PR19 Redetermination

Bristol Water: Statement of Case (Non-Confidential)

April 2020

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Executive Summary

1. Introduction

1 Bristol Water has changed significantly from the organisation it was five years ago, with new ownership, a new Board structure, a new management team, and a clear social purpose and social contract with our customers and stakeholders.

2 A transformation programme initiated by the new management team has delivered increased cost efficiency, a stronger focus on day-to-day operational management, and improved service performance for customers.

3 Our business plan for 2020-2025 was innovative and ambitious. The plan built on extensive customer engagement, upper quartile cost efficiency and stretching service performance targets to meet customers' needs whilst balancing current and future investment requirements. In its plan assessment, Ofwat recognised the strength of our engagement and customer support for the ambitious service levels in key areas such as leakage and supply interruptions.

4 We have supported Ofwat's aims and objectives for PR19 and continue to support the regulator's overall vision for the water sector. There are many areas where Ofwat's final determination (**FD**) matches or is closely aligned with our plan, including performance commitments (**PCs**), outcome delivery incentives (**ODIs**) and resilience investment. We do not dispute Ofwat's retail controls or significant elements of the wholesale controls.

5 In this context, it was with reluctance and after very careful consideration that the Board of Bristol Water rejected Ofwat's FD and requested a third consecutive reference to the CMA.

6 The decision was reached on the grounds that Ofwat's FD is not financeable for a small water only company like Bristol Water. Bristol Water cannot efficiently finance delivery of its plan for customers as a consequence of specific erroneous decisions by Ofwat. The errors in Ofwat's decisions can be grouped under three headings set out below, namely, cost of capital errors, cost allowance errors and balance of risk errors.

7 There are a set of decisions we refer to as **cost of capital** errors:

- Our most concerning and by far the most fundamental issue is that Ofwat set the cost of capital too low to support efficient financing for Bristol Water as a small water only company. This was contrary to significant regulatory precedent from our previous references to the CMA in 2015 (**CMA15**) and the Competition Commission in 2010 (**CC10**), and robust evidence that a company like Bristol Water faces higher debt financing costs. Ofwat's failure in the FD to apply a Company Specific Adjustment (**CSA**) uplift on the cost of debt, alongside the other errors, means we cannot expect to earn a reasonable rate of return on our efficient level of costs in the 2020-2025 period.

- As well as the CSA on the cost of debt, Ofwat also has not considered the precedent from our previous references on a CSA uplift to the cost of equity that reflects the higher operational gearing circumstances for small water only companies like Bristol Water,

compared to Ofwat's notional company. Our analysis of the FD provides clear evidence that a CSA uplift on the cost of equity is required.

- In addition to the cost of capital issues specific to Bristol Water, Ofwat has cut industry cost of capital parameters for the 2020-2025 period to levels not justified by the evidence, and Ofwat's FD is compromised by a number of errors relating to setting a number of components: total market returns (**TMR**), the risk free rate (**RfR**); asset beta, debt beta and the ratio of embedded to new debt.

Cost allowance errors:

- Ofwat has imposed an additional £30m cost challenge that reduces the assumed Bristol Water cost base substantially below independent benchmarks of industry upper quartile cost performance, and is not consistent with the high quality of services our plan will provide. Ofwat has made unjustified assumptions about the level of industry-wide productivity improvements, and there are incorrect adjustments to specific cost items.

Balance of risk errors:

- Ofwat has imposed additional financial incentive measures, not justified by supporting analysis, which expose us to material downside financial risk that compromises our ability to secure a reasonable return on capital and undermine our financeability. These errors are:
  - setting the penalty rate too high for two ODIs;
  - imposing an asymmetric totex cost sharing mechanism in the FD which means that we must bear 60% of any cost over-runs but can only retain 40% of underspend; and
  - imposing the default gearing outperformance sharing mechanism, in circumstances where gearing was not expected to increase under our plan, without considering the impact on financeability given the other FD errors.

8 The combined effect of these decisions is that we cannot efficiently finance delivery of our business plan. On both an efficient relevant notional financial structure basis and our actual financial structure basis we cannot reasonably be expected to:

- maintain an investment grade credit rating (which is a licence requirement);
- deliver reasonable returns for shareholders; and
- have the financial resilience to weather even minor cost shocks.

9 We set out further detail below to demonstrate that Ofwat's inadequate assessment of financeability resulted in a **financeability error**, including a failure to ensure that the FD was financeable for a relevant notional (small water only) financial structure for a company like Bristol Water.

10 We have considered all reasonable steps to remedy the financeability shortfalls within the FD, and whether these could mitigate the necessity for this reference. Having exhausted all available practical measures, we reached the conclusion that we cannot adequately mitigate the risks posed by Ofwat's determination, and had no option but to reject the FD.

11 These errors are further summarised below with more detailed explanations provided in the subsequent sections of this statement of case. Redactions for confidential information are clearly marked by [✂].

12 In undertaking its redetermination, we request that the CMA correct the errors by allowing a cost of capital for a small water only company relevant to Bristol Water, increasing our cost allowance in the areas identified and reducing the asymmetric application of downside risk mechanisms.

2. Cost of capital errors

2.1 The issue

13 As a small water only company, we face higher costs of financing than larger companies. We therefore require a CSA[1] to ensure we can finance our plan.

14 In particular, we face relatively high costs financing our embedded Artesian[2] debt, which matures in 2033. We demonstrated to Ofwat that these costs were efficiently incurred[3] and that a CSA is justified, as this debt is an efficient long term financing solution. Ofwat accepts that our customers strongly support the need for a CSA and that there is compelling evidence justifying the required level of CSA, yet maintain this is not sufficient to apply a CSA for Bristol Water.

15 Ofwat applied a CSA to two other water only companies in PR19, but decided not to do so for Bristol Water on the basis of a 'customer benefits' test. This test considers whether Bristol Water has a net beneficial effect on Ofwat's industry benchmarks for cost or service (a similar test is used in assessing water mergers).

16 In both CMA15 and CC10, it was determined that a CSA on both debt and equity should apply to us.

17 A CSA on the cost of equity (through a 13% uplift on asset beta) continues to be justified because of higher volatility of returns and operational gearing compared to larger (listed) water companies.

18 Ofwat was wrong to depart from this clear precedent and to ignore our need for a CSA. Ofwat's decision contains the following errors:

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1 Ofwat's test assesses whether there is a need for a 'company specific adjustment' or 'CSA'. This can also be described as a Small Company Premium (SCP) and the terms can be used interchangeably for ease of reference.

2 The securitised debt which was issued in 2003-2005 by a group of water companies is explained in section 3.3 of KPMG expert report (2020) Small Company Premium for Bristol Water.

3 Ofwat do not appear to dispute this.

- Ofwat wrongly use a qualifying 'customer benefits ' test, even though this approach was rejected in CMA15 as a matter of principle because of the lack of a causal link between the test and the efficient level of the cost of capital (the **CSA test principle error**); and

- even if it was appropriate to apply a customer benefits test, Ofwat failed to apply its own test correctly to Bristol Water's situation (the **CSA test application error**).

19 Ofwat underestimated the level of adjustment required where companies passed the CSA test by miscalculating the cost of debt premium and not including a cost of equity premium (the **CSA test calculation error**). Without a CSA on embedded debt, our ability to finance our plan is undermined because of the efficiently incurred costs we face that are higher than Ofwat's allowances. This is an enduring issue which we will continue to face for future price controls, at least until the maturity of our Artesian debt in 2033.

20 In addition to the CSA errors, Ofwat reduced the industry cost of capital for PR19 to a level which is not justified by the evidence and compromised by a number of errors.

21 Specifically, in relation to the **industry cost of equity**:

- Ofwat understated the TMR as a result of methodological errors and an unbalanced consideration of the evidence, contrary to the approach previously taken by the CMA (the **TMR error**);

- Ofwat based the assessment of the RfR on a selective use of index-linked gilt debt only, contrary to CMA15, where the CMA considered a wider body of evidence to develop a more accurate view of the RfR (the **RfR error**);

- Ofwat underestimated the asset beta as a result of its reliance on high frequency betas with a shorter horizon (daily betas with a 2-year horizon), rather than the more robust approach of using lower frequency betas over longer periods (i.e. monthly betas with a 5-year horizon) (the **asset beta error**); and

- Ofwat unreasonably assumed a debt beta of 0.125, which is considerably higher than the debt beta of zero applied in PR14 and in CMA15. The approach taken by Ofwat to this was entirely speculative, being without robust evidential basis. Ofwat had no reasonable basis for assuming such a high level of systematic risk of debt across the industry (the **debt beta error**).

22 In relation to the **industry cost of debt**:

- Ofwat underestimated the cost of new debt, as a result of the errors in calculation of the RfR (the **cost of new debt error**); and

- Ofwat's analysis unjustifiably skewed the ratio of new to embedded debt, by setting it at 20:80. The data for a relevant notional water only company, consistent with our forecast, suggests a ratio of 5:95 (the **debt ratio error**).

23 Ofwat failed to consider the implications of not allowing us an appropriate cost of capital (including CSA) on our financeability.

2.2 The proposed remedy

24 We request that the CMA adjust our cost of capital to remedy the **cost of capital errors**. Our forecast of the appropriate cost of capital includes a CSA for both debt and equity as applied in CMA15, as well as a new to embedded debt ratio of 5:95. This is supported by the extensive evidence and financeability analysis we present. We set out Ofwat's position in PR19 (Ofwat's FD column) and the adjusted cost of capital (in nominal terms) once these errors are corrected (Bristol Water column) in the table which follows.

Required adjustments to remedy the cost of capital errors

Cost of capital parameter	Ofwat's FD	Bristol Water
Notional Gearing	60%	60%
Total Market Return	8.63%	9.00%
Risk free rate	0.58%	1.00%
Equity risk premium	8.05%	8.00%
Debt beta	0.125	0.10
Asset beta (not reflecting debt beta)	0.29	0.31
Asset beta (reflecting debt beta)	0.36	0.36
Operational gearing CSA adjustment	-	13%
Asset beta (reflecting debt beta) – post CSA adjustment	0.36	0.41
Re-levered Equity beta (post CSA adjustment)	0.71	0.87
Overall cost of equity, post-tax	**6.27%**	**8.00%**
Cost of embedded debt (including the CSA)	4.47%	4.85%
Cost of new debt (including the CSA)	2.54%	3.25%
Ratio of new to embedded debt	20:80	5:95
Liquidity and issuance costs	0.10%	0.10%
Overall cost of debt	**4.18%**	**4.87%**
Appointee WACC, vanilla	**5.02%**	**6.12%**
Retail margin deduction	0.04%	0.04%
Wholesale WACC, vanilla	**4.98%**	**6.08%**

3. Cost allowance errors

3.1 The issue

25 Ofwat challenged our cost estimates in a number of ways and made multiple interventions for all companies. The overall impact for Bristol Water was vitiated by a number of errors, which cumulatively give rise to a c.£30 million gap between our business plan and the FD.

26 In developing our plan, we considered a wide range of top-down modelling approaches developed by Oxera and NERA. These models show us to be close to, or in a number of cases more efficient than, the upper quartile level of efficiency in the sector. Our bottom-up approach led us to adopting cost estimates towards the lower end of the range implied from the top-down modelling (i.e. it was more stretching).

27 It is recognised by Ofwat that we went to significant lengths to present a business plan that was c.10% below historical costs over the last 5 years, while delivering a step change improvement in service levels. We developed our transformation plan in parallel to PR19, identifying by the end of the process £80 million (c.14%) of cost efficiencies to be achieved by 2025.

28 The CMA15 precedent suggests that it is important to consider a wide range of top-down model and bottom up evidence when considering what challenge to apply. Ofwat's proposed cost allowance for Bristol Water falls significantly below the range implied from the top-down modelling and bottom-up assessments that we have considered.

29 We have identified a number of specific errors and weaknesses in Ofwat's approach which all contribute towards Ofwat underestimating the amount of costs we would need to serve our customers efficiently. We include these as specific examples of where Ofwat has made errors, and on their merits they sum to a central estimate of a c.£45m cost adjustment. Our position remains that the plan we submitted was built on robust and transparent evidence that demonstrates that our cost base is at the lower (most efficient) end of a credible range for upper quartile efficiency.

30 In relation to **econometric benchmarking**:

- Ofwat failed to take into account the fact that companies are operating at different levels of service when setting its base cost allowance. This resulted in our efficient costs being understated by £14-£15 million because the models compare our costs to the costs of companies with lower levels of service (the **service level error**).

- Ofwat failed to reflect the 'cost-service' relationship appropriately in its cost setting framework, resulting in a deficit in our base cost allowance for our costs of leakage of £13 million. In doing so Ofwat ignored the relevant CMA15 precedent (the **leakage error**).

- Ofwat wrongly set an efficiency target at the level of modelled efficiency for the fourth ranked company rather than the upper quartile. This was the result of Ofwat ignoring regulatory precedent and relying on a subjective assessment of what efficiency challenge the industry should face in AMP7. Correcting for this error would increase our cost allowance by £2.5 million (the **benchmark error**).

31 In relation to industry-wide **productivity improvements**:

- Ofwat was unjustified in assuming that companies can improve productivity during AMP7 by 1.1 per cent per year. Ofwat's analysis was erroneous and was contrary to regulatory precedent by ascribing productivity improvements to unmodelled costs that are externally driven taxes and charges. Addressing this error, even to the maximum

assumption that could be justified of 1 per cent, would increase our cost allowance by £2.6 million (the **frontier shift error**).

- Ofwat failed to account for real inflation in energy costs when considering input prices. Correcting this error would increase our cost allowance by £2 million (the **input price error**).

32 In relation to **specific cost items**:

- Ofwat wrongly reduced our allowed revenues for growth and developer services by £4.1 million as a result of relying on erroneous forecast and unit cost data. Rather than reflecting our evidence on growth costs, Ofwat adjusted developer services costs by historic estimates of base efficiency, ignoring our final efficiency proposals (the **growth and developer services error**).

- Ofwat was unjustified in disallowing £2.7 million of costs associated with our Canal and River Trust payments as a result of flaws in its modelling. In doing so, Ofwat ignored the relevant CMA15 precedent where our full cost adjustment claim was allowed (the **CRT error**).

- Ofwat wrongly deducted £3.3 million from our enhancement opex as a result of an error in applying the implicit allowance adjustment. This was despite this deduction being greater than the enhancement opex we proposed in our plan. Correcting this error would increase our cost allowance by £2.2 million (the **enhancement opex error**).

- Ofwat failed to conduct a proper analysis of our enhancement schemes and wrongly applied an additional 10% challenge, based on historic base-efficiency modelling that has no relevance to the efficiency of our proposed enhancement expenditure. This further reduced our cost allowances by £0.75 million (the **enhancement efficiency error**).

- Without warning, Ofwat proposed an additional £0.4 million licence fee cost four days after publication of the FD. This was despite the fact that these costs are outside of our control. Ofwat should have made a corresponding allowance in the FD (the **licence fee error**).

33 While the impact of some of the individual errors may not appear to be significant, the cumulative impact of these errors on our business and on our financeability is material in the context we face with the FD. Ofwat failed to acknowledge the implication of reducing our cost allowances (either singularly or in combination with other measures) on our ability to deliver for customers and the financeability of Bristol Water.

3.2 The proposed remedy

34 We request that the CMA remedy the **cost allowance errors** by increasing our cost allowances under the FD. We consider that an appropriate remedy would be for the CMA to increase our cost allowance by **c.£30 million**, consistent with the extensive cost benchmarking that underpinned our plan and the service level improvements we propose.

4. Balance of risk errors

4.1 The issue

35 Ofwat imposed additional financial incentive and sharing mechanisms measures, not justified by supporting analysis, which expose us to material downside financial risk that compromises our ability to secure a reasonable return on capital. We describe these as the '**balance of risk errors**'.

36 Ofwat's failure to allow us a CSA, its errors in estimating the cost of capital, and its decision to disallow c.£30 million in cost allowances, results in material constraints for our debt and equity financing. This significantly impedes our ability to absorb the effects of adverse events that can typically be expected. In this context, the asymmetric downside risk in the FD faced by Bristol Water is unjustified, and Ofwat has not sufficiently considered the full implications of its interventions.

37 In relation to the **ODIs**:

- Ofwat wrongly set the penalty rate too high for the ODI for both the mains bursts and per capita consumption performance commitments as a result of failing to consider the strength of customer views. This results in greater negative asymmetry in the overall ODI RoRE range compared to Bristol Water's business plan (i.e. an FD p10/p90 RoRE range of -2.9% to +0.8%) (the **ODI error**).

38 In relation to the **asymmetric cost sharing rates**:

- Ofwat was unjustified in setting asymmetric cost sharing rates for overspend and underspend against our totex allowances, setting a 60% rate for the company share of the burden of any overspend, and a 40% rate for the benefit of any underspend. Ofwat's cost sharing rates do not fulfil the proper function of providing companies with protection against the risk of cost overruns and incentives for furthering efficiency. Instead, they place a further reliance on the accuracy of Ofwat's benchmarking in identifying inefficiency, which is not evident based on the FD (the **asymmetric cost sharing rates error**).

39 In relation to the **gearing outperformance sharing mechanism**:

- Ofwat was unjustified in including a mechanism for Bristol Water requiring reduced bills to customers where gearing exceeds a certain threshold. Contrary to the intention, the inclusion of this mechanism adversely impacts our financial resilience (the **gearing outperformance sharing error**).

40 Ofwat's introduction of significant asymmetric risk is not appropriate as a regulatory design and undermines our financeability, given the inadequate financial resilience it has imposed on us under the FD through the **cost of capital errors** and **cost allowance errors**. It further compromises our ability to secure a reasonable return on our capital is one of the reasons why Ofwat has failed to meet its finance duty.

4.2 The proposed remedy

41 We request that the CMA remedy these errors by: making specific adjustments to incentive rates which will reduce negative asymmetry of the overall ODI RoRE range, setting the cost sharing rate at 50% and removing the gearing outperformance mechanism.

5. Financeability error

5.1 The issue

42 Ofwat was obliged to set a FD which allowed us to earn a reasonable rate of return on debt and equity, given efficient performance on costs and high quality services. It has failed to do so, contrary to its finance duty, as a result of the **cost of capital errors**, the **cost allowance errors** and the **balance of risk errors** summarised above.

43 Ofwat was duty bound to undertake an adequate financeability assessment to ensure that the FD was financeable for Bristol Water. This requires considering financeability in terms of each of the key parameters in the FD of allowed (efficient) costs, allowed returns on capital and in respect of regulatory financial incentive mechanisms and their effects on cash flow risk and expected returns.

44 Ofwat acknowledged the importance of this assessment, and undertook an assessment by reference to a notional company. However, that assessment was fatally compromised by Ofwat's construction of the 'notional' financial structure and a number of other errors:

- Ofwat's notionally efficient company has a notional financing structure which bears little resemblance to that of a small water only company, contrary to the CC10 and CMA15 precedents (as without the small company adjustment to the cost of capital and lower new debt share it is not a reasonable estimate for a small water only company like Bristol Water).

- Ofwat identified (for the notional company) £20m five-year totex headroom (i.e. additional expenditure above the FD totex allowances) over the absolute minimum AICR ratio, which is less than the £25m in Ofwat's own normalised p10 totex downside in the FD. This also ignored other sources of asymmetric downside risk which Ofwat acknowledges, for example, that arise from not reflecting the higher debt cost of small water only companies.

- Given asymmetric sharing mechanisms, Ofwat assumes that shareholders must absorb downside risks. Debt providers rely on an equity buffer, but there is no prospect of return to equity in the FD, let alone adjusted for asymmetric risks. This is not in customers' long term interests where the risks arise from an imbalanced regulatory settlement, given the need for ongoing investment to deliver an efficient and resilient service beyond 2025.

- Ofwat relied on mitigation strategies that are not applicable or available to Bristol Water. Notably, Ofwat assumed that problems with financial ratios likely result from the timing of investment or a mismatch between company actual financing and their notional assumptions. As such, Ofwat suggests that companies should adjust their financing, for instance reducing and paying off debt and increasing equity to resolve this mismatch between real returns and their actual cost of debt. Such restructuring options

have obviously been considered by us at length, and are not available to Bristol Water. Our gearing has fallen in recent years due to our shareholders retaining equity in the business, and our debt level is consistent with the notional gearing assumptions. Additionally, it is not efficient under any scenario to repay early and replace the long-term Artesian debt, which was efficiently incurred at the time it was raised. Finally, the only debt that is capable of being repaid is short term debt, a minority of our capital structure, which has the cheapest cost and thus offers little benefit to ratios.

45 We have considered all reasonable steps to address the financeability constraints within the FD, but cannot adequately mitigate the risks posed by Ofwat's FD. A proper **financeability assessment** reveals failings in respect of several important tests:

- Ofwat failed properly to check that the credit rating (Baa1) it set for determining the cost of capital was achievable. When the tests are correctly applied, it is evident that the core ratios used by Moody's (AICR) and Standard and Poor's (funds from operations/net debt) to support this rating are not achieved (the **credit rating test**).

- Ofwat failed to secure sufficient financial headroom over debt service requirements to enable us to withstand foreseeable adverse events, while maintaining an investment grade credit rating (as required by our licence). This is because of the inadequate cost of capital, inadequate cost allowances and the unjustified asymmetric downside risk under the FD (the **headroom debt service test**).

- Ofwat failed to secure that a relevant notional company can earn the required equity return on a mean expected basis (meaning that it would not be able to secure equity funding at the cost of equity allowed under the FD) (the **equity returns test**).

46 The failure to meet these provides clear evidence that **the business plan is not financeable under the FD**. This concern has been recognised by Moody's which on 11 March 2020 downgraded Bristol Water's credit rating to Baa2, with a negative outlook. Moody's concluded that the FD presented such significant challenges that, despite our modest gearing, even an increase in allowances may not be enough to restore our credit rating.

47 Overall it is clear that **Ofwat has failed to meet its finance duty when setting the FD for Bristol Water**. Had Ofwat conducted a proper financeability assessment, the failings in the FD would have been clear and necessary adjustments could have been made. These include allowing for the CSA, increasing the industry cost of capital, adjusting the approach to cost allowances and reducing the asymmetric downside risk.

5.2 The proposed remedy

48 We request that the CMA correct these errors by increasing our cost of capital, in particular through applying a CSA that reflects the efficient financing cost of a relevant notional company with characteristics relevant to Bristol Water, increasing our cost allowance in the areas identified, and removing the asymmetric application of downside risk mechanisms.

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Section A: Financeability error

1. Introduction

1 Ofwat was obliged by its finance duty to set a FD[4] which allows us to earn a reasonable rate of return on an efficient level of costs.[5] Ofwat failed to do so, as a result of the following errors:[6]

- **Cost of capital errors** – see Section B
- **Cost allowance errors** – see Section C
- **Balance of risk errors** – see Section D

2 In exercise of its duty, Ofwat was required to undertake a financeability assessment as a cross-check to ensure that our FD was financeable. This required considering financeability for each of the key parameters in the FD:

- allowed (efficient) costs;
- allowed returns on capital; and
- regulatory financial incentive mechanisms, and their effects on returns and cash flow risk.

3 Ofwat acknowledged the importance of this financeability assessment. However, its assessment was fatally compromised by its construction of the 'notional' company reference point and a number of other material errors.

4 A **proper financeability assessment** reveals failings in respect of several important tests:

- the cost of capital is clearly inadequate because the requisite leverage and coverage ratios for a comfortable investment grade credit rating cannot be achieved;
- the required equity return is not expected to be met on a mean expected basis; and
- there is a lack of financial headroom to meet cost shocks, as evidenced by the challenges in achieving a comfortable investment grade credit rating as required by our licence.[7]

5 Our assessment is supported by a report from KPMG, 'Financeability of Bristol Water and PR19 Final Determination' (the **KPMG Financeability Report**).[8]

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4 See Annex 1: 'Glossary' for an explanation of commonly used terms.
5 See Annex 2: 'Statutory Framework' for a description of Ofwat's statutory duties.
6 See Annex 3: 'List of areas not in dispute' for those areas that are not in dispute. See also Annex 4: 'Initial Observations on Ofwat's submissions'.
7 See Annex 2: 'Statutory Framework' for relevant details of our licence.
8 See Annex 5: 'List of expert reports' for a list of expert reports submitted in support of our statement of case.

6 The failure to meet these financeability tests is strong evidence that **our business plan[9] is not financeable under the FD**. We have considered all reasonable steps to address the financeability constraints within Ofwat's FD but cannot adequately mitigate the risks posed.

7 We request that the CMA correct these errors by increasing our cost of capital, in particular through applying a CSA uplift[10] that reflects the efficient financing cost of a relevant notional company with characteristics relevant to Bristol Water, increasing our cost allowance in the areas identified, and removing the asymmetric application of downside risk mechanisms.

2. Ofwat's finance duty

8 Ofwat has a primary duty – the **finance duty** – to exercise and perform its functions as an economic regulator in a manner that it considers will best:[11]

> "*secure that [water companies] are able (in particular through securing reasonable returns on their capital) to finance the proper carrying out of [their] functions*".

9 The finance duty requires Ofwat to deliver a FD which allows us to earn a **reasonable rate of return** on our efficient level of costs for the 2020-2025 period.

10 The CMA has confirmed that for a return to meet the finance duty (i.e. to be a reasonable return), it should be commensurate with the risk of the regulatory framework[12] and with what investors can earn on investments of comparable cash flow risk – i.e. the expected return should be consistent with the allowed return:[13]

> "*Financeability is a term used by regulators to decide if a firm has the ability to pay off its providers of debt and equity finance. In price controls it is generally assumed that financeability is achieved <u>when the rate of return (or WACC) has been set at a high enough rate, such that the revenues and therefore cash flows made by the firm are sufficient to pay investors and lenders</u>*." (emphasis added)

11 Our financeability is determined by Ofwat's decisions on the following key parameters:

- **Allowed costs** – which should reflect the efficient level of spend we need to deliver on our plan as well as to provide the committed level of services to customers;
- **Allowed return** – which should be based on relevant market evidence of the cost of capital and provide a level of return that is commensurate with the risks faced by a relevant notional company like Bristol Water under the regulatory framework; and

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9 See Annex 6: 'Our story' for details of our business transformation and Annex 7: 'Our efficient plan' for details of our business plan.

10 Ofwat's test in this regard assesses whether there is a need for a CSA. This can also be described as a Small Company Premium (**SCP**).

11 Section 2(2A) of the Water Industry Act 1991 (**WIA91**).

12 CMA (2017), 'Firmus Energy (Distribution) Limited v Northern Ireland Authority for Utility Regulation: Final determination' (***Firmus Energy***), paragraphs 7.98 and 7.99 (https://assets.publishing.service.gov.uk/media/5953bfd8e5274a0a69000079/firmus-final-determination.pdf).

13 *Firmus Energy*, paragraph 7.60, as restated by the CMA in 'SONI Limited v Northern Ireland Authority for Utility Regulation: Final determination' (2017), paragraph 3.21 (https://assets.publishing.service.gov.uk/media/5a09a73ce5274a0ee5a1f189/soni-niaur-final-determination.pdf).

- **Regulatory financial incentive mechanisms** - e.g. performance targets, caps and collars, ODI penalty and reward rates on ODIs, cost sharing incentives, which affect our returns depending on performance, and therefore affect the cash flow risk to capital providers.

12 When combined, these financeability tests act as an overall cross-check of the FD.

13 The CMA endorsed this approach to assessing financeability in its redetermination of our PR14 price control in CMA15.[14] The CMA confirmed that both cost allowances and financing costs need to be **reasonable** so that, on balance, the price control settlement results in a financeable outcome where capital can be raised at the allowed rate of return:[15]

> "*We have made an assessment of Bristol Water's wholesale totex requirements (Section 7) and its financing costs (Section 10). In doing so, we have determined a reasonable level of costs that Bristol Water could be expected to incur. If these estimates are reasonable, then Bristol Water should be able to finance its functions, since it will be able to raise finance at our assumed rates, and meet its operational and investment requirements*." (emphasis added)

14 Securing our financeability is crucial to the efficient operation of our company and is strongly aligned with the interests of our customers. It would not be in the long-term consumer interest for us to be granted insufficient cost allowances for base maintenance and operations or insufficient allowance for the cost of capital to reflect our efficiently incurred historical financing costs. The ability to attract and service efficient finance costs on a reasonable basis is therefore in line with long-term consumer interests. It should therefore be uncontroversial that the finance duty compliments Ofwat's **consumer objective** by ensuring that we can provide high quality services to current and future customers.

15 Ofwat also has a **resilience duty** and has recognised the need to **secure financial resilience** when discharging this duty for the long-term benefit of both customers and shareholders. A balanced determination will be one that sees the finance, consumer and resilience duties function in harmony, guided by the DEFRA Strategic Policy Statement.[16]

3. Ofwat's failure to meet its finance duty

3.1 Ofwat's flawed assessment of financeability

16 Ofwat sets its allowed returns on a 'notional' basis. It assumes a capital structure which is typically different to the actual capital structures adopted by companies. The reason for this is that Ofwat considers it to be for companies to determine their own capital structures. We accept that this is economically logical as there is a competitive market for private capital which companies in the UK can access. It is also consistent with conventional corporate finance theory which states that capital structure (the balance between debt and equity)

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14 CMA (2015), 'Bristol Water plc: A reference under section 12(3)(a) of the WIA91 – Report' (**CMA15**) (https://www.gov.uk/cma-cases/bristol-water-plc-price-determination).

15 CMA15, paragraph 11.75

16 See Annex 2: 'Statutory Framework' for further details.

should be irrelevant to the returns that a company is able to earn, once the impact of tax on debt is removed.[17]

17 Capital structure has an impact on the risks faced by equity and debt investors and the returns demanded by them to provide capital. Companies can choose an optimal actual capital structure based on their circumstances and their own assessment of risks[18] and we note that different water companies have chosen a range of financing arrangements.

18 Assuming a notional capital structure has **three critical implications** for price control setting:

- Ofwat must select an **appropriate** assumed capital structure that is achievable in practice (i.e. it has to be **relevant** to the individual company's circumstances).
- Ofwat must set **allowed returns which allow for efficient costs of debt and equity** given the assumed capital structure. This involves making appropriate financial assumptions in applying the CAPM to derive a WACC for the regulated company.
- Ofwat should **test for financeability under the same notional assumptions for structure and financing costs that it uses to set the cost of capital**.[19]

19 At PR19, consistent with previous price controls, Ofwat made two industry-wide assumptions about the notional capital structure:

- Ofwat assumed gearing of 60% (debt/RCV); and
- Ofwat assumed 33% of debt is index-linked.

20 Ofwat's gearing assumption was influenced by actual gearing in the sector which has risen since privatisation. It is not materially below our own current gearing, of c.65%. We do not challenge either of these assumptions.

21 However, in order to accurately assess financeability in PR19, tests have to be applied on a **relevant notional structure** that reflects **efficient financing costs** for an efficient water company in England and Wales, with **relevant risk and other company characteristics**, under a 'notional' capital structure.

22 On this latter point, UK regulators have recognised that the relevant notional structure may be impacted by the **characteristics** of the particular regulated entity. In CMA15, the CMA confirmed that (in the absence of an appropriate notional structure) it would consider deviations from the notional structure where relevant:[20]

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17 Ofwat's price control approach does this by passing the tax benefit of debt finance where it differs from the notional structure to customers.

18 The new gearing outperformance sharing mechanism challenges the notion that the actual capital structure is independent of Ofwat's price setting assumptions – see **Section D Balance of risk errors**.

19 We refer to the notional capital structure and consistent notional financing assumptions together as the 'notional company'.

20 CMA15, paragraph 11.30.

> *"…we consider the suitable assumptions to be included within our financial ratio analysis. As discussed above, we draw largely on assumptions consistent with a notional financial structure, but we consider each assumption on a case-by-case basis"* (emphasis added)

23 In particular, the relevant notional financing structure is affected by the **size** of the regulated company. There is extensive regulatory precedent and financial literature which confirms that size affects financing costs.[21]

24 In our FD, Ofwat did not include an adjustment to the allowed cost of debt to reflect the higher costs of debt we face as a small water only company. Ofwat also did not consider whether the FD meant that the cost of equity should be higher for a small water only company. This means that **our allowed returns are inadequate** and that Ofwat's financeability assessment is inadequate, contrary to its finance duty.

3.2 A relevant notional company for small water only companies

25 Small, efficient water only companies such as ours face higher costs of financing as compared with larger companies with an otherwise similar level of asset risk. Ofwat does not appear to dispute the efficiency of this higher cost of finance.

26 In past price reviews, Ofwat has recognised that **small companies face higher financing costs**. Ofwat's previous price control determinations have included a higher allowance for the cost of debt for smaller companies. This is the case for two small companies at PR19.

27 Ofwat has not included a CSA uplift in our FD. This is a **material error** and the single most significant reason why we requested a redetermination – see **Section B Cost of capital errors**.

28 In CMA15, the CMA defined the notional company for Bristol Water as one that includes a CSA uplift on the cost of debt of 40bps. This was on the basis of convincing evidence that we faced higher debt financing costs than larger companies. This approach was consistent with the previous determination of our price control by the Competition Commission (**CC**) in CC10.[22]

29 The CMA confirmed that Ofwat's failure to reflect this inherent characteristic of higher cost of debt financing for small companies in testing for financeability could constitute a failure of its finance duty:[23]

> *"Ofwat's approach will result in some companies, in particular very small companies, being in a position where their notional cost of efficient finance, is higher than Ofwat's assumption. If the notional company is based on a total industry average, the resulting cost of debt could be perceived as too low for these very small companies, which could be perceived as being potentially inconsistent with its finance duty."*

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21 KPMG SCP Report, section 3.1.

22 Competition Commission (2010), 'Bristol Water plc – A reference under section 12(3)(a) of the Water Industry Act 1991 – Report' (**CC10**) (https://www.gov.uk/cma-cases/bristol-water-plc-price-determination-cc).

23 CMA15, Appendix 10, paragraph 58 (https://assets.publishing.service.gov.uk/media/5627997640f0b60368000001/Appendices_5.1_-_11.1_and_glossary.pdf).

30 We set out a detailed explanation of the appropriate CSA for Bristol Water in **Section B Cost of capital errors.** In summary, we consider that our allowed cost of debt under the FD should be 4.87% based on:

- cost of embedded debt of 4.85% (including a CSA of 38bps);
- cost of new debt of 3.25% (including a CSA of 25bps);
- ratio of embedded to new debt of 95:5; and
- debt issuance costs of 10bps.

31 We therefore define the relevant 'notional company' for Bristol Water as one which **reflects these efficient costs of debt financing**.

32 By not allowing for a CSA uplift on the cost of debt, Ofwat has not used the correct 'notional company' for Bristol Water. This is a material error as demonstrated by relevant financeability tests. Ultimately, it means that the cost of capital set by Ofwat is not achievable for us, as it does not account for the additional debt financing costs that we face as a small company.

33 We also set out in **Section B** the case for a CSA uplift on the cost of equity. We propose a 13% uplift in the cost of equity. This is justified on the basis of the operational gearing and volatility of returns for a relevant notional company for Bristol Water due to a relatively smaller RCV. This level of adjustment was applied by the CMA in CMA15:[24]

> "*In the context of our determination for Bristol Water, we considered that it was proportionate to assess whether any difference between Bristol Water's cost of capital and the wider industry should be reflected within the assumption for the asset beta.*"

3.3 Applying relevant criteria to test our financeability

34 The KPMG Financeability Report sets out the following criteria and tests for assessing financeability:[25]

- the notional company should be able to achieve the **credit rating** assumed in the cost of debt allowance – the **credit rating test**;
- the notional company should have **sufficient financial headroom** to withstand plausible downside risk – the **headroom debt service test**; and
- the notional company should be able to reasonably expect to earn the required return on a mean expected basis – the **equity returns test**.

35 We have used these criteria and the testing which follows from them to support our case. We start by explaining the rationale, the methodology and the implications of failing these tests.

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[24] CMA15, paragraph 10.155. We note that the CC made an equivalent adjustment in CC10.
[25] KPMG Financeability Report, section 5.

(1) Credit rating test

36 It is important that the allowed rate of return on debt under the FD allows us to raise capital at market cost. A standard way to test for this is to run credit rating simulations, based on standard rating agency methodologies, as the CMA has confirmed:[26]

> *"In assessing financeability it is good regulatory practice to consider the views of the credit rating agencies, and by implication, the financial ratios".*

37 Ofwat set the cost of debt allowance using an average of A and BBB rated iBoxx indices for bonds with a maturity of 10 years or more (effectively equivalent to Baa1). We therefore expect that for the FD to be financeable, we should be able to achieve the Baa1 credit rating that is assumed in the cost of debt allowance. A rating that is lower than this would mean that we would only be able to raise debt at a **higher cost** than allowed, which would result in unfunded debt costs.

