suggestion that a balanced regulatory approach would "have included a demonstration that what the regulator considers achievable also chimed with the views of customers."[24] We are better placed than customers to assess whether PCLs are stretching but achievable, given cost allowances, and consider that customers will want us to ensure this is the case.

5.10 It would be a derogation of our responsibility as a prudent regulator not to scrutinise and, where appropriate, challenge the results of companies' customer research, based on the wider set of information available to Ofwat

[24] Anglian Water, 'Statement of Case', April 2020, p. 243, paragraph 977. See also SOC280 (Anglian Water) – ICS Consulting, 'Exploring the relationship between service quality and costs', March 2020, p. 7

(such as historical and sector comparative information), and the extent to which they have used it appropriately to form their business plans.

5.11 We have been consistently clear about this during the PR19 process. We were, in particular, clear that we would use comparative information to set PCLs and that three performance commitments with a common level of service would be based on forward-looking upper quartile values. But we nonetheless left flexibility to deviate from this where a good case was made.

5.12 We consider that our interventions help deliver outcomes that are in customers' interests. The interventions we made were targeted and proportionate based on the wider set of information available to Ofwat (such as comparative information) that was not available to customers. In some cases, we considered that there were few reasons why customers should receive a different level of service in different regions (for example water supply interruptions, pollution incidents and internal sewer flooding). In other cases, our interventions were aligned with what we considered that customer research really said (e.g. by triangulating properly and assessing and accounting for quality of research). Moreover, while our interventions were constructed on a bottom-up basis, we also explicitly considered the overall stretch and the appropriateness of companies' resulting outcomes packages in arriving at our final determinations.[25]

5.13 Finally, we note that the disputing companies argue that their customers' best interests would be best served by lower service or higher prices. While we accept that it is challenging to understand customer preferences and how they relate to levels of service, the focus of these companies only on areas where they propose to reduce service or increase costs suggest that it is more likely they are motivated by shareholder interests rather than those of their customers.

[25] For example see 'PR19 final determinations: Overall stretch on costs, outcomes and cost of capital policy appendix', December 2019, pp. 23-33 and 'PR19 Final Determinations: Delivering outcomes for customers policy appendix', December 2019, pp. 104-106.

6. Our PR14 approach of historic upper quartile was not sufficiently stretching

Final Determination

6.1 As we explained in our introduction to the CMA, in PR14 we used the historic upper quartile to set common performance commitment levels.[26] We found that many companies exceeded these levels very early on in the subsequent price control period: 15% were already exceeded in 2014-15 (the year before the price control began) and 21% in the first year of the period (2015-16).[27] And by 2018-19 water companies had achieved or exceeded 63% of their performance commitments, with eight companies achieving more than 70%, and earned net ODI payments of £112 million over the period 2015-19.[28][29] In short, with hindsight, it is apparent that the level at which the performance commitments were set was simply not very stretching and companies were able to recoup substantial financial incentives (incentives paid for by their customers) without having to make sustained efforts over the five-year period.

Issues raised by disputing companies

6.2 ICS, on behalf of Anglian Water, argues that the PR14 approach of using historic upper quartile was sufficiently stretching. It acknowledges that many PCLs were met very early, but it says that the net ODI position on the 5 performance commitments set by reference to historic upper quartile in PR14[30] and leakage is break even, if you remove Severn Trent. It says there is no consideration of the costs associated with achieving PR14 outperformance and no demonstration as to whether this was achieved efficiently or of the potential trade-offs in other areas.

[26] Ofwat, 'Reference of the PR19 final determinations: Cross-cutting issues', March 2020, pp. 14-16
[27] Ofwat, 'Delivering Water 2020: Our methodology for the 2019 price review; Appendix 2: Delivering outcomes for customers', December 2017, p. 44
[28] Ofwat, 'Service delivery report 2018-19', October 2019, p. 12
[29] Ofwat, 'PR19 final determinations: Overall stretch on costs, outcomes and cost of capital policy appendix', December 2019, p. 24
[30] SOC280 (Anglian Water) – ICS Consulting, 'Exploring the relationship between service quality and costs', March 2020, pp. 4-5

Our response

6.3 We do not think that ICS's analysis of ODI performance suggests that the PR14 approach was sufficiently stretching:

- The ODI rates on PR14 performance commitments had a greater emphasis on underperformance payments than outperformance payments (more so than at PR19), as we explain in the Outcome Delivery Incentives section within chapter 2 of our 'Risk and return – common issues' document. It follows that, if the out- and under-performance payments received net off, there is likely to be more outperformance than underperformance, as demonstrated by the fact that most levels were met.

- ICS does not explain why it thinks we should exclude Severn Trent from the analysis. It would be circular to exclude it because the outperformance was linked to insufficiently challenging PCLs and ODI rates. Moreover, in addition to the Severn Trent outperformance payments, the 2015-20 period saw a number of significant underperformance payments. These reflected performance issues occurring that demonstrate unacceptable inefficiency and practices including at Thames Water, Southern Water and a minority of companies during the freeze thaw event in 2017-18.[31] These would significantly reduce the net ODI payments that would have materialized absence such inefficiency. The net ODI negative payments for 2015-19 for Thames Water alone (£113.8m)[32] outweigh the net positive ODI payments for Severn Trent Water for this period (£111.8m).[33]

- ICS also does not explain why it thinks that companies are not achieving the PCLs efficiently. If companies are not achieving PCLs efficiently, then it is acknowledging that our cost models will be based on inefficient costs. It is for this reason that we include catch-up efficiency challenges. We also note that our PR19 base cost models include the cost of actual historical improvement, including any costs spent on outperforming PR14 PCLs.

[31] Ofwat, 'Out in the cold – water companies' response to the 'Beast from the East', June 2018, pp. 17-31
[32] Ofwat, 'Outcome Delivery Incentives model – Thames Water', December 2019, sheet "Ofwat App27", sum cells G10:J10 and G17:J17 and G23:J23. The model can be downloaded from our Final determinations models webpage.
[33] Ofwat, 'Outcome Delivery Incentives model – Severn Trent Water', December 2019, sheet "Ofwat App27", sum cells G10:J10 and G17:J17 and G23:J23. The model can be downloaded from our Final determinations models webpage.

- Finally, the data on the scale of achievement of PR14 performance commitments and the net ODI payments set out above do not suggest that companies had to make significant trade-offs between performance commitments.

7. Our approach to using forward-looking upper quartile performance commitment levels as a starting point is appropriate

Final Determination

7.1 Given our experience following PR14, in PR19 we asked companies to set more stretching levels for common performance commitments, considering their forecast of future upper quartile performance where appropriate to do so. We specifically asked companies to set their PCLs for 3 of these common performance commitments (water supply interruptions, pollution incidents and internal sewer flooding) **at** their forecast of upper quartile performance. We used these estimates as a starting point to set the common level (although we moved away from it where appropriate). For the non-comparable bespoke performance commitments (which represent the majority of companies' outcomes), by contrast, we did not take forward-looking upper quartile into consideration.

Issues raised by disputing companies

7.2 Anglian Water suggests that the forward-looking upper quartile approach is inappropriate because the forecasts have not been created in a consistent manner.[34] It suggests that for water supply interruptions and pollution incidents, a number of companies put forward PCLs that they do not appear to be able to achieve. It points to the fact that Affinity Water, Bristol Water, South East Water and Wessex Water all proposed PCLs for water supply interruptions below four minutes and affected Ofwat's upper quartile for this performance commitment when only one of these companies has achieved a score of less than twelve minutes in the 2015-20 price control period and that was in only a single year. It also says that we used PCLs which represent forecasts of frontier performance (e.g. Yorkshire Water's water supply interruptions and Wessex Water's pollution incidents levels) as if they were forecasts of upper quartile performance. It claims that the performance of these companies is likely to be worse than the levels proposed and may be unachievable. The consequence of this (if correct) is that **all** companies' PCLs

[34] Anglian Water, 'Statement of Case', April 2020, pp. 243-244, paragraphs 978-982

for these performance commitments are set at an elevated (more stretching) level relative to the true upper quartile of performance.

7.3 Anglian Water goes on to state this is particularly problematic as a number of performance commitments are new.[35] It says that out of the 15 common performance commitments, 11 have been subject to changes in definition for PR19 or are new measures introduced in PR19 and none of the companies were fully compliant with the reporting definitions at the time of business plan submission.

7.4 It also claims that there is no regulatory precedent across the water sector and other regulated sectors (such as electricity transmission) for using forward-looking, rather than past, performance.[36]

7.5 Yorkshire Water states that Ofwat's approach to setting upper quartile performance commitments is flawed. It argues that Ofwat's approach is unsound because the approach does not take account of differences between companies and because companies are unlikely to be able to achieve upper quartile for multiple performance commitments.[37]

Our response

7.6 We have utilised the forward-looking upper quartile for a limited number of performance commitments. We think it is appropriate as it takes account of the expected improvement in service. And these improvements are based on forecasts that companies themselves think they can achieve or, if they could not achieve what they considered to be forward-looking upper quartile, then they were able to make the case for a different level (which many did for supply interruptions).

7.7 As we set out in our PR19 methodology, we chose not to provide guidance to companies on forecasting upper quartile performance so that companies can individually consider what stretching performance will look like in 2020-25 and we can learn from those different approaches.[38] Companies could benchmark their performance against each other and against industry trends so they could see how their estimate of forward-looking upper quartile compared to

[35] Anglian Water, 'Statement of Case', April 2020, pp. 243-244, paragraph 983
[36] Anglian Water, 'Statement of Case', April 2020, p. 245, paragraphs 988-989
[37] Yorkshire Water, 'Statement of Case', April 2020, pp. 52-54, paragraphs 158-161
[38] Ofwat, 'Delivering Water 2020: Our methodology for the 2019 price review; Appendix 2: Delivering outcomes for customers', December 2017, p. 54

historical and potential future industry performance. They also had the opportunity to revise their forward-looking upper quartile PCLs in their April 2019 business plans following our initial assessment of plans. In April 2019 we saw considerable convergence around our estimate of the forward-looking upper quartile derived from companies' September 2018 submissions for pollution incidents and internal sewer flooding (although there was still a wider range of PCLs provided by companies for water supply interruptions).

7.8 In addition, most companies tested their PCLs with customers and conducted cost benefit analysis, so we can consider these values as genuine forecasts of performance and not just a PCL they proposed at an upper quartile level because they were asked to do so in our methodology. While recognising that we also asked companies to challenge themselves to be ambitious (and some were very ambitious), ultimately companies have to live by the levels in their determinations so they have limited incentives to over-forecast and be left with an unachievable PCL. The fact that a particular company's forecast represents the current or future frontier does not invalidate it as a genuine estimate of their future performance that should be incorporated into an estimate of the industry upper quartile (any more than company forecasts that are lower than the current or forecast upper quartile). Indeed, there is also a counter-incentive on companies to forecast insufficiently stretching levels to make life easier. For the range of submitted PCLs for water supply interruptions, pollution incidents and internal sewer flooding see Figures 2, 3 and 4 below.

7.9 However, we did recognise that some judgement would be needed in estimating forward-looking upper quartile performance and that companies can be over-optimistic in their forecasts, as well as pessimistic. This is why we used the upper quartile, rather than the frontier estimate, of performance levels.

7.10 Anglian Water comments that forecasts were unreliable because many common performance commitments were new. This is not the case. Only unplanned outage is a new common performance commitment for PR19.[39] The others existed at PR14 and have been evolved for PR19, for example through definitional changes, which have been the subject of joint development and consultation with the industry and several years of shadow

[39] Unplanned Outage is the only completely new common performance commitment with a financial incentive. The two Resilience performance commitments are new but non-financial. The components of Compliance Risk Index have been reported to the Drinking Water Inspectorate for many years.

reporting.[4041] Indeed many of the service measures have existed in one form or another through multiple price control periods, albeit with some changes in definition. In most cases, this has made it possible to put together historical time series taking account of reporting changes over time. In fact, for the most recent years of data we have both actual outturn data on PR14 definitions and shadow reporting data on the PR19 definitions so that we can compare between the two. We recognised this issue in our methodology, and our proposed approach had almost unanimous support.[42]

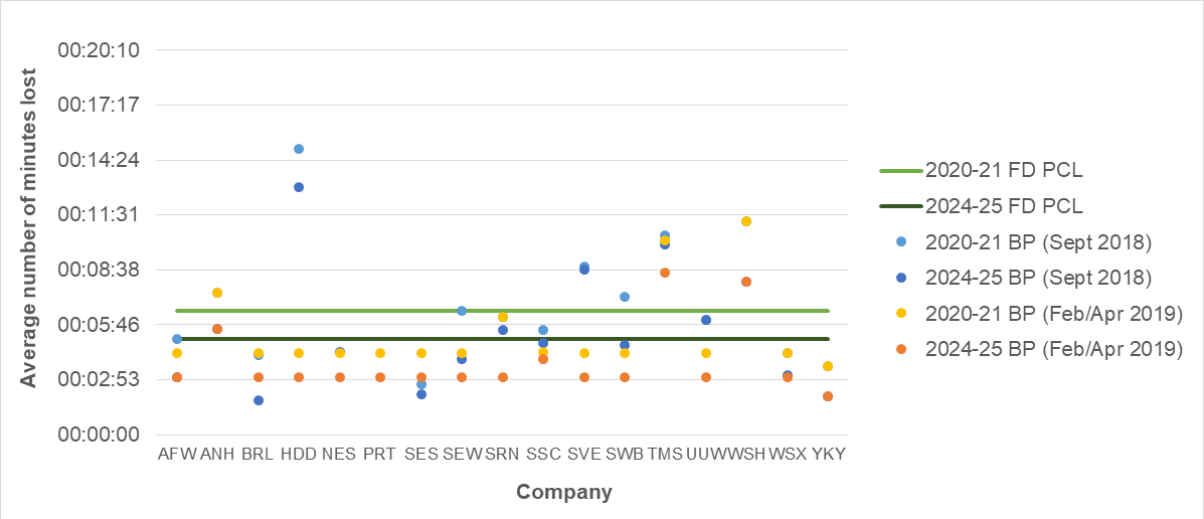
7.11 Moreover, the forecast upper quartile was a starting point rather than definitive, and we moved away from it where appropriate. As set out in the Final Determination delivering outcomes for customers policy appendix:
"…once we have calculated the upper quartile performance levels as a starting point, we need to consider whether these levels are a reasonable expectation for the sector so that we can set levels reflecting a stretching but achievable level of service improvement by 2025. This also addresses the concern raised by some companies that the performance levels derived from our estimation approach are unrealistic. Therefore we conduct further analysis – taking account of wider evidence – to calibrate the appropriate level of stretch of each performance commitment for an efficient company."[43]

7.12 The three charts below (Figures 2, 3 and 4) show the PCLs we set in our final determinations for each of the three performance commitments with common PCLs (water supply interruptions, pollution incidents and internal sewer flooding respectively) for 2020-21 (the first year of the period – shown as a green solid line) and 2024-25 (the final year of the period, shown as a brown solid line). It also shows the PCLs proposed by each of the companies in their September 2018 business plans (light blue dots for 2020-21 and dark blue dots for 2024-25) and February/April 2019 revised business plans

[40] Ofwat, 'PR19 final determinations: Delivering outcomes for customers policy appendix', December 2019, pp. 10-12
[41] Ofwat, 'Delivering Water 2020: Our methodology for the 2019 price review; Appendix 2: Delivering outcomes for customers', December 2017, pp. 58-68
[42] See page 58 of the PR19 final methodology (Appendix 2) where we say we needed to consider how companies can set performance commitment levels for metrics that lack a continuous time series of historical data. We state "companies should use the best information they have available to propose performance commitments based on a percentage change. For example, for leakage, a company might propose a performance commitment with a 15% reduction over time (by 2024-25), compared to the base level. Companies could translate the percentage changes into absolute levels (for example, in megalitres per day for leakage) once reporting under the new definition had settled down. This approach had almost unanimous support in the responses to our informal consultation." Further detail can be found in Ofwat, 'Delivering Water 2020: Our methodology for the 2019 price review; Appendix 2: Delivering outcomes for customers', December 2017, pp. 58-59
[43] Ofwat, 'PR19 final determinations: Delivering outcomes for customers policy appendix', December 2019, pp. 19-20

(yellow/brown dots for 2020-21 and 2024-25 respectively). Where September 2018 and February/April 2019 business plans for a company are the same we show the later submissions (yellow/brown dots) in the foreground.

Figure 2: Companies' proposed PCLs and our final determination PCLs for water supply interruptions[44]



[44] For clarity, the water supply interruptions performance commitment is defined as the average number of minutes lost per customer for interruptions that lasted three hours or more.

Figure 3: Companies' proposed PCLs and our final determination PCLs for pollution incidents[45]

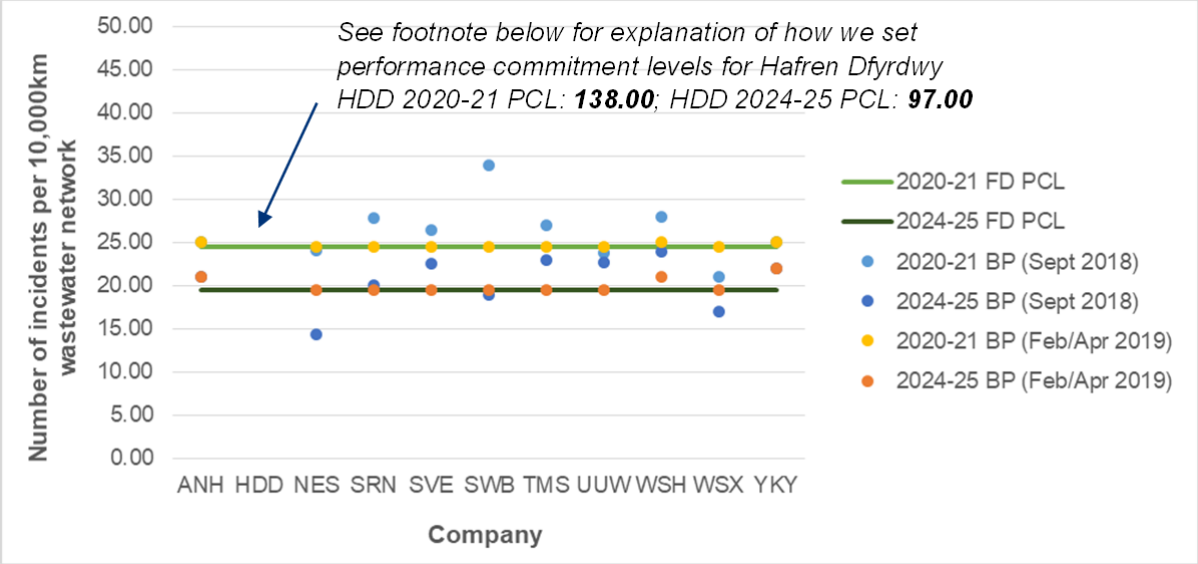
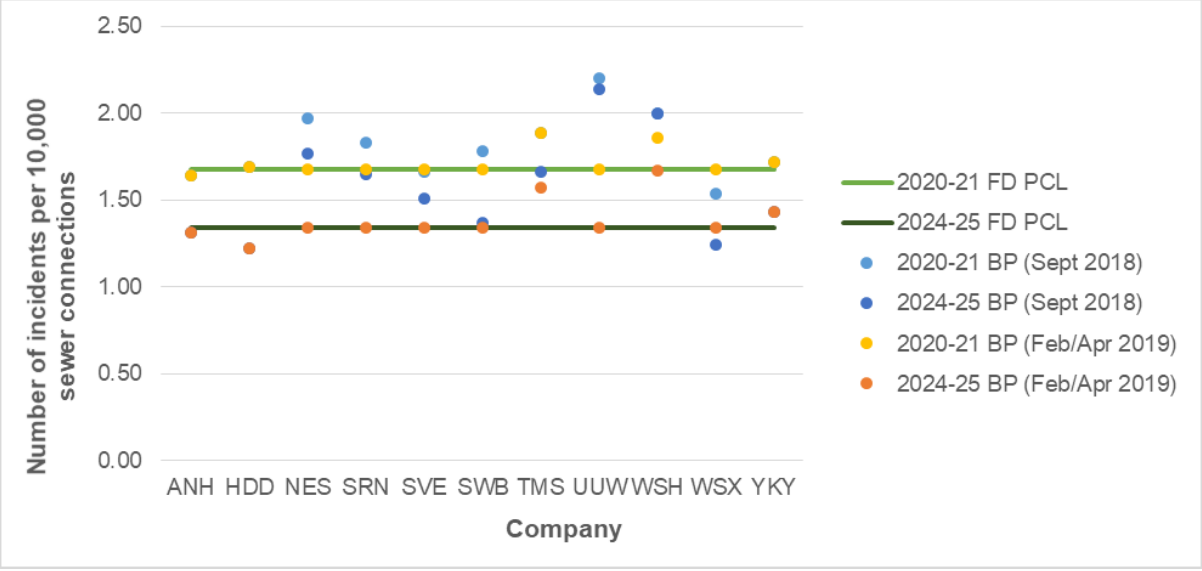


Figure 4: Companies' proposed PCLs and our final determination PCLs for internal sewer flooding



[45] The performance commitment level for Hafren Dyfrdwy is not shown in Figure 3, because this is outside the range of the y axis. As we explained in our final determinations, we set the performance commitment for Hafren Dyfrdwy at its proposed level, rather than using the forecast upper quartile as applied for other companies. We consider that it is not appropriate to set Hafren Dyfrdwy's performance commitment level at the forecast upper quartile level, as this would lead to the company being restricted to having very low numbers of Category 3 pollution incidents, which have minor or minimal impact on the environment, people and/or property. Further explanation can be found in Ofwat, 'PR19 final determinations: Delivering outcomes for customers policy appendix', December 2019, pp. 24-25

7.13 For water supply interruptions in particular, as Anglian Water points out and is shown in Figure 2 above, there was a wide spread of initial estimates of forward-looking upper quartile by companies for both 2020-21 and 2024-25 in their September 2018 business plans, as they used a variety of different methodologies to determine it and had differing views of the achievability of future levels. For example, a number of companies including Bristol Water, Northumbrian Water, SES Water, Wessex Water and Yorkshire Water forecast ambitious levels, whereas Welsh Water and Thames Water appear significantly less ambitious.

7.14 These converged somewhat in companies' revised business plans following our initial assessment of plans although, as the yellow/brown dots in the figure show, still with some dispersion of values and outliers around our initial estimate of the sector forward-looking upper quartile. In addition, a number of companies continued to make representations that this was too stretching, particularly in early years of the period, or that additional funding would be required to achieve the water supply interruptions PCLs.

7.15 As described in our introduction to the CMA, we recognised at draft determination that the forward-looking upper quartile approach was not leading to an achievable set of PCLs for water supply interruptions for the sector as a whole, and we modified our approach, relaxing the 2024-25 level and introducing a glidepath to it.[46] This is illustrated in Figure 5 in section 9 below.

7.16 This contrasts with the situation for pollution incidents (Figure 3) and internal sewer flooding (Figure 4) where, although there was some initial dispersion of forecasts in September 2018 business plans (light/dark blue dots), there was a much stronger convergence of forecasts around our estimates of the sector upper quartiles for 2020-21 and 2024-25 following our initial assessment of plans (yellow/brown dots). We retained these to set the PCLs for these performance commitments at draft and final determinations.

7.17 Nevertheless we did not simply take the forward-looking upper quartile levels set out by the companies. As we explain in detail in section 9 below we conducted considerable analysis to satisfy ourselves that the levels were both stretching and achievable. This analysis resulted in us adjusting the levels for water supply interruptions as a consequence.

[46] Ofwat, 'Reference of the PR19 final determinations: Key elements of the methodology appendix', March 2020, pp. 3-6

7.18 Anglian Water's argument that there is not precedent for using forward-looking, rather than past, performance does not imply there had been any failing on our part. We are keen to evolve our regulatory framework in light of the learnings of previous price controls and changes in circumstance, so previous regulatory decisions cannot govern all approaches that we take (see 'Introduction and overall stretch', chapter 3 – meeting our duties). For example, since 2010, our common customer service performance metric, SIM, has been set on the basis of relative performance across the sector, so only leading performers earn rewards and outturn performance, not past performance, sets the benchmark. We have replaced this with C-Mex for the 2020-25 period which is an evolution of our approach as it now also includes a measure of relative performance against cross-industry comparators as well as within-sector performance.

7.19 It is also worth noting that in our draft methodology, we originally proposed that companies should achieve the forecast upper quartile level of performance for 2024-25 from the first year of the price control. However, following feedback from companies that this would be too stretching, we revised our approach and instead challenged them to set their performance levels based on the forecast upper quartile on a year-by-year basis, from 2020-25. A number of companies supported this approach in their responses to our consultation.

7.20 Taking Yorkshire Water's additional points in turn: First, contrary to its claim that the approach does not take account of differences between companies, we note that companies were able to put in a cost claim for additional funding to meet the common PCL or a proposal for a company-specific adjustment to its PCL from the common level. We considered each of these on their merits (see paragraph 9.21 below for examples). Second, we do not agree that companies are unlikely to be able to achieve upper quartile for multiple performance commitments. We set PCLs for each performance commitment independently, except in a small number of cases where we considered that there were explicit linkages between them (for example on mains repairs and leakage). We consider that an efficient company should be able to meet the PCLs in each one of the three performance commitments with common levels over the period. As we set out in our introduction to the CMA and our 'Introduction and overall stretch' document, good performers tend to be good across a number of metrics, not just on isolated ones.

8. Our interventions were appropriate

Final Determination

8.1 For the performance commitments which were not set at a common level, we considered whether proposed PCLs were stretching using a variety of approaches. Where we had concerns, we intervened although our approach depended on the nature of circumstances and evidence available. Details of our approaches are summarised in the final determinations Delivering outcomes for customers policy appendix (in Table 3.1 with further explanation in the remainder of chapter 3 of that appendix).[47]

Issues raised by disputing companies

8.2 Economic Insight, on behalf of Yorkshire Water, claims many of our interventions are based on inappropriate and meaningless comparisons. It cites our intervention on Yorkshire Water's sewer collapses and drinking water contacts PCL, which we set consistent with the upper quartile percentage improvement in proposed PCLs, whereas for unplanned outage our interventions set PCLs at the industry median proposed level. It claims there is no sound evidential basis for these being 'stretching and achievable' and there is no reason for them to reflect the economically efficient level.[48]

8.3 It also said our interventions did not take account of company-specific circumstances and we should have employed robust economic and engineering analysis and evidence to estimate the economically efficient PCLs.

8.4 It said we used asymmetric information as the reason to take more extreme positions than those based on company evidence (e.g. the upper quartile, rather than the average) but without evidence that the intervention moved PCLs closer to the economically efficient level.[49]

[47] Ofwat, 'PR19 final determinations: Delivering outcomes for customers policy appendix', December 2019, pp.16-18
[48] Annex 05 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to ODI interventions in the Final Determinations', March 2020, p. 34
[49] Annex 05 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to ODI interventions in the Final Determinations', March 2020, p. 34

Our response

8.5 As set out in section 4 above, we were not aiming to set PCLs solely according to cost benefit analysis.

8.6 Moreover, we do not think our interventions were inappropriate or meaningless. The variety of techniques we used when we intervened in companies' proposed PCLs reflected the careful nature of our assessments and interventions and the particular circumstances of each performance commitment. For example, we used median forecast for 2024-25 as the intervention level for unplanned outage because this was a new measure with a limited historical dataset, and therefore we considered there may be some uncertainty around the forecasts, making upper quartile inappropriate. For other measures with a stronger historical dataset (where companies are better able to forecast future performance), we had more confidence in the data provided to set intervention levels based on company proposed improvements and so used upper quartile. Further details are provided in our final determination Delivering outcomes for customers policy appendix.[50]

8.7 More generally, we consider that comparative analysis is a key tool in setting PCLs, analysing deliverability and assessing achievability. It would be remiss of us if we did not use comparative information available to us – we would be ignoring relevant information. Our final methodology noted the importance of comparative information, especially for the common performance commitments.[51] The PR19 outcomes framework enabled companies to propose PCLs based on comparative analysis and it enabled us to make informed determinations about the service customers receive.