38 In the modelling KPMG have used Moody's approach, as set out in Moody's published methodology to assessing regulated water networks. This is the most prescriptive methodology of all the rating agencies. KPMG have also modelled S&P's FFO/Net debt metric because we monitor it in considering our long-term financial resilience. This is because cost shocks negatively affect S&P's FFO/Net debt more quickly than AICR, but cost risk and control is still a significant factor in Moody's overall rating.

39 Moody's uses a grid implied rating based on the weighted average numeric score assigned to the company, which is comprised of qualitative (60%) and quantitative (40%) factors. A given overall credit rating score can be achieved through a combination of qualitative and quantitative factors. The headroom in the ratios implied by the qualitative factors significantly affects the extent to which quantitative factors can fall below certain thresholds without adversely affecting the overall credit rating of the company.

40 However, AICR is the primary metric for Moody's and constitutes a strong constraint on its credit ratings: a rating would be very unlikely if AICR fell below the relevant guidance level. In a recent publication, Moody's set out guidance on minimum AICR and gearing thresholds that are consistent with Baa1 and Baa2: 1.5x and 1.3x respectively.[27]

41 Moody's does not define an AICR threshold that would apply for a Baa3 rating. KPMG conclude[28] that a threshold of 1.1x can be considered appropriate for Baa3. We concur with this and present our modelling results on this basis.

42 Table A1 sets out the thresholds against which the projected metrics will be assessed, as defined by KPMG. These are based on Moody's thresholds, but provide an additional level of granularity to the analysis. KPMG have included additional thresholds for 'Stable Baa1', 'Stable Baa2' and 'Stable Baa3' at levels above the minimum threshold consistent with each credit rating. Where a metric does not meet the Baa3 threshold it is categorised as 'at risk' of

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26 CMA15, paragraph 11.24.
27 Moody's (2018), 'Regulator's proposals undermine the stability and predictability of the regime'.
28 KPMG Financeability Report, section 5.

contributing to a sub investment grade rating. In the case of AICR this applies at levels lower than 1.1x.

Table A1 Ratio thresholds and RAG grid[29]

RAG	Stable Baa1	Baa1	Stable Baa2	Baa2	Stable Baa3	Baa3	Baa3 at risk
Moody's							
AICR	≥ 1.6	1.6 - 1.5	1.5 - 1.4	1.4 - 1.3	1.3 - 1.2	1.2 - 1.1	< 1.1
Net Debt / RCV	≤ 70%	70% - 72%	72% - 75%	75% - 80%	80% - 82.5%	82.5% - 85%	> 85%
S&P							
FFO / Net Debt	≥ 10%	10% - 9%	9% - 8.5%	8.5% - 8%	8% - 7%	7% - 6%	< 6%

43 In conducting our test, we calculated the three financial ratios above for the notional company for each year of the period in our appropriate 'base case', by which we mean:

- earning revenues equal to those allowed in the FD;
- incurring the costs of debt consistent with our small size – specifically at the levels that we propose should be allowed in **Section B Cost of capital errors**. We therefore model nominal cost of debt at 4.87%, which is 69bps higher than the FD allowance;
- incurring totex in line with the proposals in our response to the DD, adjusted as set out in **Section C Cost allowance errors**. These costs are 6% higher than the allowance, at c.£30 million; and
- incurring ODI penalties or earning ODI rewards in line with our mean expected performance on the relevant outcome measures. Our base case accounts for the inherent asymmetries in the ODI regime overall in particular via the setting of caps and collars on performance commitments and the setting of penalty and reward rates on ODIs – see **Section D Balance of risk errors**. We estimate the costs to be c.£1.5 million per annum higher due to the asymmetries over the price control period.

44 The resulting financial ratios are compared against the threshold levels in Table A1 above to determine whether or not the implied credit ratings consistent with the calculated ratios are consistent with that assumed in setting allowed returns. We also illustrate the impact of each of the factors above in explaining the difference between AICR in the FD and our assessment of AICR on average over the period.

(2) Headroom debt service test

45 Our company needs to be financeable under a plausible set of downside scenarios. This means having sufficient headroom in leverage and coverage ratios in the base case to be resilient to downside shocks. Downside scenario testing is also fundamental for lenders to assess whether

[29] KPMG Financeability Report, section 5.

our company has a reasonable prospect of being able to service debt under plausible downside scenarios.

46 Testing financial resilience through this approach reflects standard market practice and is widely recognised by regulators and the CMA. In CMA15, the CMA considered the impact from downside risks on ratios and the implied financial headroom for maintaining investment grade credit rating:[30]

> *"We consider it good regulatory practice to consider the impact of downside shock on financial ratios. We therefore conducted a sensitivities analysis."*

47 Downside scenario testing is also supported by the UK Joint Regulators Group:[31]

> *"The financeability of each notionally financed company is typically tested under both the 'base' scenario (allowed revenue set at the beginning of each price control) and also stress tested against a number of other scenarios or events (depending on the sector under review)."*

48 We have tested resilience under downside scenarios prescribed by Ofwat[32] as well our own specific scenarios. These are outlined below:

Ofwat scenarios

- **Totex**: 10% totex under-performance
- **ODIs**: ODI penalty equivalent to 3% of RoRE (modelled as 1% of RoRE for 3 years)
- **High inflation**: 4% RPI, and 3% CPIH for each of the five years of the price control
- **Low inflation**: 2% RPI, and 1% CPIH for each of the five years of the price control
- **Bad debt**: increase in the level of bad debt of 20%
- **Debt refinanced**: new debt financed as required at 2% above the forward projections
- **Financial penalty**: equivalent to 3% on one year Appointee turnover
- **Combined scenario**: This assumes (1) underperformance of both totex and retail expenditure of 10% in each year of the price control; (2) an ODI penalty equivalent to 1.5% of RoRE in each year; and (3) a financial penalty equivalent to 1% of revenue in one year

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30 CMA15 paragraph 11.52.

31 Joint Regulators Group (2013), 'Cost of Capital and Financeability' (https://www.ofgem.gov.uk/ofgem-publications/37070/jrg-report-cost-capital-and-financeability-final-march-2013-pdf). The JRG was the predecessor to the UKRN, which came into being on 19 March 2014.

32 Ofwat, 'Putting the sector back in balance – summary of Ofwat's decision on issues for PR19 business plans', page 4 (https://www.ofwat.gov.uk/wp-content/uploads/2018/04/Benefit-sharing-decision-statement-FINAL-for-publishing.pdf).

Bristol Water scenarios

- **Canal and River Trust** (**CRT**): [✂

]

- **Ofwat combined scenario with CRT**: a combination of Ofwat's scenario and the CRT scenario above
- **p10 totex**: equivalent to £25 million of totex overspend
- **p10 ODI**: equivalent to a £19 million penalty

49 Our own specific scenario models the impact of the increase in cost, [✂

].

50 We model the same financial ratios as in the base case and compare them to the threshold levels in each case on an average basis over the price control period.

51 We also present a breakdown of the factors which explain the difference in the key AICR ratio between that calculated by Ofwat in its FD and the figure that we calculate.

(3) Equity returns test

52 An efficient regulated company should be able to earn the required return on a mean expected basis under Ofwat's FD. Failure to do so would indicate that the rewards are outweighed by the risks.

53 Where there are notable negative asymmetries, or unfunded efficient totex costs, this would result in an expected return that would be below the allowed return.

54 The ability to recover efficient costs is a key criterion for financeability, as is clear from the CMA's precedent including CMA15. The CMA recognised that the ability to finance our functions is contingent on, and driven by, a number of factors in the price determination, including the level of wholesale totex allowances and the assumed cost of capital.[33] The CMA concluded that if the estimates of the costs that we were expected to incur were reasonable, then we would be able to finance our functions.[34]

55 We have calculated the expected returns to equity and other financial metrics (leverage and coverage ratios) on a mean expected basis to determine whether the notional company can earn the allowed return in expectation and can therefore be deemed financeable.

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33 CMA15, paragraph 11.2.
34 CMA15, paragraph 11.19.

Implications of failing the three tests and not meeting the criteria

56 If the tests results in financial metrics that lie significantly below the target thresholds, we consider this would then indicate a significant financeability challenge over the 2020-2025 period.

57 There could be two potential underlying causes of the tests failing.

58 First, it is theoretically possible that the financeability issue could arise from a mismatch between real and nominal cash flows to debt in the regulatory framework: real cost of debt is used to set revenue allowances (with inflation factored into the RCV each year and hence recovered over time) while debt investors demand nominal returns in practice (other than for index-linked debt). This can lead to a financeability issue even though overall allowed returns are set correctly. This has been a key driver of financeability assessment since privatisation. However, it is accepted that the impact of this effect becomes small when a company is in 'steady state', with limited growth in the asset base requiring new debt finance. Our FD involves a very small enhancement programme. Therefore that the cash flow mismatch is not a significant factor in our case.

59 It is therefore highly probable that any financeability problem would result from the second possible root cause: which is that **the FD has not made an adequate allowance for efficient costs, either totex, or the cost of capital or both**.

60 A robust financeability assessment should indicate whether the cost of capital in the allowance is reasonable and achievable in practice. It acts as a cross-check on allowed returns. When these tests fail, there is a need to recalibrate the price control.

61 Before discussing the results of the testing, we comment on Ofwat's limited financeability assessment of the FD.

62 For avoidance of any doubt, our financeability assessment considers the relevant notional company and does not take any account of AMP6 reconciliation adjustments. This is because our performance has significantly improved and some of these penalties are likely to be recovered in the final 2019/20 reconciliation.

3.4 Why Ofwat's financeability assessment is inadequate

Ofwat's assessment of financeability in the base case

63 Ofwat has performed its financeability assessment with reference to a credit rating two notches above the minimum investment grade rating (Baa1), and has used a threshold of 1.5x for AICR in its test. This AICR threshold is consistent with the minimum required to achieve Baa1 under Moody's methodology for water utilities.[35] The target rating for the purpose of testing financeability is also consistent with the cost of debt allowance.[36]

[35] Moody's (2018), 'Regulator's proposals undermine the stability and predictability of the regime'.
[36] KPMG Financeability Report, section 6.

64 It was on this basis that Ofwat concluded that our FD is financeable. This assessment is based on the FD assumptions, notably that FD cost allowances are adequate to cover our efficient level of totex and our cost of capital. Even so, the key AICR ratio is, on average, 1.47x over the period, which is marginally below Moody's threshold – suggesting we would only achieve a strong Baa2 rating, or a weak Baa1 rating. Yet Ofwat does not identify the need for any action to remedy this financeability issue in our FD.

65 Where Ofwat has identified financeability constraints (for twelve other companies), it sought to address these concerns by adjusting the PAYG (the proportion of opex in allowed revenues) and run-off rates (depreciation). Ofwat's position is that by modifying PAYG rates and/or accelerating depreciation, financeability issues can be addressed by shifting cash flows over time – effectively by advancing revenue from future price controls to the current one. Rating agencies, however, are known to not take these adjustments into account when calculating ratios.[37]

Ofwat's assessment of resilience to downside scenarios

66 It is important that we have sufficient financial headroom to be resilient to plausible downside scenarios. Indeed, Ofwat required companies, in submitting their business plans, to test against specified downside scenarios.

67 However, Ofwat's own testing of downside scenarios in the FD appears to be very limited. The FD describes a test of interest cover against two downside scenarios (p10 totex and ODI downside of 1% of RoRE). Ofwat states that there is financial headroom available to cover totex and ODI downsides. However, the headroom calculation is relative to an AICR threshold of 1.0x, which is below the assumed threshold required to achieve the minimum investment grade rating of 1.1x. It should also be noted that there is very little detail of Ofwat's analysis set out in the FD or anywhere else.

68 Despite the low threshold, Ofwat calculates financial headroom to be only £20 million over the five-year period. The CMA will note that this figure is lower than the c.£30 million difference between our efficient totex costs and that assumed by Ofwat in the FD. It is less than the £25 million Ofwat assumes in the p10 totex range Ofwat quotes in our FD, based on its standardised assessment for an efficient notional company, let alone before taking into account headroom for financing and outcome incentive downside.

69 The financial headroom that has been allowed in the FD is therefore insufficient to cover a plausible totex outturn which, if incurred, would risk a credit rating downgrade to below investment grade. Higher than allowed financing costs (which are inevitable given the absence of the CSA for embedded debt) and downside ODI outcomes (e.g. should severe weather occur) will place even more stress on this limited financial headroom.

Conclusion on Ofwat's assessment

70 It is not clear on what basis Ofwat was able to conclude that we are sufficiently resilient to its specified downside scenarios, not least because Ofwat's analysis is very limited. Ofwat

[37] Moody's (2019), 'Rock of low returns meets hard place of covenants'.

considers that by being just below the AICR threshold of 1.5x on a notional basis, we are financeable under the FD. It concluded that the interest cover headroom available to us on a notional basis, calculated at 1.0x AICR, is sufficient, despite this being demonstrably below Ofwat's p10 totex downside and being calculated against a level which is not consistent with the lowest investment grade credit rating.

71 There is therefore insufficient financial headroom to cover a plausible downside shock on totex even *before* we consider further downsides which will result from the higher financing costs that we will incur compared to the allowance or may incur from underperformance on ODIs. The FD is therefore not financeable even if it were assumed that FD cost allowances were appropriate central estimates of efficient costs.

72 KPMG's analysis supports this conclusion:[38]

> *"Overall, the conclusion from this analysis is that Ofwat's evaluation and treatment of downside scenarios as part of its financeability assessment has significant gaps, is overly optimistic, and internally inconsistent, especially given the overall PR19 regulatory framework. Therefore, Ofwat's assessment does not represent a robust and adequate check to conclude on BW's financeability and leads the regulator to wrong conclusions."*

73 Ofwat has failed to conduct a sufficiently robust financeability assessment of the FD to ensure that we are able to withstand plausible downside risk. Moreover, Ofwat has failed to consider whether a real financeability problem is indicative of costs of capital being set too low. Ofwat appears to have disregarded the implications of financeability tests of the notional company as a cross-check on allowed returns.

3.5 Ofwat's 'notional' company is not financeable under the FD

74 We asked KPMG to apply the three tests of financeability – the credit ratings test, the headroom debt service test and the equity returns test – to Ofwat's 'notional' company.[39]

(1) Results of credit rating test as applied by KPMG to the 'notional' company

75 We present the results of KPMG's analysis in two parts:

- Key ratios by year versus thresholds
- AICR bridge

Key ratios by year versus threshold

76 Table A2 shows the key financial metrics for each year of the price control period (AMP7) under our base case. The RAG rating illustrates into which of the threshold bands the ratio falls. It also shows the credit rating implied by these ratios based on a simulation of Moody's approach.

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38 KPMG Financeability Report, section 6.
39 KPMG Financeability Report, section 7.

Table A2 Projected financial metrics with a notional financial structure (with higher financing costs and Totex spend and losses from ODIs, on a mean expected basis)[40]

Base Case	2020/21	2021/22	2022/23	2023/24	2024/25	AMP7 average
Moody's metrics						
AICR	0.84x	0.86x	0.88x	0.89x	0.89x	**0.87x**
Net Debt / RCV	60.6%	60.4%	60.0%	59.7%	59.4%	**60.0%**
FFO / Net Debt	11.2%	11.3%	11.4%	11.6%	11.5%	**11.4%**
RCF / Net Debt	11.2%	11.3%	11.4%	11.6%	11.5%	**11.4%**
FFO / Net Debt (S&P)	10.2%	10.3%	10.4%	10.5%	10.5%	**10.4%**
Implied rating	Ba2	Ba2	Ba2	Ba2	Ba2	**Ba2**

77 In each year of the AMP, the key AICR ratio at 0.87x on average is well below 1.0x, meaning that operating cash flows are insufficient to cover interest payments. This ratio falls significantly below the 1.1x level which would be consistent with minimum investment grade.

78 The other ratios considered in the analysis are broadly consistent with the thresholds consistent with a Baa1 rating.

79 However, AICR is a key ratio that constrains our rating under Moody's methodology. In the modelling, this ratio is consistent with sub-investment grade credit rating of Ba2. This implies there is a significant risk to breaching our licence requirements and shows that for the notional structure under the appropriate base case our financial projections are not consistent with the assumed allowed cost of debt credit rating.

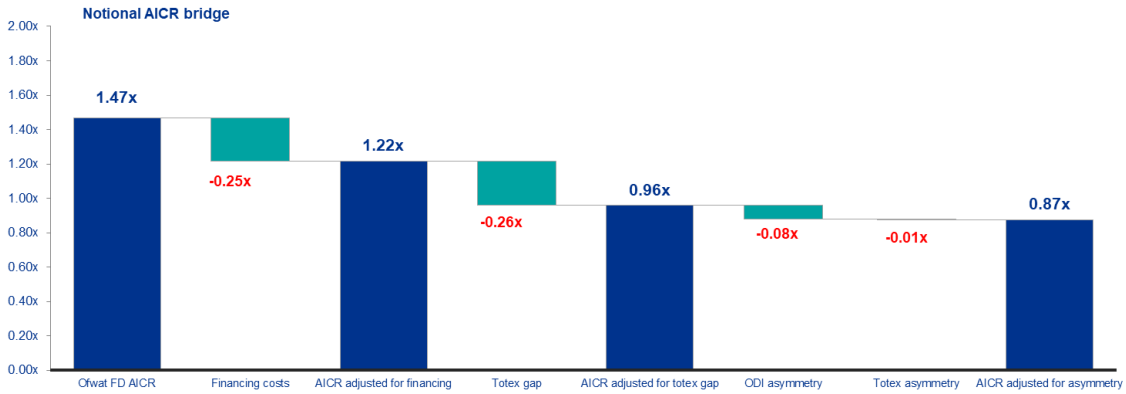
80 The test reveals that we face a severe financeability challenge over PR19 with the prospect of being unable to access the finance we need and/or incurring substantially greater costs than allowed. The long-term cost of recovering financial resilience would ultimately impact customers, as the financial position would weaken and the underlying causes of the financeability challenge would be unlikely to change.

AICR bridge

81 Graph A1 shows the main causes of the difference between Ofwat's calculation of the AICR and that calculated by KPMG.

[40] KPMG Financeability Report, section 7.

Graph A1 Notional AICR bridge[41]



82 Ofwat calculates AICR as 1.47x on average over AMP7. If the impact of additional financing costs we will incur is taken into account, that figure falls to 1.22x, which is consistent with a weak investment grade credit rating at Baa3 (the lowest investment grade) rather than the target level of Baa1. Therefore, at this level the implied credit rating is not consistent with that assumed in setting the cost of debt allowance.

83 If outturn totex is at the level we forecast in our plan, rather than at the level allowed in the FD, there will be a 'totex gap' of c.£30 million. As we need to incur these base costs to be able to deliver our plan, our AICR is expected to fall further to 0.96x, consistent with a sub-investment grade credit rating, and would trigger the cash lock-up mechanism. The impact of ODI and totex asymmetries further exacerbate the issue. Accounting for these brings AICR to 0.87x.

Conclusion

84 Our base case financeability assessment shows a substantial risk to our ability to maintain an investment grade credit rating and this implies a significant risk that we would be unable to meet our licence obligation. We are likely to face a severe financeability challenge over PR19 absent any adjustment.

(2) Results of headroom debt service test as applied by KPMG to the 'notional' company

85 The scenarios tested include Ofwat mandated scenarios in addition to our own company specific scenarios (as previously outlined). KPMG have conducted the analysis needed to test the downside scenarios against our base case. It has tested two iterations of the test, where in both we incur the higher financing costs in the base case. However, the iterations differ in the treatment of the totex gap:

- in the first iteration, it is assumed that **there is no 'totex gap'**, i.e. outturn totex is assumed to be in line with allowed base totex. We view this as unrealistic but we present the result of the testing as it shows that, even with this assumption, there are financeability problems. Our presentation of this scenario should not be taken to mean that we expect to be able to match FD totex; and

41 KPMG Financeability Report, section 7.

- in the second iteration, it is assumed that **outturn totex is as per our plan**. This means there is a 'totex gap' of c.£30 million between allowed and outturn totex. We consider this to be the appropriate base case that describes the costs we would need to incur to deliver on our plan.

Iteration 1 – 'excluding totex gap'

86 Table A3 shows the results of our analysis for the three key financial metrics, indicating by means of a RAG rating with which implied credit rating the calculated metric is consistent according to Table A1.

Table A3 Appropriate base case (excluding asymmetries) excluding totex gap – downside scenarios implication[42]

Scenarios	AICR (Moody's)	Net debt / RCV (Moody's)	FFO / Net debt (S&P)
Base case adj financing	1.22x	59.8%	11.8%
BW scenarios			
C&RT	0.93x	60.0%	10.5%
C&RT plus combined scenario	0.54x	62.6%	8.7%
P10 ODI	1.01x	57.4%	11.3%
P10 Totex	0.88x	60.1%	10.4%
Ofwat scenarios			
Ofwat: 10% Totex underperformance	0.88x	60.0%	10.4%
Ofwat: high inflation, +1% CPIH	1.35x	59.4%	11.8%
Ofwat: low inflation, -1% CPIH	1.11x	60.1%	11.7%
Ofwat: bad debt, 5% increase	1.21x	59.8%	11.7%
Ofwat: ODI penalty, 3% over 3 years	1.12x	60.2%	11.4%
Ofwat: interest rates, +2% on new debt	1.11x	60.4%	11.3%
Ofwat: turnover fine, 3% in one year	1.16x	60.1%	11.5%
Ofwat: combined scenario, 10% cost increase, 1% ODI for 3 years, 1% turnover fine	0.79x	60.4%	10.0%

87 The results show that under five scenarios, including two of those prescribed by Ofwat, interest cover is less than 1.0x, implying that cash flows would not even cover interest payments. It follows that under these scenarios AICR would not meet the level consistent with the lowest investment grade credit rating (1.1x for Baa3). For six of the other scenarios, this level would be achieved. However, in only one scenario is the resulting ratio consistent with a higher credit rating, Baa2. The other two metrics are broadly consistent with a Baa1 investment grade credit rating.

42 KPMG Financeability Report, section 7.

88 This means that even where we assume, unrealistically, that we would be able to meet the FD totex assumption, the plan is not financeable as there is insufficient financial headroom to support a reasonable credit rating in a substantial number of plausible downside scenarios.

Iteration 2 – 'including totex gap'

89 Table A4 shows the results of KPMG's testing when we assume a realistic level of totex consistent with our plan.

90 When including the totex gap, the downside scenarios become untenable, with AICR being below 1.0x in almost all scenarios, meaning cash flows cannot cover interest payments in the period.

Table A4 Appropriate base case (excluding asymmetries) including totex gap – downside scenarios implication[43]

Scenarios	AICR (Moody's)	Net debt / RCV (Moody's)	FFO / Net debt (S&P)
Base case adj financing, plus gap	0.96x	59.4%	10.8%
BW scenarios			
C&RT	0.61x	63.9%	8.8%
C&RT plus combined scenario	0.23x	66.6%	6.9%
P10 ODI	0.71x	61.0%	9.6%
P10 totex	0.59x	63.7%	8.7%
Ofwat scenarios			
Ofwat: 10% totex underperformance	0.58x	63.8%	8.7%
Ofwat: high inflation, +1% CPIH	1.06x	59.1%	10.9%
Ofwat: low inflation, -1% CPIH	0.88x	59.8%	10.8%
Ofwat: bad debt, 5% increase	0.95x	59.5%	10.8%
Ofwat: ODI penalty, 3% over 3 years	0.87x	59.8%	10.4%
Ofwat: interest rates, +2% on new debt	0.88x	60.0%	10.4%
Ofwat: turnover fine, 3% in one year	0.91x	59.7%	10.6%
Ofwat: combined scenario, 10% cost increase, 1% ODI for 3 years, 1% turnover fine	0.49x	64.2%	8.3%

91 In some cases, interest cover is extremely low, i.e. at or beneath 0.5x. In addition, some scenarios result in gearing or FFO/Net Debt which would support credit ratings of Baa2 or less. These results show that the FD is not financeable.

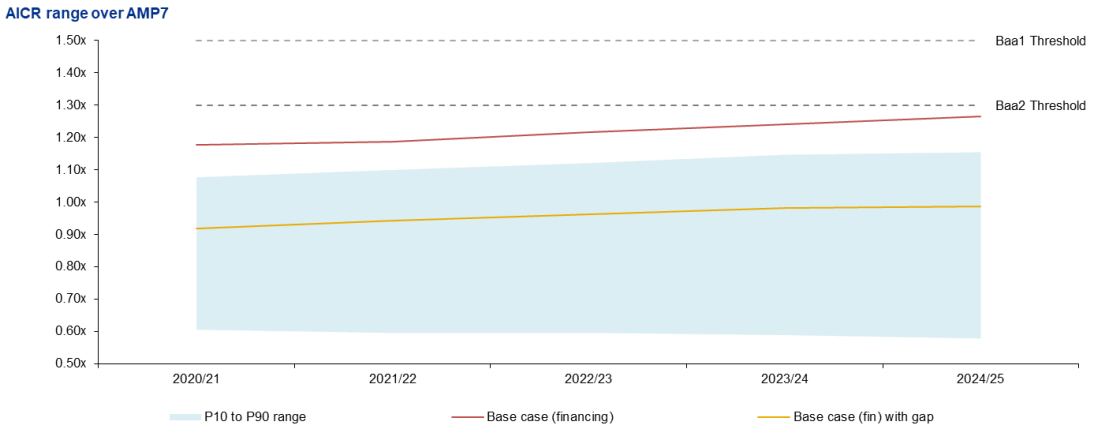
92 Ofwat have recently strengthened the regulatory ring-fence which requires companies to maintain an investment grade credit rating. The consequences include a cash lock-up mechanism where we would be restricted from making any cash payments outside of the ring-fence, such as dividend payments. In the case of any of these downside scenarios materialising, the notional company would be at significant risk of breaching the licence requirements.

[43] KPMG Financeability Report, section 7.

AICR range over totex out/underperformance

93 To test the sensitivity of this result KPMG looked at the AICR ratio in AMP7 over the p10 to p90 totex out/underperformance range. Graph A2 shows the results.

Graph A2 Notional AICR gap to required thresholds under different Totex scenarios over AMP7[44]



94 This shows that even when there is substantial outperformance against expected business plan totex, interest cover does not reach the level consistent with a Baa2 rating. In other words, very positive totex outcomes all result in interest cover less than 1.3x.

Conclusion

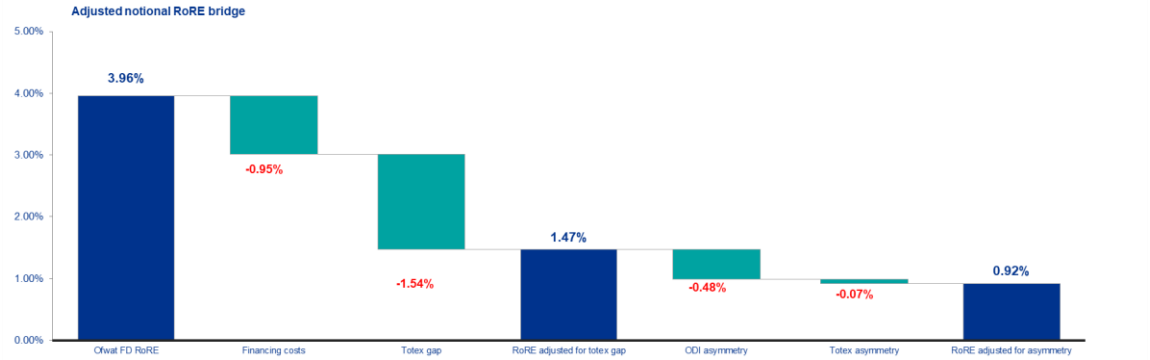
95 Our testing of downside scenarios, supported by KPMG's analysis, shows that the FD is not financeable under any reasonable assumption. Even where totex is assumed to match the FD, our financeability is compromised due to our financing costs not being appropriately reflected in the notional cost of capital allowance.

(3) Results of equity returns test as applied by KPMG to the 'notional' company

96 Graph A3 shows KPMG's analysis of the impact on RoRE of the factors causing financeability concerns.

44 KPMG Financeability Report, section 7.

Graph A3 Notional RoRE bridge after adjustments[45]



97 Overall, RoRE is significantly lower than estimated by Ofwat, falling from 3.96% to as low as 0.92%, after taking into account necessary cost adjustments and asymmetrical costs. Around 1% of the difference is accounted for by the failure to allow for higher debt costs incurred as a small company. Around 1.5% is as a result of the c.£30 million 'totex gap', with the company incurring 60% of the expected overspend through the cost-sharing mechanism. The asymmetries in the regime are worth around 0.5% of totex together.

98 Our equity investors have not taken any dividends over 2015-2020, instead retaining equity in the business to support its transformation.[46] Under the assumptions detailed in this section, we would be at risk of triggering Ofwat's cash lock-up mechanism that would further prevent any dividend distributions during AMP7, potentially extending the period without a dividend payment to ten years.

Conclusion

99 Our base case involves a substantial reduction in expected returns to levels well below those allowed. The deterioration in credit metrics and cash flow may also result in triggering cash lock-up and thus restricting dividends. It is therefore very difficult to conclude that expected returns at this rate would attract investment.

3.6 Our plan is not financeable under the FD

100 We asked KPMG to apply the three tests of financeability assuming our actual capital structure: i.e. at a level of gearing of c.65%.[47] This is greater than that assumed for the notional company, but is not considered by Ofwat to be an atypical or unusually high level of gearing.

101 These tests demonstrate that under the actual capital structure, the financeability challenge is exacerbated. Ofwat has failed in its finance duty because the FD is not financeable.

45 KPMG Financeability Report, section 7.
46 See Annex 6: 'Our story' for details.
47 KPMG Financeability Report, section 8.

(1) Results of the credit ratings test as applied by KPMG to our actual capital structure

102 We present the results of KPMG's analysis in two parts:

- Key ratios by year versus thresholds
- AICR bridge

Key ratios by year versus thresholds

103 Table A5 shows the key financial metrics for each year of the price control period (AMP7) under our base case but assuming our actual capital structure. The RAG rating illustrates into which of the threshold bands the ratio falls. It also shows the credit rating implied by these ratios based on a simulation of Moody's approach.

Table A5 Projected financial metrics with the actual financial structure (including higher financing costs and Totex spend, and losses from ODIs, on a mean expected basis)[48]

Base Case	2020/21	2021/22	2022/23	2023/24	2024/25	AMP7 average
Moody's metrics						
AICR	0.78x	0.80x	0.80x	0.81x	0.80x	**0.80x**
Net Debt / RCV	68.1%	68.5%	68.6%	68.9%	69.2%	**68.7%**
FFO / Net Debt	9.8%	9.8%	9.8%	9.7%	9.6%	**9.7%**
RCF / Net Debt	9.8%	9.8%	9.8%	9.7%	9.6%	**9.7%**
FFO / Net Debt (S&P)	8.3%	8.2%	8.2%	8.1%	8.0%	**8.2%**
Moody's rating	Ba2	Ba2	Ba2	Ba2	Ba2	**Ba2**

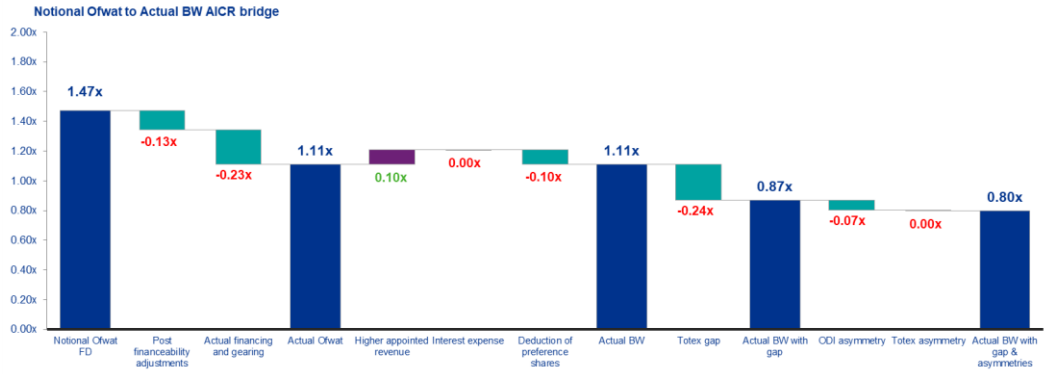
104 These results show financeability is more of a challenge under our actual financing structure than the notional structure in the base case. AICR remains consistently (and significantly) below the 1.1x threshold for Baa3, implying a risk to the required investment grade credit rating and risk of a licence breach. In addition, FFO/Net Debt is at a level only consistent with minimum investment grade. Overall, the implied rating using Moody's methodology is sub-investment grade. KPMG show this is consistent with a Ba2 rating.

AICR Bridge

105 Graph A4 shows KPMG's analysis of the drivers of differences between Ofwat's calculation of the key AICR metric on a notional basis (1.47x) and KPMG's estimate of AICR implied by the FD on an actual basis in the base case.

[48] KPMG Financeability Report, section 8.

Graph A4 Notional to Actual AICR bridge[49]



106 Moody's recent credit opinion downgrades us to Baa2 with negative outlook, recognising the significant financeability challenge we will face under PR19. Specifically, Moody's has recognised that absent a better redetermination or material outperformance, financial metrics would be weakly positioned for the assigned rating:[50]

> "*The negative outlook reflects that Bristol Water will not have certainty over its revenues and investment programme for a further six to 12 months and that the eventual determination, if not materially improved from Ofwat's final determination, may lead to credit metrics that – absent significant outperformance – are weakly positioned for the assigned rating.*"

107 Moody's further states that a key driver for this outcome is the fact that Ofwat has not allowed a CSA to reflect our higher cost of debt:[51]

> *"Moody's notes that in previous CMA referrals, the company was able to secure a small-company premium within its allowed return, which – if achieved again – could reduce the pressure on AICR."*

108 Moody's assessment of credit rating does not appear to include the full extent of totex gap resulting under Ofwat's FD. However, Moody's highlights that there is risk that the company will not be able to manage this gap given that the gap is predominantly on base costs:[52]

> *"We consider the base cost gap more difficult for the company to manage and see increased risk of overspending."*

109 Overall, the analysis above shows that under the actual capital structure, our financial projections are inconsistent with the allowed cost of debt and thus we expect to face a significant financeability challenge over the 2020-2025 period, absent further mitigating action. This has already been recognised by rating agencies as evidenced by Moody's recent downgrade of our credit rating to Baa2 with negative outlook.

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49 KPMG Financeability Report, section 8.
50 Moody's (2020), 'Credit Opinion: Bristol Water plc, Update following downgrade to Baa2, negative outlook', page 1.
51 Ibid, page 5.
52 Ibid, page 7.

(2) Results of the headroom test as applied by KPMG to our actual capital structure

110 KPMG have undertaken analysis of downside scenarios on the same basis as for the notional structure above (including showing the impact of the post-financeability adjustments (**PFA**s) which include AMP6 performance adjustments, without this affecting our conclusions). Running the same scenarios shows we will experience significant financeability constraints. As with the notional company, two iterations have been run: excluding and including the 'totex gap'.

Iteration 1 – 'excluding totex gap'

111 Table A6 shows KPMG's analysis when allowed totex is assumed to match the FD allowance.

Table A6 Actual excluding totex gap – downside scenarios implication[53]

Scenarios	AICR (Moody's)	Net debt / RCV (Moody's)	FFO / Net debt (S&P)
Base case	1.11x	68.1%	9.3%
BW scenarios			
C&RT	0.83x	68.7%	8.3%
C&RT plus combined scenario	0.45x	71.3%	6.7%
P10 ODI	0.89x	66.3%	8.7%
P10 totex	0.81x	68.7%	8.2%
Ofwat scenarios			
Ofwat: 10% totex underperformance	0.80x	68.7%	8.2%
Ofwat: high inflation, +1% CPIH	1.14x	68.6%	8.8%
Ofwat: low inflation, -1% CPIH	1.09x	64.3%	10.3%
Ofwat: bad debt, 5% increase	1.10x	68.1%	9.3%
Ofwat: ODI penalty, 3% over 3 years	1.03x	65.2%	9.4%
Ofwat: interest rates, +2% on new debt	1.05x	65.3%	9.4%
Ofwat: turnover fine, 3% in one year	1.07x	65.1%	9.5%
Ofwat: combined scenario, 10% cost increase, 1% ODI for 3 years, 1% turnover fine	0.71x	69.1%	7.8%

112 This shows that under ten of the twelve downside scenarios, AICR does not meet the Baa3 threshold of 1.1x. In six scenarios AICR is below 1.0x so that interest payments would not be covered by operating cash flows. The downside scenarios also exert pressure on our Net debt/RCV ratio and in some scenarios on the FFO/Net Debt.