8.8 We did allow for company specific circumstances – otherwise we would have simply set all PCLs at the same level. But we also considered what improvements were possible by looking at what had been achieved by other companies. Due to information asymmetry the onus must be on companies to provide compelling evidence that improvements are more difficult for them due to exogenous factors that other companies do not face. This needs to consider both factors that are in its favour as well as those that are against it. In some cases, companies provided arguments for this, but we did not consider them compelling (for example Yorkshire Water on internal sewer

[50] Ofwat, 'PR19 final determinations: Delivering outcomes for customers policy appendix', December 2019, Chapter 3
[51] Ofwat, 'Delivering Water 2020: Our methodology for the 2019 price review; Appendix 2: Delivering outcomes for customers', December 2017, p. 45

flooding - see chapter 4 of our Response to Yorkshire Water's statement of case).

8.9 As we set out in section 3 above, we are alive to the risk of information asymmetry. It was for this reason that we took the upper quartile of the forecasts, where we had good data, rather than the mean or median (although we nonetheless accepted that companies can be optimistic as well as pessimistic and so did not take the frontier estimate). But, as we set out in sections 9 and 12 below, we did not adopt "extreme positions" but rather carefully assessed available evidence to ensure our interventions resulted in achievable PCLs. We note that Yorkshire Water did not appear to consider our intervention on Water Quality Contacts, based on the upper quartile improvement, inappropriate in their August 2018 representations on our draft determination. Moreover, where we had concerns about the data we were cautious (i.e. we preferred to err on the side of companies) and made interventions on the basis of medians, rather than upper quartile.

8.10 Overall, we consider that far from being inappropriate or lacking a sound evidential basis, our interventions reflected a judicious and measured use of comparative information. Given the choice between accepting at face value what the companies told us about how stretching their proposed PCLs were, and making adjustments in the light of what other companies were telling us that they could achieve, the latter was – and remains – clearly preferable.

9. We checked that the stretch is achievable

Final Determination

9.1 A key principle in setting PCLs was that they should be "stretching but achievable". We therefore tested for achievability of the proposed levels within the 2020-25 period across a number of dimensions.

9.2 In relation to the three forward-looking upper quartile performance commitments where we set common levels, we conducted a number of specific comparative checks on achievability at a company and sector level. As set out in the final determinations Delivering outcomes for customers policy appendix we consider the following factors:[52]

- the sector's past performance against PR14 levels;
- the scale of improvement over time (both in PR14 and in previous periods where historical, comparable data was available);
- the improvement required to reach the forecast upper quartile level both in the first four years of the period and in the final year 2024-25. This includes looking at the 'overnight' or first year change from 2019-20 forecast levels to the forecast upper quartile level in 2020-21. In our final determinations we use new data on 2018-19 performance from shadow reporting which was not available to us at draft determination

9.3 We carried out similar analysis for a number of other common performance commitments where we were setting PCLs against sector comparable metrics. For example with asset health performance commitments we tested achievability against historical performance. We based the mains repairs PCLs on the best five years' performance from the last eight years, taking the reasonable assumption that a PCL set on actual performance achieved five times out of the last eight years should continue to be achievable in the 2020-25 period.

9.4 In relation to per capita consumption, we assessed achievability against factors including how the proposed reduction compared with achieved historical reductions and best ever levels achieved, any empirical evidence

[52] Ofwat, 'PR19 final determinations: Delivering outcomes for customers policy appendix', December 2019, pp. 19-20

from the company that achieving a greater reduction than proposed would not be attainable during one five-year period, and alignment to other commitments made by the company (such as in its water resource management plan submitted to Defra).

9.5 We also checked our interventions against future performance levels where appropriate. At both draft and final determination, we tested our 2020-25 performance commitment levels for the common performance commitments against the longer term forecasts submitted by the companies. In particular, we looked to see whether the sector and individual companies were forecasting continuing improvements in service levels over time, as well as the degree of ambition in these forecasts at a company and industry level.

9.6 As set out in the final determinations Delivering outcomes for customers policy appendix, the majority of companies provided data up to 2040 for all the established performance commitments.[53] We assessed how stretching the long term forecasts were across the sector and companies for seven of the key common performance commitments (per capita consumption, supply interruptions, pollution incidents, internal sewer flooding, mains repairs, and sewer collapses, as well as leakage) using April 2019 business plan data and subsequent queries.

9.7 For the two new resilience performance commitments (risk of severe restrictions in a drought and risk of sewer flooding in a storm), the underlying models forming part of the performance commitment inherently look at long term forecasts. We assessed the quality of each company's modelling and forecasts as part of our determinations. With the performance commitments relating to statutory measures (compliance risk index and treatment works compliance) we set the PCLs in expectation of full compliance in all years during the 2020-25 period and beyond.

9.8 Unplanned outage is a new measure. Although some long term data is available, we assessed that, with only two years of shadow reporting, long term projections are likely to be unreliable and so this did not form part of our assessment of PCLs.

[53] Ofwat, 'PR19 final determinations: Delivering outcomes for customers policy appendix', December 2019, pp. 189-191 and Annex 2

Issues raised by disputing companies

9.9 Anglian Water argues that we did not undertake sufficient checks on the achievability of our PCLs.[54] ICS, on behalf of Anglian Water, claims that we did not differentiate in our assessments between 25% more stretch and 50% more stretch.[55]

9.10 Anglian Water also points to the fact that, while the PR19 stretch for internal sewer flooding and for pollution incidents is lower than it achieved in PR14, the PR19 stretch for water supply interruptions is almost four times higher.[56] It claims that this shows inconsistencies in our approach.

Our response

9.11 We carefully assessed available evidence to ensure our interventions resulted in achievable PCLs. As we show here and in section 7, we carefully calibrated and differentiated the appropriate levels of stretch for each performance commitment according to a variety of different factors, including the realism of upper quartile forecasts and their achievability, contrary to ICS's assertion on behalf of Anglian Water.

9.12 We conducted extensive checks on the achievability of our proposed PCLs. This included checks on current and historical performance, the potential for catch-up to the best companies in the 2020-25 period, the achievability of "overnight" adjustments at the beginning of the period, and longer term forecasts of performance. As the CMA will appreciate, this was a complex and multifactorial exercise, which we conducted over a considerable period of time, and taking account of large volumes of data. We relied on our deep knowledge of the sector, and our regulatory expertise, to set PCLs which are achievable. Furthermore, and contrary to Anglian Water's claim, we applied a consistent approach to our consideration of achievability across each of the three forward-looking upper quartile performance commitments, as the following paragraphs demonstrate.

9.13 Tables 1 and 2 below compare the required performance improvement to 2024-25 performance commitment levels, and the improvement companies have already achieved over PR14 for water service (represented by water

[54] Anglian Water, 'Statement of Case', April 2020, pp. 243-245, paragraphs 978-987
[55] SOC280 (Anglian Water) – ICS Consulting, 'Exploring the relationship between service quality and costs', March 2020, pp. 4-5
[56] Anglian Water, 'Statement of Case', April 2020, p. 227, paragraph 924 (and Table 29)

supply interruptions) and wastewater service (represented by pollution incidents and internal sewer flooding) respectively. Green shading indicates the company has outperformed the 2024-25 PCL during the PR14 price control period or forecast that its 2019-20 performance, the last year of PR14 period, would already be at or better than its 2024-25 PCL. We provided this analysis at final determination.[57] We have expanded on it to show the stretch to 2024-25 PCLs from best company PR14 performance, as using some of the company 2019-20 forecasts could present a misleading picture. The best company year, i.e. the year in which it performed the best on the relevant metric, varies by company and metric. The disputing companies are shown in bold.

9.14 For example, on water supply interruptions (see Table 1 below), Anglian Water is arguing that it cannot meet its PCL, as it claims that it only improved performance by 15% in the equivalent run of years around PR14 (as measured by 2012-13 actual versus 2016-17 actual performance) and we are asking for 55% stretch in the 2020-25 period (as measured by the company's 2019-20 forecast made in its September 2018 business plan versus the final determination 2024-25 PCL). However, compared to its best performance in the PR14 period, the PR19 2024-25 PCL represents stretch for the company of only 32%, and its PR14 best performance represents a 46% improvement compared to 2012-13. This makes the PR19 final determination stretch appear much more achievable compared to the company's claim. Both Northumbrian Water and Yorkshire Water forecast their 2019-20 performance on water supply interruptions to be at an equivalent or better level than we ultimately set 2024-25 performance commitment level. Northumbrian Water has already outperformed this level during the PR14 period.

9.15 On internal sewer flooding (see Table 2 below) the position is even more stark, with Anglian Water already having outperformed its 2024-25 PCL during the PR14 period, despite for asking additional funding. Northumbrian Water has also outperformed its 2024-25 PCL for pollution incidents in its best year during the PR14 period (by 57%).

[57] Ofwat, 'PR19 final determinations: Overall stretch on costs, outcomes and cost of capital policy appendix', December 2019, p. 29, Table 8

Table 1: Comparison of water performance improvement required to reach 2024-25 levels and PR14 improvement

Water Supply Interruptions				
Company	Stretch to 2024-25 PCL		PR14 Improvement from 2012-13[58]	
	From Sept 2018 Business Plan 2019-20 forecast	From best company year in PR14	To best sector year (2016-17)	To best company year in PR14
Anglian Water	**-55%**	**-32%**	**-15%**	**-46%**
Dŵr Cymru	-58%	-59%	-77%	-77%
Hafren Dyfrdwy	-58%	20%	35%	-73%
Northumbrian Water	**0%**	**105%**	**-65%**	**-65%**
Severn Trent Water	-43%	-51%	-65%	-65%
South West Water	-35%	-37%	-20%	-43%
Southern Water	-19%	-29%	-61%	-61%
Thames Water	-53%	-53%	-21%	-21%
United Utilities	-58%	-45%	-24%	-49%
Wessex Water	-59%	-15%	-47%	-76%
Yorkshire Water	**25%**	**-28%**	**-4%**	**-32%**
Affinity Water	-17%	-61%	8%	-35%
Bristol Water	**-59%**	**-60%**	**-47%**	**-47%**
Portsmouth Water	25%	43%	3%	-13%
South East Water	-50%	-61%	-2%	-2%
South Staffs Water	-29%	18%	-47%	-57%
SES Water	79%	67%	-71%	-80%
Industry	**-41%**	**-38%**	**-40%**	**-51%**

[58] We measure water supply interruption performance from 2012-13, as this is the earliest year for which consistent data is available.

Table 2: Comparison of wastewater performance improvement required to reach 2024-25 levels and PR14 improvement

Company	Internal Sewer Flooding				Pollution Incidents			
	Stretch to 2024-25 PCL		PR14 Improvement[59]		Stretch to 2024-25 PCL		PR14 Improvement[60]	
	From Sept 2018 Business Plan Forecast	From best company year in PR14	To best sector year (2018-19)	To best company year in PR14	From Sept 2018 Business Plan Forecast	From best company year in PR14	To best sector year (2018-19)	To best company year in PR14
Anglian Water	**-21%**	**9%**	**-30%**	**-30%**	**-33%**	**-8%**	**-55%**	**-61%**
Dŵr Cymru	-33%	-12%	-19%	-19%	-33%	-30%	-16%	-16%
Hafren Dyfrdwy*	-23%	-29%	-	-	-39%	-	-	-
Northumbrian Water	**-43%**	**-43%**	**-13%**	**-30%**	**-22%**	**57%**	**-71%**	**-71%**
Severn Trent Water	-21%	-16%	-40%	-45%	-29%	-29%	-35%	-41%
South West Water	-24%	9%	-51%	-51%	-58%	-80%	-38%	-38%
Southern Water	-33%	-32%	-22%	-22%	-33%	-38%	-53%	-61%
Thames Water	-36%	-23%	-40%	-40%	-30%	-19%	-51%	-57%
United Utilities	-73%	-21%	-32%	-32%	-20%	-11%	-10%	-18%
Wessex Water	-16%	11%	24%	4%	-11%	-12%	-4%	-11%
Yorkshire Water	**-47%**	**-82%**	**-15%**	**-15%**	**-41%**	**-54%**	**-6%**	**-8%**
Industry	**-41%**	**-34%**	**-26%**	**-28%**	**-30%**	**-28%**	**-39%**	**-44%**

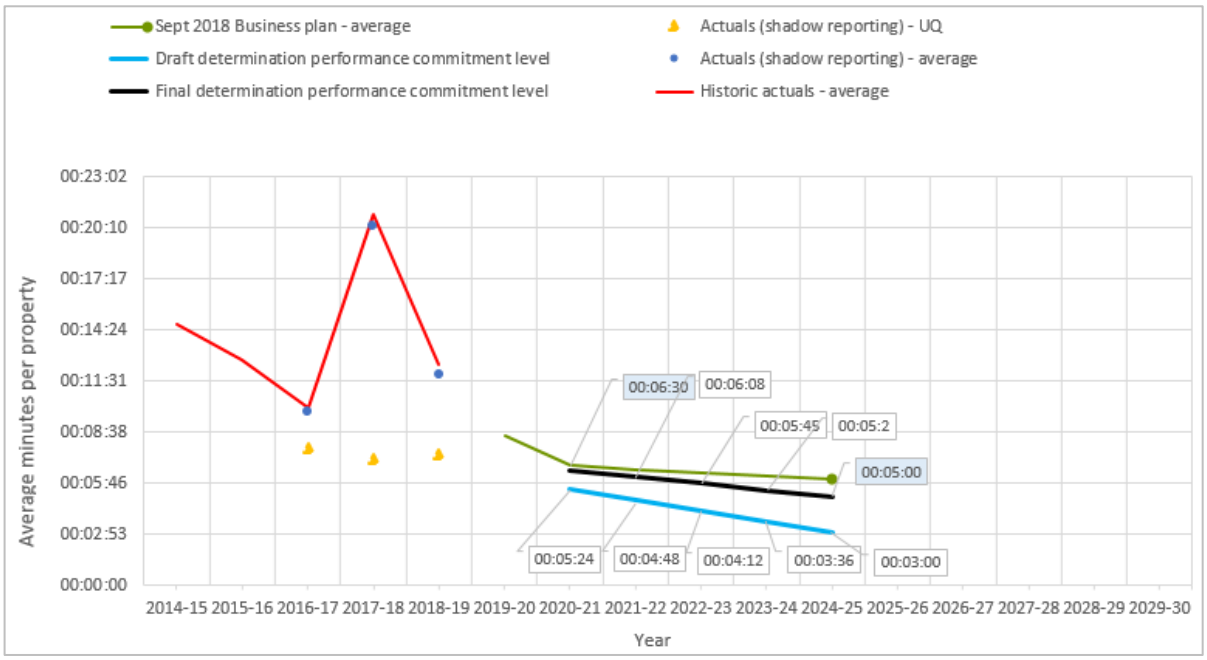
* As Hafren Dyfrdwy separated from Severn Trent Water in 2018, Hafren Dyfrdwy only began tracking its performance on internal sewer flooding in 2018-19 and has not tracked its performance on pollution incidents in PR14. Source: Ofwat analysis using data from the 2018-19 service delivery report.[61]

9.16 The three graphs below (Figures 5, 6 and 7) show, for each of water supply interruptions, internal sewer flooding and pollution incidents respectively, an illustration of achievability at an overall sector level. The charts show a time series from the final year of the PR09 period (2014-15) of industry average performance (on PR14 performance commitment definitions) up to 2018-19, compared with (a) performance on PR19 definitions from shadow reporting for those PR14 years where it is available (industry average and upper quartile),

[59] We measure internal sewer flooding performance from 2014-15, as this is the earliest year for which consistent data is available.
[60] We measure pollution incidents performance from 2013-14, as this is the earliest year for which consistent data is available.
[61] Ofwat, 'Service delivery report data – 2018-19', October 2019.

(b) the average of companies' business plan forecasts for the final year of PR14 and the PR19 period, and (c) the PR19 final determination PCLs for the PR19 period. In addition, on Figure 5, water supply interruptions, we show the draft determination PR19 PCLs to illustrate the change between draft and final determinations which reflected achievability concerns.

Figure 5: Analysis of achievability of water supply interruptions performance commitment levels[62]

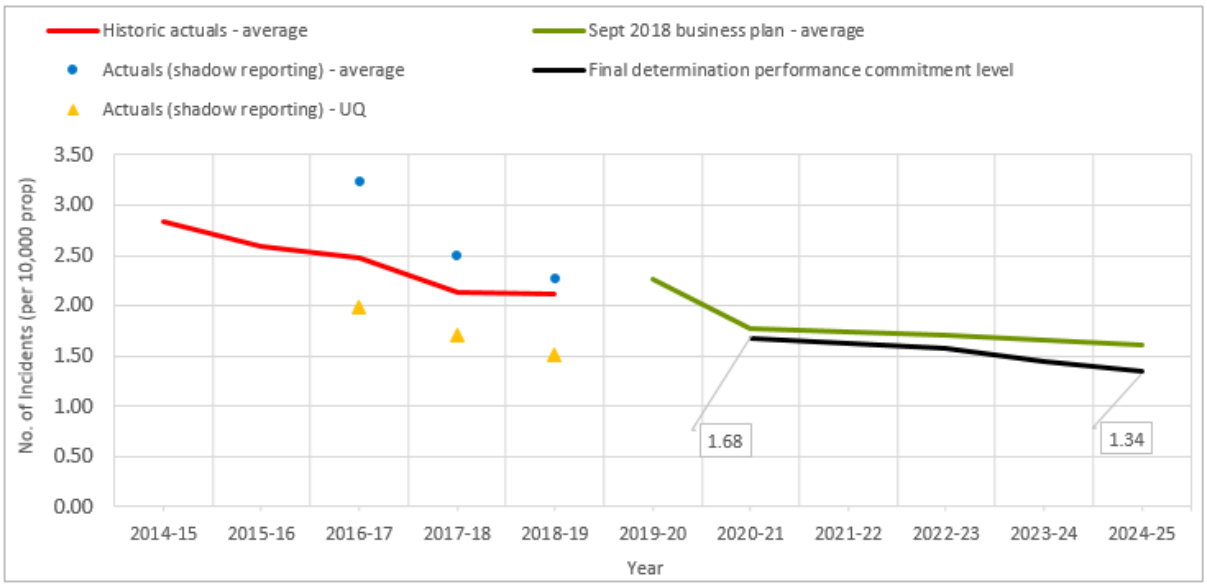


9.17 The supply interruptions chart (figure 5) shows the significant improvement in performance in the early years of the PR14 period, before sector performance was impacted negatively by the freeze/thaw event in 2017-18.[63] We note, however, that the best performing companies (as represented by the yellow dots showing the upper quartile performance on a PR19 shadow reporting basis) were much less impacted by freeze/thaw in 2017-18. The companies' forecasts of performance in final year of PR14 and through the PR19 period show a continuing downward trend on average, with a significant improvement forecast in 2019-20 and again in 2020-21. It also shows the change in our proposed PR19 PCLs from the draft determination to the final determination – having taken on board companies' concerns about the achievability of both the required "overnight" adjustment between the end of

[62] For clarity, the water supply interruptions performance commitment is defined as the average number of minutes lost per customer for interruptions that lasted three hours or more.
[63] Ofwat, 'Out in the cold – water companies' response to the 'Beast from the East'', June 2018, pp. 17-31

PR14 and the beginning of PR19 relative to both outturn performance to 2018-19 and companies' forecasts of performance in 2020-21, and the scale of required improvement over the whole PR19 period. Based on our final determination PCLs, the scale of improvement required during the PR19 period is less than that achieved in the previous period once the effects of freeze/thaw are removed.

Figure 6: Analysis of achievability of internal sewer flooding performance commitment levels

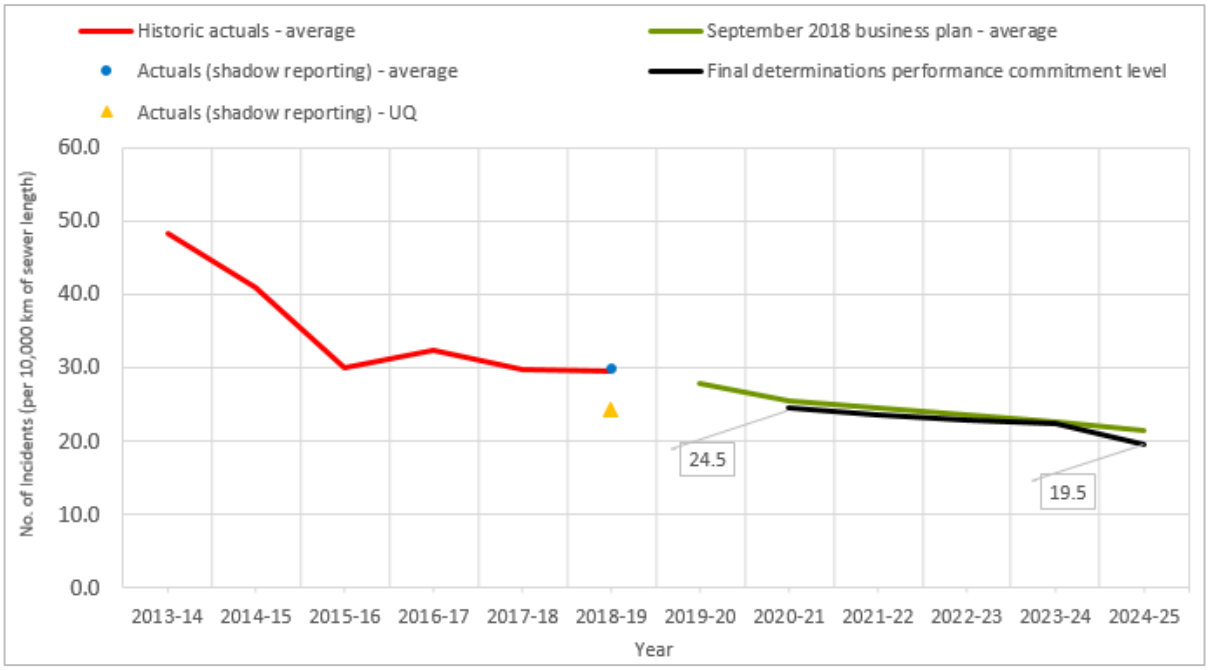


Note: Actuals and Sept 2018 business plan series exclude Hafren Dyfrdwy

9.18 The internal sewer flooding chart (figure 6) shows the clear improvement in performance across the sector throughout the PR14 period. It also shows that the sector's level of performance improvement as measured by the new PR19 definition was closely aligned with this. In their PR19 business plans, on average, companies forecast a continuing trend of improvement from the final year of the PR14 period through to the end of the PR19 period. Our PR19 final determination PCL trend is steeper reflecting the more ambitious upper quartile of companies' forecasts (see figure 3). The scale of improvement required during PR19 period is less than that achieved in the previous period, especially in relation to the upper quartile. Indeed the first year PR19 PCL (2020-21) is less challenging than the final reported upper quartile value on a shadow reporting basis (2018-19). We note that the companies' average forecasts of 2019-20 performance suggest no improvement from the average outturn performance on a shadow reporting in 2018-19, the only year in the period in which there would be no improvement at the sector level if the forecast is correct. Taking these points together, we consider that the

potential "overnight" adjustment between the end of PR14 and beginning of PR19 is likely to be achievable for an efficient company.

Figure 7: Analysis of achievability of pollution incidents performance commitment levels



Note: Actuals and Sept 2018 business plan series exclude Hafren Dyfrdwy

9.19 The pollution incidents chart (figure 7) shows the rapid improvement in performance on this metric by the industry in the run up to PR14, and in the early part of the PR14 period. In their PR19 business plans, companies forecast a continuing improvement from the final year of the PR14 period through to the end of the PR19 period. Our PR19 final determination PCL closely aligns to this, reflecting the narrow dispersion in forecasts among companies (see figure 4). The scale of improvement required during PR19 period is less than that achieved during the previous PR14 period, and there is only a small "overnight" adjustment required between the upper quartile shadow reporting value for 2018-19 and the first year PR19 PCL (2020-21).

9.20 Moreover, we considered company evidence for regional and company-specific factors that would lead us to set different levels for that company or deviations from the common industry level or from common rates of improvement (such as Yorkshire Water's claim that it has more cellared properties than any other region). This included taking account of company evidence in the case of the three forward-looking upper quartile performance commitments, where our presumption was to set them at common levels.

9.21 Companies that claimed to have special company-specific circumstances from a cost or performance perspective were able to put in cost claims (as for example Anglian Water did successfully on leakage and Yorkshire Water on sewer flooding) or make representations to us to have company-specific adjustments made to the PCLs (as for example Hafren Dyfrdwy did successfully on pollution incidents).

9.22 Drawing all of this together, there is no proper basis for the claims that the stretch on outcomes in our final determinations is not achievable. We conducted a series of detailed and careful checks to establish that they are achievable and consistent.

10. Past levels of improvement help to inform future stretch

Final Determination

10.1 As discussed above, we used past performance as one (but not the only) element of our assessment of achievability at a company and sector level.

Issues raised by disputing companies

10.2 Both Anglian Water and Yorkshire Water suggest that the checks with regard to past performance were not sufficient.

- Yorkshire Water states our analysis "relies upon a backward-looking assessment of performance at PR14, where the allowed costs and performance commitments in AMP6 were very different to those in PR19."[64] Yorkshire Water claims that PR19 PCLs represent a step change from PR14 that has not been appropriately funded.

- Anglian Water suggests that the fact that stretch has been achieved in the past does not mean it can be achieved in future, particularly as it is harder to make improvements from a better starting point. [65] It says that its good existing comparative performance means its PCLs for performance commitments based on forward-looking upper quartile performance improvement across companies will be harder to achieve and it will incur penalties through underperformance payments for maintaining current good performance. ICS, on behalf of Anglian Water, states that our setting of PCLs were influenced by concerns about information asymmetries, and that this led us to dismiss evidence on matters such as increasing marginal costs.[66]

[64] Yorkshire Water, 'Statement of Case', April 2020, p. 47
[65] Anglian Water, 'Statement of Case', April 2020, pp. 249-251, paragraphs 1011-1014 (and box on Water quality contacts)
[66] SOC280 (Anglian Water) – ICS Consulting, 'Exploring the relationship between service quality and costs', March 2020, p. 5 and p. 13

Our response

10.3 We disagree with companies' claim that past performance cannot necessarily be replicated (or that good performance in PR14 makes it harder to replicate in PR19 in practice because there is less potential for further incremental gains).

10.4 We generally underestimated the scale of potential PR14 improvement, as evidenced by outturn performance across a range of performance commitments, including those relating to asset health, so we think it is reasonable to set PR19 PCLs on the basis of PR14 actual outturn performance not PR14 PCLs.

10.5 As we set out above, the base cost assessment models include the money spent on achieving outcomes in PR14 which should be amplified by technological progress. We acknowledge that, in principle, marginal costs may increase for increases in service performance (or put another way it may become more difficult to achieve improvements in service levels within base funding). This is particularly the case across material and sustained changes in performance levels, which require more than incremental changes in operational practices to achieve. This was considered in the assessments in our final determinations.

10.6 We considered that, in practice, for the three performance commitments where we set common levels, significant improvements in performance can be achieved in the PR19 period through changes in operational strategies and practices to align with the most efficient companies. We noted in our final determinations that "some companies achieved substantial improvements in performance in PR14 by operational and management improvement, for example Northumbrian Water has reduced supply interruptions by 65% and Severn Trent Water has reduced internal sewer flooding by 40%, indicating the scope for companies to improve performance. We do not consider that customers should accept lower levels of service going forwards simply because their company has been performing less well than its peers."[67] We considered that poor performance in these measures is usually a result of ineffective operational practices, rather than changes requiring significant capital investment, and that companies can typically use a range of methods to improve performance (see for example our final determinations Delivering outcomes for customers policy appendix, page 23, for operational methods to

[67] Ofwat, 'PR19 final determinations: Overall stretch on costs, outcomes and cost of capital policy appendix', December 2019, p. 44

improve internal sewer flooding). In other words we think it is unlikely in practice that companies are at the point of diminishing marginal returns in the range of performance improvements required in PR19.

10.7 We also note that generally we are seeking less rapid improvements in PCLs at PR19 than were achieved in practice in the PR14 period, aside from the short term impact of freeze thaw on water supply interruptions (see figures 5, 6 and 7). Furthermore, we think that it would be coincidental at best if the improvements we are targeting are all in the zone at which marginal costs increase rapidly. Contrary to ICS's assertion on behalf of Anglian Water, therefore, we did not come to these conclusions as a result of our concerns about information asymmetries.