Iteration 2 – 'including totex gap'

113 Table A7 shows KPMG's analysis when our 'totex gap' of c.£30 million is factored in.

[53] KPMG Financeability Report, section 8.

Table A7 Actual including totex gap – downside scenarios implication[54]

Scenarios	AICR (Moody's)	Net debt / RCV (Moody's)	FFO / Net debt (S&P)
Base case plus gap	0.87x	68.1%	8.5%
BW scenarios			
C&RT	0.52x	72.5%	6.8%
C&RT plus combined scenario	0.14x	75.2%	5.3%
P10 ODI	0.62x	69.7%	7.4%
P10 totex	0.50x	72.4%	6.7%
Ofwat scenarios			
Ofwat: 10% totex underperformance	0.49x	72.5%	6.7%
Ofwat: high inflation, +1% CPIH	0.90x	68.7%	7.9%
Ofwat: low inflation, -1% CPIH	0.84x	67.6%	9.0%
Ofwat: bad debt, 5% increase	0.86x	68.2%	8.4%
Ofwat: ODI penalty, 3% over 3 years	0.79x	68.5%	8.2%
Ofwat: interest rates, +2% on new debt	0.82x	68.6%	8.2%
Ofwat: turnover fine, 3% in one year	0.83x	68.4%	8.3%
Ofwat: combined scenario, 10% cost increase, 1% ODI for 3 years, 1% turnover fine	0.41x	72.9%	6.4%

114 In this scenario, the financeability issues are further exacerbated. In every downside scenario the key AICR ratio is well below 1.0x. This alone would imply a deterioration in implied credit rating to sub-investment grade. Added to this there is very substantial pressure on Net Debt/RCV and on FFO/Net Debt with these ratios only just consistent with the thresholds for the Baa3 minimum investment grade credit rating.

Conclusion

115 Testing against plausible downside scenarios against the base case under the actual financing structure demonstrates likely material financeability concerns. Maintaining an investment grade credit rating would appear extremely unlikely should any of these scenarios crystallise. Therefore, the FD is not financeable.

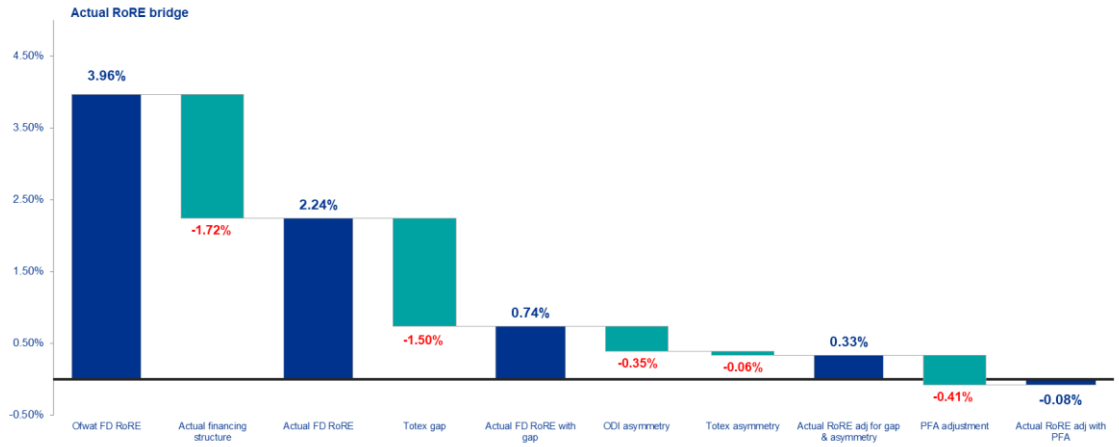
(3) Results of the equity returns test as applied by KPMG to our actual capital structure

116 In this section we set out KPMG's calculations of RoRE under the actual capital structure assumption. The results are substantially lower than under the notional structure due to the impact of post-financeability adjustments (PFAs) and higher actual embedded debt costs.

117 Graph A5 shows KPMG's analysis of RoRE in the form of a RoRE bridge. It shows the base RoRE calculated by Ofwat on average (3.96%) and the impact of various shocks.

54 KPMG Financeability Report, section 8.

Graph A5 Notional to Actual RoRE bridge[55]



118 As shown in the graph, KPMG's analysis shows the effect of financing costs when assuming the actual capital structure results in a RoRE of 2.24% over the price control period. RoRE falls to 0.74% when including the further effects of the totex gap. The impact on RoRE is calculated on a post-tax basis and assumes the 60% underperformance cost sharing rate.

119 Including the impact of ODI and cost asymmetries results in RoRE of 0.40% on average across the AMP. Finally the impact of PFAs, as a result of performance over AMP6, decreases RoRE further to -0.08%.

Conclusion

120 Negative RoRE is unlikely to be a credible basis for assuming the introduction of equity and indicates a severe financeability challenge for equity.

4. We cannot adequately mitigate the risks under the FD

121 Having demonstrated why the FD is not financeable, we have assessed whether remedies may be available to address the issue. Specifically, we have considered five remedies of which three involve changes to price-setting methodology or assumptions, one involves structural reduction in our actual cost of debt and one seeks a contribution from equity investors, as summarised:[56]

- Remedy 1 – acceleration of cash flows through adjustments of regulatory levers such as PAYG and run-off rates
- Remedy 2 – full transition to CPIH
- Remedy 3 – changes to the notional structure

55 KPMG Financeability Report, section 8.
56 KPMG Financeability Report, section 10.

- Remedy 4 – refinancing the Artesian debt
- Remedy 5 – dividend re-investment

122 In each case we conclude that the proposed remedy is not appropriate.

Remedy 1 – Accelerating cash flows though adjusting regulatory levers

123 In order to improve financing metrics, Ofwat has adjusted PAYG rates (the proportion of returns remunerated in the price control period rather than recovered via the RCV over time) for several companies at PR19 in order to shift revenue forward on an NPV neutral basis. Ofwat states in the FD that problems with financial ratios are particularly acute because of the timing of investment or a mismatch between company actual financing and their notional assumptions. It also supports the case for using regulatory levers to resolve financeability issues by re-profiling cash flows. However, it is also clear that these issues apply where there is RCV growth, as the mismatch unwinds where the company is in 'steady-state'.

124 None of Ofwat's arguments above apply to us. Our gearing has fallen in recent years due to shareholders retaining equity in the business and is not out of line with the industry notional assumptions. The long-term Artesian debt was efficiently incurred, and at current rates is not efficient to repay, as it would be exceptionally costly to refinance. Finally, with low enhancement costs and a falling RCV, changing revenue timing would not be an appropriate remedy to alleviate the financeability problem we face, as frontloading revenues would likely simply exacerbate financeability issues in future periods.

125 Rating agencies typically 'look through' such adjustments (by reversing them in calculating relevant financial metrics) as they present an unsustainable solution to financeability in the long term. This is on the basis that an increase in revenues now implies a reduction in future revenues and therefore reduced financial headroom in the future. For example, Moody's has stated that PAYG and run-off rates can distort comparability between companies and therefore it removes excess PAYG and regulatory depreciation to calculate AICR.

126 These types of mitigants are misdirected as they attempt to improve liquidity at a particular point in time, as opposed to addressing the underlying financeability issue of improving the creditworthiness of the company. In addition, any substantial departure from natural rates (based on the economic characteristics of the spending) will have an impact on current customers' bills: essentially customers may overpay now for benefits which flow to future customers.

127 The CMA has also explicitly rejected PAYG adjustments on these grounds, for example in CMA15 where it stated:[57]

> *"When deciding the level of revenue taken in this period compared with that retained for the future, it is important to consider the impact on the company and its customers. Moving revenue between regulatory periods (e.g. via PAYG changes) may be NPV neutral. However, if the amounts are excessive then this would be detrimental for both*

[57] CMA15, paragraph 11.14.

the company's long-term financial position (as recognised by the credit rating agencies), and for customers (as inter-generational differences could result in current customers paying more than their fair share).”

128 In addition, our ‘natural’ PAYG rate of c.75% is high relative to other companies suggesting limited scope for further increasing it.

Remedy 2 – Full transition to CPIH

129 A full shift to CPIH indexation would have the effect of higher cash flows earlier compared with RPI indexation that would improve financial ratios in the AMP.

130 This solution is also unsustainable over time since it involves, as with a change in PAYG, an improvement in short-term cash flows which will reduce future financial headroom: the change in indexation simply shifts cash flows through time. Front-loading cash flows from full CPIH indexation would also increase the bills of current customers, with implications for intergenerational equity due to the undue burden placed on current consumers relative to future consumers. The balance of transition to CPIH in our plan was subject to specific customer research on bill profiles and the cross-generational burden of bills.

131 If the CMA or Ofwat were to consider a solution where companies under appeal are required to move to full CPIH indexation, such a solution would also create comparability issues across the industry where companies will have differing rates of transition to CPIH. This will create inconsistencies across revenue profiles across the sector. Separately, this will further result in differing cash flow exposure for companies to the extent that the sector has varying degree of exposure to RPI index-linked debt.

Remedy 3 – Changes to the notional structure

132 Changes to the notional structure could be used to reduce the debt service requirement thereby increasing financial headroom and reducing the magnitude of the financeability challenge for the notional company. For example, reducing the notional dividend yield or changing the level of gearing may improve financial ratios.

133 This does not represent a robust solution to addressing financeability issues because changes to the level of gearing are likely to be arbitrary and could introduce a material wedge between the actual financing structure and the notional financing structure in previous price controls. This is particularly important for the actual financing structure which has been directly influenced by the notional gearing assumption set in previous controls.

134 Reducing the notional dividend yield is also not an appropriate solution, since whilst it would alleviate the pressure on debt metrics, it does not consider the financeability implications holistically as it fails to take into account equity financeability.

Remedy 4 – Restructuring our debt portfolio

135 The Artesian debt is currently our most expensive debt. We have considered what approaches we might undertake to replace or restructure this debt to reduce interest costs.[58] The costs associated with refinancing in the near-term have been estimated to outweigh the savings from future interest payments. As a result, there would be no benefit from such a transaction and it could create additional financeability challenges.

Remedy 5 – Dividend re-investment

136 We have not paid dividends to ultimate shareholders over the period of AMP6. The financeability issues caused by the FD are so severe that it is highly likely that dividend lock-up restrictions will apply. A remedy involving dividend restrictions is therefore unlikely to be possible or effective. It would also seem inappropriate to expect dividend restrictions for a company that has only very limited capital growth.

Conclusion

137 Ofwat has failed in its finance duty because, as demonstrated by our financeability assessment, we are unable to earn a reasonable rate of return on our efficient level of costs under the FD. Had Ofwat conducted a proper financeability assessment, the unreasonable risk to Bristol Water within the FD would have been clear and necessary adjustments to Ofwat's overall judgements could have been made.

138 We have considered and discounted a number of technical remedies as being inappropriate. However, potential financing remedies are not cost effective or might increase risk to the company, without an offsetting benefit (none of the options result in us maintaining a comfortable investment grade rating of Baa1).

139 We set out in this section the three tests, which we then apply, for a proper financeability assessment. The failure to meet the three financeability tests – whether singularly or cumulatively – provides strong evidence that **the FD is not financeable**. Had Ofwat conducted a proper financeability assessment, the failings would have been clear and necessary adjustments could have been made.

140 Ofwat's own financeability testing in the FD was wholly inadequate. It identified (for the notional company) £20m five-year totex headroom over the absolute minimum AICR ratio of 1.0, which is less than the £25m in Ofwat's own standardised p10 totex downside. This ignores other sources of asymmetric downside risks which Ofwat acknowledges, such as arising from not reflecting the higher debt cost of small water only companies.

141 Ofwat therefore assumes it is for shareholders to absorb these risks. In our view this is not in customers' long term interests as the issue stems from errors in cost assessment, not setting the cost of capital for a relevant notional efficient company with the characteristics of Bristol Water, and specific asymmetric elements of the regulatory framework that add to downside risk.

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58 See Annex 8: Refinancing options

142 Ofwat assumes in the FD that problems with financial ratios result from timing of investment or a mismatch between company actual financing and its notional assumptions. The implications of this are that companies should adjust their financing, for instance reducing and paying off debt and increasing equity to resolve this mismatch between real returns and their actual cost of debt.

143 Such assumptions are not reasonable for Ofwat to make for Bristol Water. Gearing has fallen in recent years due to shareholders retaining equity in the business and is not out of line with the industry notional assumptions. The long-term Artesian debt was efficiently incurred, and at current rates is not efficient to repay. Finally with low enhancement costs and a falling RCV, changing revenue timing is not appropriate and is not something Ofwat considered for Bristol Water in the FD.

5. The proposed remedy

144 We request that the CMA secure our financeability under the FD by:

- applying a CSA to our allowance for cost of debt and equity beta and setting the correct WACC by estimating the cost of capital based on appropriate market evidence – see **Section B Cost of capital errors**;
- remedying the cost allowance errors by increasing our cost allowances under the FD – see **Section C Cost allowance errors**; and
- making specific adjustments to ODIs and cost sharing rates to reduce the negative asymmetry in the regulatory framework – see **Section D Balance of risk errors**.

Section B: Cost of capital errors

6. Introduction

145 Ofwat has made a series of errors in setting the cost of capital in the FD, which results in a cost of capital that Ofwat recognises by not allowing a CSA is lower than the level achievable by Bristol Water or a relevant notional company.[59] In doing so, Ofwat has breached its finance duty because we are not able to earn a reasonable rate of return on our efficient level of costs for the 2020-2025 period.

146 Ofwat's errors relate to its approach to applying company-specific allowances by way of a CSA, as well as its estimation of the underlying industry cost of capital.

147 In relation to the **CSA**:

- Ofwat erred by requiring companies to satisfy its 'customer benefits' assessment prior to providing them with a CSA. Ofwat's benefits assessment bears no relevance to whether small water only companies (**WoCs**), acting efficiently, have a higher cost of capital than larger companies.

- In any event, Ofwat wrongly concluded that Bristol Water did not satisfy its 'customer benefits' assessment. If Ofwat had applied its test correctly, it would have determined that the benefits of providing us with a CSA adequately compensate customers for the cost.

- Ofwat also did not consider the evidence that small companies had a higher cost of equity by analysing operational gearing in the FD, consistent with CMA15 and CC10.

- Ofwat also erred by setting the level of the CSA adjustments in the FD below the level justified by the evidence. On our analysis, the value of the CSA on the cost of embedded debt that should be provided is 38bps for cots of debt, and a 13% uplift on asset beta to reflect higher Cost of Equity, rather than the 35 bps set by Ofwat (on a cost of debt-only basis). We agree that the CSA on the cost of new debt that Ofwat used of 25bps (for the small water companies where Ofwat applied a CSA) would be an appropriate estimate. Our arguments in relation to the failure to apply a CSA are supported by a KPMG report 'Small Company Premium for Bristol Water for PR19' (**KPMG SCP Report**).

148 In relation to the **industry cost of capital**, Ofwat made a series of errors in its analysis that resulted in it setting a cost of capital that was too low. As we explain below, the industry cost of capital should be adjusted upwards to 5.35% (from Ofwat's rate of 4.98%) (wholesale WACC, vanilla), before considering the corrected relevant notional new to embedded debt percentage.

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[59] Ofwat found that there is compelling evidence to make a CSA to the cost of capital for Bristol Water but ultimately decided not to make the adjustment. See FD, 'Allowed return on capital technical appendix – Annex 1 Company-specific adjustments to the allowed return on capital', page 102 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Allowed-return-on-capital-technical-appendix.pdf).

149 Our arguments on the industry cost of capital are supported by the following expert reports:

(a) KPMG report on "Estimating the cost of capital for PR19" (**KPMG Cost of Equity Report**), which was prepared in conjunction with Professor Alan Gregory (Emeritus Professor of Finance at the University of Exeter Business School); and

(b) Economic Insight Report on "Review of Ofwat's approach to the WACC at PR19 Final Determinations" (**Economic Insight Report**).

150 Table B1 shows Ofwat's position on the WACC in the FD, as compared to our position excluding the CSA adjustment.

Table B1 – WACC summary excluding CSA, nominal

	Ofwat's FD	Bristol Water (exc. CSA)
Notional Gearing	60%	60%
Total Market Return	8.63%	9.00%
Risk free rate	0.58%	1.00%
Equity risk premium	8.05%	8.00%
Debt beta	0.125	0.10
Asset beta (not reflecting debt beta)	0.29	0.31
Asset beta (reflecting debt beta)	0.36	0.36
Re-levered Equity beta	0.71	0.76
Overall cost of equity, post-tax	**6.27%**	**7.05%**
Cost of embedded debt	4.47%	4.47%
Cost of new debt	2.54%	3.00%
Ratio of new to embedded debt	20:80	20:80
Liquidity and issuance costs	0.10%	0.10%
Overall cost of debt	**4.18%**	**4.28%**
Appointee WACC, vanilla	**5.02%**	**5.39%**
Retail margin deduction	0.04%	0.04%
Wholesale WACC, vanilla	**4.98%**	**5.35%**

7. Company Specific Adjustment to the cost of capital

151 In the FD, Ofwat recognised that we provided compelling evidence supporting our request for a CSA by way of an adjustment to the cost of debt.[60] Despite this, Ofwat decided not to apply a CSA on the basis that we did not meet its 'customer benefits' assessment.

152 As set out below, Ofwat's approach is contrary to its finance duty, in particular its duty to ensure that water companies are able to secure reasonable returns on their capital to finance the carrying out of their functions. It is also contrary to clear CMA precedent concerning Bristol Water.

153 We also dispute the level of CSA Ofwat considered in the FD. In its redetermination, the CMA should set the CSA at a higher level to reflect the evidence of (i) a higher cost of embedded debt CSA, (ii) an appropriate ratio of new to embedded debt, and (iii) a cost of equity CSA. The CMA should apply the CSA on new debt of 25bps as Ofwat estimated in the FD.

7.1 Customer benefits test

The issue

154 Since 1995, Bristol Water has been provided with an uplift on the industry-allowed cost of capital to reflect its higher cost of raising capital, which follows from the company-specific circumstances we have faced historically and which continue to apply. Ofwat and the CMA have previously recognised that these higher costs result from our scale and have nonetheless been efficiently incurred.[61] This was the case at PR94, PR99, PR04, PR09 and PR14 (following the redetermination in CMA15).

155 In CMA15, the CMA set out a simple framework for assessing whether a CSA should be applied, both generally and in Bristol Water's circumstances. It stated:[62]

> *"… in our view the primary consideration in setting the cost of capital was whether efficient companies could finance their functions. Ofwat accepted that small companies have, on average, a higher cost of capital. While this remains the case, our starting point would be that this should be taken in to [sic.] account in the assumption on the cost of finance."*

156 The CMA's approach recognised Ofwat's finance duty to ensure that water companies are able to finance the carrying out of their functions, in particular by **securing reasonable returns on their capital**. It also concluded that small water only companies have a higher cost of capital. These two points taken together were sufficient, in the CMA's view, to necessitate providing us with a CSA.

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60 FD, 'Allowed return on capital technical appendix – Annex 1 Company-specific adjustments to the allowed return on capital', pages 101 to 102.

61 An overview of Bristol Water's embedded debt, which will be in place until 2033, is set out in the KPMG SCP Report, sections 2.3.2 to 2.3.4.

62 CMA15, paragraph 10.75.

157 In PR19, Ofwat departed from the CMA's precedent despite being subject to unchanged statutory duties and having accepting that we have a higher cost of capital than larger companies. Instead of following the methodology set out by the CMA in CMA15, Ofwat devised and applied a new three-stage assessment to determine whether we should be allowed a CSA. This comprised three questions:[63]

- **Levels Assessment**: is there compelling evidence that the level of the requested adjustment is appropriate?
- **Benefits Assessment**: is there compelling evidence that there are benefits that adequately compensate customers for the increased costs?
- **Customer Support Assessment**: is there compelling evidence of customer support for the proposed adjustment?

158 Ofwat concluded that we satisfied the first and third tests but did not pass the second test.[64] That is to say, Ofwat concluded there is compelling evidence that the level of CSA we sought was appropriate and that our customers were content to unconditionally fund the cost of the CSA. Nevertheless, Ofwat decided not to provide us with a CSA on the basis of its view that the benefits of providing a CSA did not adequately compensate customers for the increased costs (despite their willingness to fund it).

159 Ofwat's application of the CSA test is flawed for at least two reasons. First and most importantly, Ofwat's benefits assessment test is irrelevant to determining whether a CSA should be applied. It is inconsistent with Ofwat's statutory duties and departs from CMA precedent without justification. Second, even if the CMA were to decide that Ofwat's benefits assessment is relevant and appropriate, we would have passed the assessment if it were correctly applied. Each of these points is explained further below.

(1) Ofwat was wrong to apply its benefits assessment

160 Ofwat's benefits assessment considers whether there is compelling evidence that there are benefits that adequately compensate customers for the increased cost of the CSA. Ofwat assessed this by considering the following three questions:[65]

- Has the company had a beneficial effect on Ofwat's cost benchmarks?
- Has the company had a beneficial effect on Ofwat's service benchmarks?
- Are there benefits in other areas, such as the development of new or innovative approaches that lead the sector forward?

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63 Ofwat (2017), Delivering Water 2020: Our final methodology for the 2019 price review (**PR19 Final Methodology**), page 180 (https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Final-methodology-1.pdf). FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', page 94.

64 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', pages 102 and 112.

65 PR19 Methodology, Appendix 12, pages 92 to 93.

161 Ofwat's assessment of water companies' impact as an independent comparator comprised two 'approaches':

- **The single period approach:** this considered the extent to which each company's historical data and forecast commitment levels would strengthen Ofwat's PR19 cost efficiency and service benchmarks. It considers seven areas of a company's operations: base water wholesale totex, retail totex, supply interruptions, leakage, water quality contacts, unplanned outages and per capita consumption.

- **The forward-looking approach:** this considered a company's future contribution to Ofwat's ability to set stringent benchmarks beyond AMP7. It considers three areas of a company's operations: base totex benefits, non-base totex benefits and the cost of the uplift.

162 Ofwat states that its benefits assessment is similar to the test it applies in a merger context, i.e. when assessing whether proposed mergers between water companies would result in a negative impact on customers if allowed to proceed.[66] That test considers whether a merger will prejudice Ofwat's ability to make comparisons between water enterprises.[67] Specifically, in the merger test, Ofwat assesses whether the removal of an independent company through a merger will restrict its ability to use cost and service benchmarks to set stretching targets for other water companies for the benefit of customers.[68]

163 Ofwat sought to justify the use of its benefits assessment as a condition to allowing a CSA on the grounds that whilst smaller water only companies have a higher cost of financing, they can address this: "*investors are able to seek financing efficiencies, including as a result of mergers, and by pooling financing arrangements*".[69] In other words, in Ofwat's view, if an efficient small water only company cannot finance its functions as a result of not being provided with a CSA, it can reduce its cost of capital by pooling financing arrangements (similar to the Artesian arrangements which led to the higher cost of embedded debt) or by merging.

164 Yet Ofwat claims that whilst merging is an option for smaller companies, they are not required to do this. The PR19 Final Methodology states that "*failure to meet our test does not imply mergers must happen, but [it means] that the return investors receive should be commensurate with the efficient cost and quality of service customers receive*".[70] In this statement, Ofwat clearly acknowledges that it is not setting the cost of capital based on the level of a notional company comparable to Bristol Water. Rather, Ofwat has set the industry cost of capital at a level that is <u>below</u> that of a notional company relevant to our circumstances, recognising that we would not be able to raise capital at the level set by Ofwat.

165 In refusing to allow a CSA, Ofwat has therefore presented us with a stark choice: either seek to reduce our cost of capital through a merger or find other means to finance our functions

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66 PR19 Methodology, Appendix 12, page 92.
67 Section 33A(2)(a) of the Water Industry Act 1991.
68 Ofwat's approach to mergers and statement of methods, October 2015 (**Statement of Methods**), page 4 (https://www.ofwat.gov.uk/wp-content/uploads/2015/11/pap_pos20151021mergers.pdf).
69 PR19 Methodology, Appendix 12, page 91.
70 PR19 Methodology, Appendix 12, page 91.

notwithstanding a cost of capital allowance that does not reflect – and is acknowledged to be below – our actual, efficiently-incurred costs. This is a clear breach of Ofwat's finance duty.

166 The irrelevance of Ofwat's benefits assessment was considered in CMA15. That redetermination followed Ofwat's decision to apply a customer benefits test in PR14. The CMA considered and rejected that iteration of the test for three reasons:

- There was no causal link between the cost of debt required by small water only companies and the customer benefits assessed by Ofwat.[71] These benefits were based on the likelihood of the company being in the top efficiency quartile and the impact on customers of removing them from Ofwat's cost and service benchmarks on efficiency and service level challenges.[72]

- Ofwat's benefits assessment was not necessary to meet the CMA's duty to protect the interests of customers. The CMA recognised that customers of small companies would notionally pay more as a result of the CSA but there are many reasons why customers of small companies may have different bills. As such, the CMA concluded this did not constitute a valid reason to adjust the approach to the cost of capital.[73]

- Given the long term nature of financing, departing from regulatory precedent without evidence of changing market conditions raised the risk of stranded costs.[74]

167 These concerns with Ofwat's benefits assessment remain in our case.

168 In its PR19 Final Methodology, Ofwat recognised the CMA's concerns from CMA15 but stated that it did not agree with the CMA's conclusions. Ofwat's view is that as customers cannot choose their supplier, Ofwat must be satisfied that allowances are reasonable and, if water companies do not merge or pool financing arrangements, then "*it is not clear that we should expect customers to incur the incremental cost*".[75]

169 But Ofwat's position in the PR19 Final Methodology fails to address the concerns raised by the CMA in CMA15. Ofwat's solution – that small companies that do not meet its benefits assessment should only be allowed a cost of capital that is lower than the level that they can actually achieve – ignores Ofwat's finance duty. The CMA recognised the importance of this duty in CMA15, where it stated that a cross-check to determine whether a CSA should be allowed is whether "*the notional level [of cost of capital] derived from industry was reasonable for a company such as Bristol Water*".[76] In other words, if the industry cost of capital is not reasonable for a company such as Bristol Water, then a CSA should be applied.

170 The CMA has previously stated it had "*concerns with the principle of assuming a WACC level which is beyond the reasonable efficient level which management could expect to be able to directly achieve*".[77] These concerns persist with Ofwat's reintroduction of its benefits

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71 CMA15, paragraph 10.72(a).
72 CMA15, Appendix 10.1, paragraph 57.
73 CMA15, paragraph 10.72(b). Note the CMA uses the term "SCP" rather than "CSA" in CMA15 but the terms are interchangeable.
74 CMA15, paragraph 10.72(c).
75 PR19 Final Methodology, Appendix 12, page 91.
76 CMA15, paragraph 10.50.
77 CMA15, Appendix 10.1, paragraph 60.

assessment, which imposes an unjustified and irrelevant hurdle for companies which Ofwat accepts face a higher cost of capital due to their small company circumstances.

171 The application of a benefits assessment is therefore clearly inconsistent with both Ofwat's finance duty and CMA precedent. The CMA should strike the test from its redetermination of our case for a CSA on the cost of capital.

(2) Ofwat has misapplied its own benefits assessment

172 Ofwat's benefits assessment concluded that applying a CSA to Bristol Water would result in a gap to positive NPV of -£14m.[78]

173 But even if its benefits assessment were valid, Ofwat's NPV conclusion is wrong due to six material errors:

- Ofwat omitted relevant customer benefits from its benefits assessment;
- Ofwat did not consider the effect a merger would have on model precision;
- Ofwat's approach does not align with its FD benchmarking methodology;
- Ofwat understates the benefits of service comparisons due to an unbalanced use of incentive rates;
- Ofwat's estimate of future comparative non-totex benefits is arbitrary and understates the benefit; and
- Ofwat has wrongly assessed our efficiency.

174 Each of these errors is detailed below. When corrected for these errors, Bristol Water would satisfy Ofwat's benefits assessment. This shows that Ofwat did not have a cogent reason for deciding not to provide us with a CSA, even on its own (incorrect) test. We provide supporting details of these errors in the KPMG SCP Report.

Ofwat omitted relevant customer benefits from its benefits assessment

175 Ofwat's benefits assessment attempts to weigh the cost of a CSA against the benefits to customers from Bristol Water remaining independent. For Bristol Water, Ofwat's application of the test wrongly concludes that there is a -£14m gap to positive NPV during the period 2025 to 2050.[79] Under Ofwat's assessment, this means that we would have to provide a further £14m benefit to customers in order to pass its benefit assessment and therefore qualify for a CSA.

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78 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', page 111.

79 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', Table A1.7, page 109.

176 There are three categories of customer benefits that Ofwat has failed to take into account. This error alone compromises Ofwat's conclusion; when these benefits are taken into account, we satisfy Ofwat's 'customer benefits' assessment.

177 First, Ofwat failed to take account of the customer utility from retaining Bristol Water, under its current ownership structure, as their supplier. Our research, which was accepted by the Customer Challenge Group, showed that 87% of customers supported our remaining as their supplier even after being informed of the impact of a CSA on their bills. Although Ofwat accepted that this was "*compelling proof of customer support*"[80] for the application of a CSA, it did not take account of this customer benefit in its benefits assessment. The 'customer benefits' test is a misnomer, as Ofwat ties it solely to its perceived value to regulation of other companies, not to the benefit to Bristol Water's customers. The evidence on this survey is included in our revised business plan.[81]

178 We used our customer research to assess the value to customers from retaining Bristol Water as their supplier. Taking a conservative approach, the customer utility gained from Bristol Water remaining a small independent company can be assumed to be equal to the CSA uplift that customers are willing to pay for. On Ofwat's calculation in the FD, the cost of the CSA uplift (and therefore a conservative value of the customer benefit) is around £17m.[82] Applying this benefit to Ofwat's forward looking estimate of the customer benefit would clearly result in a net positive outcome to its benefits assessment.

179 The second error is that Ofwat's model does not include any assessment of the impact of losing Bristol Water as a comparator on Ofwat's customer measure of experience (**C-MeX**). Ofwat's stated approach to its benefits assessment is in principle the same as its Statement of Methods for assessing mergers in the water sector.[83] In the Statement of Methods, Ofwat states that it used the service incentive mechanism (**SIM**) when assessing mergers.[84] The SIM has since been replaced by the C-MeX. However, when conducting its benefits assessment for the purposes of the price control, Ofwat did not consider our positioning in the C-MeX. Early indications are that we perform well in C-MeX, where we are currently ranked sixth overall and second in terms of customer experience surveys. If we were to merge with another company, this would therefore have a negative impact on the C-MeX thresholds and, as such, the incentives for other water companies to achieve stretching customer service targets. Ofwat's application of its benefits assessment is therefore inconsistent with its stated approach, and its failure to consider C-MeX means it has significantly understated the customer benefit of providing a CSA in our case.

180 The third error is that Ofwat did not adequately consider the benefit of our approach to innovation. Ofwat states that its benefits assessment will include considering whether a company provides customer benefits in the form of innovation. Similarly, when assessing mergers, Ofwat will consider whether the merger will result in the loss of a comparator which

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80 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', page 112.

81 Bristol Water (2019), 'C6 Financing, Affordability and Risk and Return REVISED', page 122.

82 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', Table A1.7, page 109.

83 PR19 Final Methodology, Appendix 12, page 92.

84 Statement of Methods, page 5. For example, Ofwat considered the impact on the service incentive mechanism (SIM), which was replaced by C-MeX, when considering the impact of South-West Water's acquisition of Bournemouth Water in November 2015.

has a good track record of innovation (such that it could be used to raise standards across the sector).[85]

181 Ofwat did have some regard to our claims on innovation, recognising our sector-leading approach to innovation:[86]

> "*Bristol Water's business plan is high quality with sufficient evidence to demonstrate that it has the right culture for innovation which enables it, through its systems, processes and people, to deliver results for customers and the environment from innovation. It also has some elements of sector leading, ambitious and innovative approaches…*".

182 However, Ofwat did not seek to quantify these additional benefits in the FD, or explain the analysis underlying its conclusion. It is impossible to therefore understand the basis for Ofwat's assertion that it "*did not consider that the collective value to customers of these benefits was likely to exceed £14m in NPV terms, with a high degree of confidence*".[87] Whilst Ofwat asserts that these factors were "*[a]ssessed in the round*", Ofwat does not explain how it attempted to quantify these benefits.

183 There are a number of innovations that Ofwat had information on from our business plan[88] which showed the level of our innovation but which Ofwat does not appear to have considered in its benefits assessment. Examples of our innovation include:

- **Our social contract** – we were the first utility to publish a social contract. The social contract reflects our purpose to have a positive impact for society, building trust beyond the delivery of clean, safe and reliable water supplies. Other companies such as Anglian Water,[89] Severn Trent[90] and Southern Water[91] have subsequently published their own description of their social purpose and social contract. It is clear, therefore, that Bristol Water led the way on this.

- **Introducing "ice pigs" and partnerships with university research institutes** – a process in which ice slurry is pumped into a pipe and forced through in order to remove sediment and other unwanted deposits to leave the pipe clean. We developed this process in partnership with Bristol University and today it has many applications in the water sector and is expanding into other industries such as oil and food manufacturing. This partnering approach to innovation continues today. More recently, a "calm DMA" approach to network management was developed in partnership with Cla-Val and Imperial College. This scale pilot is now being rolled-out at a number of WaSCs and benefits leakage, bursts, energy use and water quality.

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85 Statement of Methods, page 12.
86 Ofwat, 'Bristol Water: Test question assessment', 31 January 2019, page 7.
87 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital'.
88 Our business plan, page 155.
89 (https://www.anglianwater.co.uk/about-us/our-purpose/)
90 (https://www.stwater.co.uk/news/news-releases/severn-trent-seeks-the-views-of-customers-in-social-purpose-repo/)
91 (https://www.southernwater.co.uk/the-news-room/the-media-centre/2019/november/working-towards-a-shared-goal-why-social-contracts-matter)

- **The Water Bar** – we deploy this pop up bar serving water at local events and festivals, such as Bristol Pride and music festivals. It links the health benefits of water and the high quality of water we supply to the local community, whilst reducing the use of single-use plastic bottles. The Water Bar won multiple awards[92] and has been copied by other companies.

- **The Refill campaign** – working with City to Sea, an app was developed which engages businesses and the local community in highlighting the social and community benefits in free public access to drinking water. The app includes 'gamification points' and provides local retailers with the opportunity to engage with the community and encourage take-up, whilst also providing an essential public service. The Refill Bristol campaign has gone national, and has formed a key part of the water industry response to recent Government challenges to show wider benefits and reduce single-use plastics.

184 We would have passed Ofwat's benefits assessment if the regulator had considered these recent benefits and the expected benefits of the innovations that could be expected over the next 25 years.

Ofwat did not consider the effect a merger would have on model precision

185 Ofwat's benefits assessment did not estimate the benefit for model accuracy or 'precision' from Bristol Water being an independent comparator.

186 The CMA has previously recognised that more data points will lead to greater model precision. In its decision relating to the acquisition of Bournemouth Water by Pennon Group, the CMA stated:[93]

> *"A standard principle of statistical theory is that fewer data points will lead to less precise econometric estimates."*

187 Similarly, Ofwat itself recognises that "*[a]ny reduction to the number of comparators can have an impact on the robustness of our analysis by reducing the number of independent observations*".[94] In relation to the Pennon Group/Bournemouth Water merger, Ofwat estimated that the precision effect could be in the region of £31.5 million over a five year period, and the CMA estimated an impact of £6.3 million per annum.[95]

188 When responding to the DD, we referred to KPMG's assessment of the potential impact of precision on Ofwat's models over a five year period. This was assessed to be £34.1 million, based on a five year sample of data and the DD model.[96] KPMG's analysis is therefore

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92 For example, Bristol Water has been awarded the Big Bang Award for Innovation by Utility Week (2018), and the Community Project of the Year Award and Outstanding Innovation Award in the Water Industry Achievement Awards (2018).

93 CMA (2015) 'Pennon Group and Bournemouth Water A report on the completed acquisition by Pennon Group plc of Bournemouth Water Investments Limited', paragraph 20 (https://assets.publishing.service.gov.uk/media/563a3190ed915d566a000016/Pennon_final_report.pdf).

94 Statement of Methods, page 65.

95 Ofwat (2015) 'Response to the CMA's provisional findings of its investigation into the completed acquisition by Pennon Group plc of Bournemouth Water Investments Limited', page 4 (https://assets.publishing.service.gov.uk/media/562e0c9e40f0b654d6000003/Ofwat_Response_to_PFs.pdf).