10.8 For water supply interruptions, one of the reasons why we relaxed the 2024-25 performance commitment level in our final determinations was to address achievability concerns by allowing companies time to improve their operational practices, rather than making inefficient high cost capital investments to achieve the same ends within the 2020-25 period. We also relaxed the 2020-21 PCL - because we considered that for many companies the "overnight" improvement from current levels of performance was unlikely to be achievable.

10.9 For mains repairs, after considering companies' draft determination representations, we relaxed the PCLs in our final determinations (by moving from using historical best three years to using historical best five years). This was to avoid setting levels that may not be achievable within base funding allowances. We sought to avoid setting the level in the region where companies might need to implement expensive capex solutions rather than improvements in operational practices.

10.10 Overall, therefore, we took appropriate account of past performance in assessing the achievability of the PCLs that we set.

11. We do not think it is necessary to impose symmetric performance incentives to align with customer interests

Final Determination

11.1 At PR19 we used ODIs to strengthen the incentives on companies to focus on what matters for customers.

11.2 In line with this, we removed the aggregate cap and collar that we imposed at PR14, and instead set an indicative range of ±1% to ±3% of RoRE for financial ODIs. We allowed caps and collars on individual performance commitments, but only where they were financially material and uncertain.

11.3 We conducted an overall assessment of each performance commitment 'package', considering both the PCLs and the ODI rates.[68] The aim of this was to ensure that the individual methodological components of our ODI rates and PCL assessments resulted in performance commitment packages that are consistent with the overarching aims of our PR19 outcomes methodology, namely that companies face an appropriate set of incentives that take account of customer priorities and companies' financeability, and encourage outperformance whilst protecting consumers against underperformance.

Issues raised by disputing companies

11.4 The disputing companies have raised issues with the balance of out- and under-performance payments. Anglian Water specifically states that "Regulatory principles would suggest, [the ODI framework] should be reasonably balanced between penalty and reward."[69]

11.5 Yorkshire Water's advisor Economic Insight states that our approach to caps and collars is arbitrary and designed to give rise to asymmetric risk.70 Economic Insight also argues that our broader interventions to Yorkshire Water's package of performance commitments and ODIs have been

[68] Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, pp. 105-6
[69] Anglian Water, 'Statement of Case', April 2020, p. 18
[70] Annex 05 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to ODI interventions in the Final Determinations', March 2020, p. 37

asymmetric in favour of increasing downside risk, resulting in an ODI package with an asymmetric balance of risk.

11.6 Anglian Water claims that our approach to setting caps has led to the scope of outperformance being inconsistent across companies.[71]

11.7 It argues that we have enhanced any asymmetry in our methodology because "Ofwat has not made any adjustments where its analysis suggests that companies have set targets that are too stretching or incentive rates that are too punitive."[72]

Our response

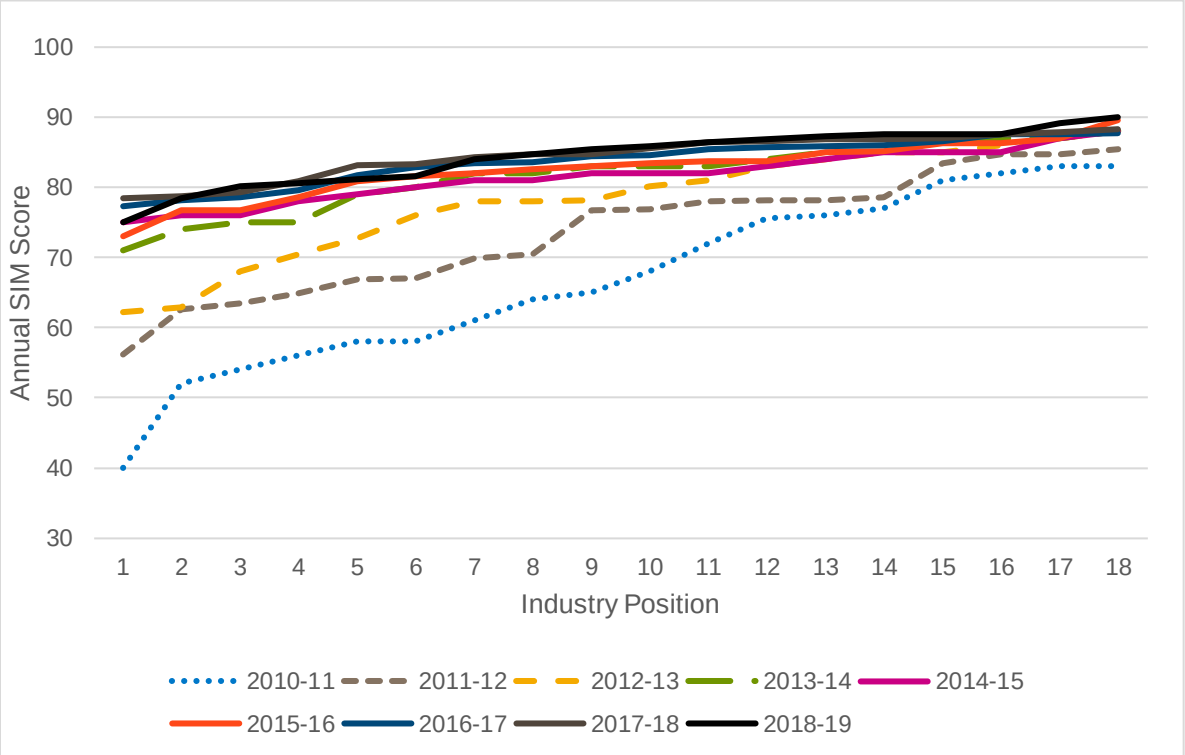
11.8 Our incentive regime helps to align the interests of investors and management with those of their customers, by incentivising them to improve performance in ways that customers' value.

11.9 To a large extent, their performance is in their own hands. ODIs help incentivise companies to follow through on their business plan, and deliver what matters to consumers, and go even beyond that plan where this is in consumers' interests. Where they fail to deliver, ODIs help claw back the money allocated to companies, and to compensate consumers for reduced service. We recognise external factors, such as the weather, can sometimes impact on companies' ability to deliver service quality, but companies can generally mitigate the impact of this, and are funded to do so.

11.10 Where we have introduced new incentive mechanisms in the past, we have seen significant improvements, especially for companies with the worst performance. For example, figure 8 shows the change in companies' customer service from 2010 to 2019 following the introduction of the service incentive mechanism (SIM) in the 2010-14 period. There was improvement across the industry each year, but the greatest improvement was in companies catching up. This shows the importance of incentives, and in particular underperformance payments.

[71] Anglian Water, 'Statement of Case', April 2020, p. 229
[72] Anglian Water, 'Statement of Case', April 2020, p. 229, paragraph 99

Figure 8: SIM scores in rank order for 2010-11 to 2018-19



11.11 There are also many cases in respect of which outperformance will be rewarded. To give just three examples:

- The new C-Mex incentive has significantly increased the potential upside for companies in PR19 relative to PR14 and PR09. [73]
- In PR19 we have introduced enhanced ODIs in respect of frontier-shifting performance, which companies have selected for areas where their performance is strongest. [74]
- We have removed the aggregate cap on outperformance payments of 2% of return on regulated equity (RoRE) that was applied in PR14.

11.12 We disagree that it is necessary in principle for upside and downside incentives to be symmetrically balanced. Bristol Water appeared to agree with

[73] Ofwat, 'PR19 final determinations: Customer measure of experience (C-Mex) and developer services measure of experience (D-Mex) policy appendix', December 2019.
[74] Ofwat, 'PR19 final determinations: Delivering outcomes for customers policy appendix', December 2019, pp. 118-126.

this in its presentation to the Competition and Markets Authority on 15 April 2020.

11.13 We were clear in our PR19 final methodology that our ODIs may not be symmetrical. This was for two key reasons:

- First, our approach to outperformance was based on customer engagement, and in some cases customers did not want to have an outperformance payment or found it hard to value it. For example, customers can struggle to financially value asset health measures, and in any case often consider asset health a core function of the business for which it should not receive additional outperformance payments. It would be inappropriate to have outperformance payments that are higher than the value that customers place on the benefit or are willing to pay. Companies have also, based on their interpretation of customer research, proposed underperformance rates exceeding outperformance rates.[75] This suggests that companies also believe that customers can take a different view of outperformance to underperformance.

- Second, in some cases 100% compliance is the statutory requirement. In these cases, our underperformance rate simply reflects lack of compliance with statutory obligations, and outperformance payments are not feasible.

11.14 We also disagree that our approach to setting caps and collars was designed to be asymmetric. Indeed, our methodology imposed a collar wherever we imposed a cap, specifically to help counterbalance the cap. We did set caps differently from how we set collars, but this was to provide appropriate incentives.[76] For example:

- Where a company had presented evidence of the maximum outperformance payment that customers were willing to pay, we considered caps should be set at this level. Otherwise we set caps at the P90 level - this is the performance level that is only exceeded 10 per cent of the time. Setting the cap at the P90 level keeps the company

[75] For example, see the Ratio worksheet within our final determination ODI rate model for customer facing performance commitments, which shows companies' proposed business plan ODI rates for customer facing performance commitments. Underperformance rates are on average 20% larger than outperformance rates. See Ofwat, 'ODI rates customer facing performance commitments model', December 2019. The model can be downloaded from our Final determinations models webpage.
[76] Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, p. 181

incentivised to improve performance, while protecting customers from paying higher than expected outperformance payments.

- However we took a different approach for collars. Specifically, where we had comparable evidence on past performance across companies, we set collars for all companies that would capture poor levels of recent historical performance. We consider that this level is indicative of the performance level against which a company should ensure that it is resilient under plausible circumstances. This was often below the P10 level. We do not expect companies to deliver the poor level of service at which collars are set, but if a company is not exposed to the financial consequences it is more likely to do so.

11.15 Since this approach to caps and collars is based on company specific factors such as customer engagement and company estimates of risk, there is some differentiation in their application between companies. However, we did seek to align the application of caps and collars where there was no clear reason for the differences. Where the vast majority of companies had caps and collars on a specific performance commitment, and we could not clearly identify reasons that the remaining companies should be treated differently, we applied them to all companies. Moreover, where caps were based on P90 estimates we took steps to ensure those figures were not materially out of line (see Annex 1).

11.16 Nonetheless, differences may still arise between companies on the application and level of caps and collars. We are surprised that Anglian Water has raised the issue of inconsistency of caps across companies. Its August 2018 representations on our draft determinations suggested it considers all caps and collars should be based on customer research.[77] Indeed we took account of customer research where the company had highlighted issues in its representations, making changes to caps better to align with customer preferences. For instance, we made changes to the caps for internal sewer flooding and pollution incidents so that the maximum outperformance payment was the same as the company's April business plan.[78] It is inconsistent to argue that we should use each company's interpretation of its customer research to set its caps and collars, whilst at the same time criticising caps and collars as being inconsistent between companies. One is very likely to lead to the other.

[77] Anglian Water, 'PR19 draft determination representation', August 2019, p. 41
[78] Ofwat, 'PR19 final determinations: Anglian Water – Delivering outcomes for customers final decisions', December 2019, p. 28 and p. 50

11.17 We do not consider our incentive regime will give rise to a negative impact on realised returns for efficient companies on average, although we acknowledge some companies may underperform (see chapter 2 of our 'Risk and return - common issues' document). In practice, companies are strongly incentivised to minimise underperformance payments and achieve outperformance payments (as illustrated by expected vs outturn performance at PR14).

11.18 Finally, it is plainly wrong for Anglian Water to claim that we have not made any adjustments where our analysis suggests that companies have set levels that are too stretching, or incentive rates that are too punitive. Similarly we disagree with Yorkshire Water's view that our performance commitment and ODI interventions are strongly tilted towards increasing downside risk, and there are many cases where we have increased potential for outperformance payments. For instance:

- Economic Insight[79] have identified that 21% of our interventions on PCLs and 52% of other interventions increased the potential for Yorkshire Water to earn net positive incentive payments. In chapter 4 of our Response to Yorkshire Water's statement of case, we describe how we significantly reduced the stretch required on water supply interruptions and leakage, which are two of the company's most financially material performance commitments.

- For Anglian Water, we approximately halved the ODI underperformance rates for both water supply interruptions and internal sewer flooding relative to those that the company itself proposed in its business plans. For Yorkshire Water, we reduced the water supply interruption underperformance rate by over 70%. This followed the overall assessment of each performance commitment 'package', considering both the performance commitment levels and the ODI rates, as referred to above.

- We have also relaxed performance commitment levels where appropriate. Bristol Water, Northumbrian Water and Yorkshire Water all proposed more demanding water supply interruption PCLs in their business plans than the levels we have set in our final determinations. This is because we have set all companies the same upper quartile PCLs, and so companies that are more efficient are able to earn outperformance payments. Bristol Water, Northumbrian Water and Anglian Water all proposed more demanding

[79] Annex 05 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to ODI interventions in the final determinations, March 2020, p. 19

mains repairs PCLs in their business plans than the levels we have set in our final determinations. Taking into account evidence from across the industry, we have allowed some leeway in the number of mains repairs as a result of reducing leakage.[80]

- We have also added collars where these were necessary. For instance, we added a collar for Northumbrian Water's Event Risk Index, as we identified it was uncertain and the company was exposed to significant downside risk.[81] We also added standard or enhanced collars to 12 of Yorkshire Water's performance commitments in line with our standard approach of adding caps and collars on financially material or uncertain performance commitments.[82]

11.19 Accordingly, and viewed overall, the ODIs set in the final determinations incentivise behaviours which are in customers' interests. We have taken those interests into account at every stage of our analysis, and contrary to the impression given by some of the disputing companies' submissions, we have not set ODIs in an arbitrarily penal manner.

[80] Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, pp. 59-60
[81] Ofwat, 'PR19 final determinations - Northumbrian Water – Delivering outcomes for customers final decisions', December 2019, p. 25
[82] Ofwat, 'PR19 draft determinations: 'Yorkshire Water – Delivering outcomes for customers actions and interventions', July 2019, for example see pp. 3-4. This decision was unchanged for our final determination.

12. The approach we took to understand risk in our final determinations, while pragmatic, was sufficient to support our conclusion that no company faces undue downside risk

Final Determination

12.1 We asked companies to estimate the ODI risk which they were exposed to by estimating, for each performance commitment, a "P10" performance level which they should fall below only 10% of the time, and a "P90" level, which they should exceed only 10% of the time. We formulated our own view of risk by taking these values as a starting point and making adjustments where we thought appropriate.

Issues raised by disputing companies

12.2 The four disputing companies disagree with our risk analysis. Yorkshire Water argues that "to ensure package risk was appropriately calibrated, [Ofwat] should have undertaken its own [stochastic] analysis"[83].

12.3 Anglian Water has not provided views on risk modelling. However, it does not appear to expect that companies have provided precise risk analysis in the way that Yorkshire Water considers essential. Instead, it considers "methodologies for forecasting future performance ranges will have been based on rough estimates."[84]

12.4 It is unclear what Northumbrian Water considers Ofwat should have done to understand package level risks. On one hand it notes we have "not adopted a stochastic approach to risk assessment". On the other hand the concerns it outlines are to do with specificities of how we have used company evidence.[85]

12.5 The disputing companies also put forward a number of detailed arguments on our adjustments to the P10 and P90 figures. These are considered in Annex 1.

[83] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, p. 7
[84] Anglian Water, 'Statement of Case', April 2020, p. 229
[85] Northumbrian Water, 'Statement of Case', April 2020, p. 191

Our response

12.6 Beyond contending that we ought to have accepted their own risk analysis, the four disputing companies do not seem to have a consistent view of how we should have estimated risk. This in itself suggests that the correct approach is in essence a judgement call.

12.7 Moreover, the approach suggested by Yorkshire Water of conducting our own stochastic modelling was not practical without deciding to do this in advance. To complete a stochastic risk analysis in a rigorous and fair way, given likely differences in opinion between companies, we would have had to:

- consult and decide on the optimum stochastic approach to understand risk;
- consult and agree on the appropriate exogenous factors to take into account sufficient to consider all companies' circumstances;
- provide in advance information requirements on additional data on probability distributions of each performance commitment and on the relationships between different performance commitments and exogenous factors; and
- scrutinise the subsequent large volume of additional information that companies would have had to return. This would likely have required a significant amount of correspondence with companies and in many cases resubmissions of information before we would have had confidence in it.

12.8 Moreover, even if we had gone through such a process, this would not necessarily have resulted in a more robust view of risk for the reasons we detail below. Monte Carlo analysis can help to understand aggregate risk if underlying drivers of performance and interrelationships are understood. However, the outputs of such analysis are only as good as the underlying data used.

12.9 Instead we have used the results of companies' own exercises to inform our judgements. While companies may have used very different methodologies to understand risk, we asked companies to provide the results in a comparable way (i.e. P10s and P90s). We adjusted company estimates because:

- We have the advantage of being able to use the comparative information from companies on P10 and P90s to identify outliers, trends and

asymmetries. This data helps us reach a much clearer understanding of risk profiles than looking at any one company.

- We are setting out risk for an efficient company. A company may view itself as efficient when assessing its P10 and P90, though (for a wide variety of reasons discussed in the sections above) we have had to intervene where company business plans did not propose efficient PCLs.

- Companies have incentives to understate the upside and overstate the downside risk in their submissions to us. We have evidence to support this, based on the results from PR14 and the package 'scaling factors' provided by companies (see Annex 1). We think our use of scaling factors is proportionate to identify an indicative RoRE range for financial ODIs.

12.10 We consider that our approach provides more credible and considered estimates, taking account of comparative information, than those provided by the companies.

13. We think our final determination PCLs and ODIs are aligned with customer and environmental interests in the short and long term

Final Determination

13.1 Our final determinations took into account both customer and environmental interests in the short and long term. In each case we exercised judgement to strike the right balance between these various factors.

Issues raised by disputing companies

13.2 Anglian Water suggests that our decisions on PCLs mean that companies may choose to accept a penalty rather than to strive to meet an unrealistic PCL. It also suggests that it will have to make a series of sub-optimal choices for its business, assets, customers and the environment during the 2020-25 period.[86]

13.3 Yorkshire Water also claims that setting 'too hard' a challenge causes consumer and environmental harm, particularly in the long-run because it diverts resource away from activities customers value and from future customers.[87] It further suggests that we should allow a margin for resilience challenges that may arise.

Our response

13.4 As set out in section 8 above, we think our PCLs are stretching but achievable, and that it is not in customers' interests to pay more than is necessary to receive a service. We have an incentive regime that encourages companies to deliver higher quality service if customers are willing to pay for it to do so. It also allows for flexibility if, as Anglian Water suggests, its costs are higher than our estimate of efficient costs. In those cases, it may be in customers' interests that the company does not incur those costs and instead

[86] Anglian Water, 'Statement of Case', April 2019, pp. 249-251, paragraphs 1011-1014 (and box on Water quality contacts)
[87] Annex 04 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to funding upper quartile performance', March 2020, p. 2

reduces its performance (following the "economic optimal" logic that the company put forward). But then it should return the money to customers.

13.5 If it were the case that incurring the underperformance payment was preferable to incurring the costs necessary to achieve the PCLs, this should be reflected in the marginal cost data the company submitted in support of its ODI rates. However, for the customer-facing common performance commitments, the company's own reported marginal cost[88] which would be avoided from a unit of underperformance (after adjustment for totex sharing incentives) is less than the ODI rate that would apply if the company chose to underperform relative to its PCL. This suggests the company does not face an incentive to underperform.

13.6 If, and to the extent that, the CMA still considers that the company faces insufficient incentives to meet its PCLs, the appropriate remedy would be to strengthen incentives by increasing underperformance rates, rather than making PCLs less stretching. In particular, consideration could be given to adjusting the relevant Anglian Water performance commitment underperformance payments upwards to address its concern that the penalty is insufficient to ensure it acts in its customers' interests.

13.7 If Anglian Water is suggesting that it will cut back on investment elsewhere to achieve the performance levels, this is likely to result in ODI underperformance payments in other areas either now or the future, or additional (inefficient) expenditure in the longer term to avoid incurring such payments in the future. Such inefficient expenditure will not be funded in future price controls. It is also hard to reconcile these statements that it will under-invest or run down service with its claim to be a company that acts in the wider public interest. At best, this statement seems to indicate a narrow pursuit of its short term shareholder interests.

13.8 The outcomes framework also exists alongside, and does not override, companies' licence and statutory duties and requirements to meet standards set by environmental and quality regulators and government. Failure to comply with those duties may result in enforcement action.

13.9 As set out in chapter 3 of our 'Introduction and overall stretch' document and demonstrated throughout this response, we actively considered all of these factors (customers, the environment, the short term and the long term) in

[88] As submitted by the company in data table App1a of its April 2019 business plan.

making our determinations across the totality of PR19 and on companies' outcomes in particular.

13.10 We also do not think it appropriate to "leave money on the table" in case of downside resilience risks, as Yorkshire Water seems to suggest, while allowing companies to obtain additional funding through outperformance payments in neutral or upside circumstances. Companies have already taken into account a wide range of possible upside and downside performance outcomes in the PCLs and ODIs they put forward to us. Companies should not be able to earn significant amounts of ODI outperformance payments for less than excellent performance. We have taken into account both these upside and downside opportunities and risks in setting caps and collars to protect customers and companies from excess upside and downside exposure where we think it is appropriate to do so. For this reason we think Yorkshire Water is wrong to suggest that having stretching PCLs weakens companies' resilience to challenges which may arise.

13.11 Overall, we consider that moving away from our decisions on PCLs and ODIs is likely to result in suboptimal outcomes for customers and the environment.

14. Conclusions

14.1 This document has set out why we consider our methodology for setting PCLs is appropriate and why the evidence and judgements we have made support the levels that we have determined both generally and for the disputing companies in particular. In summary, we consider that:

- Companies should, in general, continue to be able to deliver improvements in service levels within their PR19 base cost allowances;
- It is appropriate for PCLs to be stretching, and require improvement from PR14 levels, but they should also be achievable for an efficient company within the 2020-25 period;
- PCLs cannot be set purely on the basis of an analysis of marginal costs versus marginal benefits of service increments and decrements – it is generally not possible to identify an economically optimal PCL for each performance commitment. It would also penalise efficient companies and reward inefficient companies, unless marginal costs were also adjusted to remove inefficiency;
- The outcomes package for each company should take account of evidence of customer preferences, but it is not the only factor that we should consider - we also consider other information not available to customers in making our judgements of the appropriate PCLs;
- The PR14 approach of using historic upper quartile performance to set PCLs turned out to be insufficiently stretching in many cases, and so we have used forward-looking upper quartile at PR19 as a starting point where appropriate to do so, focused on a small proportion of the common performance commitments; and
- Using a variety of data points we checked that the proposed stretch for each performance commitment was achievable. We made interventions in each company's proposed PCLs to make them more or less stretching where appropriate to do so.

14.2 Companies have also raised further issues relating to ODIs. We have explained how:

- Our approach to ODIs aligns company and customer interests; and

- Our approach to modelling risks associated with ODIs was appropriate given the data available.

14.3 Overall, we consider that the PCLs and ODIs we have set are aligned to our duties, including that they are in the best interests of customers and the environment, in the short and long term.

Annex 1. Detailed points on our ODI risk assessment

a. Summary

A1. This annex considers detailed points on our approach to modelling the risk exposure due to ODIs. This was based on companies' estimates of the P10 level, which they should fall below only 10% of the time, and the P90 level, which they should exceed only 10% of the time. We formulated our view of risk by taking these values as a starting point and making adjustments where we thought appropriate.

A2. The annex sets out why the adjustments we made were appropriate. Specifically, it describes:

- Why changing companies' PCLs necessitates changing their P10 and P90 estimates;
- Why P90 estimates should be consistent with thresholds for enhanced ODIs;
- Why it is appropriate to challenge companies' P10 and P90 performance estimates using information from other companies;
- How we adopted a consistent approach to our adjustments to P10 and P90 estimates in the case of drinking water contacts;
- That the use of "scaling factors" to understand overall risk was a reasonable approach given the available evidence; and
- Why our approach to deriving scaling factors was a reasonable approach given the available evidence.

b. Changing performance commitment levels necessitates changing estimates of the P10 and P90 performance levels

Final Determination

A3. Where we adjusted a company's PCL, we also adjusted the company's P10 and P90 estimates, shifting them up or down by the same amount and

therefore retaining the same distance between the P10 and P90 levels and the PCLs set out in the company's revised business plan. This was because we considered the company's PCL to be equivalent to its P50 estimate. If a company's P50 estimate is too low, it follows that its P10 and P90 estimates are too low. We conducted further checks that the resulting adjusted P10 and P90 estimates are appropriate.

Issues raised by disputing companies

A4. Within the Yorkshire Water statement of case there are number of arguments against adjusting its estimates of P10 and P90 performance levels. Essentially, these are: (i) that we should not change the performance level in the first place (which it states should be set at the P50); (ii) if we do make a change, it does not necessarily mean that the company's proposed P10 and P90 estimates of performance should be adjusted upwards by the same amount as the company's proposed performance commitment level; and (iii) there is a tension between Ofwat intervening on the performance commitment level and 'discarding' the company's risk analysis, but maintaining the absolute gap between the P10, P50 and P90 estimates of performance proposed by the company.[89]

Our response

A5. As set out in the main body of this document, we have used several sources of evidence, including comparative historical and forecast performance data, to reach our view of stretching but achievable PCLs for an efficient company. These are reasonable estimates of performance that an efficient company should on average achieve.

A6. As we set out in the final determinations, if we consider that a company has proposed an inappropriately low PCL which does not reflect what is achievable for an efficient company, it is likely that the P10 and P90 estimates are also inappropriately low for an efficient company. If we did not adjust company estimates of P10 and P90 performance levels, we could end up with

[89] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, p. 13

estimates of P90 performance at worse levels than the PCLs. This is not credible for an efficient company and does not provide a useful guide to risk.[90]

A7. We considered the best way of revising P10 and P90 estimates. One option was to apply the same risk profile for each performance commitment for every company as there is no robust evidence to suggest that any company should have a different risk profile to its peers. However, we judged it better to adjust the companies' own estimates as this was likely to lead to a more appropriate understanding of risk. This puts some weight on the companies' risk analyses and is more conservative than applying a generic risk profile to each company. However, it increases the need to complete further checks that the resulting adjusted P10 and P90 estimates are appropriate. These are considered further below.

c. P90 estimates should be consistent with estimates of enhanced ODI thresholds

Final Determination

A8. Enhanced ODIs provide greater incentives for companies performing beyond the industry frontier. If companies perform beyond the "enhanced threshold", which represents the industry frontier, it will lead to more stretching performance commitments for all companies in the future. We therefore allow them greater ODI rates to reflect this benefit.

A9. We conducted a cross check of our calculated P90 estimates with the "enhanced ODI thresholds". Where P90 estimates were below the enhanced ODI threshold we adjusted them to be equal to the level of this threshold. Specifically, we maintained the 2020-21 P90 estimate and increased other years' P90 estimates linearly so that by 2024-25 the P90 estimate is equal to the enhanced ODI threshold.[91]

[90] Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, p. 162 and p. 188
[91] Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, p. 165

Issues raised by disputing companies

A10. Yorkshire Water argues that our adjustment to the P90 ranges to ensure they are equal to enhanced thresholds is 'illogical'. It states we have no basis for changing the probability distributions for performance outcomes based on where the performance thresholds for earning enhanced ODI rates lie.[92]

Our response

A11. The enhanced threshold is the point at which a company earns larger outperformance payments. We have based enhanced thresholds on the historical improvements that the industry has demonstrated it has achieved.[93] Although this will be demanding to achieve, it should be within reach of a company. If a company's P90 is below this threshold, i.e. easier to achieve than the enhanced threshold, this suggests that either the enhanced threshold is very demanding or the P90 threshold is too low. We have scrutinised enhanced thresholds carefully and consider they are set at an appropriate level. We therefore considered that P90 estimates that were lower than the enhanced threshold were inaccurate and intervened to set the P90 in line with the enhanced threshold.

d. It is appropriate to challenge companies' P10 and P90 performance estimates using information from other companies

Final Determination

A12. As we set out in our final determinations Delivering outcomes for customers policy appendix[94], we adjusted P10 and P90 levels for common or comparable performance commitments where these were materially more pessimistic than those of other companies without either a credible explanation or convincing evidence.