96 KPMG (2019) 'Setting a company-specific adjustment to the allowed cost of capital for Bristol Water – Responding to Ofwat's PR19 Draft Determination', page 48.

indicative of a cost assessment that Ofwat could have applied in its price setting process, although we note that it does not exactly align to the approach in the FD, which uses eight years of data.

189 In the FD, Ofwat acknowledged that there would be a precision impact. However, it did not attempt to quantify that impact or use KPMG's quantification. Rather, Ofwat stated that it would consider the precision impact "*qualitatively*".[97] There is no evidence in the FD that this has been done. Ofwat merely stated that having assessed our concerns "*in the round*" it does not expect these benefits to exceed £14m in NPV terms with a high degree of confidence.[98]

190 Ofwat has therefore wrongly overlooked the significant impact on precision estimated by KPMG, which is consistent with Ofwat's own findings in the Pennon Group/Bournemouth Water merger.[99] Taking account of a precision impact of this magnitude would result in Bristol Water passing Ofwat's benefits assessment.

Ofwat's approach does not align with its FD benchmarking methodology

191 Ofwat assessed the impact of losing Bristol Water as a comparator on its wholesale totex models. It concluded that, historically, Bristol Water had been relatively inefficient, and that us as a comparator would improve the overall efficiency benchmarks and have a positive customer impact.[100]

192 Ofwat has misapplied this test. Ofwat considered the impact of removing Bristol Water on the upper quartile of the efficiency benchmarks. However, in the FD Ofwat uses the fourth most efficient company to set base cost allowances, not the upper quartile. Removing us from the comparator benchmarks would have no impact on the fourth most efficient company and therefore no impact on Ofwat's approach to setting base cost allowances. No doubt Ofwat will state that this change to fourth company should not affect the customer benefits test as it is possible Ofwat will use upper quartile in the future. This illustrates that the assessment as a whole is partial, selective and not fit for purpose.

193 Correcting the assessment removes the largest area of modelled detriment from Ofwat's single-period approach.

Ofwat understates the benefits of service comparisons due to an unbalanced use of incentive rates

194 Ofwat has sought to value the impact on customers of having us as a comparator when setting service performance levels. Ofwat assessed the impact on customers using the ODI reward rates. It is not clear why Ofwat has only considered the reward rates, and not the penalty rates.

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97 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', Table A1.5, page 104.

98 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', page 111.

99 See Ofwat (2015) 'Assessing the impact of a merger – spreadsheets developed for the Pennon/Bournemouth merger' (https://www.ofwat.gov.uk/assessing-the-impact-of-a-merger-spreadsheets-developed-for-the-pennon-bournemouth-merger/).

100 KPMG SCP Report, section 4.2.3.

195 In the Pennon Water/Bournemouth Water merger, Ofwat considered both the ODI penalty and reward rates within its analyses of impacts on comparators.[101] The penalty rates give significantly greater implied benefits than using the reward rates. This is due to companies generally proposing greater penalty rates than reward rates. Therefore, using solely the penalty rates for the upper quartile benchmark comparison is likely to overstate the value. Similarly, using solely the reward rates is likely to understate the value as companies should not propose reward rates that are equal to customers' marginal valuations – doing so would mean that customers experience no net benefits from a company outperforming its targets.[102]

196 A more balanced approach to service comparison would be to use the average of companies' reward and penalty rates. This approach, which would be consistent with Ofwat's approach to merger assessments, would increase the modelled customer benefit from having us as a comparator.

Ofwat's estimate of future comparative non-totex benefits is arbitrary and risks understating the benefit

197 Ofwat assessed the impact of Bristol Water as a comparator when determining non-base totex. To do this, Ofwat took a single-period historic estimate and assumed that these benefits halve at each subsequent price review. This approach anticipates that poorer-performing companies will be incentivised to improve their performance over time, resulting in a reduction in the benchmarking benefits of upper quartile performers.

198 Ofwat's approach is arbitrary and does not form a sound basis to determine whether a company should be allowed a CSA. While it is possible that there may be some degree of industry convergence on the performance measures that Ofwat currently incentivises, it is also possible that there will be new performance measures that Ofwat will seek to benchmark in the future. For example, PR19 is the first price review where unplanned outages have been used as a measure of performance.

199 Given that Ofwat does not appear to have undertaken any analysis on whether performance would converge or whether new performance measures would be introduced, a balanced approach would be to assume that the quantum of benefits gained from existing measures will continue at similar levels to the level reached in 2024/25, rather than the average over 2020-2025 which includes the impact of glidepaths. The use of glidepaths reduces the customer benefit value for leading companies, because Ofwat deems that the benefit is lower as the target to other companies less stringent. If the Ofwat had adopted this approach, the modelled customer benefit from having Bristol Water as an independent comparator would have been higher.

200 There is no clear logic for assuming that benefits on average in 2020-2025, which are reduced for us because Ofwat has applied a standard glidepath for companies, will be repeated after 2025. The 2024-2025 position would represent a more logical starting point given the significant limitations of this approach in any case.

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101 Ofwat (2015) 'Assessing the impact of a merger – spreadsheets developed for the Pennon/Bournemouth merger'.

102 KPMG SCP Report, section 6.3.5.

201 Ofwat finds a significant disbenefit in retail totex for a single period (£12.5m) that they then roll forward to future periods, without carrying out the transitions and changes assessment undertaken for wholesale totex. The level of disbenefit does not seem appropriate given that Ofwat took a different approach to efficiency benchmarking at PR19 from PR14, and that our retail activities are already merged with Wessex Water's through a single operation. In PR19, Ofwat deemed our retail costs to be more efficient than PR14 and allowed marginally more cost than our plan. It is therefore unclear why Ofwat did not question why a fixed approach for retail with a large disbenefit was appropriate. Ofwat did not include retail cost in the customer benefits test at PR14.[103] Therefore, it should be assumed that retail totex has no impact on Ofwat's customer benefits test.

Ofwat has wrongly assessed our efficiency

202 Ofwat's benefits assessment is materially affected by Ofwat's conclusion on Bristol Water's efficiency ranking. In undertaking its benefits assessment, Ofwat has assumed that Bristol Water is relatively inefficient. However, as shown in **Section C Cost allowance errors**, Ofwat has made a series of errors and unjustified judgements in the application of its efficiency models. Ofwat may also have based assumptions on our efficiency on historic performance, ignoring the fact that our performance has improved significantly in recent years under new ownership and new management.

203 When these errors are corrected, our efficiency position at PR19 would be significantly improved. Updating Ofwat's analysis for this would increase the benefits in its benefits assessment test so that it is NPV positive.

Requested remedy

204 Ofwat was wrong to apply a benefits assessment. It is contrary to precedent in CC10 and CMA15. Circumstances have not changed since then and, further, the application of the test results in a position that renders Bristol Water (or any relevant notional company) non-financeable. The CMA should therefore not apply Ofwat's customer benefits test in the redetermination.

205 In the alternative, the CMA should correct the errors in Ofwat's approach to its customer benefits assessment. Correcting these errors would result in us passing Ofwat's customer benefits test. In our view, the CMA does not need to consider the evidence on the test itself if the previous precedent is retained, given that circumstances are unaltered since 2015 and 2010.

7.2 Cost of debt premium

The issue

206 Ofwat has also erred in the FD by setting the level of the CSA too low.

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[103] Ofwat (2014), PR14, 'Setting price controls for 2015-20: Annex to technical appendix A6 – benefits assessment from a company-specific uplift on the cost of capital', page 25 (https://www.ofwat.gov.uk/wp-content/uploads/2015/10/pap_tec1408pr14impactassessbenefit.pdf).

207 In CMA15, the CMA applied a 40 bps CSA to the cost of debt for Bristol Water.[104] This was in line with the cost of debt CSA applied by Ofwat in PR09. However, in the FD Ofwat concluded that if a CSA were applied, the relevant company's cost of debt should be increased by only 33 bps.[105] The KPMG SCP Report assesses that the cost of debt CSA should be 37.35 bps higher. The differences between Ofwat's and our positions in respect of the cost of debt CSA are set out in Table B2.

Table B2 – Cost of debt CSA

	Ofwat's FD	Bristol Water's corrected CSA
Cost of embedded debt CSA	35 bps	38 bps
Cost of new debt CSA	25 bps	25 bps
Ratio of embedded debt	80%	95%
Overall cost of debt CSA	33 bps	37.35 bps

(1) Cost of embedded debt CSA

208 In the FD, Ofwat confirmed its view that a plausible range for a cost of debt CSA was 24 to 40 bps.[106] Ofwat recognised that our proposed uplift of 38 bps was within that range, but it ultimately concluded that the cost of embedded debt CSA should be 35 bps. In coming to this view, Ofwat wrongly ignored the evidence developed by KPMG and submitted by Bristol Water.[107]

209 KPMG's methodology, which was built on PwC's Artesian analysis for Ofwat during PR14, was largely accepted and adopted by Ofwat in the IAP response in 2018. KPMG then reviewed and refined application of this methodology and CSA estimates to reflect the latest evidence as well as comments by Ofwat.[108]

210 In the FD, Ofwat challenged KPMG's interpretation of PwC's Artesian analysis, stating that PwC had calculated spreads of Artesian debt against the iBoxx index less 15 basis points (i.e. spreads relative to the allowance which was to account for the outperformance wedge effect), whereas KPMG had interpreted these spreads as differences between the yield on Artesian debt and the iBoxx index. Ofwat wrongly concluded that this meant that KPMG's analysis

104 CMA15, paragraph 10.80.
105 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', Table A1.4, pages 100-101.
106 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', page 98.
107 FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', page 100.
108 KPMG SCP Report, sections 3.2 to 3.4.

overstated the spread to iBoxx for Artesian debt by 15 bps.[109] If correct, this would mean that KPMG's estimate of the CSA was overstated by 15 bps.

211 Subsequent to the FD, KPMG updated their analysis to reflect this 15 bps uplift included in the Artesian spreads calculated by PwC. This update concluded that the analysis continues to support a CSA in the range of 30–47 basis points based on KPMG's preferred methods of calculating the CSA (methods 2 and 3). This analysis is shown in Table B3, in the column 'Difference (2020 update)'.

Table B3 – Updated debt premium analysis

Methodology	WoC Spread	WaSC Spread	Difference (August 2019)	WoC Spread adjusted - 15bps	Difference (2020 update)
Method 1: Spread to gilts	1.48%	0.97%	**0.51%**	1.63%	**0.66%**
Method 1: Spread to gilts – weighted	1.39%	1.02%	**0.37%**	1.49%	**0.47%**
Method 2: Spread to Iboxx Avg	0.33%	-0.25%	**0.58%**	0.22%	**0.47%**
Method 2: Spread to Iboxx Avg- weighted	0.31%	-0.23%	**0.54%**	0.22%	**0.45%**
Method 3: Spread to relevant Iboxx	0.34%	-0.07%	**0.41%**	0.23%	**0.30%**
Method 3: Spread to relevant Iboxx - weighted	0.34%	-0.12%	**0.46%**	0.26%	**0.38%**

212 Therefore, the revised analysis conducted by KPMG continues to show that, once accounting for all bond price determinants, there is a 30–47 basis points difference between the pricing of debt for WoCs versus WaSCs based on the sample of historical data.

213 The various methods listed in the table are described in the KPMG SCP Report at section 4.2. As set out in that report, Method 3 is the most robust, as it controls for key differences in the observed cost of debt in the sector, including due to timing, rating and tenor of the issues. The weighted Method 3 is consistent with the way Ofwat set the industry cost of embedded debt. This method supports a cost of embedded debt CSA of 38 basis points on a weighted average basis.

(2) Analysis supporting the additional embedded debt cost for a relevant notional company like Bristol Water (CSA)

214 Both Ofwat and the CMA have recognised that small companies may face higher financing costs due to their size.[110] Indeed, there is extensive precedent established over the PR94,

[109] FD, 'Allowed return on capital technical appendix, Annex 1: Company-specific adjustments to the allowed return on capital', page 100.

[110] CMA15, Appendix 10.1, paragraph 58; and PR19 Final Methodology, page 180.

PR99, PR04 and PR09 price determinations and in the last two referrals for redetermination (CC10 and CMA15) that it is appropriate to allow a CSA on debt for small companies.[111]

215 We do not dispute Ofwat's calculation of the industry embedded cost of debt, but consider that this does not fully reflect our efficiently incurred financing costs, which are higher than those of the larger companies in the industry.

216 Ofwat took two approaches in its assessment of the cost of embedded debt:[112]

- **Benchmark index approach –** this was Ofwat's primary approach to estimating the cost of embedded debt. Ofwat calculated the 15-year trailing average of the A/BBB iBoxx non-financials index. This implied a cost of embedded debt of 4.72% in nominal terms. Ofwat then applied a downward adjustment of 25 bps for the 'outperformance wedge' to reflect historical observed performance, which resulted in a cost of embedded debt allowance of 4.47% in nominal terms.

- **Balance sheet approach** – this was used as cross check by Ofwat. Ofwat calculated a range of benchmarks based on the data on financial instruments reported on company balance sheets. Ofwat applied a series of adjustments to the data to exclude non-standard instruments and swaps. Ofwat calculated a weighted average of 4.25% and a company-level median of 4.65%. Given that its point estimate from the benchmarks index approach was within this range and was close to the median for WaSCs and large WoCs, Ofwat concluded that it represented a sufficient allowance for an efficient company.

217 The CMA has in the past considered that when setting the appropriate allowance for the cost of debt, the notional cost of debt (obtained through index methodology and application of a CSA for Bristol Water), should be cross-checked against a company's actual cost of debt. In fact, this is the approach that the CMA took when setting our allowed cost of debt in CMA15.[113] In other words, when setting the cost of debt allowance, the CMA explicitly took account of both the efficient notional level of costs for a company like Bristol Water (based on an 'index' approach) as well as our actual cost of financing (based on adjusted balance sheet approach).

218 When setting the cost of debt, the CMA and Ofwat both considered that there might be an 'outperformance wedge' (or 'halo effect') as WaSCs might be able to issue debt at a discount to the iBoxx index.[114]

219 Economic Insight consider that the 25 bps outperformance deduction made by Ofwat is poorly evidenced. Economic Insight explain that Ofwat has not considered the cause of any outperformance (and, consequently, fails to control for differences in credit rating or tenor),

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111 KPMG SCP Report, section 3.1.
112 FD, 'Allowed return on technical capital appendix', page 85.
113 CMA15, paragraph 10.50.
114 CMA15, paragraphs 10.63 and 10.81; Ofwat (2019), PR19 draft determinations: Cost of capital technical appendix', section 4.2 (https://www.ofwat.gov.uk/wp-content/uploads/2019/07/PR19-draft-determinations-Cost-of-capital-technical-appendix.pdf).

risks double-counting potential outperformance and has not taken into account the variation in debt instruments and mix across companies.[115]

220 Moreover, even if some companies might have been able to outperform the index as a result of e.g. issuing shorter tenor, any 'outperformance wedge' would not be applicable to us. The transaction costs associated with frequent capital market access mean that it would be prohibitively expensive for a small company such as us to issue short duration debt and frequently refinance.[116] This is reflected in our current and historic debt portfolio, which comprises bonds with very long duration that exceed the iBoxx index duration of around 20 years on a weighted average basis. Therefore, even if there were an 'outperformance wedge' across the industry due to tenor, this would not be available to us as we cannot 'outperform' the industry cost of debt by issuing shorter tenor.

221 As demonstrated in the KPMG SCP Report, our weighted average cost of embedded debt across fixed, floating and index-linked debt, in nominal terms, is 5.09% (see the table below).[117] This is significantly higher than the allowed cost of debt in the FD of 4.47%. In the FD, Ofwat quoted our cost of debt in 2018/19 as 4.73%.[118] Whilst this was the case in 2018/19, it does not take into account that the average RPI inflation indexation on our index linked debt was 2.4%. However, it is an error for Ofwat not to adjust the long term inflation rate in line with the FD, which used a long turn RPI rate of 3%. Correcting for this increases our nominal interest costs from 4.73% to 5.09%, which is an additional embedded debt cost (compared to Ofwat's allowances) of 0.62%, rather than the 0.26% Ofwat erroneously quotes in the FD.

222 We note that, in making the reference, Ofwat appears to argue that we are larger than other small WoCs and have a cost of debt lower than the actual cost in 2018/19 of some WaSCs.[119] It is inevitable that using a WaSC median cost means that some companies (particularly those selected by Ofwat with higher gearing levels) have a higher cost of debt. In any event, comparing our adjusted 2018/19 actual interest rate for Bristol Water of 5.09% to Ofwat's quoted figures for Dwr Cymru (5.04%) and Yorkshire Water (4.91%) suggests Ofwat is supporting an approach that considers the company actual cost of finance in setting embedded debt costs.

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115 Economic Insight Report, sections 4.2.2 and 4.3.2.
116 KPMG SCP Report, paragraph 3.2.1.
117 KPMG SCP Report, paragraph 3.4.2.
118 FD, 'Allowed return on capital appendix', page 98.
119 Ofwat (2020), 'Reference of the PR19 final determinations: Explanation of our final determination for Bristol Water', paragraph 2.40 (https://www.ofwat.gov.uk/wp-content/uploads/2020/03/Reference-of-the-PR19-final-determinations-Explanation-of-our-final-determination-for-Bristol-Water.pdf).

Table B4 – Bristol Water actual cost of embedded debt calculation

Cost of embedded debt calculation	Fixed	Floating	Index linked	Total
Bristol Water Debt (as at March 19), £m	84.07	74.04	188.82	346.93
Nominal interest rate	4.96%	1.75%	6.47%	5.09%
Long term inflation (actual 17/18 for ILD)	3.00%	3.00%	3.06%	-
Real interest rate	1.90%	-1.21%	3.41%	-
Real interest cost, £m	1.6	-0.9	6.44	7.14
Weighted real interest rate	-	-	-	2.06%

223 In CMA15, the CMA made numerous adjustments to our cost of embedded debt[120] which we have endeavoured to replicate in Table B5 below. The adjustments made are as follows:

- Preference shares: the CMA considered that preference shares should be excluded from the embedded debt analysis (note that these have already been excluded in Table B4 above);
- Yields on Artesian debt: the CMA made adjustments when calculating our Artesian debt cost to reflect the fact that these were issued at a premium and therefore yield was lower than the coupon rate. This led to a downward adjustment of 0.17%;
- Intercompany loan: this loan was in part undertaken for non-operational purposes. As such, the CMA considered a counterfactual position where a lower quantum of debt was raised, leading to a downward adjustment between 0% and 0.07%;
- Issuance costs: the CMA considered issuance costs of 10 bps, in line with Ofwat's estimate of issuance costs; and
- Cash holding costs: the CMA also considered cash holding costs to account for our management of liquidity requirements and debt covenants. This added 0.10% to 0.20% to the cost of debt.

224 These adjustments are reflected in the table below, shown in both real and nominal terms. No further adjustments have been made as we have not raised any further non-operational debt nor issued debt at a premium since CMA15. Our cost of embedded debt, post adjustments, is shown to be between 2.02% and 2.19% (real, RPI) or equivalently between 5.08% and 5.25% (nominal).

120 CMA15, paragraph 10.101.

Table B5 – CMA adjustments to Bristol's actual cost of embedded debt calculation

CMA adjusted cost of embedded debt	Low	High
Weighted real interest rate	*2.06%*	*2.06%*
CMA adjustments		
Adjust for yields of Artesian debt	*-0.17%*	*-0.17%*
Remove Artesian used for parent loan	*-0.07%*	*-*
Issuance costs	*0.10%*	*0.10%*
Cash holding costs	*0.10%*	*0.20%*
	-0.04%	*0.13%*
CMA real cost of embedded debt	*2.02%*	*2.19%*
CMA nominal cost of embedded debt	*5.08%*	*5.25%*
Long term inflation	*3.00%*	*3.00%*

225 Table B6 below shows that our cost of embedded debt, post adjustments, is considerably higher than Ofwat's allowance, by an average of 0.68% in real, RPI terms or 0.70% in nominal terms.

Table B6 – Comparison between CMA adjusted cost of embedded debt and Ofwat's FD

Comparison with Ofwat FD	Low	High	Average gap
Bristol nominal cost of embedded debt	*5.08%*	*5.25%*	
Ofwat nominal cost of embedded debt	*4.47%*	*4.47%*	
Nominal gap	*0.61%*	*0.78%*	*0.70%*
Bristol real cost of embedded debt	*2.02%*	*2.19%*	
Ofwat real cost of embedded debt	*1.43%*	*1.43%*	
Real gap	*0.59%*	*0.76%*	*0.68%*

226 As discussed above, part of the reason for this gap is due to us not being able to issue debt with short-duration tenor, meaning that we cannot obtain any 'outperformance wedge' relative to the index. As shown above, this means that relative to Ofwat's allowance post 'outperformance wedge', and if no further adjustments are made to the allowance for Bristol Water, the gap between our actual embedded debt cost and Ofwat's allowance in the FD is considerable.

227 For the reasons set out above, there are good grounds to apply a CSA for debt of 62 bps for Bristol Water, based on a nominal cost of debt of 5.09%. This is consistent with the cross-check that the CMA applied in 2015. Moreover, Ofwat does not dispute that our embedded debt was efficiently incurred. Ofwat also does not appear to disagree with KPMG's analysis which adjusts for tenor of debt in calculating the CSA, which suggests that an uplift of 38bps should be applied. We have taken a conservative approach of applying this lower CSA, on the basis that a nominal cost of debt of 4.85% for a relevant notional company like Bristol Water is supported by the evidence.

(3) Ratio of new to embedded debt

228 Ofwat has set a ratio of new to embedded debt of 20:80. There are two concerns with this ratio. First, it assumes a level of new debt (20%) that is higher than shown by industry-wide data (17%). Second, and more materially, it does not take account of smaller companies requiring far lower proportions of new debt. Our anticipated percentage of new debt during AMP7 is 5%. In setting a cost of capital that fails to reflect the financing structure of a relevant notional company, Ofwat has set a cost of capital that is not achievable by an efficiently-run small WoC. These issues are set out further below.

229 In its draft determination (**DD**), Ofwat adopted a ratio of 80:20 (embedded debt to new debt). Ofwat justified this approach by reference to analysis that established a range of 17%-22% for new debt.[121] The lower end of the range was the average share of new debt as an unweighted average across the companies, whereas the higher end was based on the weighted average of debt issued by the sector. The five water only companies, four of which requested a CSA, had the lowest levels of anticipated new debt.[122]

230 Following the DD, Ofwat developed a new approach to estimating the proportion of new debt. Under this 'notional-actual hybrid' approach, Ofwat made a series of financing assumptions about companies' debt strategies. This approach implied a level of new debt between 17% (company-level average) to 18% (sector weighted average). Notwithstanding this updated analysis, Ofwat did not change its position in the FD. This is despite eight companies responding to the DD, stating that 20% exceeded their anticipated ratio of new debt.

231 Despite the evidence suggesting a lower industry average figure, Ofwat maintained its 20:80 ratio in the FD on the basis that the ranges did not give sufficient cause to move from the DD.

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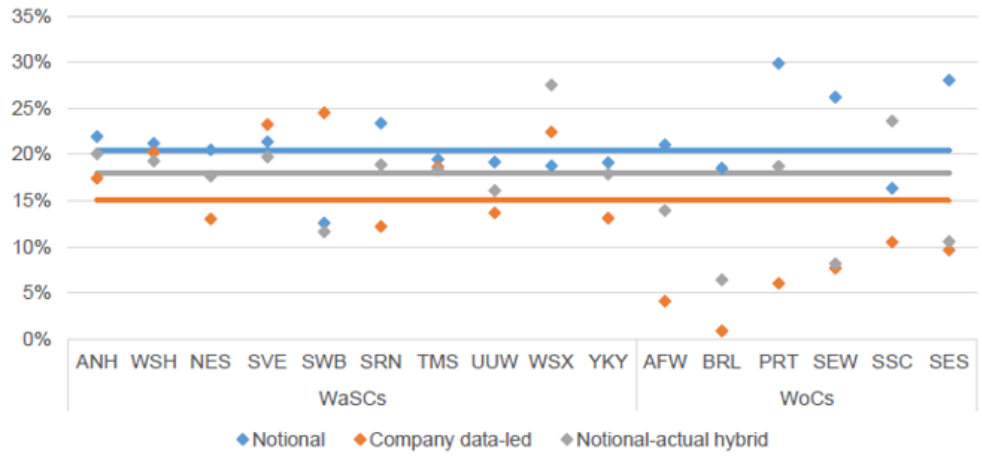
121 DD, 'Cost of capital technical appendix', page 63.

122 DD, 'Cost of capital technical appendix', page 63.

232 Economic Insight set out three approaches to quantifying the share of new debt: the notional approach, a company data approach and the notional-actual hybrid approach.[123] Figure B1 summarises Ofwat's analysis under each of these three approaches.

Figure B1 – Estimated average share of new debt, 2020-2025[124]



233 The 'company-led' data approach shows that for all six WoCs, the estimated share of new debt over 2020–2025 is considerably lower than that for WaSCs. The average share of new debt ranges from close to 0% for Bristol Water to c.10% for South Staffs. It is clear from this figure that it is appropriate to set a lower overall ratio for new debt, and a further lower share for a notional company relevant to Bristol Water and the WoCs with similar characteristics.

234 In the FD, Ofwat rejected requests for a lower new debt ratio for small WoCs. Ofwat stated:[125]

> *"We recognise that a 'lumpy' investment (or debt issuance) profile can cause a company's share of new debt to deviate from our sector assumption, which may drive under- or outperformance. Over time, we would however expect these deviations to balance out, with underperforming positions becoming outperforming positions and vice versa. This is because, for example, an atypically high share of embedded debt attributable to issuance concentrated over a few years will become an atypically high share of new debt when this debt is refinanced. Over the long term therefore, we consider our approach reasonable, and that making more company specific assumptions on share of new debt is not required to ensure equal treatment of companies."*

235 Ofwat's argument does not hold true for small WoCs. Small WoCs systematically differ in their debt issuance profile to large companies. Due to their size, small WoCs' debt issuance will always be more concentrated and will result in a significantly higher proportion of embedded or new debt relative to the 'average WaSC'.

123 Economic Insight Report, page 33.
124 FD, 'Allowed return on capital appendix', page 77.
125 FD, 'Allowed return on capital appendix', page 74.

236 In CMA15, the CMA applied Ofwat's notional new to embedded debt ratio in the calculation of the allowed cost of debt. However, our circumstances have significantly changed since then. The lower returns afforded under PR19 and higher difference between embedded and new cost of debt undermines Bristol Water's ability to finance its operations.

The proposed remedy

237 Ofwat and the CMA have previously applied a cost of debt CSA of 40 bps. Given that Bristol Water has a significant proportion of efficiently incurred embedded debt, there is no reasonable ground to depart from the approach taken in CMA15.

238 In order to ensure that the CSA is effective and enables us to service its capital requirements, a cost of debt CSA of 38 bps should be applied on embedded debt and 25 bps on new debt should be applied. The new to embedded debt ratio should also be adjusted to 5:95.

7.3 Cost of equity premium

The issue

239 Ofwat did not recognise any cost of equity CSA in its FD. This approach is flawed as it fails to recognise that small WoCs, such as Bristol Water, with higher operational gearing are subject to higher asset beta risk and therefore require an uplift in their equity beta. Based on the data in the FD, it is clear that small WoCs have higher operational gearing and skew in expected returns compared to the larger listed WaSCs and, as such, require a CSA uplift on the cost of equity.

240 Operational gearing is a measure of the balance between fixed and variable costs within a company's cost structure.[126] Higher operational gearing (i.e. a higher proportion of fixed to variable costs) increases systematic risk (which is reflected in the asset beta) as companies with higher fixed costs have greater profit volatility in response to demand shocks, since most of their costs are unavoidable. This principle that higher operational leverage generally increases systematic risk is well established and, as a general principle, is recognised by Ofwat.[127]

241 Whilst the water sector in the UK is not exposed to material volume risk (other than to developer services, water trading and bad debt), operational gearing issues arise for small WoCs due to their relatively low RCV. Small WoCs have lower capital employed relative to operating costs, resulting in 'thinner margins'. As a consequence of this, any given cost or ODI shock will have a disproportionately larger impact on profit volatility relative to the impact it would have on a larger water company with higher profit margins. Variations in cost and outcome incentives have a similar impact on profits for a small company (as opposed to revenues, although this is also considered).

242 The principle of adjusting beta for operational gearing is well recognised in economic regulation, including in CC10 and CMA15. An uplift to equity beta was allowed in both cases,

126 FD, 'Allowed return on capital technical appendix', page 97.
127 DD, 'Cost of capital technical annex', page 53.

due to our higher operational gearing relative to WaSCs, which results in higher profit volatility and beta risk.[128]

243 Ofwat and its advisers have questioned the extent to which operational leverage results in higher systematic risk exposure for small WoCs.[129] In the FD, Ofwat continued to reject any argument for applying a beta uplift. Although Ofwat accepted that there is a link between operational gearing and systematic risk,[130] it considered this link to be irrelevant in regulated industries as companies are not exposed to demand risk.[131]

244 However, as described above, operational gearing results in higher profit volatility due to cost and outcome incentives having a disproportionately higher impact on profit margins for small companies. Therefore, any cost or ODI shock represents a greater proportion of profits for small WoCs compared to WaSCs.

245 Ofwat's position in PR19 is materially the same as it was in PR14.[132] The CMA did not accept Ofwat's position in PR14. In CMA15, the CMA concluded that an adjustment was needed in spite of those arguments, specifically stating:[133]

> *"In coming to a view on the level of any uplift [related to operational gearing], we do however recognise that not all of the operational gearing will necessarily reflect systematic risk, and also that not all beta risk will result from operational factors… Although there is uncertainty over the scale of any uplift, and we agree that calculating a single value is difficult, we were not persuaded that zero is a suitable point estimate for the uplift".*

246 Consistent with this, the CMA concluded that it would be appropriate to apply a beta uplift of 13% to the percentage of allowed wholesale revenue from return on capital and RCV run-off was applied.[134]

247 At the time we submitted our revised business plan, we did not seek a CSA for the cost of equity. Whilst our advisers' analysis demonstrated that there should be such a CSA, we considered that due to difficulties in calculating the value of the CSA for the cost of equity and the relatively low impact of this element of the CSA, we would not request it for AMP7.[135] This position changed following the DD. As stated in our response to the DD, the balance of risk in our plan had changed as a result of Ofwat's position on cost of capital and the cost and incentive challenges arising from Ofwat's WaSC-weighted analysis.[136]

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128 CC10, Appendix N, paragraph 137 (https://assets.publishing.service.gov.uk/media/55194c7240f0b614040003d2/558_appendices.pdf); and CC15, Appendix 10.1, paragraphs 125 to 127.
129 DD, 'Cost of capital technical annex', pages 53 to 54.
130 FD, 'Allowed return on capital appendix', page 98.
131 FD, 'Allowed return on capital appendix', page 97.
132 DD, 'Cost of capital technical annex', pages 53 to 54.
133 CMA15, Appendix 10.1, paragraphs 126 to 127.
134 CMA15, paragraph 10.162.
135 Our business plan (revised), 'C6: Financeability, Risk & Return, and Affordability', page 104.
136 Bristol Water (2019), 'Response to the PR19 Draft Determination: Financial issues', page 50 (https://www.bristolwater.co.uk/wp-content/uploads/2019/09/BW04-Financial-Issues-PRV.pdf).

(1) Estimating the value of the required equity premium

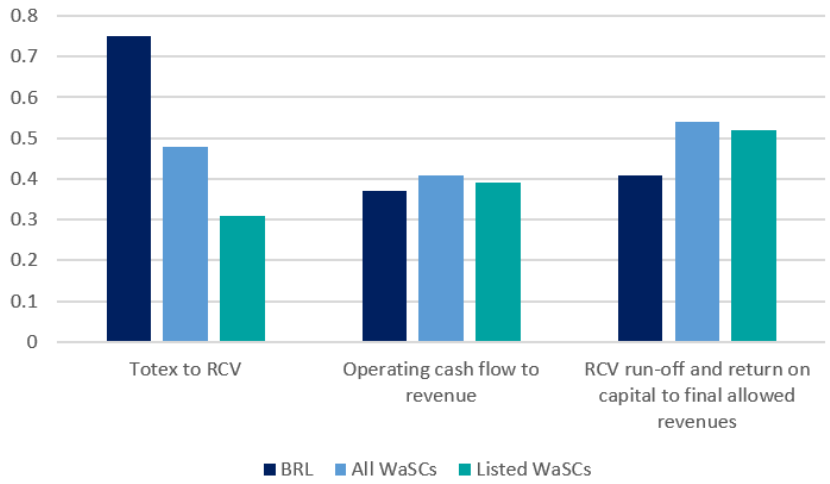
248 Economic Insight conducted analysis based on the data included in Ofwat's DD to compare our operational gearing to WaSCs, particularly those that are publicly listed, and which therefore Ofwat uses to set the industry asset beta.[137] The analysis focused on the following ratios:

- totex to RCV;
- operating cash flows to revenue; and
- RCV run-off and return on capital to final allowed revenues.

249 Economic Insight's analysis (summarised in Figure B2 below) found that under each metric, Bristol Water had higher levels of operational gearing, and therefore greater systematic risk than Ofwat's comparators. Economic Insight concluded that an appropriate equity beta uplift would fall within the range of 5%-26%, stating:[138]

> *"As can be seen, on our first measure (totex/RCV) Bristol's operating leverage is more than twice that of listed WaSCs. On the second measure (operating cash flow/revenue) the company's operating leverage is 5% higher than the listed WaSCs (noting that, on this measure, a 'lower' ratio indicates 'higher' leverage). On the third measure (RCV run-off and return on capital/final allowed revenues), Bristol's operating leverage is 26% higher than the listed WaSCs. We generally favour the latter two measures; and so the data supports an uplift range to beta for Bristol of 5%-26%. This compares to the CMA's finding at PR14 that a 13% uplift was appropriate."*

Figure B2 – Comparison of Bristol's operating leverage versus all WaSCs and listed WaSCs



250 Figure B2 above shows that an equity uplift of 13% as applied by the CMA in PR09 and PR14 remains appropriate, in light of the equity uplift range of between 5% and 26% calculated by Economic Insight.

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137 Economic Insight (2019), 'Review of Ofwat's approach to the WACC at PR19 draft determinations'.
138 Economic Insight (2019), 'Review of Ofwat's approach to the WACC at PR19 draft determinations', paragraph 24.

251 We have also conducted our own analysis based on Ofwat's FD model using measures of operational gearing that have been considered by the CMA in the past.

252 The evidence presented below suggests a higher figure for operational gearing, but this is driven in part by the disallowance of the CSA on debt and other parts of the statement of case which have reduced operational cash flows compared to other companies.

253 The analysis has been updated for the FD in Table B7 by comparing Bristol Water to the three listed companies:

Table B7 – RCV and RoRE analysis for the FD*

	Totex to RCV	Operating cash flow to Revenue	RCV run off and return	RoRE skew cost	RoRE skew ODI	RoRE skew financing	RoRE skew total
Bristol Water	92.8%	45.4%	35.5%	-0.26%	-1.33%	-0.89%	-2.48%
United Utilities	55.4%	55.9%	51.8%	0.27%	-0.25%	0.10%	0.12%
Severn Trent Water	73.7%	50.3%	44.8%	0.30%	-1.04%	0.02%	-0.71%
South West Water	64.7%	56.5%	50.0%	0.24%	-0.34%	0.08%	-0.02%
Average of three listed	64.6%	54.2%	48.9%	0.30%	-0.50%	0.10%	-0.20%
Implied beta uplift (BRL difference over average)	43.6%	16.3%	27.3%				

* For illustration, the RoRE asymmetry is defined as the difference in the RoRE impact at p10 and p90 relative to the mean. For example, the RoRE cost asymmetry of -0.26% means that the negative impact at p10 on RoRE is 26bps higher than the positive impact on RoRE at p90.

254 The analysis above demonstrates that under the PR19 framework, the impact from operational leverage is exacerbated, due to the notable downside risk on ODIs and totex in the framework, which we bear as a small company.

255 Specifically, to emphasise the impact of the relatively low RCV in practice, as well as the asymmetric risk in cost, outcome incentives and financing, we analysed the difference of 'skew' between the upside and downside RoRE analysis in the FD. This shows that for each of cost, ODIs and financing, there is a larger downside skew (i.e. downside RoRE range less upside RoRE range) for Bristol Water than for listed companies.

- On financing, this reflects the impact of Ofwat not allowing a cost of debt CSA, which has the immediate impact of eroding equity returns. Even if Ofwat's ODI assessment and totex cost assessment were assumed not to be biased, the RoRE impact from skew in the framework on outcome delivery incentives and totex, is disproportionately larger for us given the erosion in equity returns due to the financing cost disallowance.