[92] Annex 05 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to ODI interventions in the Final Determinations', March 2020, p. 38
[93] Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, pp. 119-121
[94] Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, pp. 164-165

A13. Specifically, we first calculated the ratio of the P10 and P90 level to the PCL for each company. Where this was more than one standard deviation away from the industry mean of that ratio, and we did not consider the P10 and P90 levels to be well justified, we then adjusted P10 and P90 levels to the bottom of the range (as given by the mean plus one standard deviation).[95]

Issues raised by disputing companies

A14. Yorkshire Water argues this was inappropriate, and it presents a report on our approach to ODI interventions in the final determinations, by Economic Insight. This report argues that:

> "Ofwat's adjustments to P10 and P90 values to make them 'more similar' across firms lack evidential support. It states that there is no logical or evidential basis for intervening on the basis that the ratio of P10 and P90 values to PCLs for individual ODIs should lie within one standard deviation."[96]

Our response

A15. We consider it is appropriate for us to scrutinise companies' P10 and P90 performance estimates. It is also right for us to challenge companies where their P10 or P90 performance estimates are clear outliers relative to others and there is no credible explanation for such differences.

A16. We agree that P10 and P90 performance estimates should take account of company-specific circumstances and performance drivers, where these have a material influence on performance and are beyond management control. However, we consider that it is primarily companies' responsibility both to explain the specific factors which differentiate them from other companies, and to provide robust evidence of the effects on their performance. As our final determinations Delivering outcomes for customers policy appendix notes,

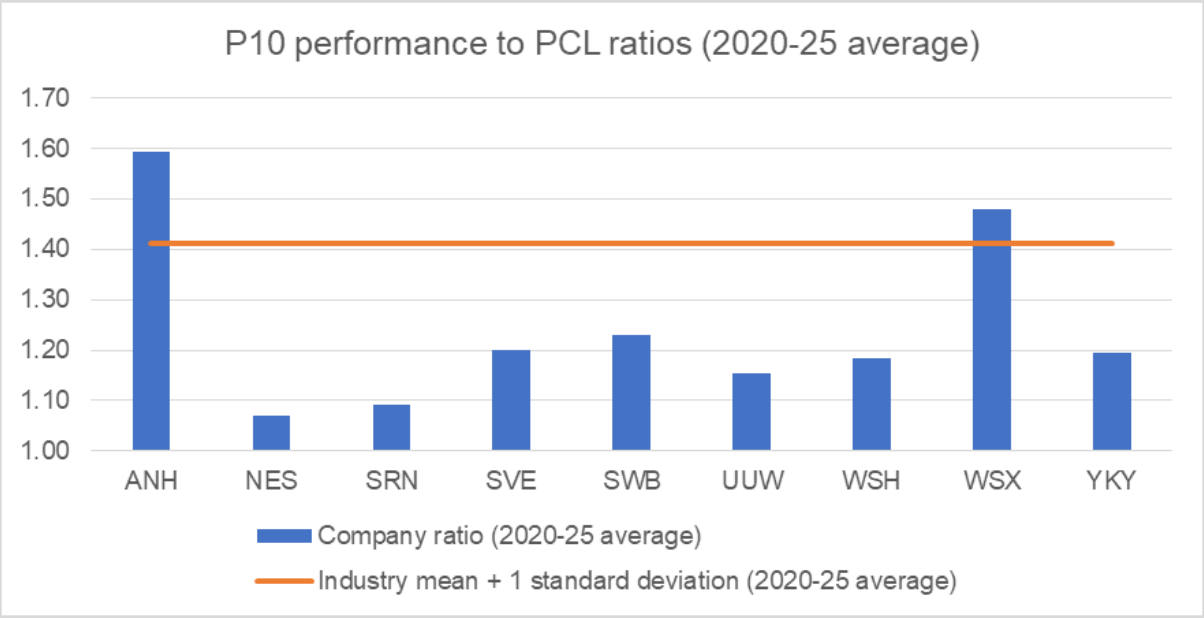
[95] As mentioned in our final determinations Delivering outcomes for customers policy appendix, we did not consider intervening as a rule when companies' P10 or P90 proposals were materially more *optimistic* than the rest of the industry. This was because we consider companies are unlikely to have an optimism bias in their ODI risk estimates, based on historical evidence which suggests companies have outperformed against their ODI expectations at PR14. Further detail can be found in Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, pp. 162-165

[96] Annex 05 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to ODI interventions in the Final Determinations', March 2020, pp. 37-38

our comparative analysis of companies' P10 and P90 performance estimates did "consider whether there were any other credible explanations for a given company's P10 and P90 levels being an outlier."[97]

A17. In our final determinations, we analysed the dispersion in P10 and P90 performance estimates for common and comparable bespoke performance commitments, after having adjusted these estimates for changes in PCLs between companies' revised business plan submissions and final determination. Our analysis found significant variation in companies' P10 and P90 estimates for several performance commitments. As an example, figure A1 below captures the dispersion we found in companies' P10 to PCL ratios for external sewer flooding. This figure also captures the boundary of our "reasonable range" which is defined as the industry mean ratio plus one standard deviation as we explain above.

Figure A1: Comparison of companies' P10 performance to PCL ratios for external sewer flooding performance commitments (2020-25 average)



Source: Ofwat analysis from PR19 final determination

A18. As figure A1 shows, estimates of P10 performance for external sewer flooding varied widely relative to PCLs, with Anglian Water and Wessex Water having

[97] Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, pp. 164-165

significantly more pessimistic views of P10 performance than other companies.

A19. We recognise that these differences could reflect company specific differences in some cases. For example companies with a high proportion of catchments where rainfall is conveyed quickly because ground is impermeable and/or the topology funnels all flow into one area may have a higher risk of sewer flooding.[98] Higher rainfall will also exacerbate sewer flooding risks. These factors can be mitigated by water companies, for example by increasing sewer size or by working with partners to manage surface water outside the sewerage system or using devices to control flows within sewers, but the mitigation may only be partial.

A20. We evaluated the evidence provided by Anglian Water and Wessex Water for their P10 performance estimates. Anglian Water stated that the P10 reflects the "worst recent performance".[99] Wessex Water stated that the P10 reflects the "90%ile of Discover Water incidents plus S105a uplift".[100] Neither of these explanations indicates that these estimates should materially differ from those of other companies, based on factors outside of management control. These two companies delivered amongst the best performance in the industry in 2018-19.[101] In the case of Anglian Water, it has the flattest and driest area in the country which indicates a lower risk for P10 performance than other companies.

A21. We therefore adjusted the P10 performance estimates for these companies by reducing their P10 to PCL ratio down to the edge of our reasonable range, defined as the industry mean ratio for external sewer flooding plus one standard deviation.

A22. Across common and comparable bespoke performance commitments more broadly, we found that companies did not provide convincing evidence to justify why their P10 and P90 performance estimates should be materially more pessimistic than those of other companies, based on factors outside of management control. Companies did not therefore justify that material differences in forecast ODI risk reflected genuine differences in risk that are

[98] Atkins, 'Developing and Trialling Wastewater Resilience Metrics', November 2017, pp. 35-37
[99] Anglian Water, 'DD Outcomes Technical Appendix', August 2019, p. 14
[100] Wessex Water, PR19 Business Plan September 2018, 'Supporting document 3.5 – Inputs to RORE for outcome delivery incentives', September 2018, p. 8
[101] Ofwat, 'Service delivery report 2018-19', October 2019, p. 21

beyond management control as opposed to forecast error or differences in efficiency.

A23. Our use of standard deviation measures to define the reasonable range is based on regulatory judgement, and this is consistent with our approach to setting reasonable ranges when assessing companies' ODI rates. The use of standard deviations also reflects the variation present in the data, allowing for greater variation where there is little convergence between companies' P10 and P90 performance estimates relative to their PCLs. In the absence of evidence that there should be variation between companies we consider it appropriate to curtail outliers.

A24. Our use of P10:PCL and P90:PCL ratios, rather than absolute levels, to compare companies is not arbitrary. It reflects the fact that companies report some of their comparable bespoke performance commitments using different measurement units. The use of ratios therefore allows for standardised comparison of P10 and P90 estimates across companies. Returning to the external sewer flooding example above, some companies report this performance commitment as number of incidents per 10,000 sewer connections, whereas other companies report this as total number of incidents. We compare against PCLs because these are designed to be stretching but achievable targets for service delivery, and it is therefore important to assess the degree to which P10 and P90 performance estimates differ from these benchmarks.

e. We adopted a consistent approach to our adjustments to P10 and P90 estimates in the case of drinking water contacts

Final Determination

A25. Our adjustments to the P10 and P90 estimates were in line with the approach outlined above. This includes the intervention on Yorkshire Water's drinking water contacts performance commitment.

Issues raised by disputing companies

A26. Economic Insight, on behalf of Yorkshire Water, argues that it is difficult to understand how we have adjusted P10 and P90 performance estimates for particular performance commitments. The report presents Yorkshire Water's

drinking water contacts performance commitment as an example, and states that whilst changes in the P90 performance estimates (and outperformance cap) between business plan submission and our final determination can be explained by changes to PCLs, changes in the underperformance collar – which it assumes is equal to our P10 performance estimates – cannot be straightforwardly explained.[102]

Our response

A27. In line with our standard approach to setting P10 and P90 estimates, we adjusted the P10 and P90 levels for Yorkshire Water's drinking water contacts performance commitment to reflect our interventions to the PCLs, when compared against Yorkshire Water's April 2019 revised business plan. We therefore took the company's April P10 and P90 estimates as a starting point, and we adjusted these to retain the distance from the PCLs.

A28. The Economic Insight report states that this ODI "is not a common / comparative one", but in fact this was one of the comparable bespoke performance commitments for which we compared P10 and P90 estimates across different companies[103]. Our comparative analysis did not find either Yorkshire Water's P10 or P90 estimates to be materially more pessimistic than other companies, and therefore we did not make any further adjustments on this basis. No other adjustments beyond those identified above were made in our final determinations.

A29. However, the Economic Insight report implies that changes in the P10 performance level do not match changes in the PCLs. It reaches this conclusion for two reasons, neither of which is well-founded.

A30. Firstly, the report assumes that P10 performance levels are equal to the underperformance collar and P90 performance levels are equal to the outperformance cap for this performance commitment. This assumption does not hold true in this particular case, because we set collars for the performance commitment based on applying a multiplier value to the PCL for 2020-21. This aligns with our standard approach to setting collars for common

[102] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, pp.14-16
[103] Water quality contacts is categorised as a comparable bespoke performance commitment in Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, p. 17

and comparable bespoke performance commitments.[104] For this reason, the P10 performance level does not equal the underperformance collar we set for this performance commitment.

A31. Secondly, the report compares our final determination against the P10 and P90 performance estimates proposed by Yorkshire Water in its September 2018 business plan. By contrast, our final determination approach uses the P10 and P90 performance estimates which companies proposed in their *revised* business plans (submitted in February or April 2019) as a starting point for setting final determination P10 and P90 performance estimates.[105] Even still, it is not fully clear how Economic Insight has sourced Yorkshire Water's business plan P10 estimate, and we believe that it has stated this incorrectly. Figure 3 of the Economic Insight report implies a P10 estimate of approximately 23.0,[106] but Yorkshire Water's September 2018 business plan provides a P10 estimate of 18.4 (the same figure that was used in the company's April 2019 business plan, as we show in Table A1 below).[107] This further contributes to the perceived discrepancy identified in Economic Insight's report between changes in PCLs and changes in P10 performance estimates between business plan submission and our final determination.

A32. We summarise our calculation of the P10 and P90 performance levels applicable to this performance commitment in Table A1 below. These calculations show how we derived our final determination P10 and P90 estimates by applying the change in PCLs to the P10 and P90 estimates provided in Yorkshire Water's April 2019 business plan.

[104] We explain our approach to setting collars for common and comparable bespoke performance commitments in Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, pp. 167-171
[105] Ofwat, 'PR19 final determinations, Delivering outcomes for customers policy appendix', December 2019, pp. 162-163
[106] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, p. 15
[107] Yorkshire Water, PR19 business plan, Appendix 19c – Appointee Performance Commitments, "26_Drinking Water Contacts_19c", September 2018, pp. 9-10. This can be retrieved by downloading Appendix 19c of Yorkshire Water's September 2018 business plan.

Table A1: Summary of our P10 and P90 level calculations for Yorkshire Water's drinking water contacts performance commitment[108]

Metric	2020-21	2021-22	2022-23	2023-24	2024-25
PCL (company business plan)	11.3	11.3	11.3	11.3	11.3
PCL (final determination)	11.4	10.6	9.8	8.9	8.1
PCL (change by year)	**0.1**	**-0.7**	**-1.6**	**-2.4**	**-3.2**
P10 (company business plan)	18.4	18.4	18.4	18.4	18.4
P10 (final determination)	18.5	17.7	16.8	16.0	15.2
P90 (company business plan)	3.6	3.6	3.6	3.6	3.6
P90 (final determination)	3.7	2.9	2.0	1.2	0.4

Source: Ofwat analysis from PR19 final determination

f. The use of scaling factors to understand overall risk is a reasonable approach given the available evidence

Final Determination

A33. Once estimates of P10 and P90 performance for each performance commitment are determined, further steps are required to understand risk at the package level, the ODI return on regulated equity (RORE) range.

A34. To calculate this, we take the P10 and P90 estimates and apply ODI rates to provide values in £m at the P10 and P90 probability levels. We term these the P10 and P90 values. We then add the P10s and P90s for each ODI and adjust these values by using "scaling factors" to get the overall P10 and P90 values for the package.

[108] In this table, "PCL" stands for performance commitment level, and "P10" and "P90" refer to P10 and P90 performance levels. All data is expressed in the official units applied to this performance commitment, which is number of consumer contacts per 10,000 population (reported to one decimal place).

A35. These scaling factors were based on the companies' estimates of P10 and P90 values.