- With regards to cost, the Ofwat ODI analysis includes the impact of the asymmetric cost sharing rate at 39.76% outperformance and 60.24% underperformance. Effectively this adds to the cost skew, because it assumes 60% of the underspend will be reflected in investor returns during the period (and only 40% of the outperformance), compared to 50% for the listed 'fast tracked' companies.

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- This shows that there are no similar opportunities on cost savings within management control that offset this downside risk, even with Ofwat mitigation. The skew in Ofwat's own analysis is c.2.3% higher than for the listed companies (-2.5% v -0.2%), in comparison to equity returns of 4%.

The proposed remedy

256 In summary, the evidence supports an operational gearing adjustment of 13% on asset beta, corroborated by KPMG analysis.[139] Economic Insight proposed a cost of equity CSA beta uplift of 16%, being the midpoint of their analysis of our operating leverage.[140] This is also the minimum uplift identified in our analysis of data from Ofwat's FD financial models. There is clear evidence of the difference risk, both in terms of the financial metrics linked to operational gearing, and within totex and outcomes compared to the listed companies Ofwat set as the benchmark for industry equity beta. Although the evidence supports an uplift of

139 KPMG SCP Report, paragraph 5.2.6.
140 Economic Insight Report, page 28.

16% to the beta, even a conservative approach supports an uplift of at least the amount applied by the CMA in CMA15, i.e. 13%.

8. Industry cost of capital

257 In the FD, Ofwat determined that the wholesale cost of capital (vanilla) was 4.98%. However, this figure is based on a series of errors in Ofwat's approach to estimating both the cost of equity and the cost of debt, resulting in a cost of capital that is at least 37 bps too low.

258 In relation to the **cost of equity**, Ofwat erred in its assessment of:

- the total market return (**TMR**);
- the risk-free rate (**RfR**);
- the asset beta; and
- the debt beta.

259 In relation to the **cost of debt**, Ofwat erred in its assessment of:

- the cost of new debt, which is based on the RfR (plus an adjustment for credit risk); and
- the ratio of embedded debt to new debt.

260 The errors in Ofwat's analysis are detailed in the subsections below, with reference to the KPMG Cost of Capital Report and the Economic Insight Report.

8.1 Cost of equity – Total market return (TMR)

The issue

261 The TMR is the return expected by investors from a suitably diversified portfolio of equities, i.e. the return that an investor would expect if they invested in the whole market. As such, it is a central component to the calculation of the cost of equity.[141] Ofwat has estimated the TMR as 8.63% nominal. This is significantly lower than our conservative estimate of 9.00% nominal, and results in the industry cost of equity being set too low.

262 The TMR is expected to be a relatively stable parameter and should not change sharply between regulatory reviews. Nevertheless, Ofwat's proposed TMR of 8.63% nominal or 5.47% (RPI real) is over 100 bps lower than the TMR determined by the CMA in CMA15, which was 6.5% (RPI real).

263 The TMR is typically estimated using historical return data and forward-looking cross-checks. This is uncontroversial. Ofwat used a number of approaches to estimate the TMR, including

[141] Under the CAPM model, the cost of equity is calculated by multiplying the asset beta by the equity risk premium, and adding that to the RfR. The equity risk premium is the TMR less the RfR.

long-run ex post, long-run ex ante and forward looking approaches. A number of aspects of its approach were novel, and (at best) suboptimal or (at worst) unjustified when a more conventional and reliable approach could have been taken. The key elements of Ofwat's approach are that Ofwat:

- used back-cast CPI inflation for historical approaches, as opposed to RPI;
- used one single approach to averaging historical ex post data – the Jacquier, Kane and Marcus[142] (**JKM**) unbiased estimator, using 5-10 year holding periods; and
- for long-run ex ante or forward looking approaches, applied no uplift to the geometric average for the 'Bias Adjustment'.

264 Ofwat used this methodology to derive a range of estimates, and then selected a point estimate in the middle of the range. This resulted in a point estimate of 5.47% (RPI real), or 8.63% in nominal terms.

265 We instructed KPMG, in conjunction with Professor Alan Gregory (Emeritus Professor of Finance at the University of Exeter Business School), to review Ofwat's approach to estimating TMR. They identified four significant issues with Ofwat's approach which show that Ofwat's range of estimates and point estimate are too low.[143]

266 First, KPMG and Professor Gregory concluded that Ofwat should have relied on the historical RPI series as the most robust approach to deflating historical returns.[144] Instead, Ofwat have relied on the historical back-cast CPI series which serves to materially understate the TMR given the lower value from CPI compared to RPI. Further, the use of the back-cast CPI series is unreliable because:

- While the methodology and index construction for the CPI series have remained broadly consistent through time, the coverage of goods and services has changed over time. Ofwat does not acknowledge this and instead argues that the BoE's CPI series is more consistent over time. Further, even if one considers that the CPI index is more consistent through time than RPI, it has only existed since 1988, prior to which back-cast estimates have to be relied upon, which the ONS themselves caution against using. This is an error.
- Ofwat's argument that the use of CPI is reasonable because RPI was not available prior to 1947 is erroneous. CPI is only available since 1988, so as KPMG point out, it is unclear why Ofwat considers RPI only being available since 1947 is a rationale for use of CPI over RPI.
- Finally, it is also unclear why Ofwat considers stating that the CED is more robust than the COLI validates the use of CPI over RPI. As KPMG argue, the CED inflation series could in principle be used as a proxy for RPI or CPI.

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142 Jacquier, Kane and Marcus (2005) 'Optimal estimation of the risk premium for the long run and asset allocation: A case of compounded estimation risk' (http://people.bu.edu/jacquier/papers/longt.jfec05.pdf).

143 KPMG Cost of Equity Report, section 4.2.

144 KPMG Cost of Equity Report, paragraph 4.2.3, 4.2.4.

267 Changing from RPI to the back-cast CPI series materially lowers TMR by over 100 basis points when the nominal TMR has not significantly changed. Ofwat has not advanced any justification for using a CPI series despite these limitations, the impact on TMR, and this approach breaking with regulatory precedent.[145]

268 The second issue with Ofwat's approach to TMR is that Ofwat has selectively used a single averaging approach when averaging historical returns, which is inconsistent with precedent from the CC and CMA, which has previously used a range of averaging techniques.[146] The JKM estimator selected by Ofwat produces the lowest TMR estimate. Ofwat's selection is therefore biased towards an artificially low range.

269 Third, Ofwat has not applied any uplift for the inherent geometric averaging in dividend discount models, which is inconsistent with market evidence supporting the need for a Bias Adjustment and regulatory precedent.[147] This is a clear error.

270 Fourth, KPMG's view is that the most robust approach to estimating TMR is to use long-run ex post average of historical returns, as alternative approaches are unstable and involve the use of judgement in their application. They note that this is consistent with the approach Wright et al[148] proposed to the UKRN and regulatory precedent to date.[149] Ofwat has departed from this approach and instead presented its estimate as a mid-point selected from the range of options to calculate expected returns, thereby suggesting that the alternative approaches are equally valid. KPMG maintain that this is not the case, and that Ofwat should have placed greater weight on long-run ex post approaches, using long-run ex ante returns only as a cross check.

271 KPMG's TMR calculations are set out below. KPMG have used the historical back-cast series[150] and applied them consistently with the RPI series for holding periods that align with Ofwat's investment horizon. The results in Table B8 show that the TMR is broadly unchanged relative to the CC's view in the *NIE determination* when the COLI/RPI series is considered. There is an impact of around 25 to 35 bps when CED/RPI is considered.

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145 Prior to PR19, Ofwat and the CMA used historical RPI series.

146 See CC (2014), 'Northern Ireland Electricity Limited price determination, Final determination' (the ***NIE determination***), paragraph 13.146 (https://assets.publishing.service.gov.uk/media/535a5768ed915d0fdb000003/NIE_Final_determination.pdf); and CMA15, paragraphs 10.184 and 10.185.

147 See *NIE determination*, Appendix 13.2, paragraph 8, and KPMG Cost of Equity Report, paragraphs 6.2.15 to 6.2.21.

148 Wright, S. et al (2018) 'Estimating the cost of capital for implementation of price controls by UK Regulators' (**Wright et al**) (http://www.bbk.ac.uk/ems/faculty/wright/wrightburnsmasonpickford2018.pdf).

149 KPMG Cost of Equity Report, paragraph 4.1. KPMG notes that this approach was adopted by the CC in the *NIE determination* and closely followed by UK sectoral regulators up to 2019.

150 The cost of living index (**COLI**) and consumer expenditure deflator (**CED**).

Table B8 – TMR estimates from the long-run ex post data, RPI real[151]

Averaging approach	Holding period (years)	CC NIE Determination	COLI/RPI basis	CED/RPI basis
Arithmetic average	-	7.10%	6.98%	6.63%
Blume (1974) adjusted	10	6.90%	6.85%	6.50%
Blume (1974) adjusted	20	6.80%	6.69%	6.35%
JKM (2005) unbiased estimator	10	n/a	6.91%	6.57%
JKM (2005) unbiased estimator	20	n/a	6.75%	6.42%
JKM (2005) MSE estimator	10	6.60%	6.59%	6.27%
JKM (2005) MSE estimator	20	6.10%	6.11%	5.82%
Non-overlapping returns	10	6.80%	7.18%	6.77%
Non-overlapping returns	20	6.90%	7.45%	7.07%
Rolling average	10	6.40%	6.73%	6.42%
Rolling average	20	6.70%	6.78%	6.46%

272 In applying a range of averaging approaches to RPI deflated returns, and recognising that known issues exist with the weightings used in the construction of the COLI series, KPMG conclude that the weight of evidence supports a TMR of 6.25% (real RPI). This is equivalent to 9.44% in nominal terms,[152] i.e. c.80 bps higher than Ofwat set the TMR in the FD.

273 We have also considered evidence from the Economic Insight Report.[153] Economic Insight consider that Ofwat's TMR is understated primarily for three reasons.

274 First, Economic Insight argue that Ofwat's approach to assessing realised historical returns is selective in that it assumes 'one right' inflation measure to derive real returns, as well as a single approach to averaging returns (JKM) to the exclusion of other methods (such as Blume).[154] Economic Insight's expert view is that an 'uncertainty range' should be used, which would better reflect the wider evidence, including the range of inflation options available for consideration and alternative averaging techniques. On its calculations, Economic Insight consider the appropriate range for the TMR to be 5.49–7.07% (RPI real), i.e. 2 to 160 bps higher than Ofwat.

275 Second, Economic Insight conclude that Ofwat's ex ante method is weak and has little merit:[155]

151 KPMG Cost of Equity Report, Appendix 1.
152 The calculation assumes 3% RPI inflation applied through the Fisher equation.
153 Economic Insight Report, section 2.
154 Economic Insight Report, page 9.
155 Economic Insight Report, section 2.1.3.

- Ofwat has adjusted historical averages to strip out what it considers to be non-repeated events but Ofwat has not explained its approach in doing this, including how such events were identified and weighted.

- Ofwat's claims of historical outperformance (and the subsequent adjustments made by Ofwat) are unconvincing. Economic Insight were not able to identify any evidence of significant, systematic and persistent outperformance.

- Ofwat has adopted the Fama-French dividend growth model when estimating TMR from the average dividend yields and dividend growth rates over 1900-2018 but does not appear to have applied a volatility adjustment.

276 Economic Insight's third reason is that Ofwat has not put forward a balanced presentation of the evidence on forward looking evidence (using a dividend discount model). A balanced presentation of the evidence indicates a 'high' estimate that lies beyond Ofwat's range. Specifically, Economic Insight observe that in the DD Ofwat presented a range for each of its consultants' dividend discount model estimates based on spot and 5-year average evidence. However, in the FD, Ofwat simply selected the lower end of the updated range. Economic Insight point out that once the full updated evidence is assessed, based on spot and 5-year average, the TMR range lies between 5.04% and 6.99% in RPI terms with a mid-point of 6.01%, i.e. 54 bps higher than Ofwat.

277 Taking the KPMG and Economic Insight evidence together, it is clear that the TMR should be set higher than Ofwat's estimate of 8.63%. KPMG's point estimate lies above 9.44% in nominal terms, and Economic Insight's average of the range similarly lies around 9.5%. Ofwat's consultants, PwC and Europe Economics, also point to using a higher TMR. PwC identified a proposed TMR of 9% (nominal)[156] and Europe Economics identified a range of 8.12% to 9.14% (nominal), whilst noting "*the most recent data suggesting that these figures could rise*".[157]

Requested remedy

278 A more robust approach to TMR would take account of the broader set of evidence, including the alternative ways of calculating the TMR. This would consider (i) a range of inflation options and averaging techniques and (ii) a range of evidence on TMR from cross-checks such as dividend discount model estimates.

279 In our view, correcting for these issues leads to a conservative TMR estimate of 9% for 2020-2025. This is at the lower end of the range proposed by Economic Insight, and below that of KPMG.

280 We note that a TMR of 9% is the low end of the range provided by Ofwat's consultants, PwC, who estimated the TMR based on a dividend discount model to sit in the range of 9% (5-year average) to 10.2% spot evidence. This is summarised in Table B9.

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156 PwC (2019), 'Updated dividend discount model analysis for PR19: A note prepared for Ofwat' (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PwC-%E2%80%93Dividend-discount-model-analysis-for-PR19-October-2019.pdf).

157 Europe Economics (2019), 'The Allowed Return on Capital for the Water Sector at PR19 – Final Advice', pages 22 to 23 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/Europe-Economics-%E2%80%93-The-Allowed-Return-on-Capital-for-the-Water-Sector-at-PR19-%E2%80%93-Final-Advice-December-2019.pdf).

Table B9 - TMR returns based on PwC dividend discount model[158]

Dividend Discount Model - FTSE All-Share		
Measure	**Spot Return**	**5 year average**
Original Estimate Balance of Incentives (Dec-16)	8.30%	8.80%
October 2017 update (as at 31/10/2017)	8.40%	8.70%
October 2018 update	10.10%	8.80%
Feb 2019 update (as at 29/02/2019)	10.40%	8.90%
Feb 2019 DDM range	8.9% to 10.4%	
Sep 2019 update (as at 30/09/2019)	10.20%	9.00%
Sep 2019 DDM range	9.0% to 10.2%	

8.2 Cost of equity – Risk free rate

The issue

281 The RfR is the required return on an asset that has no risk of financial loss. The RfR is the starting point for calculating the cost of equity and is typically approximated as the yield on government debt given the low risk nature of that debt.

282 In the FD, Ofwat used a real RfR of 0.58% in nominal terms. Ofwat's methodology at PR19 relied on short-term market data from index-linked gilts in the UK to derive the RfR:

- First, Ofwat took the view that index-linked gilts are the most appropriate proxy. Ofwat decided not to use other available UK instruments because it considers that the yield on nominal gilts is distorted upwards due to inflation premia.[159]
- Second, Ofwat measured the spot yield at a particular point in time on index-linked gilts with a 15 year maturity. This was taken to be the yield average over the month of September 2019.
- Third, Ofwat applied an uplift to the spot yields to take account of the market's expectations of yield increases on 15 year gilts, over the control period. This was also calculated based on yield curve data over the period September 2019.

158 Table replicated from PwC, Updated dividend discount model analysis for PR19: A note prepared for Ofwat, October 2019. Data sources: PwC analysis, Capital IQ, Refinitiv, Consensus Economics, Bank of England.

159 PR19 Final Methodology, 'Delivering Water 2020: Our methodology for the 2019 price review Appendix 12: Aligning risk and return', page 32 (https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-12-Risk-and-return-CLEAN-12.12.2017-002.pdf).

283 An RfR of 0.58% is not supported by the market evidence. A more thorough, but still conservative, approach to estimating RfR supports an RfR of 1%. This still places more weight on current market evidence, based on a pragmatic assumption that the current circumstances that result in lower gilt rates may not revert in the short-run as the body of the evidence suggests they will.

284 The deficiencies in Ofwat's approach to the RfR are detailed in KPMG's Cost of Capital Report. KPMG have identified three principal problems with Ofwat's approach.

285 First, Ofwat's reliance on very short-term data over a specific month is inconsistent with regulatory precedent, including the CMA's approach in CMA15.[160] In other determinations, regulators have adopted a 'through the cycle' estimate of the RfR to smooth out spot market volatility and recognise the long term nature of the sector.[161]

286 The second problem KPMG identified is that Ofwat has relied on short-term (one month) market evidence where rates were volatile and in disequilibrium. This is evident from the significant change in Ofwat's estimate of the RfR between the DD (1.54%) and the FD (0.58%). KPMG note that, due to the current volatility in capital markets, there is risk that if the allowed cost of equity is based on a particular narrow point in time (September 2019), it will be below the market cost of equity over the price control period, even though the rate includes forward rate adjustments. For that reason KPMG suggest the use of long-term equilibrium rates, and setting the rate based on a 'glide path' to the long-run equilibrium rate. KPMG cite Bank of England evidence of 0.5% in real CPI terms as the long-run equilibrium rate for the UK economy. This is equivalent to c.2.5% in nominal terms.

287 A third problem is that Ofwat has relied on a single source of data, index-linked debt. KPMG consider that wider evidence including nominal gilts should be used. This is because index-linked gilts are distorted due to regulatory requirements on institutional investors to hold index-linked debt, which creates artificially inelastic demand for these assets. Alternatives such as interbank rates should be considered as these are the preferred benchmark by the Bank of England.

288 Based on an assumed glide path from today's market rates to an equilibrium RfR, and therefore incorporating both current and forward looking evidence, KPMG conclude the appropriate RfR range is c.-1.5% to -0.8% real RPI for use in the allowed cost of equity.[162] KPMG note that final estimates will vary depending on the weight given to forward rate estimates and equilibrium estimates of the RfR. KPMG's view is that more weight should be placed on equilibrium estimates of RfR than today's market rates. KPMG's implied range for the RfR in nominal terms is 1.46% to 2.18%,[163] considerably above Ofwat's 0.58%.

289 Economic Insight have also questioned Ofwat's decision not to use a range of sources (i.e. both nominal gilts and index-linked gilts) in determining its RfR. Economic Insight agree with Ofwat that there are concerns with relying on nominal gilts alone. However, Economic Insight point

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160 In CMA15 the CMA adopted a RfR of +1.25% (RPI, real). See also the *NIE Determination* where the CC took the same approach. In both redeterminations this was despite rates at the time being zero/negative.

161 KPMG Cost of Equity Report, section 1.3.

162 KPMG Cost of Equity Report, paragraph 4.5.30.

163 The calculation assumes 3% RPI inflation applied through the Fisher equation.

out that neither nominal gilts nor index-linked gilts alone provide a perfect measure of RfR because:[164]

- nominal gilts will embed an inflation risk premium (as Ofwat itself notes);
- index-linked gilts embed a liquidity premium; and
- index-linked gilts may be further affected by market distortions.

290 Economic Insight illustrate that Ofwat was wrong to attribute the difference between nominal and index-linked yields entirely to inflation.[165] If Ofwat's position were correct, then the nominal and index-linked approaches should yield the same results once the nominal yield is corrected for the inflation premium (which, in Ofwat's view, is around 40 basis points). On that basis, it would be irrelevant whether nominal gilts are used as a starting point adjusted for inflation premium, or real index-linked, since they should produce the same result of the 'true' RfR. However, Economic Insight show that this is not the case based on empirical data. The Economic Insight Report demonstrates that adjusting the nominal gilt yields for inflation still produces different results to the index-linked yields. Therefore, the differences are not solely due to an inflation premium.

291 Overall, Economic Insight consider that Ofwat has not appropriately considered the uncertainty in measuring the inflation risk and liquidity risk premia associated with nominal and index-linked debt respectively. Ofwat has not therefore established the extent to which differences between the real and nominal yields are due to these factors, as opposed to market distortions.

292 Economic Insight conclude that there are a range of factors that impact nominal and index linked gilts yields, all of which are difficult to quantify and subject to uncertainty, due to which it is objectively difficult in practice to decide which of the RfR measures more accurately reflects the 'true' real RfR. Economic Insight recommend that both approaches are used to measure the RfR. This approach was also supported by Ofwat's advisers, Europe Economics.[166]

293 Economic Insight consider that the evidence supports a range for the 0.72% to 1.20% in nominal terms, a range which sits well outside Ofwat's 0.58% point estimate.

The proposed remedy

294 The evidence shows that the RfR should be in the range of c.0.7% to 2% in nominal terms, depending on the extent to which there is reversion to 'long-run' data over the period. We believe a reasonable – and conservative – estimate of 1% nominal RfR should be adopted by the CMA. This lies towards the middle of Economic Insight's range, which places more weight on current market evidence.

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164 Economic Insight Report, page 18.
165 Economics Insight Report, page 19.
166 Europe Economics (2019), 'The Allowed Return on Capital for the Water Sector at PR19 – Final Advice', page 2.

8.3 Cost of equity – Asset beta

The issue

295 The asset beta reflects the systematic riskiness of equity assets of a sector, relative to the market as a whole. A higher asset beta reflects a higher level of systematic riskiness and results in a higher cost of equity.

296 In the FD, Ofwat used an estimated asset beta of 0.29, which is lower than that used in PR14 (0.30). Ofwat considered a range of beta estimates with different frequencies and time horizons to derive this figure. Whilst 0.29 is just within the plausible range estimated by our consultants, this is contrary to the expectation that the beta would increase at a time of increasing risk. Correcting Ofwat's approach and placing greater reliance on beta estimates with longer time frames results in an asset beta of 0.31.[167]

297 Ofwat's estimate of systematic risk is based on a report by Europe Economics, which reported OLS and GARCH[168] betas for Severn Trent and United Utilities for a number of period horizons (1, 2 and 5 years) and frequencies (daily, weekly and monthly frequencies).[169] This approach places too much reliance on (less reliable) shorter horizons and high frequencies, resulting in an asset beta that is too low. Beta estimates over time horizons of at least five years and with lower sampling frequencies have been shown to provide the most robust estimates for regulatory charge control purposes.[170]

298 KPMG have identified two specific concerns with Ofwat's use of time horizons. First, Ofwat's approach does not reflect the long lives of infrastructure assets. KPMG points out that the use of time horizons of 1, 2 or 5 years is inconsistent with the recommendation of Wright et al (2018) to the UKRN to use long-run time horizons of 10 years or more.[171]

299 Second, KPMG note that short frequencies, such as 2-year betas, should not be used to estimate the beta as these are conditional beta estimates that reflect current market conditions which might not persist in the long-run. These estimates are therefore less suitable for use in regulatory determinations. Wright et al support this approach, stating:[172]

> *"Crucially, there is strong historical evidence that short-term shifts in volatility and correlations do not persist indefinitely. As a result, Robertson and Wright conclude that the most recent rolling beta estimates are very likely to prove temporary."*

300 KPMG also caution against the use of daily sampling frequencies. These betas are less robust than monthly estimates because there is a trade-off between observation frequency and statistical accuracy. Whilst there are clearly more daily observations than monthly observations, which reduces the standard error of the estimates, daily observations are more

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167 Prior to reflecting the effect of the debt beta – see section 8.4.

168 OLS (Ordinary Least Squares) and GARCH (Generalised Autoregressive Conditional Heteroskedasticity) are estimators used to derive econometric estimates of beta.

169 DD, 'Cost of capital technical annex', page 55.

170 For example, see Gregory A., Hua S., and Tharyan, R. (2018) 'In search of beta', *The British Accounting Review,* 50(4): pages 425 to 441.

171 KPMG Cost of Equity Report, paragraph 3.3.2, and Wright el al, page 7.

172 Wright et al, page 52.

likely to be affected by 'noise' due, in part, to an information lag in asset returns. This 'noise' is reduced in monthly observations.[173]

301 Europe Economics acknowledge this concern in their final report to Ofwat, where they state:[174]

> *"A potential shortcoming associated with the use of high frequency data arises from the possibility that market-wide information is reflected into stock prices with some delay."*

302 Therefore, KPMG conclude that beta estimates which rely on higher frequency data, such as daily betas, as well as shorter time horizons, such as 2 year betas, are less robust. More weight should be placed on monthly (low frequency) betas over longer periods (5-year betas).

303 KPMG also note that the statistical instability of the equity beta estimates should be addressed by making Vasicek statistical adjustments.[175]

304 Having made these corrections to Ofwat's approach, KPMG conclude that the appropriate range for the raw equity betas lies in the range of 0.66 to 0.72, which translates to a range for unlevered beta of between 0.30 and 0.33 (prior to adjusting for any debt beta), i.e. above Ofwat's 0.29.

305 Economic Insight have also considered Ofwat's approach to calculating the asset beta. Whilst Economic Insight concluded that Ofwat's beta estimate was a plausible interpretation of its own evidence, it took a similar approach to KPMG and noted that:[176]

> *"…we continue to think that it may be appropriate to place most weight on the five-year daily GARCH unlevered beta value of 0.31."*

306 Economic Insight therefore suggest an overall unlevered beta range of 0.29 to 0.31 on a (prior to adjusting for any debt beta).

The proposed remedy

307 An appropriate interpretation of the evidence would be to estimate an asset beta of 0.31 (prior to adjusting for any debt beta). The estimate is towards the lower end of the plausible range proposed by KPMG of 0.30-0.33, and is consistent with the GARCH five-year unlevered value considered to be most appropriate by Economic Insight.

8.4 Cost of equity – Debt beta

The issue

308 The debt beta reflects the systematic riskiness of debt securities, relative to the market as a whole. Debt beta influences the overall equity beta because it impacts the size of the gearing adjustment from the asset beta to the equity beta.

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173 KPMG Cost of Equity Report, paragraphs 4.6.15.

174 Europe Economics (2019), 'The Allowed Return on Capital for the Water Sector at PR19 – Final Advice', page 32.

175 See Vasicek, O.A. (1973) 'A note on using cross-sectional information in Bayesian estimation of security betas', *The Journal of Finance,* 28(5): pages 1,233 to 1,239.

176 Economic Insight Report, page 30.

309 In the FD, Ofwat used a debt beta of 0.125. This is considerably higher than the debt beta in PR14, which was 0. This increase in the debt beta is counterintuitive given that there have been no defaults in the water sector since privatisation, and is based on superficial and flawed analysis. A debt beta of 0.1 is more appropriate and in line with regulatory precedent.

310 Ofwat's estimation of the debt beta is based on analysis by PwC and Europe Economics.[177] Ofwat picked a point estimate of the debt beta towards the lower ends of the ranges proposed by PwC and Europe Economics. Ofwat acknowledged that there were uncertainties in its derivation method and that the academic literature supported adjustments to the debt premia that would reduce the debt beta.[178]

311 Even though Ofwat has picked a point estimate towards the lower end of its range, Economic Insight consider that the approach underpinning the ranges by Ofwat is not robust for two reasons.

312 First, whilst Economic Insight consider that Europe Economics' decomposition method to estimating the cost of debt is reasonable, the application of the decomposition method is flawed as Europe Economics have taken a superficial approach to selecting key input parameters. For example, they used a crude rule of thumb and assumed a 20% loss given default, which they describe as a "*typical cost of bankruptcy*".[179]

313 Second, Ofwat should not only have relied on the decomposition method, which is an indirect method of calculating the debt beta. In their report, Economic Insight consider that Ofwat's view that the decomposition method is inherently more accurate than direct methods is overstated. Relying on direct methods, as well as a corrected decomposition method, would derive a lower debt beta. Economic Insight refer specifically to the 'direct' econometric estimates of the debt beta put forward by Professor Zalewska in relation to the NATS price redetermination currently before the CMA, which support a debt beta of 0.1.[180]

314 In addition to these concerns, Economic Insight also show that Ofwat's estimate of 0.125 is the highest debt beta (excluding an indicative range given by Ofgem for RIIO-2 of 0.10 to 0.15) across a number of regulatory determinations since 2012. A summary of relevant regulatory precedents is set out in Table B10.

177 FD, 'Allowed return on capital technical appendix', page 67.
178 FD, 'Allowed return on capital technical appendix', pages 68 to 69. See also Economic Insight Report, paragraph 30.
179 Economic Insight Report, page 31.
180 Economic Insight Report, page 31.

Table B10 - Regulatory precedent of debt beta levels[181]

Regulator/ determinations	Debt beta	Method(s)
Ofwat PR09 FDs (2009)	0.00	No assumption
Ofgem RIIO determinations (2012)	0.00	No assumption
CAA Heathrow Q6 (2013)	0.10	Appears to be an assumption
Ofcom FA market review (2013)	0.10	Precedent + Informed by ranges in academic literature by investment grade
Ofcom MCT market review (2014)	0.10	Precedent + Informed by ranges in academic literature by investment grade
CAA RP2 (2014)	0.10	Assumptions (based on limited CC precedent)
Ofwat PR14 FDs (2014)	0.00	No assumption
Ofcom BC market review (2016)	0.10	Precedent + Informed by ranges in academic literature by investment grade
Ofcom wholesale local access review (2017)	0.10	Precedent + Informed by ranges in academic literature by investment grade
Ofgem RIIO-2 methodology (2019)	0.10-0.15 (indicative range)	Primarily based on reviews of more recent precedent (e.g. recent Ofwat/ CAA positions)
Ofwat PR19 FDs (2019)	0.125	De-compositional (Indirect) only

315 The meridian value of these precedents is 0.1.

316 KPMG note that the WACC is not sensitive to this parameter and therefore adopt a point estimate of 0.1 in line with regulatory precedent.[182]

The proposed remedy

317 We believe an appropriate debt beta is 0.1. This is supported by Economic Insight's and KPMG's analysis and is consistent with regulatory precedent.

318 Assuming a debt beta of 0.1 results in an adjusted asset beta of 0.36.

8.5 Cost of debt

319 In setting the allowed cost of debt, Ofwat considered the cost of embedded and new debt, plus issuance costs for a notional company.

181 Economic Insight Report, page 45.
182 KPMG Cost of Equity Report, paragraph 4.8.5.

320 We do not propose any adjustments to Ofwat's approach for setting the industry cost of embedded debt. There are company-specific factors that apply to small water only companies, such as Bristol Water, but these are reflected in Bristol Water's comments on the CSA.

321 We also do not propose any adjustments to Ofwat's determination on issuance costs for a notional company.

The issue

322 Changes must, however, be made to the cost of new debt to reflect issues raised above.

323 The cost of new debt is based on the risk free rate, plus an adjustment for credit risk. Ofwat used a RfR of 0.58% in nominal terms in the FD. However, a more thorough, but conservative, approach to estimating RfR supports an RfR of 1%, i.e. 42 bps higher.

324 In the FD, Ofwat determined that the cost of new debt was 2.54%. This must be adjusted to take account of the RfR. Using a RfR of 1% implies a revised industry cost of new debt of 3%.

325 Additionally, the cost of debt should be corrected to reflect the appropriate ratio of embedded debt to new debt. In the FD, Ofwat assumed a ratio of embedded debt to new debt should be 80:20. However, our ratio of embedded debt to new debt should be 95:5.

The proposed remedy

326 In the FD, Ofwat set the allowed cost of debt by reference to:

- a cost of embedded debt of 4.47%;
- a cost of new debt of 2.54%;
- issuance costs of 10%; and
- a ratio of 80% embedded debt to 20% new debt.

327 Putting aside the application of a company-specific allowance by way of a CSA, we have identified two parameters that should be reconsidered in the redetermination. First, the cost of new debt should be adjusted to 3% to reflect a higher RfR. Second, the ratio of new to embedded debt should be 5% to 95% for small companies like Bristol Water.

328 Taking account of these changes would result in a revised industry cost of debt of 4.28% (based on 80:20 weighting of embedded to new debt for the industry), rather than the 4.18% used by Ofwat in the FD. Additionally, reflecting an appropriate ratio of embedded to new debt of 95:5 for a small company, and a CSA adjustment, results in a cost of debt for a small company like Bristol Water of 4.87%.

Section C: Cost allowance errors

9. Introduction

329 Ofwat has recognised that we went to significant lengths to present a business plan for AMP7 that included challenging efficiency targets.[183] These targets were set at c.10% below our historical costs over the last 5 years. We continually challenge ourselves on efficiency and developed our transformation process in parallel to our PR19 plan,[184] identifying £80 million of cost efficiencies to be achieved by 2025.[185]

330 In developing our plan, we considered a wide range of top-down modelling approaches developed by Oxera and NERA. These models show us to be close to, or in a number of cases more efficient than, the upper quartile level of efficiency in the sector. We also considered our needs and efficiency bottom-up. In developing our bottom-up assessment, we received support from ChandlerKBS, and review by Atkins. Our bottom-up approach led us to adopting a cost position towards the lower end of the range implied from the top-down modelling (i.e. it was more stretching).

331 Since we submitted our business plan, we asked NERA to update its PR19 models using the two years of additional data that are now available. This analysis showed us to be more efficient than the upper quartile benchmark in 2017/18. In 2018/19, our costs slightly increased due to additional leakage activity, and some one-off costs. This resulted in NERA's modelling for 2018/19 suggesting that there might be scope for cost reduction in the range of 3% to 8% relative to the industry upper quartile. However, as these cost reduction estimates are from a higher cost base, the total predicted cost requirement for 2020-2025 remains slightly above our proposed cost position.

332 Table C1 shows the forecast base wholesale expenditure requirement for 2020-2025 for the range of approaches we have considered.[186] This is before any assumptions for frontier shift are applied.

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183 See, for example, Ofwat (2020), 'Reference of the PR19 final determinations: Explanation of our final determination for Bristol Water', which states: "*…we acknowledge that the company challenged its own costs considerably throughout the price review process, including submitting business plan costs that are lower than the costs incurred historically*" (paragraph 2.21). This is also reflected in the transcript of Ofwat's third 'teach in' session for the CMA held on 25 February 2020, which states: "*We consider that the company has challenged itself significantly on costs during this current price review*" (page 38).

184 See Annex 6: 'Our story' for details.

185 See Annex 7: 'Our efficient plan' for details.

186 Ofwat applies its efficiency assessment to modelled costs, then makes additions for unmodelled costs, cost adjustment claims, a growth adjustment, and the implicit allowance relating to enhancement opex. We have used our view for these additions when comparing the various modelled approaches to the Ofwat position.

Table C1: Forecast base wholesale expenditure requirement 2020-2025

Approach used	2020-2025 base, £m (pre-frontier shift)	Difference to BW plan, £m	Difference to BW plan, %
NERA's PR19 models (2020) – high end of the range	482	+69	17%
Oxera's PR19 industry models – high end of the range	479	+65	16%
Oxera reproduction of PR14 models – high end of the range	475	+61	15%
Oxera's PR19 industry models – low end of the range	448	+35	8%
NERA's PR19 models (2020) – low end of the range	446	+32	8%
NERA's replication of Ofwat's consultation documents	441	+27	6%
Oxera reproduction of CMA models – high end of the range	441	+27	6%
Oxera reproduction of PR14 models – low end of the range	429	+15	4%
Oxera reproduction of CMA models – low end of the range	429	+15	4%
NERA's PR19 models (2018)	429	+15	4%
BW position (pre-frontier shift)	**414**	**-**	**-**
Ofwat FD (pre-frontier shift - median benchmark)	408	-6	-1%
Ofwat FD (pre-frontier shift)	**390**	**-24**	**-6%**

333 In support of this analysis we provide the NERA Report and the KPMG Cost Model Report.

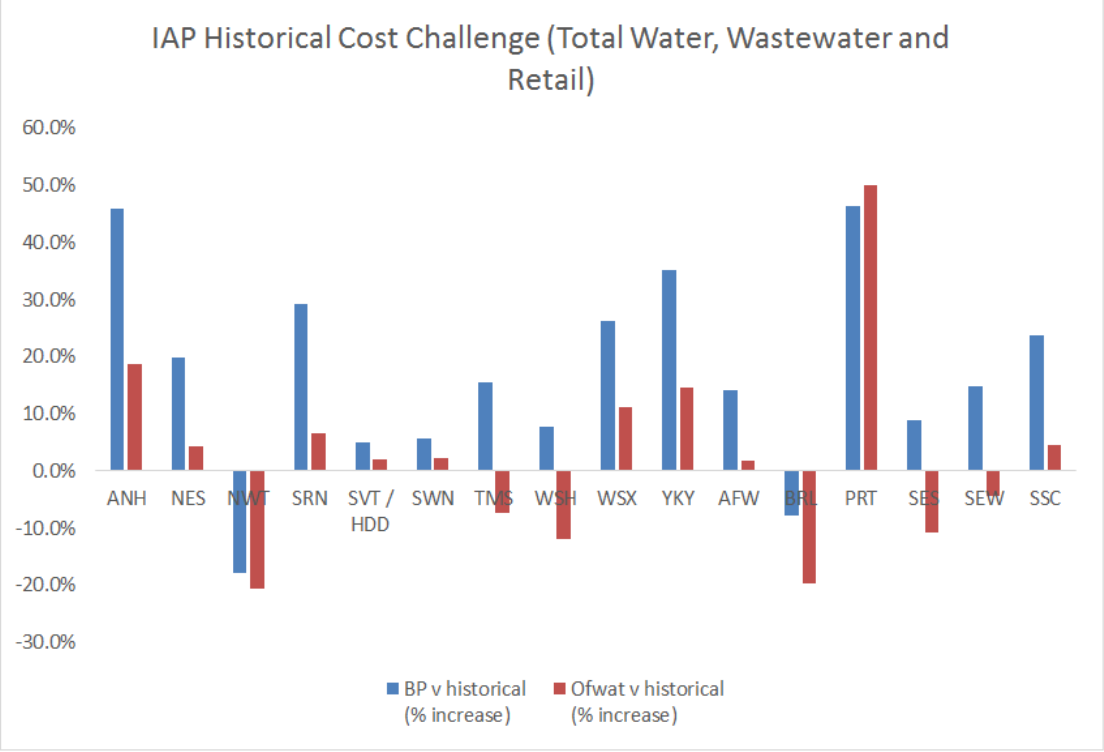
334 The CMA15 precedent suggests that it is important to consider a wide range of top-down model and bottom-up evidence when considering what challenge to apply.