Issues raised by disputing companies

A36. Yorkshire Water argues that simply adding up all the P10 values and P90 values for each individual performance commitment is unlikely to provide an appropriate P10 and P90 ODI RORE range. It states that:

> "The additive method is wholly inappropriate as a starting point. Firstly, because (i) the likelihood of being on 'extreme' ends of performance on multiple ODIs simultaneously may be lower than implied by the summation of P10 and P90 values; and (ii) performance across individual ODIs is likely to be correlated to a degree, the 'additive' method is a wholly inappropriate basis for assessing package risk."[109]

Our response

A37. We agree that the "additive method" of adding all the P10s and P90s will not lead to a balanced view of risk. We set this out in our final determination Delivering outcomes for customers policy appendix. We said that the additive method:

> "gives an estimate of the package level P10 and P90 payments that would apply if the performance commitments were perfectly correlated with each other and across years. In other words, if a P10 payment is incurred on one performance commitment then it will be incurred on all other performance commitments and in all years. However, while there may be some such correlation, this is unlikely to be perfect in practice, i.e. a company that hits its P10 level for one performance commitment is unlikely to also hit its P10 levels on all other performance commitments at the same time. And this is even more unlikely to happen in each of the five years. Thus this simple additive measure is likely to overestimate the overall package-level P10 and P90 payment estimates."[110]

[109] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, p. 6
[110] Ofwat, 'PR19 final determinations: Delivering outcomes for customers policy appendix', December 2019, p. 173

A38. Nonetheless, we would expect some level of relationship between the "additive method" and the aggregate risk at the package level. As we have already set out in section 12 above, we do not think it appropriate to run our own stochastic analysis.

g. Our approach to deriving scaling factors was a reasonable approach given the available evidence

Final Determination

A39. The overall company-level P10 and P90 risk cannot be found by simply summing all individual performance commitment P10 and P90 ODI values. This is because the risks are not all perfectly (positively) correlated. In practice, some will move in different directions in a given year due to chance.

A40. To reach a company-level view, we start by simply summing the individual P10 and P90 ODI values, and then apply a 'scaling factor'.

A41. To derive scaling factors, we first considered the scaling factor for each company, i.e. the ratio between each company's additive P10 and P90 values and its estimate of the package level P10 and P90 values. As an illustrative example, if summing a company's individual P10 ODI underperformance payments for 2020-21 gives a total of £20million, and the company states its overall package P10 risk for that year is £15million, then its scaling factor is 75%.

A42. For the P10 value we use a scaling factor equal to the rounded industry mean P10 scaling factor of 70%. In calculating the industry mean we have removed scaling factors that are greater than 100% that are not theoretically possible. A scaling factor of 100% means that the package level P10 is the same as the additive value. So with a 10% probability the company is required to pay out its P10 value on all ODIs, i.e. ODIs are perfectly correlated. We would normally not expect perfect correlation.

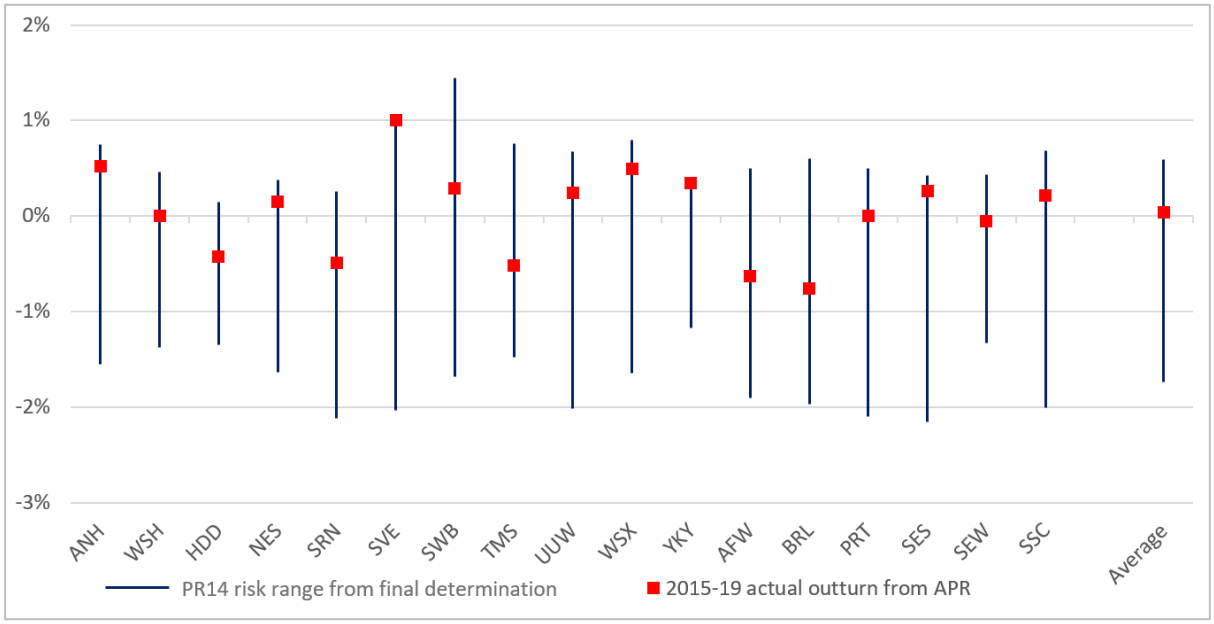
A43. The mean P90 scaling factor for the industry, using the company data, 65% for water and 53% for wastewater, is lower than the 70% for the P10 scaling factor. In other words, companies appear to be much more conservative in their estimation of package level upside risk (P90) than the downside risk (P10). One possible explanation for this could be that underperformance of

different performance commitments is more highly correlated than outperformance. However, there was no evidence that this was the case.

A44. Rather, we considered that this was an indicator that companies have been pessimistic in providing estimates. Companies have some incentive to overstate the P10 estimates and understate the P90 estimates.

A45. Figure A2 shows the 2015-19 period outturn and PR14 company estimates of P10 and P90 values as an average percentage of regulated equity. The PR14 P10 and P90 estimates are additive values without any adjustment for scaling factors.

Figure A2: Reported performance of each company against company PR14 P10 and P90 estimates



Source: Ofwat, PR19 final determinations: Aligning risk and return policy appendix, December 2019, p. 29

A46. Companies' outturn performance in the PR14 period is at the top half of the expected range that was produced using the additive method without any scaling factors, with a number of companies at or close to their P90 estimates.

A47. This indicates that companies have outperformed significantly in comparison to expectations published at PR14. The 2015-19 period included the 2017 freeze thaw event and significant flooding events[111] and so better than

[111] For example see Met Office, 'Further rainfall and flooding across north of the UK', December 2015 and Met Office, 'Strong winds and flooding from storm Angus', November 2016.

expected performance has not been driven by benign conditions. If estimates were unbiased we would expect a reasonably symmetrical distribution. However, only five companies have realised negative overall ODI returns during the PR14 period to date (i.e. performance below 0% ODI RORE).

A48. We would expect that normally few, if any, companies should perform at this level if the P90 estimates were reasonable. This is especially the case as the P90 estimates are additive without any scaling factors and so it indicates that the company has performed at its P90 performance for every performance commitment for every year. To produce realistic P90 package values at PR14, we should have applied scaling factors that were more than 100%; that is the additive P90 ranges need to be increased, rather than reduced, in order to fit with the observed data. This is theoretically not possible – the probability of hitting the P90 level for each performance commitment must be less than the probability of hitting the P90 for the package as a whole.

A49. As companies have demonstrated a bias in the recent past and have the same incentives for bias at PR19, we considered that applying a scaling factor of 90% to calculate the P90 ODI package value was appropriate. This was chosen on the basis that there was no well-evidenced reason for underperformance to be more positively correlated across performance commitments than outperformance, so we should therefore at least set the outperformance scaling factor to equal the underperformance scaling factor, i.e. 70%. Further, PR14 data suggests companies materially understate (deliberately or not) upside risk. To further account for this, we set the outperformance scaling factor to be higher than the underperformance scaling factor. As set out above the PR14 data would suggest that this should be more than 100%, which is not theoretically possible. We considered 90% was appropriate given this context.

Issues raised by disputing companies

A50. Economic Insight, on behalf of Yorkshire Water, appears to suggest that a comparison between companies is not possible. Northumbrian Water and Yorkshire Water both consider that in selecting a single set of scaling factors we have overridden companies' own risk analysis.

A51. Economic Insight also states that because we have calculated scaling factors beyond 100% it indicates that the method is flawed.[112]

A52. Northumbrian Water agrees that it was appropriate to exclude information in calculating an industry statistic but argues we should have done this in a different way:

> "Ofwat is also excluding outliers (>100%) which seems reasonable but should either (1) seek to capture these factors in some form (e.g. based on upper quartile); or (2) should exclude companies with low scaling factors such as Yorkshire or Wessex."[113]

A53. Economic Insight notes we have not sought to establish how much of the difference is due to:

- the difference between 'errors' or 'deficiencies' in company risk analysis;
- companies using differing methods, with some better than others; and/or
- genuine difference between package risk and additive risk.[114]

A54. Northumbrian Water and Yorkshire Water argue we should not take into account potential pessimism in our risk assessment. Economic Insight argues that

> "even if there was a 'gap' between company projected P10 and P90s and their corresponding outturn values at PR14, this does not imply an equivalent gap is 'baked into' company PR19 ODI proposals."[115]

A55. Northumbrian Water argues that it ignores the step change in performance implied by PR19.[116]

A56. Yorkshire Water's advisor highlights that we did not set out a calculation of the estimated 50% scaling reduction which we should have applied to P10

[112] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, p. 8
[113] Northumbrian Water, 'Statement of Case', April 2020, p. 189
[114] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, p. 8
[115] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, p. 6
[116] Northumbrian Water, 'Statement of Case', April 2020, p. 189

payments at PR14, and we did not use this 50% figure in setting our final determination.[117]

Our response

A57. We consider it is meaningful to compare package level risk across companies. These companies deliver the same services to customers, have the same set of common performance commitments with similar ODIs, and operate in similar environments. In general, they have not provided clear evidence of why their risks are significantly different to other companies. Although the package level risk is unlikely to be identical, there is likely to be a degree of similarity. In particular, there should be broadly similar correlation between performance commitments across companies. For example, there is likely to be a positive correlation between internal and external sewer flooding, but minimal correlation between, say, per capita consumption and unplanned outage.

A58. We do not think that the fact that we have scaling factors over 100% means that our approach is conceptually flawed. Rather, it indicates that information provided by the companies is clearly flawed such that we cannot simply accept company estimates.

A59. Northumbrian Water highlights Yorkshire Water's data as one of two outliers in the industry.[118] Yorkshire Water's estimate of the P90 value at the package level is less than 10% of the additive method, indicating a very low degree of correlation between its ODIs. This is a very significant outlier within the industry. The results that Yorkshire Water shows are also at odds with experience. At PR14 we only used the additive method to calculate the ODI RORE range, although we acknowledged that this would lead to an overestimate of P10 and P90. However, as shown in figure A2 above, Yorkshire Water's outturn for the 2015-19 period is nearly the same as the P90 calculated using the additive method in PR14. The results of Yorkshire Water's risk analysis at a package level do not appear credible compared to other companies or its own historical performance.

A60. We accept that we have not been able to distinguish between 'errors' or 'deficiencies' in companies' risk analyses and genuine differences between package risk and additive risk. The scale of the differences between

[117] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, p. 8
[118] Northumbrian Water, 'Statement of Case', April 2020, p. 191

companies, without any logical reasoning, indicates to us that much of the difference is "error". However, unlike cases where scaling factors are greater than 100%, it is hard to be definitive and there were few options for excluding other figures. In any case the upper quartile approach including the erroneous results leads to lower results for both P10s and P90s, as shown in table A2 below. These results are not obviously preferable to the mean. If we took account of these results it might suggest a lower P10 scaling factor of approximately 60%. As we consider, based on PR14 experience, that there is more risk of pessimism bias for the upside, the results should have less direct impact for the P90 scaling factor.

Table A2: Industry scaling factors

	Water P10	Wastewater P10	Water P90	Wastewater P90
Mean excluding >100%	70.23%	67.49%	52.95%	64.99%
Upper quartile including >100%	58.54%	58.72%	36.72%	55.04%

Source: Ofwat, PR19 final determinations: Delivering outcomes for customers policy appendix, December 2019, p. 174

A61. As to the comment that it was inappropriate to account for the pessimism bias in our P90 estimate in PR19 even though it existed in PR14, we consider that because PR19 was intended to be more stretching than PR14, companies will have taken into account the PR19 requirements in making their estimates of P10 and P90 performance. The requirements were clearly set out in the PR19 final methodology, and companies have based their business plans on this methodology. An incentive for companies to be pessimistic therefore remains. Certainly we do not see that this is a reason that companies could *not* have had a bias for pessimism at PR19.

A62. Yorkshire Water's advisor highlights that we did not set out a calculation of our 50% scaling reduction estimate for PR14 for the P10 estimate and we did not use this figure in setting our final determinations.[119] To be clear, this 50% figure was a rough estimate based on figure A2. 50% may have been an overstatement as this would mean a number of companies' outturn PR14

[119] Annex 02 (Yorkshire Water) – Economic Insight, 'Ofwat's approach to risk analysis in the final determinations', March 2020, p. 8

period ODI performance would be close to the P10 level, which we would not expect to occur.

A63. Table A3 shows the scaling factors for the four disputing companies.

Table A3: Scaling factors derived for the four disputing company estimates compared to Ofwat scaling factor used in final determinations

	Water P10	Wastewater P10	Water P90	Wastewater P90
Anglian Water	83	115	99	75
Bristol Water	100	-	100	-
Northumbrian Water	87	87	88	88
Yorkshire Water	40	37	10	4
Final determination	70	70	90	90

Source: Ofwat, PR19 final determinations: Delivering outcomes for customers policy appendix, December 2019, p. 174

A64. The P90 scaling factor of 90% that we used is actually lower than the scaling factor derived from Bristol Water's estimates of 100% and only slightly higher than the scaling factors derived from Anglian Water's and Northumbrian Water's estimates at a company level. The P10 scaling factors for these three companies are all greater than the final determination scaling factor. As the P10 scaling factor was based on the industry average it indicates that these three companies are more pessimistic about how poor performance will correlate. Yorkshire Water's scaling factors are outliers both to the other three disputing companies and to the rest of the industry.

A65. The scaling factors that we used help to provide a consistent approach to understanding risk across companies.

Ofwat (The Water Services Regulation Authority) is a non-ministerial government department. We regulate the water sector in England and Wales.

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