335 As can be seen from Table C1, Ofwat's allowance lies significantly below the level implied by the range of other modelling approaches considered.[187] Indeed, some of the alternative approaches we considered suggest a significantly higher level of required efficient costs for 2020-2025 than our final position.

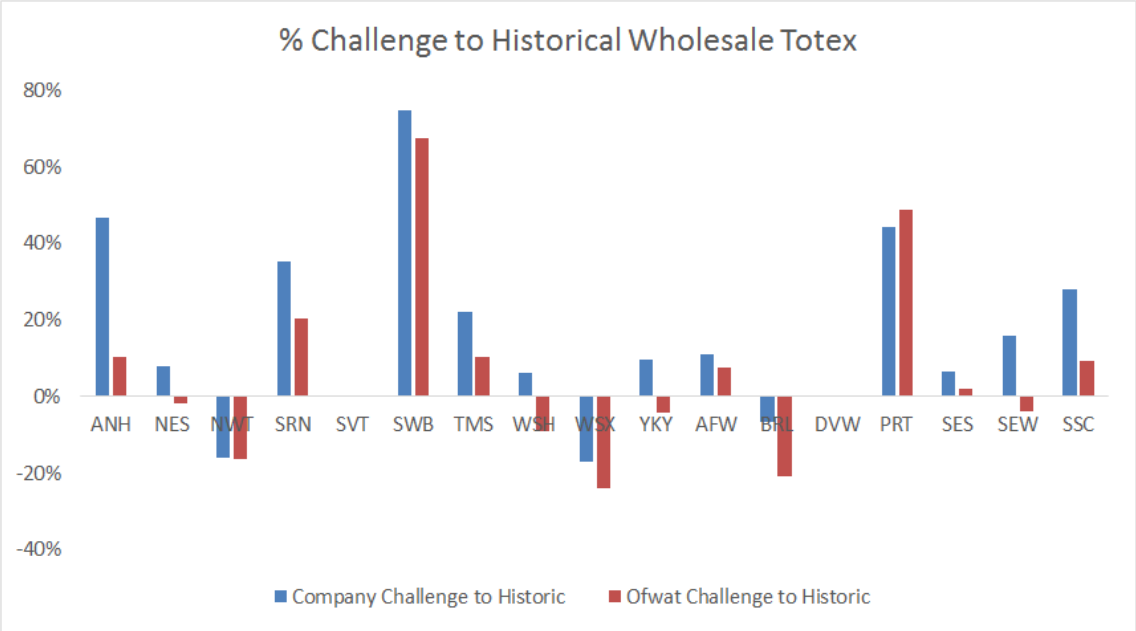
[187] Table C1 shows a total gap between our plan and Ofwat's position of £24m. The total cost gap between Ofwat's FD and our position is £30m. This is the £24m + £5 due to differences in frontier shift and real price effects + £1m due to Ofwat's challenge to our enhancement costs and the increase in licence fee.

336 The wholesale totex cost challenge we included in our plan meant we were one of the few companies to propose totex costs lower than historic in our original business plan. The strength of the efficiency challenge should therefore be seen in that context. On wholesale base totex, we have spent in line with the efficient cost the CMA found in CMA15, including for opex, but with increased base maintenance and reduced enhancement. In this context, it is important to consider whether the strength of the efficiency challenge where costs are below historic levels is reasonable to deliver, and whether there are errors or comparative issues with the econometric models that contribute to this.

Graph C1: IAP Historical Cost Challenge (Total Water, Wastewater and Retail)



Graph C2: % Challenge to Historical Wholesale Totex



337 In the round, we consider that the balance of evidence suggests that our plan is extremely ambitious, particularly given the service level improvements being targeted, and that Ofwat's cost allowance then goes further and beyond what can credibly be achieved by an efficient company. Each of Ofwat's individual errors relates to either the strength of benchmarking, differences in service levels, or specific cost challenges (and in some cases these issues overlap).

338 Ofwat's interventions for Bristol Water were vitiated by numerous errors in relation to econometric benchmarking, productivity improvements, and specific cost items, namely:

- the **service level error**;
- the **leakage error**;
- the **benchmark error**;
- the **frontier shift error**;
- the **input price error**;
- the **growth and developer services error**;
- the **CRT error**;
- the **enhancement opex error**;
- the **enhancement efficiency error**; and
- the **licence fee error**.

339 Adjustments are requested to correct these errors and meet the resulting **c.£30 million shortfall** between our business plan and the FD.

340 We address each of Ofwat's errors in setting our cost allowances in turn, and identify the remedy we propose. Our arguments are supported by:

- NERA's Report on 'Ofwat's Approach to Wholesale Cost Assessment in the PR19 Final Determination' (13 March 2020) (**NERA Report**); and
- KPMG's 'Cost model review' report (**KPMG Cost Model Report**).

10. Service level error

10.1 The issue

341 Ofwat has failed to control for the fact that companies are operating at different levels of service when setting its base cost allowance. As a result it has understated our efficient true costs by approximately £14 million-£15 million, equivalent to nearly half of the shortfall between our business plan and the FD.

342 We are a comparatively strong performing company across a wide range of service measures. We built our plan bottom-up to achieve the levels of service our customers told us that they want.

343 We did not request any enhancement allowance for service improvements, consistent with the following Ofwat guidance in its PR19 methodology:[188]

> "*We have a separate test for cost efficiency, which challenges companies to have efficient levels of cost, and we do not allow companies a higher cost allowance for a more stretching performance commitment. Indeed, doing so, would undermine the benefit of more stretching performance commitments for customers. Companies need to make their case separately for additional costs.*"

344 We expected our high levels of service to be reflected in the judgements Ofwat make in applying the base cost models. However, Ofwat did not comment in the FD on the approach we suggested to adjust for service levels delivered as part of base, rather than through enhancement, expenditure.

345 When setting its base cost models, Ofwat did not control for differences in service levels across companies or changes in service levels over time.

346 As a result, Ofwat understated our true efficient costs, giving rise to a material deficit in our cost allowances.

347 We consider Ofwat's approach to be unjustified for three reasons.

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188 PR19 Final Methodology, 'Delivering Water 2020: Our methodology for the 2019 price review Appendix 2: Delivering outcomes for customers', page 44 (https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-2-Outcomes-FM-final.pdf).

(1) Ofwat's failure to make adjustments led to our efficient costs being understated

348 Ofwat's failure to adjust the base cost models to take account of differences in service levels across companies and changes over time, meant it could not draw meaningful comparisons between companies, and resulted in it understating our efficient base costs.

349 We are well beyond Ofwat's efficiency benchmarks on lead and metering enhancement costs across the industry, as illustrated in Table C2.

Table C2 – Lead and metering costs[189]

	Modelled Costs, £m	Bristol Water Totex costs, £m	Forward looking efficiency score	Industry Median	Industry Upper Quartile
Lead Standards	1.313	0.325	0.25	0.95	0.66
Metering	11.795	9.934	0.8	1.03	0.8

350 Despite this, our relative strength is not reflected in our base cost allowance. In the way we developed our plan, high levels of service delivered by base service led to a very efficient cost of delivering enhancements.

351 In addition, on water quality measures, we are a high performing company and do not require enhancement expenditure, as we are already delivering a high level of service to our customers. We are above the upper quartile for three measures relating to water quality, as shown in Figures C1 – C3, which are derived from calculations from DWI Annual Reports:[190]

189 Taken from data included in Ofwat (2019) 'Supply demand balance enhancement feeder model'.

190 (http://www.dwi.gov.uk/about/annual-report/).

Figure C1 – Comparison of compliance risk index performance (lower is better performance)

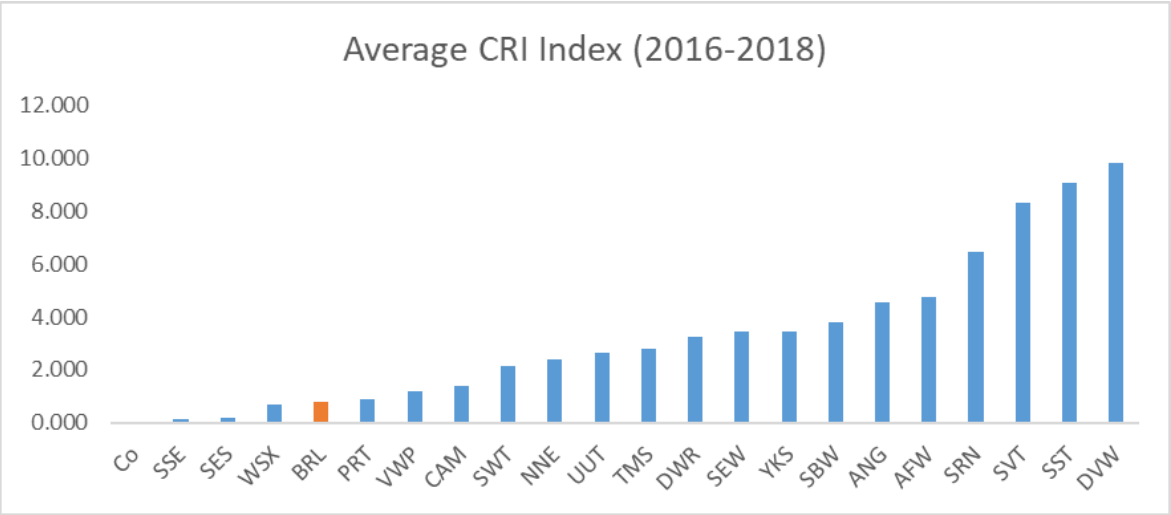


Figure C2 – Comparison of event risk index performance (lower is better performance)

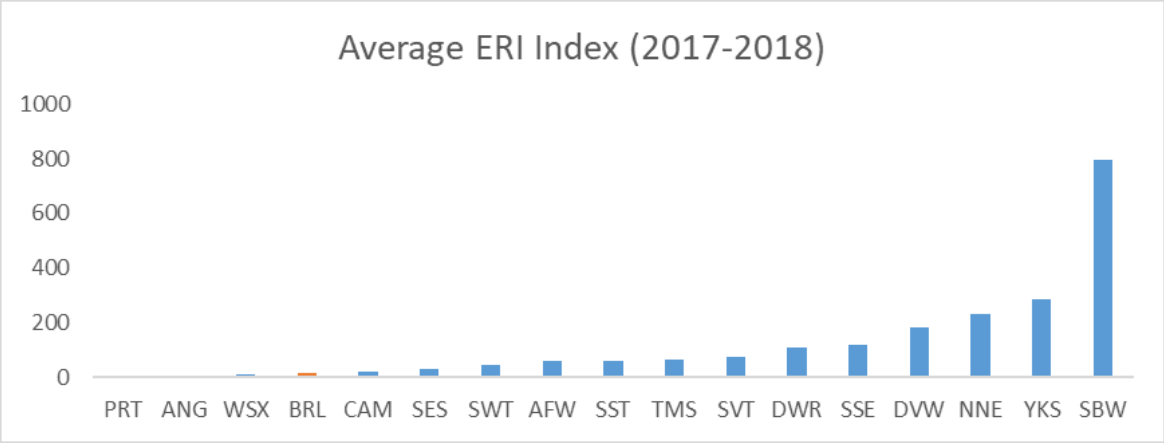
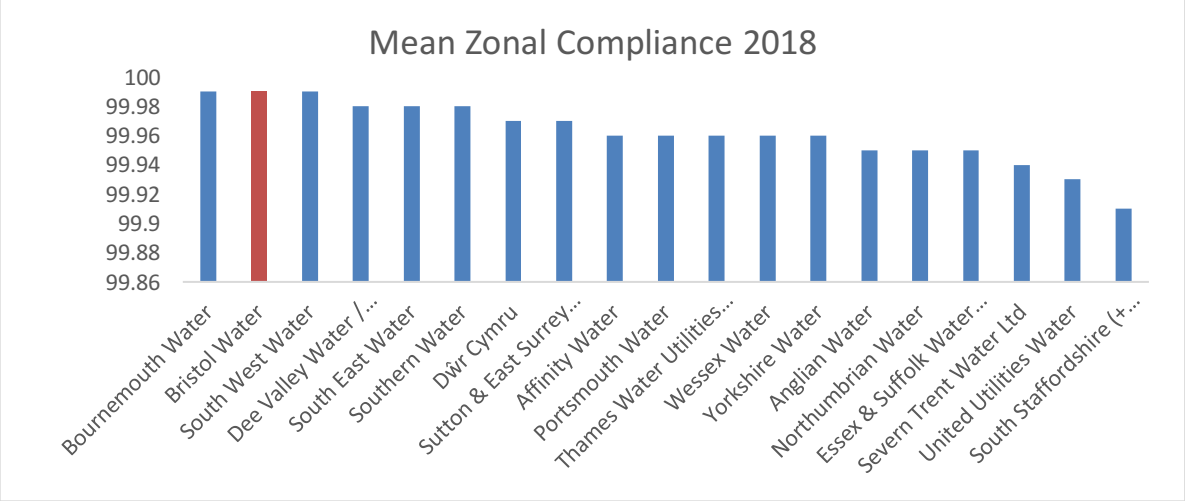


Figure C3 – Comparison of mean zonal compliance performance (higher is better performance)



352 If Ofwat had made the necessary adjustments in its base cost models to take into account service levels, a stronger position on efficiency as compared with other companies would have been revealed.

(2) Ofwat was on notice of companies' concerns but failed to make sufficient adjustments

353 The inadequacy of Ofwat's base cost models because of the lack of a structural link between performance and costs was raised repeatedly by companies during PR19. We summarise some of these comments in Table C3.

Table C3 – Other companies raising the issue of the cost-service relationship

Company	Quote	Reference
Anglian	"We find that the overall effect of the Draft Determination is to create a substantial increase in the level of risk, combined with a substantial reduction in the potential for companies to deliver good service and earn returns. This is driven in particular by a combination of: …. the lack of recognition of any relationship between the quality of service provided and the costs required to achieve that service"	Anglian Water (2019) 'PR19 draft determination representation', page 5.
South East	"The current approach across the whole Draft Determination on leakage has the following attributes: …It fails to recognise performance within the cost models;"	South East Water (2019) 'Draft Determination Response Executive Summary', page 20.
Thames	"The analysis suggests that where Ofwat has made use of comparison-based targets Ofwat's approach may not sufficiently recognise the relationship between costs and performance, and it appears to have cherry-picked a suite of targets which do not reflect the performance of any actual company."	Thames Water (2019) 'Thames Water Response to Ofwat's PR19 Draft Determination', page 25.
Welsh	"Whilst we accept that companies should always be striving to improve performance levels, we do not believe that the proposed "step change" in performance levels for some measures can be achieved without some specific funding allowance for enabling investments"	Welsh Water (2019) 'Board response to the draft determination', page 6.
Wessex	"Ofwat's regulatory framework is intended to reward and encourage efficiency and innovation. This policy intention is undermined by the way in which the draft determination cost assessment has responded to companies' proposals for the enhancement expenditure associated with delivering increases in service quality."	Wessex Water (2019) 'A summary of our response to Ofwat's draft determination for PR19', page 27.
Yorkshire	"Ofwat has set an overall efficiency challenge, reducing allowed costs and increasing the targets on performance commitments, beyond what a notionally efficient firm is capable of delivering as Ofwat has ignored the trade-offs between costs and performance."	Yorkshire Water (2019) 'Executive summary – Yorkshire Water Draft Determination Representation', page 4.

354 Ofwat's response in the FD was that it considered "*that the overall challenge across costs, outcomes and the allowed return on capital is stretching but achievable*".[191] Ofwat did not address the specific points that companies raised, other than in this general statement.

355 Neither did Ofwat make any comment in our company specific feedback on the evidence we provided on this point.

356 We consider that Ofwat ought to have responded and made adjustments in the base models to correct for this issue given the strength of the concerns raised.

(3) Ofwat's error has given rise to a material shortfall in our base cost allowance

357 To assess the materiality of this error, we have conducted our own modelling (which we have cross-checked using a range of sensitivities) which remedies Ofwat's lack of adjustment. One way to enable meaningful comparisons across the base models is to make adjustments to other companies' base cost allowances to reflect the costs they would have had to incur historically in order to achieve the equivalent level of service to us.

358 We have sought to estimate this level of historic spend by assessing companies proposed enhancement spend for AMP7. Where this spend was proposed to be incurred in areas where we have historically invested, we made a corresponding adjustment to other companies' historical base and re-ran these adjusted efficiency models.

359 We conducted an in-depth review of other companies' enhancement allowances in the FD. Across a large number of cost categories, companies have been allowed enhancement costs to achieve our levels of service. Notably, companies have revised their enhancement proposals where the DWI has enforced certain schemes to be delivered to protect customers, while we have achieved equivalent water quality standard through our base expenditure.

360 These adjustments are summarised in Table C4. We note that, as we do not have any enhancement expenditure equivalent to the categories shown below, there are no offsetting savings and all of the elements below have potential to allow for base efficiency cost improvements for the companies concerned.

191 FD, 'Overall level of stretch across costs, outcomes and cost of capital appendix', page 2 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Overall-level-of-stretch-across-costs-outcomes-and-allowed-return-on-capital-appendix.pdf).

Table C4 – Adjustments to base cost by type of enhancement expenditure

£m	Metering	Raw water	Resilience	Security	Bio-diversity	Taste & Colour	Reservoir	Treatment works	Lead	Total
Anglian	108.1	20.5	3.6	12.5					11.0	155.7
Hafren			0.5		0.9	1.4			2.9	5.8
North-umbrian	43.1	26.4	20.4	9.3					10.3	109.5
United Utilities			135.9			11.8			14.0	161.7
Portsmouth		5.5	0.4						0.2	6.1
South West		83.8				6.3			4.0	94.1
Southern		61.2							19.8	81.0
South Staffs			0.4			62.9		62.9	3.0	129.2
Severn Trent			67.0			11.3			6.3	84.6
Thames	178.1		150.7						63.5	392.3
Welsh		9.9		10.0		27.2	75.5	13.6	14.0	150.2
Wessex			0.7	11.5					11.3	23.5
Yorkshire		50.6				12.8			11.1	74.5
Total	**329.3**	**257.9**	**379.6**	**43.3**	**0.9**	**133.7**	**75.5**	**76.5**	**171.4**	**1,468.2**

361 An overview of the adjustments for each spend category is provided below:

- **Metering** – Ofwat provide specific funding for replacing dumb with smart meters, because of the PCC, leakage and customer engagement benefits that are provided. Given the standard improvement in PCC, our frontier position in leakage and high levels of customer engagement, a base implicit allowance should be made. This investment will allow base efficiencies to be delivered that are therefore not available to us having already invested in network modelling, but without the ability to compulsorily meter customers and a historic lower level of metering.

- **Raw water deterioration** – This enhancement reflects DWI requirements for nitrate blending and improving raw water. We incur costs in base cost through the Gloucester & Sharpness Canal (**G&S Canal**), which is not our asset, rather than being able to incur capital enhancement (note the link to the **CRT error**). The bespoke raw water quality outcome that includes catchment management, and the innovative Cheddar treatment works trial, show why our efficient delivery should be reflected through an enhancement implicit allowance in base modelling.

- **Resilience** – Ofwat makes a wide range of adjustments, such as for power resilience, which we have delivered through base cost as they deliver operating expenditure reductions (e.g. the Purton gas generators). The resilience cases also show elements of past shortfalls in maintenance and improving strategic links, where we have a maintenance cost (e.g. Hotwells tunnel, maintaining past resilience schemes) that is similar to these larger scale enhancement allowances.

- **Security** – Ofwat did not consider our security (**SEMD**) requirements to be material as they were small scale. When we observed at the IAP what Ofwat allowed other companies as security, we tried to transfer the cost to enhancement, but Ofwat excluded the cost altogether at the DD. Therefore we had no allowance, and a base adjustment for maintaining past SEMD improvements through Ofwat's enhancement

allowances is necessary for assessing our efficient cost as model drivers (such as treatment work or source numbers) should scale for security costs. Much of this appears to be IT cost, where we have already obtained the appropriate credentials through our investment in IT infrastructure as part of base expenditure.

- **Bio-diversity** – This is not a material element, but was included for consistency. We deliver a biodiversity service through our Biodiversity Index similar to the legislation in Wales that drives this enhancement allowance. There is a base cost of maintaining the quality of the environment on the land we own around our reservoirs in our water resource costs.

- **Taste and odour** – This includes DWI concerns, on-line monitoring and algal bloom issues. The issues are all factors that affect us where we deliver improvements (c.34% over 2020-2025) as part of base cost. An implicit allowance is therefore required in order to take a view on our base efficiency for the service levels provided.

- **Reservoir** – Improvements to recreation, access and biodiversity which are statutory duties, but feature in our plan as part of base maintenance (Blagdon visitors centre refurbishment and lakeside access).

- **Treatment works** – This enhancement replaces deteriorating assets because of significant DWI concerns. Given the lack of DWI concerns with us and relative Compliance Risk Index (**CRI**) scores, an adjustment to reflect efficient base costs is required.

- **Lead** – This enhancement expenditure of replacing customer supply pipes for lead samples is provided by us as base where we are carrying out work (e.g. meter or stop tap replacement) and identify a lead pipe on the customer side. This contributes to CRI performance.

362 Having made these adjustments, we then re-ran the Ofwat models. We commissioned KPMG to replicate the analysis in order to provide assurance of the approach applied.[192]

363 In the re-run models, the coefficients remain statistically significant, and there is no material change in R2 values.

364 Notably, the re-run models indicate a larger base cost allowance for us of £15 million over the control period.

365 We accept that we have exercised judgment in identifying other companies' costs as equivalent to costs that we have already incurred. We have therefore run a series of sensitivities, reflecting the level of confidence we have in the adjustments we are making.

366 We used a RAG approach to estimate a confidence adjusted dataset. We have a high degree of confidence in 68% of the total amount of costs we consider should be allocated to base (i.e. there is a very clear description in Ofwat's feeder models/companies plans that detail what

192 KPMG Cost Model Report.

other companies' proposed costs are for, and these directly align to costs that we have previously incurred).

367 Overall, this sensitivity has a relatively small impact on the adjusted botex estimate for Bristol Water, predicting additional totex of £14 million over the control period.

368 Given the closeness of the results of our sensitivity testing with our initial modelled estimate, we consider that an uplift in the range of £14-£15 million to our base cost allowance is reasonable.

10.2 The proposed remedy

369 We request that the CMA increase our costs by £14-£15 million to correct for the service level error.

11. Leakage error

11.1 The issue

370 In the FD, Ofwat only made allowances for the marginal cost of leakage reduction activities that take companies beyond the upper quartile level of performance, classed as enhancement expenditure. However, Ofwat has made no specific cost allowance for leakage expenditure below the upper quartile level of performance, and these activities must be funded from base expenditure. In our case, the base cost allowance is insufficient to fund these activities.

371 Ofwat made an enhancement cost allowance of £4.8 million in our FD for activities, but made no specific allowance for leakage in our base costs, which as a result are too low to fund the required activities.

372 We have the lowest level of leakage in the sector, along with Anglian Water. Whichever of Ofwat's three methods for measuring companies' leakage performance is used, our performance is very strong:

- **Leakage per property** – on this measure, we have the lowest level of leakage in the sector. We consider this to be the most appropriate measure for normalisation of leakage, as it provides the closest proxy for the amount of water supplied into the system.

- **Leakage per kilometre of water mains** – on this measure, we have the fourth level of leakage in the sector.

- **Geometric mean of normalised performance metrics** – on this measure, we have the second lowest level of leakage in the sector. This is the square root of the product of the above two measures. This is the primary measure that Ofwat has considered in its FD. On this measure, we have the second lowest level of leakage in sector.

373 This is demonstrated in Figures C4 and C5.

Figure C4 – Leakage level comparison three-year average leakage position in 2019/20, litres per property and per km[193]

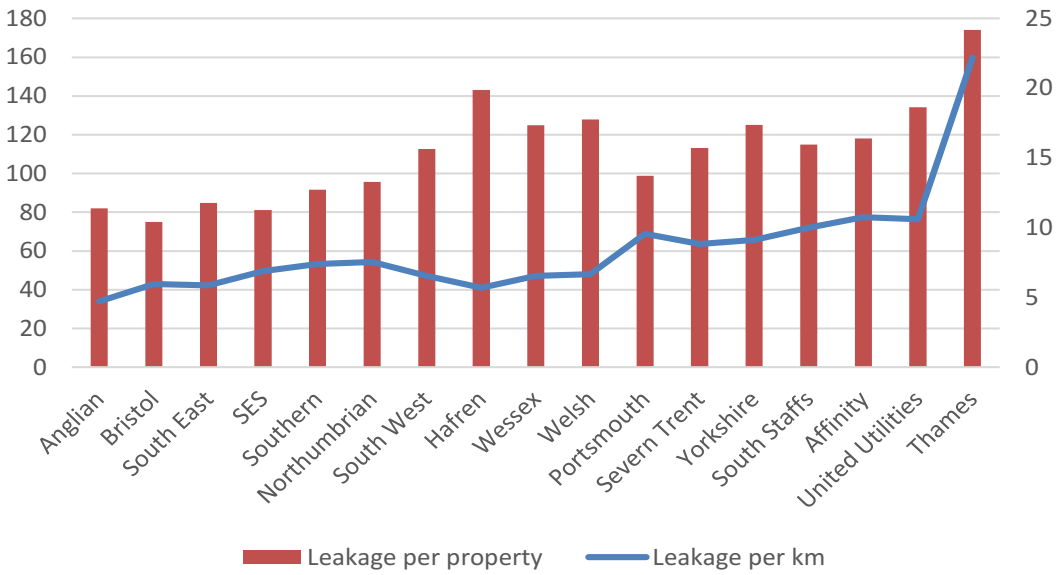
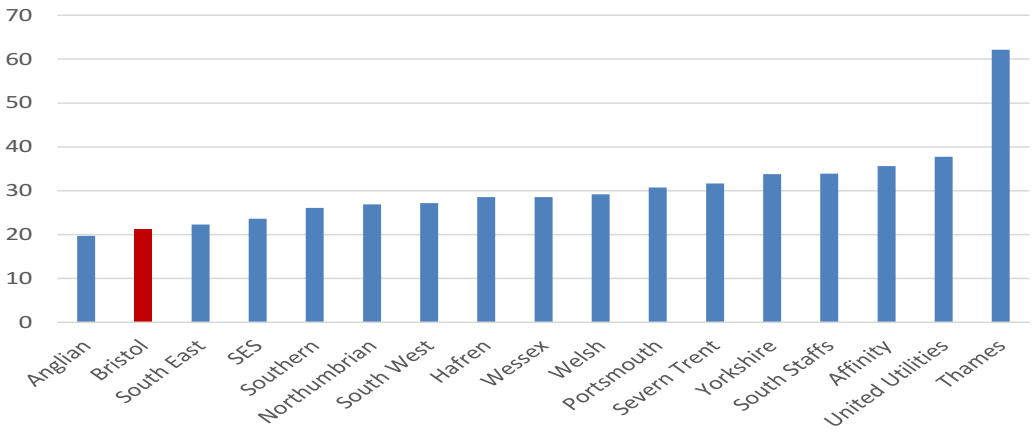


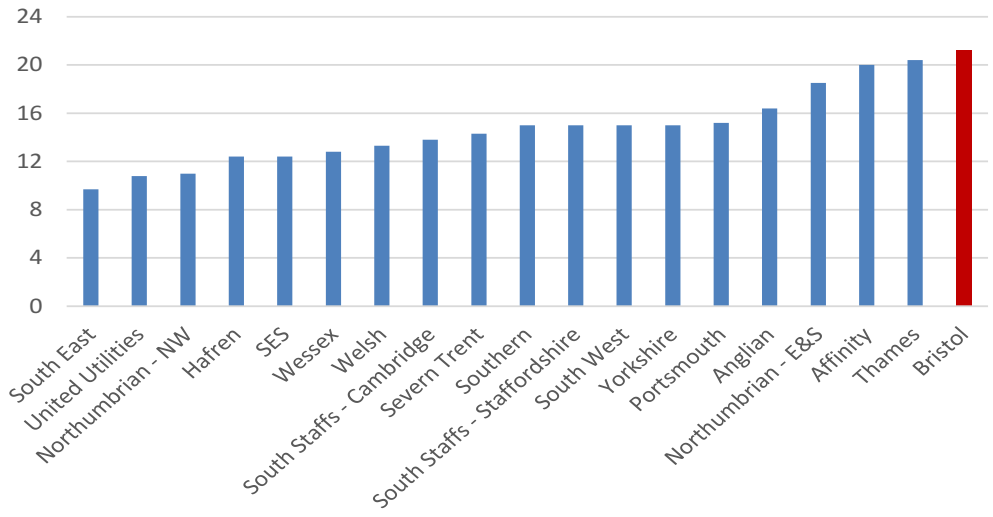
Figure C5 – Leakage level comparison three-year average leakage position in 2019/20, geometric mean of measures



374 In spite of our historically strong performance in this area, we are also planning to reduce leakage by a greater percentage than any other company (21.2% by 2024/25 from 2019/20 levels) as shown in Figure C6.

[193] Taken from data included in Ofwat (2019) 'Supply demand balance enhancement feeder model'.

Figure C6 – Reduction in leakage by 2024/25 of three-year average from the 2019/20 baseline (%)



375 This is because our customers have told us that they want leakage to be reduced as a priority.[194] 83% supported our proposals, the second highest of all service areas.

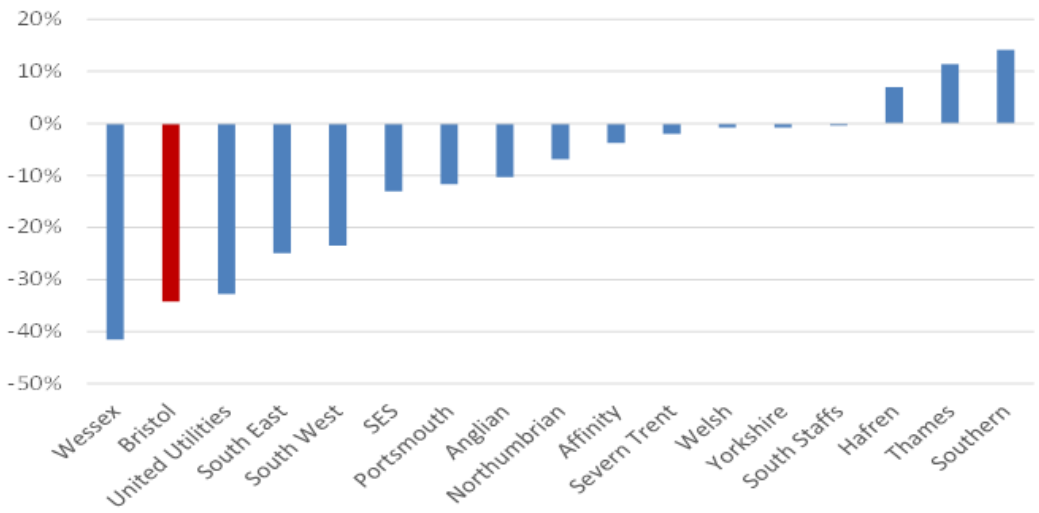
376 When developing their Water Resource Management Plans (**WRMPs**), companies consider the Sustainable Economic Level of Leakage (**SELL**). This is the point where the marginal cost of water leakage (i.e. not fixing the leak) would equal the marginal cost of leakage control (i.e. fixing the leak), and which therefore theoretically delivers the 'least-cost' level of benefit to customers. The SELL for Bristol Water in the Final WRMP is 39.3Ml/d, which is higher than our target level under the FD.[195]

377 Due to strong customer support for low leakage, our actual level of leakage is significantly below the existing SELL as shown in Figure C7.

194 Bristol Water (2018), C3 Delivering Outcomes for Customers, page 273.

195 FD, 'Delivering outcomes for customers additional information policy appendix', page 3 (https://www.ofwat.gov.uk/wp-content/uploads/2019/07/PR19-draft-determinations-Delivering-outcomes-for-customers-policy-appendix.pdf).

Figure C7 – Leakage levels (2018/19) relative to SELL[196]



378 Ofwat's failure to take account of leakage expenditure in our base cost allowance is unjustified for three reasons.

(1) Ofwat's view that customers should not pay to fund future leakage reductions is unjustified

379 In setting out its FD position on leakage cost allowances, Ofwat stated:[197]

> "*Given the sector's poor performance in this area over the last 15 years, we do not think that customers should be asked to fund the turnaround in sector performance.*"

380 This view is unjustified, for the reasons set out below.

381 First, historical leakage targets were established through the WRMP process, so that company performance expectations have been set in consultation with external stakeholders, including customers and Ofwat. Final plans (including leakage targets) are also submitted to the Secretary of State for review before companies can publish their plans. Leakage targets have therefore been developed and informed by meaningful consultation with a wide range of stakeholders. Any perceived underperformance is not attributable to companies setting unambitious targets.

382 Second, we are currently operating below our SELL. This means that our leakage is below the level required to balance supply and demand from a cost minimisation perspective. This cannot fairly be characterised as 'poor' performance on leakage. Ofwat's view on sector performance does not apply to Bristol Water in any case, given that continuous reductions in leakage have been targeted since 2010.

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196 PwC (2019) 'Funding approaches for leakage reduction', page 11 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PwC-%E2%80%93-Funding-approaches-for-leakage-reduction.pdf).

197 FD, 'Securing cost efficiency technical appendix', page 59 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Securing-cost-efficiency-technical-appendix.pdf).

383 Third, with only one exception, we have met our leakage target every year in the last 20 years, which is again indicative of our strong performance in this area.[198]

384 For these reasons, Ofwat's position that we should make significant reductions in leakage levels at a marginal cost, without recognising the higher cost of maintaining lower leakage when already at a low level, is not justified.

(2) Ofwat's base cost models make insufficient cost allowance for our leakage expenditure

385 As set out in the service level error, Ofwat has failed to appropriately reflect the relationship between costs and performance levels in its base cost models. This flaw has important implications for funding leakage expenditure.

386 NERA was commissioned by a number of water companies to assess Ofwat's funding and incentive targets for leakage reduction.[199] NERA showed that differences between companies' actual levels of leakage and their SELL has a statistically significant impact on companies' costs. More specifically, NERA showed that the marginal cost of leakage reduction rises as companies reduce leakage to lower levels.

387 Given that we are currently operating below our SELL, and we are reducing leakage further, our leakage costs should be higher than the rest of the sector. However, this is not recognised by Ofwat's models. As a result, Ofwat's base models assess us to be less efficient than we actually are.

388 Alongside the FD, Ofwat published various alternative models which support our case for a specific increase in base cost allowance to cover leakage costs:

- Ofwat published a report it had commissioned from PwC on funding approaches for leakage reduction.[200] PwC sought to augment Ofwat's econometric models to incorporate leakage more explicitly. PwC found three potential augmented model specifications, and the average position of the models suggests that Bristol Water should receive an additional £7 million base cost allowance relative to Ofwat's FD base cost allowance.

- Ofwat also published the results of a series of alternative econometric models which it had compiled.[201] Two of these models included variables relating to leakage performance: for Bristol Water, the average base cost allowance in these models was £19 million higher than Ofwat's FD base cost allowance.

389 There is a fundamental disconnect in Ofwat's regulatory framework, whereby Ofwat has set companies' efficiency targets based on the upper quartile level of costs, and has set

198 The only exception occurred during the extreme freeze-thaw event of March 2018, which saw a temperature swing of 16 degrees Celsius in less than 48 hours. This resulted in 179 additional burst mains, compared to the normal daily average of 2.6, and accounted for 1.7 Ml/d of leakage. This was significantly greater than experienced in other cold periods. Excluding the effect of this exceptional weather event, we would have met our leakage target for that year.

199 NERA (2019) 'Assessing Ofwat's Funding and Incentive Targets for Leakage Reduction' (https://www.nera.com/content/dam/nera/upload/190322-NERA-Report-on-Leakage-Reduction%20Funding.pdf).

200 PwC (2019) 'Funding approaches for leakage reduction'.

201 Ofwat (2019) 'Base adjustment model'.

performance targets based on upper quartile performance. Ofwat has failed to reflect the cost-service relationship appropriately in its cost setting framework. Ofwat's alternative models on leakage demonstrate this failure as they show that better leakage performance requires higher costs. PwC also show that marginal costs rise as leakage performance improves.[202]

390 Given the outcome of applying alternative models, Ofwat was unjustified in not providing us with adequate cost allowances for leakage.

(3) CMA15 provides a clear precedent that our level of leakage performance should be taken into account when setting our cost allowance

391 In CMA15, the CMA used an explanatory variable in its cost models for the volume of water as part of its provisional findings. In its final determination, the CMA amended its approach, stating:[203]

> *"Bristol Water was correct to identify the potential problems of using the volume of distribution input for the explanatory variables. Bristol Water's relatively low levels of distribution input per property reflect its efforts to tackle leakage: Bristol Water has relatively low level of leakage as a proportion of distribution input. The efforts to achieve relatively low levels of leakage give rise to leakage control costs that may be overlooked by the linear unit cost models from our provisional findings."*

392 The CMA therefore accepted that we have relatively low levels of leakage; that low levels of leakage give rise to leakage control costs; and that these points need to be considered within the cost modelling framework. The CMA also recognised that our leakage performance level was below the economic level of leakage.[204]

393 For its final determination, the CMA developed a cost model that took account of the effects of differences in demand or consumption patterns between companies. The CMA considered that this reflected the additional costs of achieving lower levels of leakage. The effect of the change described above was to increase the estimate for Bristol Water's expenditure requirements by a material amount (£4.5 million on average across these four models,[205] which represents c.£5 million in 2017/18 prices).

394 It should be noted that within the CMA's previous assessment, we had the fifth lowest level of leakage in the sector.[206] As shown above, along with Anglian Water, we now have the lowest level of leakage in the sector. This issue, which the CMA considered was sufficiently material to take into account at the previous redetermination, is therefore now more acute for us. Ofwat was wrong to have ignored this relevant precedent.

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202 PWC (2019) 'Funding approaches for leakage reduction', page 12.
203 CMA15, paragraph 4.134.
204 CMA15, paragraph 5.118.
205 CMA15, paragraphs 4.135 and 4.136.
206 CMA15, paragraph 5.118.

11.2 The proposed remedy

395 We request that the CMA includes a specific cost allowance of **£13 million** for leakage reduction to correct for the leakage error (this being the mid-point between the allowance suggested by the PwC model (£7 million) and the Ofwat models (£19 million)).

12. Benchmark error

12.1 The issue

396 At both IAP and DD stage, Ofwat applied an upper quartile level of efficiency challenge to base wholesale costs. However, Ofwat departed from this approach in the FD and set a more demanding 'catch-up' efficiency target for the water resources and water network plus price controls.

397 Specifically, Ofwat set a target which expects all companies in the industry to achieve the same level of efficiency as the company that ranks fourth in its comparative benchmarking analysis. As there are 17 water companies in Ofwat's cost assessment models, this goes beyond the upper quartile (i.e. the fifth ranked company) and increases the efficiency challenge from 3.9% to 4.6%.[207] This amounts to an increase in the cost challenge to Bristol Water of £2.5 million over AMP7, relative to an upper quartile level of challenge.

398 This important change was not consulted on prior to the FD, giving us no opportunity to comment or make representations on Ofwat's approach.

399 We consider that Ofwat's decision to set a beyond upper quartile efficiency challenge introduces a significant risk that allowances will be distorted by the effect of outliers, as well as data and modelling inaccuracies. For this reason, regulatory precedents in the energy and water sectors have set allowances based on the modelled efficiency of the upper quartile or median company. Instead of considering the likely scope for data error or modelling inaccuracies, Ofwat's decision to set a target based on the fourth ranked company reflects its subjective assessment of the efficiency challenge it thinks the industry should face in AMP7 and has a poor analytical basis.

400 Our reasons for this view are set out below and supported by the NERA Report.

(1) Ofwat justifies its approach to setting a more demanding efficiency target based on its subjective judgement of appropriate cost levels

401 In the FD, Ofwat stated that "*at draft determinations, the historical upper-quartile performance delivered a strong challenge*".[208] However, Ofwat updated its analysis in the FD by adding an additional year of data to its econometric modelling (see further reason (3) below) and changing the categories of costs included in the dependent variable. Following this

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207 Relative to the industry median position, Ofwat's move to upper quartile also significantly increased the scale of the challenge. At DD stage, the upper quartile company was assessed to be 1.9% lower cost than the industry median. At FD stage, the 4th most efficient benchmark was 5.2% lower cost than the industry median.

208 FD, 'Securing cost efficiency technical appendix', page 31.

update, application of the same approach to set the efficiency target as Ofwat had used in the DD (i.e. an upper quartile approach) would have led to a smaller gap between its botex allowances and companies' business plan cost forecasts. As a result, Ofwat decided to "re-assess" the catch-up efficiency target to ensure it delivered strong challenge, stating:[209]

> *"The historical upper quartile does not appear to deliver a strong challenge for the sector at final determinations. We acknowledge that part of the reason for the reduced challenge is companies reducing their requested costs in August 2019 representations to draft determinations. This may reflect that companies have improved the understanding of their costs through the price review process. It is appropriate for us to re-assess whether the catch-up efficiency challenge sufficiently protects the interest of the consumer".*

402 Ofwat's determination of a suitable efficiency challenge therefore depends not only on its econometric modelling based on historical data, but also on its own subjective and unsubstantiated judgement of the appropriate challenge to apply to companies' cost forecasts. As NERA state:[210]

> *"Applying the same approach at FD did not yield a result that Ofwat considers to be a sufficient efficiency challenge. Therefore, Ofwat arbitrarily shifted its basis for setting the efficiency challenge."*

(2) Regulatory precedents show that the efficiency target should be defined based on the reliability of data and models

403 It is generally accepted by regulators that the sort of comparative benchmarking models which Ofwat relied upon in its FD cannot separately identify genuine efficiency from data error, omitted factors and differences in cost allocation across companies. As such, estimated efficiency scores may inflate these factors. Indeed, Ofwat "*recognises statistical models are imperfect, and consequently the estimation of inefficiency imprecise*".[211]

404 Regulators therefore tend to set less demanding efficiency targets as a means to address some of these limitations. As NERA explain:[212]

> *"… regulators tend to set an efficiency target at a less demanding level than the frontier company, as an acknowledgement that not all the variation in costs between companies left unexplained by econometric models represents inefficiency".*

405 This issue was also identified in CMA15, in which the CMA stated:[213]

> *"Besides Ofwat's approach to PR14, there is regulatory precedent from Ofgem, as well as the CC's Northern Ireland Electricity price determination in 2014, for an approach that sets price control expenditure allowances on a basis that requires a greater level of efficiency than industry-average efficiency. Ofwat's PR14 price control framework,*

209 FD, 'Securing cost efficiency technical appendix', page 31.
210 NERA Report, paragraph 67.
211 FD, 'Securing cost efficiency technical appendix', page 31.
212 NERA Report, paragraph 71.
213 CMA15, paragraphs 4.221, 4.222 and 4.224.

> *including its approach to the cost of capital, was developed in this context. The regulatory precedent from Ofgem and the CC has also recognised that a less demanding benchmark than the upper quartile may be appropriate in cases where there was less confidence in the modelling results. The effect of modelling error and limitations will tend to mean that an upper quartile benchmark will require levels of efficiency that are, in practice, greater than the upper quartile. … We were concerned that an efficiency benchmark based on an upper quartile efficiency concept would be overly demanding if applied to the results of the econometric models that we used."*

406 Based on the above, Ofwat's decision to use the fourth ranked company to set the catch-up efficiency target for the water industry is inconsistent with regulatory precedent. This is because it does not address the most important considerations of previous determinations when setting similar targets, i.e. the likelihood of a target set close to the frontier being distorted by omitted factors and data error.

(3) The upper quartile efficiency challenge became less demanding because Ofwat changed the definition of modelled botex in the FD

407 In the FD, Ofwat updated its cost modelling to include historical cost data from 2018/19 that had become available since the DD.[214] It also changed the definition of the dependent variable that it uses in its botex modelling.

408 Ofwat claims that the 2018/19 historical cost data is part of the reason that the upper quartile challenge becomes less demanding when applied to the FD model. Ofwat states:[215]

> *"Evidence suggests that 2018-19 was a high cost year relative to historical years. … It is therefore appropriate that we consider how to use business plan forecasts to calibrate the catch up challenge for final determination."*

409 However, Ofwat does not offer any evidence that 2018/19 was an unusually high cost year that is unrepresentative of companies' future costs. Further, as the NERA Report shows, the upper quartile efficiency challenge did not necessarily change due to the time period over which Ofwat estimated its models, but instead as a result of the change in Ofwat's definition of the dependent variable that it used in its botex modelling.[216]

(4) Changes in companies' cost forecasts during PR19 do not justify a more demanding efficiency target

410 Ofwat explained its decision to set a more demanding target by observing that companies reduced their funding requests over the PR19 process.

411 A core purpose of comparative benchmarking is to reveal the efficient level of costs to inform management regarding the areas where there may be scope to reduce costs. As NERA points out, that management accounted for this information when revising the business plan is a

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214 FD, 'Securing cost efficiency technical appendix', page 8.
215 FD, 'Securing cost efficiency technical appendix', pages 31 to 32.
216 NERA Report, paragraphs 78 to 79.

benefit resulting from Ofwat's benchmarking process. It does not justify Ofwat setting more stretching targets.

412 In fact, it is common for companies to identify increased savings through multiple iterations of their business plans produced during price control review processes. During PR19, the majority of companies reduced their proposed costs – particularly companies assessed to be significantly inefficient at the IAP stage – as shown in Table C5.

Table C5 – Changes in companies' costs since initial business plan submission

Company	Reduction in company plan totex following IAP	Reduction in company plan following DD	Total reduction in company plan totex	Ofwat's IAP efficiency challenge
Portsmouth	-26%	0%	-26%	4%
Thames	-7%	-11%	-18%	-26%
Yorkshire	-7%	-10%	-16%	-17%
Anglian	-2%	-9%	-11%	-24%
Southern	-8%	-1%	-9%	-17%
Welsh	1%	-8%	-7%	-21%
South Staffs	0%	-6%	-6%	-17%
Affinity	0%	-5%	-5%	-10%
Bristol	-1%	-3%	-5%	-13%
Northumbrian	0%	-3%	-3%	-9%
Severn Trent	0%	-3%	-3%	-11%
Wessex	-2%	0%	-2%	-9%
SES	0%	-1%	-1%	-16%
South East	0%	0%	0%	-19%
Hafren	1%	-1%	0%	3%
United Utilities	3%	-2%	0%	0%
South West	0%	2%	2%	0%

413 As can be seen from Table C5, the companies that had the biggest challenges in Ofwat's IAP assessment of efficiency – with the exception of Portsmouth Water which we believe is an outlier[217] – went on to remove the most cost from their plans.

414 It should therefore be expected that the differences between companies' costs and Ofwat's assessment of costs will narrow. Having model residuals that are closer together does not increase the confidence that the residuals solely reflect inefficiency. It is possible that, as inefficient costs are removed, the remaining residuals reflect omitted variables, or other aspects of general model 'noise'.

[217] We understand the figures in the table above reflect the movement of the Havant Thicket reservoir to a separate control rather than a change in business plan.

415 There has not been a material improvement in Ofwat's cost models throughout the course of the price review. The R2 values of the models used at IAP are the same (to 2 decimal places) as the R2 values of the models used in the FD. This does not suggest a significant improvement in the explanatory power of the models used. Indeed, there are still a number of clear issues with the models (e.g. inconsistencies in how companies have allocated service improvement costs between base and enhancement – see the **service level error** for further details). This does not mean the models are not useful in benchmarking cost allowances, but it does indicate the error Ofwat has made in the strength of its application of the results of the benchmarking.

416 Therefore, whilst it may be true that the level of efficiency challenge from the upper quartile has reduced during the PR19 process, we do not consider that this justifies Ofwat's shift to a more stretching challenge. In addition, as NERA point out, Ofwat's change in the frontier target after companies identified forecast efficiency savings may disincentivise companies from revealing expected cost savings in future price reviews, and is an example of inappropriately "*moving goalposts*".[218]

(5) Regulatory precedent does not support Ofwat's approach

417 Ofwat cited examples of other regulators that have set efficiency challenges beyond the upper quartile. Specifically, it stated:[219]

> *"Most recently, the Northern Ireland Utility Regulator used the fourth placed company (out of fifteen companies) to set the efficiency benchmark in the price control determination for NIE Networks for the period 2017-2024 (RP6). Postcomm, Ofcom and Monitor have previously employed an upper decile benchmark in their regulation of Royal Mail delivery offices, British Telecom and acute health care providers respectively."*

418 With regard to these precedents, we note that:

- The determination by the Northern Ireland Utility Regulator (the **Utility Regulator**) does not support Ofwat's efficiency target as it appears to have intended to set an upper quartile benchmark, effectively treating fourth place as an approximation for the upper quartile. Specifically, the Utility Regulator stated:[220]

  "Respondents to the draft determination did not appear to express concern with the use of an upper quartile benchmark. Taking this and the regulatory precedent into account, we consider the upper quartile, or 4th placed company, to be an appropriate benchmark to apply …"

- Ofwat's references to other sectors are not comparable with Ofwat's modelling and/or the PR19 regulatory process (e.g. because benchmarking is not used to set efficiency

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218 NERA Report, paragraph 82.

219 FD, 'Securing cost efficiency technical appendix', page 32.

220 Utility Regulator (2017), 'Northern Ireland Electricity Networks Ltd Transmission & Distribution 6th Price Control (RP6) Final Determination', paragraph 5.176 (https://www.uregni.gov.uk/sites/uregni/files/media-files/2017-07-04%20RP6%20FD%20Main%20Report%20%28002%29.pdf).

targets)[221] and, in any event, each of these sectors – postal services, telecoms and healthcare – are materially different from the water sector.[222]

419 In our view, the electricity and gas sectors are the most comparable to water. These sectors have different companies that are affected by regional cost factors and their historical asset bases. They also have a similar number of data points to the water sector. To date, we note that Ofgem has used an upper quartile efficiency challenge.[223]

420 We also note that other regulators have been more cautious than Ofwat in what is described as upper quartile. For example, the Utility Regulator has recently used the third out of eight companies. It stated:[224]

> *"Our assumption of upper quartile as the third best out of the eight GDNs would not be generally considered an unreasonable or strict definition of upper quartile efficiency".*

421 Another important precedent is CMA15, which used a median cost target, considerably less demanding than the fourth-ranked company (or even the upper quartile). The CMA set a median cost target, in part because it recognised the limitations of its models, and in particular *"about the risks of inaccuracy in benchmarking analysis that compares measures of totex or base expenditure between companies and specific concerns about inaccuracy in our econometric models and those used by Ofwat"*.[225] As set out above, the CMA rejected the use of even upper quartile efficiency benchmarks on the basis that it "*would be overly demanding if applied to the results of the econometric models*" that were used.[226]

422 Therefore, Ofwat's decision to set a more challenging efficiency target is not supported by regulatory precedent. Ofwat stated that it had made efforts to "*take on board*" the CMA's critique of its models at PR14 and made changes to its models in the PR19 cost assessment.[227] However, it does not explain why its changes reduce the risk that its models are distorted by omitted factors or outliers to the extent necessary to justify a more demanding efficiency target. In our view, Ofwat's cost models have not significantly improved in terms of statistical robustness, and the change to go beyond upper quartile is not justified.

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221 NERA Report, paragraph 86.

222 For example: (i) there are far more delivery office data points than water company data points. There are over a 1,000 delivery offices, and only 17 water companies. Postcomm has previously had a data set of over 6,000 observations, whereas Ofwat's base cost models have 141 observations. Furthermore, there are typically fewer points of difference between delivery offices than between water companies, which are heavily affected by regional factors and their historical asset bases; and (ii) both Royal Mail and British Telecom are single companies in their sectors. The analysis undertaken is purely an internal benchmarking approach, with the frontier reflecting the companies' own best practice. The results do not reflect efficiency initiatives which other operators have chosen to pursue but which Royal Mail and British Telecom have not. Therefore, there may well be scope for efficiency gains beyond those captured by the results of this benchmarking exercise. Benchmarking within a single company may also reduce other challenges with cost comparison (e.g. differences in cost allocation and accounting practices).

223 See, for example, Ofgem (2013), 'RIIO-ED1 business plan expenditure assessment - methodology and results RIIO-ED1' (https://www.ofgem.gov.uk/ofgem-publications/85039/costassessmentmethdologyandresultsmasterv2pdf) and Ofgem (2012), 'RIIO-GD1: Final Proposals - Supporting document – Cost efficiency' (https://www.ofgem.gov.uk/ofgem-publications/48157/4-riiogd1fpcostefficiency.pdf).

224 Utility Regulator (2016) 'Price Control for Northern Ireland's Gas Distribution Networks GD17: Final Determination – Annex 5: Top-Down Benchmarking', paragraph 4.28 (https://www.uregni.gov.uk/sites/uregni/files/media-files/Annex_5_-_Top-Down_Benchmarking.pdf).

225 CMA15, paragraph 4.233.

226 CMA15, paragraph 4.224.

227 FD, 'Supplementary technical appendix: Econometric approach', page 39 (https://www.ofwat.gov.uk/wp-content/uploads/2019/02/Supplementary-technical-appendix-Econometric-approach-1.pdf).

(6) As the top ranked company is incomparable, Ofwat's target may be even more stringent

423 We consider that Ofwat's approach risks placing significant reliance on the costs and drivers of individual companies, some of which are not good comparators for other companies. For example, despite acknowledging the models do not capture Portsmouth Water's cost structure appropriately, Ofwat continued to use Portsmouth Water's data to influence the allowances provided to other companies.[228] As such, the targets set for other companies are distorted by the data of a company which Ofwat has acknowledged is different from the rest of the industry. This problem is exacerbated by Ofwat's decision to set a more demanding efficiency target in its FD than in the DD and in other similar regulatory processes, as Ofwat relied heavily on the costs and driver data of the companies it assessed to be the most efficient.

424 NERA estimate that Bristol Water's allowances:[229]

> "*…would be £10 million higher (about 3 per cent of base costs) if Portsmouth Water is excluded from Ofwat's models and the target were to be set based on the efficiency score of the fourth-ranked company. Stated differently, Ofwat's target is effectively the third-ranked company out of 16 comparable companies, due to Portsmouth (the highest ranked company) being incomparable to other companies*".

(7) Ofwat's estimate of the implicit allowance for enhancement opex is imprecise, which supports a less stringent efficiency target

425 Ofwat defines "base expenditure" as costs associated with maintaining current levels of service but, due to data reporting limitations, Ofwat's dependent variable includes operating costs incurred by companies on enhancement activities. Ofwat attempted to avoid double counting opex enhancement funding by removing the alleged implicit allowance for enhancement opex.[230]

426 Given this use of an imprecise approximation to adjust companies' cost data, NERA suggest that Ofwat should be particularly conservative in its reading of the results that emerge from its botex modelling. They also highlight various limitations in Ofwat's data (e.g. companies spend different amounts on enhancement opex, enhancement expenditure is lumpy from year to year, and Ofwat excludes data from five companies that provide information).[231]

427 The limitations of Ofwat's data, and the imprecision of the assumptions that it makes to bring the data onto an appropriate basis for setting allowances, mean that:[232]

> *"setting an efficiency target close to the frontier entails a material risk of setting infeasible cost targets for the industry".*

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228 PR19 Final Methodology, 'Cost assessment FM_WW1 with APR 2018-19 data' (https://www.ofwat.gov.uk/regulated-companies/price-review/2019-price-review/data-tables-models/).

229 NERA Report, paragraph 92.

230 NERA Report, paragraphs 93 to 94.

231 NERA Report, paragraph 95.

232 NERA Report, paragraph 96.

12.2 The proposed remedy

428 Based on the above, we request that the CMA sets the efficiency target at no more than the upper quartile level of efficiency. This is consistent with regulatory precedent and better recognises the limitations of Ofwat's data and models.

13. Frontier shift error

13.1 The issue

429 Ofwat's wholesale base cost assessment framework splits base costs into two categories: **modelled base costs** (which make up the majority), which are within a company's control, and for which cost allowances are estimated based on econometric models; and **unmodelled base costs**, which fall outside the company's control and for which cost allowances are estimated on a case-by-case basis based on the costs in companies' business plans.

430 Ofwat's cost assessment methodology in the FD includes two types of efficiency challenge, which are applied to Ofwat's initial estimates of modelled and unmodelled efficient base costs:

- A within-sector catch-up challenge, whereby cost allowances are set on the basis that companies will be expected to meet a benchmark of current efficient performance in the industry; and
- A dynamic industry-wide efficiency challenge called Frontier Shift (**FS**), which can also be measured net of companies' real price effects (**RPEs**).

431 However, Ofwat changed its approach in the FD to apply FS and RPEs to costs from 2019/20 rather than 2020/21, because "*base cost inputs and, cost forecasts, used in our cost models only take into account data and therefore on-going efficiency improvements and real price effects up until 2018-19*".[233] Applying FS and RPEs to this additional year increased the efficiency challenge we face, but there is logic in this approach and we consider that it sits within regulatory judgement and is not on its own an error.

432 In the FD, Ofwat set a FS efficiency challenge at a value of 1.1% p.a., and applied this to all modelled and unmodelled base costs. The FS reduces the Bristol Water totex allowance by £15million, which at this value is excessive, and is not supported by the evidence or regulatory precedent.

433 If the FS was reduced from 1.1% p.a. to 1.0% p.a., consistent with our own ambitious forecasts, the impact on modelled base totex would reduce from £15.0m to £13.7m, £1.3m less than Ofwat's FD approach. We believe this assumption would remain at the top end of a range that could be supported, and most of the evidence points to a lower FS potential.

434 In addition, application of FS to unmodelled base costs is not justified, nor supported by regulatory precedent. In practice, companies cannot be expected to deliver a FS challenge

[233] FD, ' Securing cost efficiency technical appendix', page 116.

against levies and taxes such as business rates, EA charges and traffic permit charges which are substantially outside of management control, which is why Ofwat treats them as unmodelled costs. This amounts to an excessive FS challenge to unmodelled base costs of £1.3m p.a., in addition to the modelled base totex impact shown above.

435 Our reasons for this view are set out below.[234]

(1) There is no transparent basis for the level of Ofwat's FS target

436 Ofwat's rationale for FS is based on its expectation that, over time, companies' productivity will improve as they adopt new technologies or new ways of working. According to Ofwat, the forecast FS comprises two effects:

- Ongoing efficiency improvements in the economy that the water sector should be able to emulate; and
- One-off efficiency improvements from water companies making greater use of the totex and outcomes framework at PR19.[235]

437 While Ofwat assessed the scope for productivity gains due to these two elements separately, the FD gives no indication which portion of the 1.1% annual target is attributable to each, and merely states that the FS target reflects the "combined effect".[236] This is contrary to the approach Ofwat took at the IAP stage, where its modelling files applied a 1.0% ongoing productivity adjustment and a 0.5% totex/outcomes adjustment.[237] Moreover, Ofwat appears to have contradicted its "combined effect" explanation in an investor call in December 2019, in which it explained that the totex and outcomes gains were less than they had hoped.[238]

438 Ofwat therefore relied on a wide body of evidence to produce its 1.1% annual target, but failed to explain how it evaluated evidence to produce this figure. The historical estimates of TFP by the Bank of England (**BoE**) and Office of Budget Responsibility (**OBR**), and estimates of multi-factor productivity (**MFP**) by the Office for National Statistics (**ONS**) are in the narrow range of 0.3% – 0.9%. Longer term historical estimates (pre-2014) of Total Factor Productivity (**TFP**) from these publicly available sources sit across a range from -0.6% to 1.5%, and OBR and BoE forecasts for TFP up to 2023 range between 0.1 and 0.6%.[239] We provide further detail on each of these independent datasets below.

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234 For further detail please see sections 5.1 and 5.2 of the NERA Report.
235 FD, 'Securing cost efficiency technical appendix', page 115.
236 FD, 'Securing cost efficiency technical appendix', page 115.
237 Ofwat (2019), 'FM_WW4 – Final Allowances.xlsx', "Controls" Sheet, Efficiency challenge parameters.
238 Ofwat (2019), 'Transcript of the Ofwat investor call', 16 December 2019, page 13 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/16-12-2019-Final-Determinations-Transcript-of-the-Ofwat-investor-call.pdf).
239 Sources for independent TFP estimates are as follows: Bank of England estimates: Monetary Policy Report, January 2020, page 36 (https://www.bankofengland.co.uk/monetary-policy-report/2020/january-2020); Office for Budget Responsibility (OBR) estimates: OBR (2018) 'Productivity growth: international comparisons' Box 3.2, page 43, in Economic and Fiscal Outlook (March 2018) (https://obr.uk/box/productivity-growth-international-comparisons/); Office for National Statistics (ONS) estimates: ONS (2018) 'Multi-factor productivity estimates: Experimental estimates to Quarter 2 (Apr to June) 2018', page 14 (https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/articles/multifactorproductivityestimates/experimentalestimatestoquarter2apriltojune2018).

BoE data

439 Tables C6 and C7 set out data from the BoE's most recent Monetary Policy Report (January 2020), which provides historical TFP growth figures and TFP forecast to 2023. This data shows that TFP growth in the recent past (2015-18) has been relatively low (c.0.2% p.a.), and that forecasts for near-term TFP growth (i.e. to 2023) are more in line with these recent figures than earlier time periods (e.g. 1998 – 2007).

Table C6 – BoE analysis of supply growth[240]

Percentage changes on a year earlier

	Quarterly averages				
	1998–2007	2008–10	2011–14	2015–18 Q3	2018 Q4–22 Q1
Potential supply growth	**2.9**	**0.2**	**1.6**	**1.7**	**1.4**
of which, potential labour supply growth	0.7	0.1	1.5	1.0	0.5
of which, population	*0.7*	*0.9*	*0.7*	*0.7*	*0.5*
of which, participation	*0.1*	*-0.1*	*0.0*	*0.1*	*0.0*
of which, unemployment(b)	*0.2*	*-0.4*	*0.3*	*0.3*	*0.0*
of which, average hours	*-0.3*	*-0.3*	*0.4*	*-0.1*	*0.0*
of which, potential productivity growth	2.2	0.1	0.1	0.7	0.9
of which, capital deepening(c)(d)	*1.1*	*0.7*	*0.2*	*0.5*	*0.5*
of which, total factor productivity(c)	*1.0*	*-0.6*	*-0.1*	*0.2*	*0.3*

240 Bank of England, 'Inflation Report February 2019', page 22 (https://www.bankofengland.co.uk/inflation-report/2019/february-2019).

Table C7 – BoE analysis of supply growth

	Quarterly averages			
	1998–2007	2010–18	2019	2020–23 Q1
Annual potential supply growth (per cent)	**2.9**	**1.6**	**1.1**	**1.1**
of which, potential labour supply growth	0.7	1.1	0.7	0.5
of which, population	*0.7*	*0.7*	*0.5*	*0.6*
of which, participation	*0.1*	*0.1*	*0.1*	*0.0*
of which, unemployment[b]	*0.2*	*0.2*	*0.1*	*0.0*
of which, average hours	*-0.3*	*0.2*	*-0.1*	*-0.1*
of which, potential productivity growth[c]	2.2	0.4	0.4	0.5
of which, capital deepening[d]	*0.7*	*0.0*	*0.3*	*0.4*
of which, total factor productivity[e]	*1.6*	*0.5*	*0.0*	*0.1*

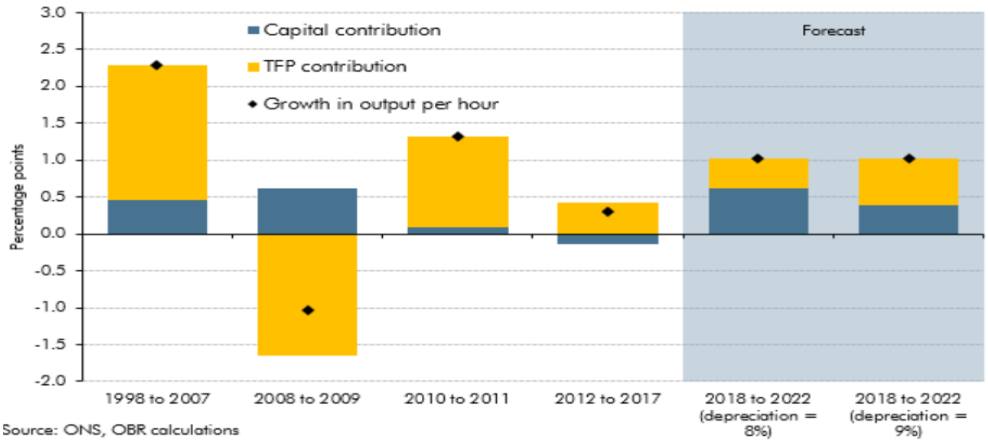
Sources: ONS and Bank calculations.

(a) Average percentage point contributions to annual growth unless otherwise specified. Contributions may not sum to the total due to rounding.
(b) Positive numbers indicate that a fall in the equilibrium unemployment rate has increased potential labour supply.
(c) Based on a growth-accounting framework using a constant returns to scale Cobb-Douglas production function, with total output to capital elasticity of ⅓.
(d) Capital deepening refers to growth in capital services per person-hour.
(e) Total factor productivity growth refers to improvements in the efficiency with which both capital and labour are used to produce output. Calculated as a residual.

OBR data

440 Figure C8 below illustrates OBR's analysis, which shows that MFP in the period 2012-17 contributed less than 0.5% to economic growth. The OBR's 2022 forecast is for TFP to contribute between 0.4-0.6% towards economic growth, which broadly aligns with the BoE's forecast of 0.3% over the coming three years.

Figure C8 – OBR analysis of productivity[241]

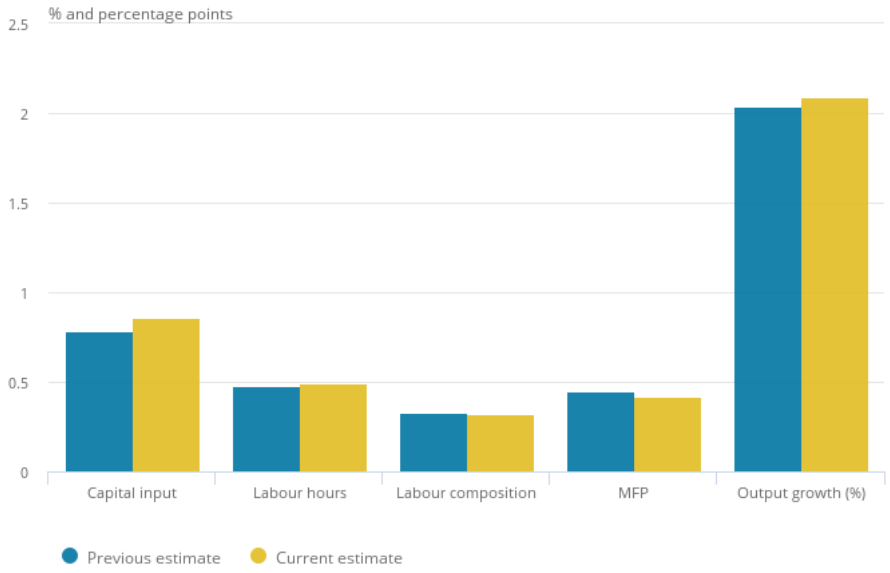


241 OBR (2018) 'Productivity growth: international comparisons' (https://obr.uk/box/productivity-growth-international-comparisons/).

ONS data

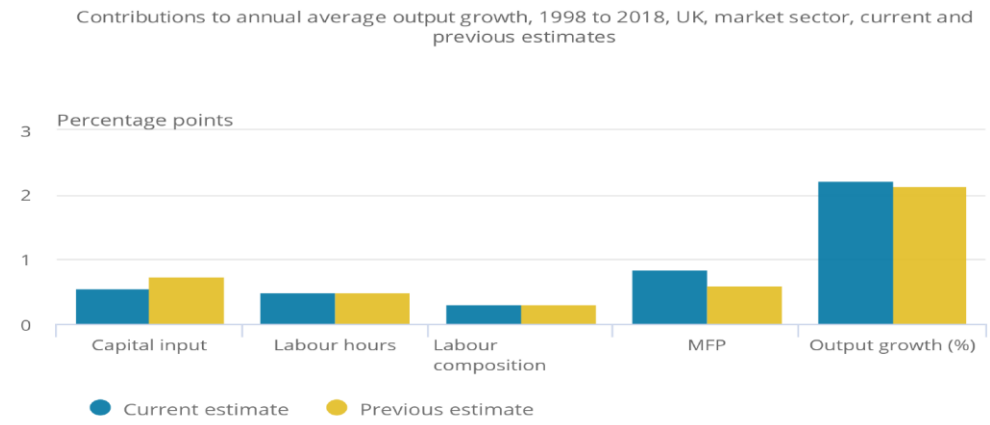
441 Figure C9 provides ONS estimates of MFP in the period 1998 to 2016, published in 2018. This shows that MFP has contributed c.0.42% to output growth in this period, a marginal downwards adjustment on the ONS's previous estimate which was less than 0.5%.

C9 – ONS analysis of productivity (2018)



442 Figure C10 provides the latest updated ONS MFP estimates (from October 2019), which take account of Blue Book changes in 2019 (which have a significant impact on capital input as asset lives have been reduced). As can be seen, the estimate of MFP is now 0.85%, which shows the sensitivity of these results to the underlying assumptions employed in the calculation.

Figure C10 – ONS analysis of productivity (2019)



Source: Office for National Statistics

443 Independent evidence therefore broadly supports a range for FS below 1% per annum. When adjustments are made for the proportion of labour involved in the water industry compared to comparators this further reduces the value. This is also a more consistent position with the low cost of capital that has been proposed by Ofwat. If the economy were growing at the speed implied by Ofwat's FS, a higher total market return could be expected and a higher allowed cost of capital.

(2) The evidence Ofwat relied on to justify its productivity assumptions in the FD is flawed

444 The economic analysis Ofwat cites to support its determination on productivity growth and the effect of the totex/outcomes framework is seriously flawed.

445 Firstly, the case studies which Ofwat commissioned consultants to conduct to examine cost savings from projects involving a capex/opex trade-off provide no evidence on the scope of future FS efficiencies. Ofwat concluded that the case study evidence indicated an efficiency improvement of 0.5% p.a.[242] However, Ofwat did not demonstrate:

- that these projects/savings could not have happened without the totex/outcomes framework;
- that they are equally applicable across all companies; or
- how much of the benefits are reflected in its catch-up targets set for AMP7.

446 Moreover, Ofwat assumed that outperformance against allowances set in the PR14 FD could be attributed to productivity gains from the benefits of totex/outcome-based regulation. There is no basis for this assumption: outperformance could arise for other reasons – for example if the regulator had made inaccurate cost forecasts when conducting econometric benchmarking, or if companies' costs fell for unanticipated reasons. Ofwat's own consultants acknowledge that they cannot rule out that *"there are no elements of catch-up efficiency during the first totex price control"*.[243]

447 Secondly, the Water UK (2017) data which Ofwat cites on historical productivity trends in the water sector conflates post-privatisation catch-up effects and frontier shift.[244] Using this data also contradicts a recommendation by Ofwat's advisers (Europe Economics) to rely on TFP trends in competitive sectors of the economy, which are not distorted by the accelerated productivity improvement achieved after privatisation.[245] Evidence commissioned by Ofwat from KPMG (including on TFP trends) also fails to properly account for catch-up efficiencies.

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242 FD, 'Securing cost efficiency technical appendix', page 168.

243 KPMG/Aqua Consultants (2018), 'Innovation and efficiency gains from the totex and outcomes framework', page 14 (https://www.ofwat.gov.uk/wp-content/uploads/2019/01/Ofwat_totexoutcomes_FINAL_30012019.pdf).

244 FD, 'Securing cost efficiency technical appendix', page 183.

245 Europe Economics (2019), 'Real Price Effects and Frontier Shift – Final Assessment and Response to Company Representations', pages 61 to 62 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/Europe-Economics-%E2%80%93-Real-Price-Effects-and-Frontier-Shift-%E2%80%93-Final-Assessment-and-Response-to-Company-Representations.pdf).

448 Thirdly, the TFP growth estimates produced for Ofwat by Europe Economics incorporate an upwards bias. In the FD, Ofwat's chosen FS efficiency target is towards the top end of the range of TFP growth rates from comparator sectors which Europe Economics reported on. Given the following biases, Ofwat's selection of the top end of the TFP range results in a productivity target which is higher than achievable by the water industry during AMP7:

- Europe Economics selected an estimated range of TFP growth rates by excluding comparator industries they estimated have lower TFP growth rates. This involved setting a lower bound of the range at 0.6%, although the range observed across all comparator industries was -0.7% to 1.5%.[246] As none of the comparator sectors are wholly relevant to the water sector, the purpose of drawing TFP evidence across them all is to derive a reasonable estimate of TFP growth scope in the water sector. However, Ofwat arbitrarily ignored sectors with lower observed productivity growth and instead relied only on sectors at the top end of the range.

- Europe Economics selected a data window that artificially exaggerated long-term TFP growth. They did this by excluding data from 2008-09 from their defined business cycle. By ignoring the recessionary part of the latest economic cycle and including the periods of stronger growth, this created an upward bias in the long-term TFP growth estimates.

- Ofwat's decision to place weight on "value-added" (**VA**) TFP measures is not appropriate, and is not supported by Ofwat's own advisers (Europe Economics). As Europe Economics acknowledged, "gross output" (**GO**) TFP measures are a more appropriate measure of estimating FS which will be applied to totex or botex, as the latter include expenditure on intermediate inputs, whereas VA TFP includes only capital and labour. In responding to criticism from companies, Ofwat has failed to explain why any weight should be placed on VA TFP measures, while regulatory precedent also confirms VA TFP is ill-suited to this purpose.[247]

449 When setting the FS level, Ofwat should also have had regard to independent data on the level of achievable efficiencies.

(3) Ofwat's decision to apply FS to unmodelled base costs is unjustified

450 In the FD, Ofwat applied the FS target and RPE to all wholesale base expenditure, including unmodelled costs over which companies have no control. For Bristol Water, these costs include: abstraction charges, business rates, Traffic Management Act (**TMA**) costs, third-party costs and non-section 185 diversions costs.

451 Ofwat acknowledged that companies have a lower degree of control over these unmodelled base costs, so it is inconsistent for Ofwat to expect companies to achieve FS efficiencies in relation to them. To take the example of business rates, these are indexed to inflation and so, from year-to-year, no productivity improvements beyond those already embedded in CPIH are possible.

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246 Europe Economics (2019), 'Frontier shift and real price effects – updated at Draft Determination', page 74.

247 The CMA's *NIE Determination* and Ofgem's RIIO-T1/GD1 decisions both noted that VA TFP measures may not be well-suited for use in utility price controls.

452 This point is recognised by regulatory precedent (in particular Ofwat until the FD) which has not applied FS to uncontrollable costs:

- During RIIO-ED1, Ofgem treated business rates as a pass-through item, and did not apply its FS index to them; and
- During PR14, neither Ofwat nor the CMA applied FS to our uncontrollable costs. In CMA15, FS was applied only to botex which was assessed using benchmarking models (i.e. controllable costs).[248]

(4) The level of Ofwat's FS challenge goes beyond regulatory precedent

453 The 1.1% FS target chosen by Ofwat goes beyond the available regulatory precedent, which in almost all cases has adopted a level of 1.0% p.a. or below. Although the range adopted in RIIO-ED1 did stretch as far as 1.1%, this was the upper end of the range and not the point estimate being used. As stated above, Ofwat's FD is also unprecedented in applying FS to unmodelled costs. Table C8 sets out recent regulatory precedent for FS in the water and energy sectors.

Table C8 – Recent precedent for ongoing productivity assumptions in GB water and energy

Sector	Price Control	Control Period	Frontier shift assumption per year
Water	PR09	2010-2015	0.25% for base Opex water and wastewater
			0.38% for EN Opex water and wastewater
			0.40% for All Capex water and wastewater
	PR09 (CMA)	2010-2015	0.90% for Opex and 0.4% for Capex
	PR14	2015-2020	None (but benchmarking models included a time trend to capture dynamic efficiencies)
	PR14 CMA	2015-2020	1.0% for Totex
Energy	DPCR5	2010-2015	1.0% for Totex
	RP5 (CMA)	2012-2017	1.0% for Opex and Capex
	RP6	2018-2022	1% for Opex and Capex
	RIIO-T1	2013-2021	1.0% for Opex and 0.7% for Capex and Repex
	RIIO-GD1	2013-2021	1.0% for Opex and 0.7% for Capex and Repex
	RIIO-ED1	2015-2023	0.8% - 1.1% for Totex

248 CMA15, paragraphs 4.246 to 4.250.

13.2 The proposed remedy

454 We request that the CMA sets the FS at 1% per annum, and applies this to modelled costs only. The CMA should not subject unmodelled costs to a FS.

14. Input price error

14.1 The issue

455 When coming up with its FS challenge, Ofwat considered whether companies' costs would change relative to the standard measure of inflation (i.e. CPIH). Taking these changes in input prices into account – known as real price effects (**RPEs**) or input price pressure (**IPP**) – is important to ensure that the cost allowances given to companies adequately enable service delivery. As forecasting RPEs/IPP can be difficult, regulators may introduce a true-up mechanism to capture any differences between the actual specific price index and the forecast that was made during the price determination.

456 Ofwat identified key input prices for the water sector as labour, energy and material costs.[249] However, in both the DD and the FD, Ofwat granted an RPE allowance for labour costs only (together with associated true-up), and not for energy or material costs. The evidence shows that an energy RPE should have been included in the FD.

457 The majority of companies' energy costs are electricity costs incurred to pump water. Overall, electricity costs constitute c.9.4% of water companies' wholesale totex. Bristol Water's costs at 9% are forecast to be in line with the industry average, although historically they have been slightly above the industry average at c.10%.

458 In the FD, Ofwat conceded that *"there is some evidence to suggest that we should allow a real price effect for energy"*.[250] However, Ofwat then cited several reasons for not granting an RPE allowance for energy costs.

459 Ofwat's arguments for not granting an RPE allowance for energy costs are flawed. Our reasons for this are set out below and detailed in section 5.4 of the NERA Report.

(1) Ofwat stated that there is *"mixed evidence of a historical wedge"*, i.e. that electricity costs exhibit volatility and have not always grown at a different rate to economy-wide inflation[251]

460 Ofwat fails to take into account the latest government forecasts published by BEIS, which anticipate electricity prices will rise faster than inflation until at least 2024, with a consolidated annual growth rate of 1.6% p.a. in the period 2021-2025. This is shown in Table C9.

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249 FD, 'Securing cost efficiency technical appendix', page 187.
250 FD, 'Securing cost efficiency technical appendix', page 196.
251 FD, 'Securing cost efficiency technical appendix', page 196.

Table C9 – BEIS electricity price projections 2018-2025[252]

BEIS electricity price projections for reference, high and low prices scenario							
		Electricity price (p/kWh, 2018 prices)			RPE forecast		
Scenario		Low	Reference	High	Low	Reference	High
2017		10.03	10.03	10.03			
2018	F	11.47	11.81	12.26	14.3%	17.7%	22.2%
2019	F	11.44	12.37	13.50	-0.2%	4.7%	10.1%
2020	F	11.51	12.43	13.91	0.6%	0.5%	3.0%
2021	F	11.61	12.53	13.78	0.8%	0.8%	-0.9%
2022	F	11.44	12.50	13.68	-1.4%	-0.2%	-0.8%
2023	F	11.51	12.51	13.59	0.6%	0.1%	-0.6%
2024	F	11.70	12.81	13.89	1.6%	2.4%	2.2%
2025	F	12.28	13.46	14.10	5.0%	5.1%	1.5%
			CAGR over 2021-2025		1.3%	1.6%	0.3%
			CAGR over 2020-2025		1.4%	1.7%	0.9%

461 Any concerns Ofwat may have about uncertainty in future electricity costs should be addressed by implementing a true-up mechanism at PR24, as it proposed for the labour RPE.

(2) Ofwat argued that energy costs are partially within management control (for example by signing up to fixed tariffs to minimise price fluctuations)[253]

462 While management may have some options in responding to changes in energy costs, such responses are not costless, and rising input prices would still unambiguously increase our costs.

(3) Ofwat argued that some energy costs are already reflected in CPIH and therefore that indexation of the price control would "in part reflect" increases in energy costs[254]

463 This argument is inconsistent with Ofwat's approach to labour costs, which are subject to an RPE, while also featuring in the CPIH index. Moreover, Ofwat's consultants Europe Economics found that electricity costs account for only 1.3% of the CPIH basket, compared to approximately 9.4% of companies' wholesale totex, which shows that PR19 indexation insufficiently accounts for RPEs in energy.

252 BEIS (2019), 'Updated energy and emissions projections 2018: Annex M Growth assumptions and prices' (https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2018).

253 FD, 'Securing cost efficiency technical appendix', page 196.

254 FD, 'Securing cost efficiency technical appendix', page 196.

(4) Ofwat argued that water companies produce as well as consume energy, which reduces the net impact of energy price changes[255]

464 While energy self-generation provides companies some protection against short-term fluctuations in energy costs, this does not protect companies against the long-term tendency for electricity prices to rise.

(5) In the IAP, Ofwat applied a materiality threshold such that costs representing less than 10% of companies' totex would not qualify for an RPE[256]

465 Applying an arbitrary materiality threshold as a condition for granting RPE adjustments is not appropriate because the effect is to prevent companies from recovering efficiently-incurred costs. While Europe Economics purported to remove the wholesale cost share threshold in its updated report following the DD, they still drew different conclusions on inclusion of RPEs for labour costs versus energy costs on the basis of these costs share of companies' wholesale costs.[257]

(6) Ofwat claimed that some water companies did not assume an RPE adjustment, or that such an adjustment would be very small[258]

466 This claim contradicts the evidence provided by water companies and summarised by Europe Economics in their report for Ofwat, which shows that, on average, companies proposed a positive RPE for energy costs of between 0.4 per cent and 3.9 per cent per year over AMP7.[259]

(7) Ofwat argued that other protections within the price control (e.g. cost sharing) applied to companies[260]

467 This argument is irrelevant to the case for inclusion of an energy RPE: the same observation would apply to labour costs, in respect of which Ofwat did allow an RPE.

(8) Ofwat argued that companies are moving towards their target of net zero carbon emissions during the 2020 to 2025 period, and that these measures "*could have a substantial impact on energy usage in the sector*"[261]

468 This is irrelevant to whether or not companies will experience inflation in their energy costs. Indeed, pressures to decarbonise will tend to increase electricity costs, as companies are required to pursue low carbon options.

469 Overall, we are taking proactive steps to manage our energy costs through: (i) energy efficiency, such as the network scheduling optimisation 'IPSOS' which uses artificial intelligence

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255 FD, Securing cost efficiency technical appendix', page 197.
256 See Europe Economics (2018), 'Real Price Effects and Frontier Shift', page 18.
257 See NERA (2019), 'Response to Ofwat's Draft Determination on Real Price Effects and Frontier Shift Prepared for Bristol Water', page 30.
258 FD, 'Securing cost efficiency technical appendix', page 197.
259 Europe Economics (2019), 'Real Price Effects and Frontier Shift – Final Assessment and Response to Company Representations', page 16 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/Europe-Economics-%E2%80%93-Real-Price-Effects-and-Frontier-Shift-%E2%80%93-Final-Assessment-and-Response-to-Company-Representations.pdf).
260 FD, 'Securing cost efficiency technical appendix', page 197.
261 FD, 'Securing cost efficiency technical appendix', page 197.

learning to automatically time network pumping to minimise energy costs; (ii) efficient procurement; and (iii) use of renewable energy and self-generation, such as the gas generator at Purton.

470 However, the evidence shows that energy is a significant and increasing cost across the sector (see Figure C11), and that growth in electricity prices has historically outstripped CPIH inflation (see Figure C12). For these reasons – and the flaws in Ofwat's reasoning detailed above – an RPE for energy costs should be included for AMP7.

Figure C11 – The water sector's total wholesale water power costs trend[262]

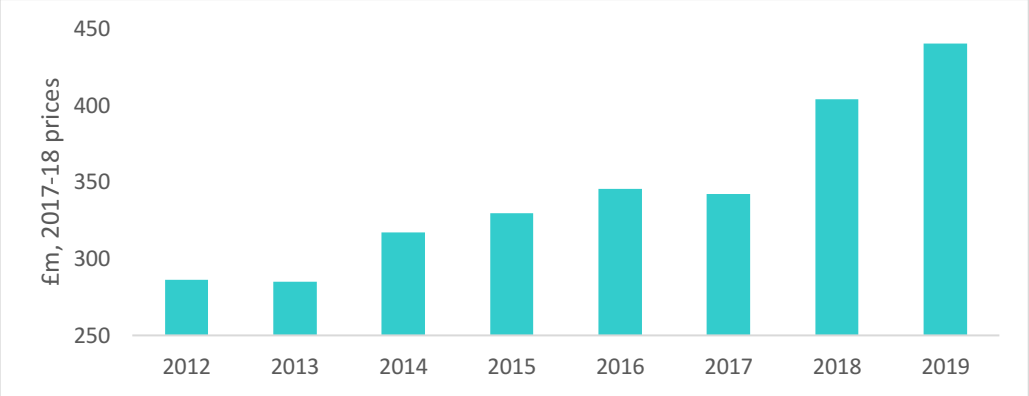
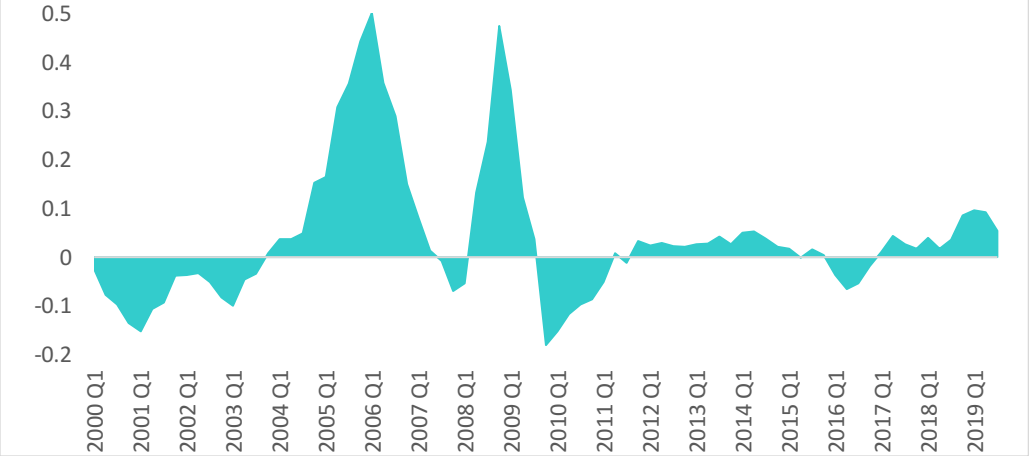


Figure C12 – Historical BEIS energy price index versus CPIH[263]



14.2 The proposed remedy

471 We request that the CMA includes an RPE for our energy costs, together with an associated true-up. We calculate that, based on 9.4% of industry costs and an annual above CPIH energy cost BEIS index of 1.6% p.a., an RPE for energy of 0.15% p.a. should be applied, in addition to

262 Source: KPMG analysis based on Ofwat's feeder model 1.
263 Source: KPMG analysis of BEIS Industrial energy price indices and CPIH.

the equivalent labour cost indexation that Ofwat included in the FD. This increases the Bristol Water wholesale base totex allowance by £2.0m.

15. Growth and developer services error

15.1 The issue

472 We have a statutory duty to meet demand for new connections from residential and business/commercial customers.[264] Our costs of doing so are known as developer services or 'growth' costs. It is particularly important that we recover these costs as we expect to face above industry average growth rates during AMP7.

473 In the FD, Ofwat reduced our allowed growth costs by £4.5 million, resulting in a significant shortfall in our required allowance. We consider that this decision was unjustified. Firstly, Ofwat's reliance on inadequate data has led it to systematically under-estimate our expected growth in new connections. Secondly, Ofwat has set the unit cost too low and applied inappropriate efficiency challenges, meaning that we are significantly under-funded. Thirdly, the adjustment Ofwat made in the FD to increase our growth costs was flawed and inadequate.

(1) Ofwat was wrong to rely on ONS data which underestimates our expected growth

474 Ofwat has relied on ONS household growth rate projections to estimate demand for new connections. It adopted this key change in its cost assessment approach at DD stage,[265] having initially proposed to rely on linear trends derived from historical new connections to project likely growth.[266]

475 In the FD, Ofwat states:[267]

> *"While forecasts based on historical values or trends are independent of company business plan forecasts, they may not capture changes in growth rates. This is the case for the number of connected properties, so we have considered independent and recognised sources to base our forecasts on and have decided to use household growth projections from the [ONS]. … The ONS is a recognised independent source, which is widely used for forecasting."*

476 Whilst we agree with the principle that estimating growth should be based on forecasts and not historical projections, we do not consider that the ONS data provides adequate growth estimates.

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264 Section 37(1) Water Industry Act 1991 (General duty to maintain water supply system etc).

265 FD, 'Securing cost efficiency technical appendix', page 19.

266 We challenged Ofwat's linear trend method at IAP stage on the basis that it would be inappropriate for companies that grow at a faster rate in AMP7 than the historical period and fails to consider our scheduled programme of mains extensions. See FD, 'Securing cost efficiency technical appendix', page 19.

267 FD, 'Securing cost efficiency technical appendix', pages 23 and 26.

477 Indeed, the ONS's official methodology itself makes clear that its data should not be used as a reliable forecast for growth, but rather as a trend-based starting point for analysis. Specifically, it states:[268]

> *"Household projections are not forecasts and generally take no account of policy or development aims that have not yet had an impact on observed trends. It should also be noted that future demographic behaviour is inherently uncertain, meaning that any set of projections will almost inevitably be proved wrong to some extent, when treated as a forecast or prediction of future numbers of households. Rather, household projections should be thought of as a trend-based starting point for analysis, providing data produced on a consistent basis for England, its regions and local authorities. Further analysis can be taken forward using these data, including the assessment of future housing need."*

478 In addition, the Government's current policy guidance for assessing local housing need suggests that the 2016-based ONS household projections upon which Ofwat relied for its growth estimates are of questionable usage:[269]

> *"The 2014-based household projections are used within the standard method to provide stability for planning authorities and communities, ensure that historic under-delivery and declining affordability are reflected, and to be consistent with the Government's objective of significantly boosting the supply of homes. …*
>
> *Any method which relies on using the 2016-based household projections will not be considered to be following the standard method as set out in paragraph 60 of the National Planning Policy Framework."*

479 Taking into account these limitations, we consider that a more appropriate source of data is our own company estimates – informed by local authority growth projections – on which Water Resource Management Plans (**WRMPs**) are based. WRMPs are a key planning document for the industry in which companies set out how they plan to maintain the balance between supply and demand for water for a minimum planning period of 25 years.

480 At DD stage, many companies made representations to the effect that Ofwat should rely on estimates from the WRMPs. In the FD, Ofwat responds as follows:[270]

> *"We recognise that local authority growth projections are consistent with the forecasts used by companies in their WRMPs. Local authority forecasts tend to be at the upper end of the range of possible growth rates. This may be appropriate for long term supply-demand balance planning, where these forecasts are used to identify capacity required and it may be appropriate to err on the high side. However, to set efficient base allowance in a manner that protects customers and does not expose companies to undue risk over a five year regulatory period, we consider that ONS forecasts are more*

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268 ONS (2018) 'Methodology used to produce household projections for England: 2016-based' (https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/methodologies/methodologyusedtoproducehouseholdprojectionsforengland2016based).

269 Ministry of Housing, Communities & Local Government (2019), 'Housing and economic needs assessment' (https://www.gov.uk/guidance/housing-and-economic-development-needs-assessments).

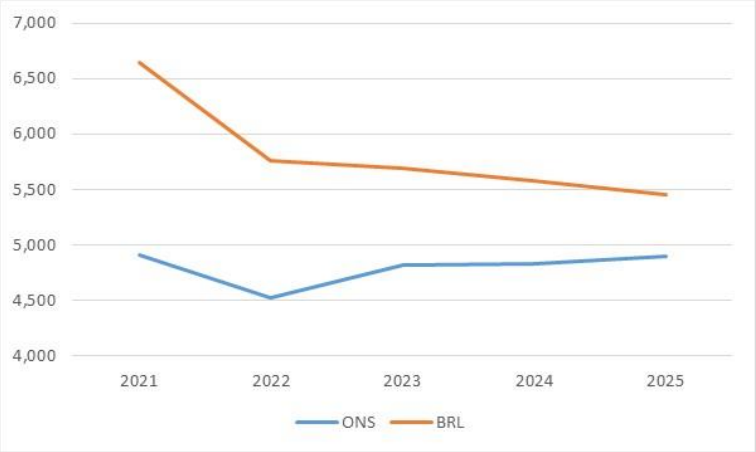
270 FD, 'Securing cost efficiency technical appendix', pages 26 to 27.

appropriate. We reviewed ONS household growth projections and found that they are typically higher than historical growth rates and lower than company growth forecasts. We therefore continue to use ONS household growth projections to forecast connected properties."

481 Contrary to the above, however, we are exposed to undue risk over the regulatory period.

482 The difference between using ONS data and company estimates is material. Our estimate for AMP7 is significantly above that of the ONS – a difference of over 5,100 connections, equivalent to over 20% of the total ONS forecast connections. The position is illustrated in Graph C3.

Graph C3 – Forecast new connections for AMP7[271]



483 As is shown in Graph C3, as a consequence of relying on inadequate data, Ofwat has assumed far lower levels of growth than our forecasts, which has in turn left us materially underfunded in terms of our required costs.

(2) Ofwat's approach to determining unit costs for growth is wrong, resulting in a unit cost that is too low

484 Establishing a standard unit cost for connections is not straightforward. Each new connection requires a mix of direct costs, the costs of physical connection to the network and, potentially, costs associated with required upstream reinforcement. This means that unit costs will vary as between companies and over time. For example, our net new connection costs were only £8.5 million in AMP5 but rose to £27.9 million in AMP6 (based on four years actual and one year forecast).

485 At IAP stage, Ofwat assessed connections/growth as enhancement expenditure and considered the associated costs separately to base costs. However, Ofwat made another key change in its cost assessment approach at DD stage by expanding the definition of base costs to include costs driven primarily by population growth – resulting in models known as the 'Botex plus models'. Ofwat justified this change on the basis that the cost drivers in the base

271 Source: FM_WW3_FD.xls, downloaded from Ofwat's website.

models would be affected by the numbers of new connections and consequently growth costs could be modelled at the same time.

486 We do not consider this reallocation of growth costs to base to be appropriate. The implied unit cost derived from the Botex plus models is £721.54 per connection on average across AMP7 (based on the implicit growth allowance for each year divided by the number of new connections). This is significantly below our own estimate of the cost at £1,014 per connection on average across AMP7, and even lower than our historical actual cost of £1,256 per connection. As Ofwat considered our unit cost estimates to be efficient at IAP stage when modelled separately, we do not understand why the unit costs for growth should differ so materially from our own estimates when modelled with base costs.

487 In addition, despite including growth costs in the base efficiency modelling, we note that Ofwat has applied the historical wholesale water efficiency challenge of 12% for Bristol Water to these costs. This in itself comprised a number of errors:

- Ofwat added in a reallocation to base expenditure from enhancement for resilience expenditure which was not part of the reallocation list in Ofwat's FD;[272]
- Ofwat applied the historical wholesale water efficiency challenge of 12% for Bristol Water to these costs rather than the forecast gap (c.6.9% without any growth adjustment) identified in the FD. This was not a logical approach;[273]
- Ofwat applied this efficiency challenge to both gross expenditure (which affects the totex menu) and the net of grants and contributions expenditure (which affects the revenue allowance); and
- Given other errors in Ofwat's application of its cost assessment, we do not consider that there is a base efficiency gap or that it should be applied to developer services expenditure.

488 Taken together, the above results in an unjustifiably low unit cost, which has important implications for our allowed revenue.

(3) The adjustment made in the FD was flawed and inadequate

489 In the FD, Ofwat continued to use the Botex plus models, updated for final 2018/19 data. Ofwat made an off-model adjustment for growth – using the developer services reconciliation mechanism – resulting in an additional allowance for high growth companies.

490 For wholesale water, the adjustment was calculated as the difference between forecast growth rates and the historical average of 0.7%, multiplied by the average historical unit cost of £783. Two elements of this adjustment are important. First, the unit rate is based on our

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272 FD, 'Securing cost efficiency technical appendix', page 51.

273 Ofwat state in 'Reference of the PR19 final determinations: Overview" (page 44, paragraph 4.55) (https://www.ofwat.gov.uk/wp-content/uploads/2020/03/Reference-of-the-PR19-final-determinations-Overview.pdf) that they made an adjustment if the company's proposed base costs were above what is efficient. However, this is not the case as the challenge appears to be historical base efficiency gaps (based on the IAP proposals), which means there is no influence from company DD response proposed base costs.

forecast number of connections and cost, and consequently is a rate significantly above that allowed as an implicit unit rate in the econometric modelling. This illustrates the under-allowance made for growth in the FD. Second, an efficiency adjustment has been made to this rate.

491 Application of the developer services reconciliation mechanism generated an additional £3.6 million for us (over 4,500 connections multiplied by £783), payable at the end of AMP7.

492 We estimate that a total of £37.6 million is required for new connections in AMP7. Of this, we expect to defray £20.7 million through developer charges and income, leaving £16.9 million of costs to recover through the price control. These numbers are net of our 8% efficiency challenge and FS assumptions.

493 The combination of the low forecast and low unit cost set out above mean that we remain exposed to a significant shortfall in allowed costs across AMP7. Although Ofwat attempted to correct for this in the FD through an additional allowance for high growth companies, this is flawed and inadequate. The continued shortfall in allowed costs is £4.1 million.

494 This shortfall, individually and in combination with other reductions to our cost allowances, has an adverse impact on our ability to finance our plan.

15.2 The proposed remedy

495 We request that the CMA calculate our cost allowance based on our WRMP estimate of new connections multiplied by our efficient unit cost. In practice, this adjustment may be higher than the gap on growth expenditure to our own plan. This is because of Ofwat's error in adjusting growth expenditure for the historical base efficiency model position, rather than taking into account their calculation of growth expenditure.

496 Calculated on the basis of removing the efficiency challenge, the appropriate uplift in gross totex in our allowance is £4.1 million. As Ofwat also applies efficiencies to assumed grants and contributions (which affects the revenue allowance), the uplift to net totex is lower at £2.1m.

16. CRT error

16.1 The issue

497 Bristol Water has a company-specific driver of costs – Canal and River Trust (**CRT**) payments – due to our area of operation. Ofwat allows companies to raise cost adjustment claims for "*unique and atypical material costs that they consider are not reflected in [Ofwat's] cost baselines*".[274] It states: *"Examples may include a new customer-driven investment; an*

[274] PR19 Final Methodology, paragraph 9.4.5.

atypically large investment by the company; or regional operating circumstances with significant impact on costs" (emphasis added).[275]

498 In the FD, Ofwat has disallowed £2.7 million of our £8.6 million cost adjustment claim in relation to CRT payments. Specifically, Ofwat has made a deduction to our claim to reflect potential savings from the use of the G&S Canal. The analysis used to estimate these 'savings' is not relevant for estimating the level of cost implicit in Ofwat's models for the G&S Canal, or the net additional cost we face, and is based on a high level indicative set of calculations which do not (and were not designed to) consider all the relevant costs. Ofwat's adjustments therefore do not improve the measurement of what costs are efficient. Also, Ofwat's logic is flawed, as it refers to the G&S Canal as a single source for cost allocation when it is in fact five sources in our regulatory reporting. And Ofwat does not appear to consider any double-counting with the implicit allowance we had already calculated and applied (which goes beyond the approach the CMA took in CMA15 in allowing our cost adjustment claim in full).

499 Bristol Water is unique and an outlier in the water sector in England and Wales in terms of the volume of raw water that an incumbent company pay a third party to provide.[276] Only around half of the water supplied within our area is sourced from within it, with the rest being transferred into the zone from outside the area.

500 Specifically, we abstract approximately 46% of our raw water from the G&S Canal, which is owned and operated by the CRT, and located within Severn Trent Water's supply area. Pursuant to a long-term bulk supply agreement, we make annual payments[277] to the CRT to cover the supply of water, which could otherwise be used in the G&S Canal, for the maintenance of the canal system to facilitate abstraction, and to cover the costs of any emergency situations preventing abstraction.[278]

501 Figure C13 shows our historical annual CRT payments. It shows that payments have been fairly constant over time. Increases in costs have largely been due to inflation.[279]

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275 Ofwat (2018), 'IN 18/02 March 2018, Price review submissions on 3 May 2018 for performance commitment definitions and cost adjustment claims' (https://www.ofwat.gov.uk/wp-content/uploads/2018/03/IN-1802-Price-review-early-submissions-on-3-May-2018-for-performance-commitment-definitions-and-cost-adjustment-claims2.pdf).

276 FD, 'Bristol Water – Cost efficiency additional information appendix' (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Bristol-Water-Cost-efficiency-additional-information-appendix.pdf).

277 These payments have a fixed and variable component both of which are indexed by RPI from 1998. In terms of fixed cost, we can abstract up to 57,000 Ml per annum at a cost of £1.000m inflated by RPI; and in terms of variable cost, we can abstract between 57,000 Ml and 76,650 Ml per annum, at an additional cost of £20/Ml inflated by RPI.

278 Abstraction from the G&S Canal has been a core and essential element of our water resources since 1962. Details of the history of this supply are included in section 6 of BW02 Cost & Efficiency and in our response to Ofwat query CE-007.

279 [✂

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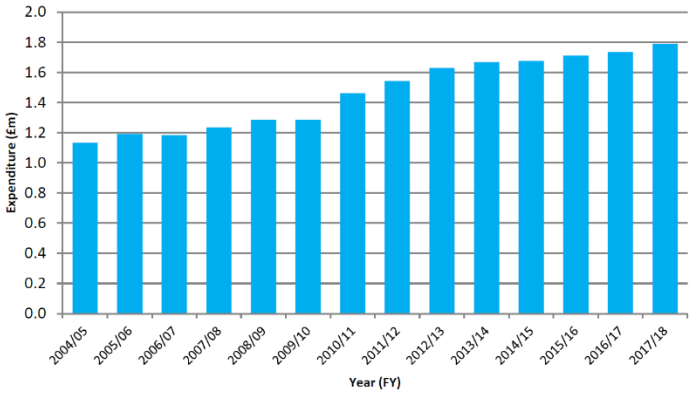
Figure C13 – Annual CRT payments (2004-2018)[280]



502 All water companies make payments to the Environment Agency (**EA**) for the water they take from the environment. The payments that we make to the CRT are a charge over and above our payments to the EA because the G&S Canal is well outside our area of appointment and the relevant arrangements were established in 1962 with the Severn River Authority who, at that time, had responsibility for both abstraction from the River Severn (now with the EA) and ownership and operation of the G&S Canal (now owned and operated by the CRT). The payments made to the CRT increase our costs relative to other water companies which can procure more of their raw water from within their areas of appointment and, absent our unique and atypical arrangements, do not have to make additional payments over and above those made to the EA. This was recognised in CMA15, in which the CMA stated: "…*Bristol Water [is] required to make additional payments, compared with other companies, for the water it [abstracts] from the environment*".[281] We note that the CRT also pass through to us the EA charge for abstraction licencing, which Ofwat treats as unmodelled costs.

503 As the raw water abstracted from the G&S Canal is of a lower quality than is usual for river sources, it is particularly complex and therefore more expensive to treat. We address this point further below.

504 If we did not have the supply of water from the G&S Canal, alternative sources of supply would be at a much higher cost. Specifically, our WRMP[282] models that the G&S Canal provides up to 210 Ml/d and 130 Ml/d on average. From our current water resource options it is not possible to provide that volume from alternative sources. Even if the most significant potential options were pursued (i.e. a second reservoir at Cheddar, no transfer to Wessex Water, 10Ml/d purchased water from a third party, and 6.5Ml/d of leakage reduction etc.), just over half (66 Ml/d) of the average water and one third of the maximum we currently source from the G&S Canal could be resourced from alternative options. The capital cost alone of delivering these options is estimated to be £122 million (equivalent to the cost of 68 years continued water sales from the CRT in 2017/18 prices). And examination of wider water resource options in the

280 Source: Bristol Water (nominal prices).

281 CMA15, Appendix 4.3, paragraph 18 (https://assets.publishing.service.gov.uk/media/5627995aed915d101e000001/Appendices_1.1_-_4.3.pdf).

282 Bristol Water (2019), 'Final Water Resources Management Plan 2019', page 52.

West of England suggests that existing sources could not provide this volume of water.[283] The supply of water from the G&S Canal is therefore necessary and efficient.

505 In our business plan, we forecast the total CRT payments over AMP7 to be £9.4 million. Third party assurance of the cost estimates was provided by Atkins.[284] Our cost adjustment claim of £8.6 million is therefore not for the full amount of the cost involved in securing this supply of water. This reflects a 5% deduction for water sales (£0.4 million), which is a cost where the revenue is outside of the price control, and an implicit allowance (£0.4m) which we calculated as our estimate of the element of the cost adjustment claim reflected in Ofwat's base cost modelling. Ofwat has acknowledged that some of the CRT costs are not reflected in its cost baselines.[285]

506 Our CRT payment costs have also been confirmed to be material,[286] assessed against Ofwat's definition of 6% of water resources planned totex.[287]

507 **Our CRT payment costs are therefore unique, atypical, material, necessary, efficient and largely not reflected in Ofwat's cost baselines.** Nor are there any costs that we avoid through this supply arrangement which mitigate the costs incurred (see further below). We therefore consider that our cost adjustment claim should be allowed in full.

508 However, Ofwat's treatment of this cost item has been inconsistent over PR14 and PR19 (including within each respective price review itself).

509 At PR14, Bristol Water applied for a cost adjustment claim of £8.1 million to cover its annual CRT payment of £1.67 million across AMP6:

- In the PR14 DD, Ofwat did not grant any cost adjustment claim but assessed that an implicit allowance for CRT payments was made in its base cost allowance of £1.8 million across AMP6.[288]
- In its subsequent FD, Ofwat granted Bristol Water an allowance of £6.3 million for CRT payments, calculated as Bristol Water's original claim less Ofwat's assessment of its implicit allowance for CRT payments.
- In its redetermination of Bristol Water's PR14 price control, the CMA granted Bristol Water its full claimed amount of £8.1 million. The CMA did not agree with either of the two approaches used by Ofwat to calculate the implicit allowance, stating: *"On approach (a), we did not consider that Ofwat's calculation method for the implicit allowance was likely to provide a good estimate of the extent to which the expenditure estimates from Ofwat's models (or our alternative models) took specific account of the additional costs relating to payments to the [CRT] … We did not consider that … approach [(b)] provided a reasonable way to estimate an efficient level for the payments*

283 Bristol Water (2019), 'Final Water Resources Management Plan 2019'.
284 Atkins (2018) 'AMP6 Reporter - Technical Assurance of Cost Adjustment Claims - August 2018'.
285 FD, 'Cost efficiency additional information appendix', page 6.
286 See https://www.ofwat.gov.uk/initial-assessment-of-business-plans-cost-assessment-models/.
287 PR19 Final Methodology, paragraph 9.4.5.
288 Ofwat (2014), PR14, 'Setting price controls for 2015-20 – Draft price control determination notice: company-specific appendix – Bristol Water', page 43 (https://www.ofwat.gov.uk/wp-content/uploads/2015/10/det_pr1408brldraft.pdf).

that Bristol Water needed to make to the [CRT]."[289] The CMA also stated that there was no evidence that the level of costs forecast by Bristol Water were inefficiently high.[290]

510 At PR19, our claim, in real terms, is slightly lower than our claim for PR14 (which, as set out above, the CMA allowed in full). However, Ofwat has only partially allowed Bristol Water's cost adjustment claim for CRT payments.

511 At IAP stage, Ofwat stated:[291]

> "*We accept that this area of expenditure is not covered by the modelled allowance and we have therefore assessed it through our unmodelled expenditure approach, see the unmodelled costs spreadsheet covering abstraction. We have recorded this claim as rejected within this template because the assessment of expenditure does not take place through the cost adjustment process. This rejection reflects the administration of our models rather than an opinion on the validity of the expenditure*."

512 As Ofwat confirmed that this area would be treated as unmodelled expenditure, we believed the claim was accepted as valid at this point.

513 At DD stage, however, Ofwat did not make an allowance for Bristol Water's CRT payments. Ofwat stated:[292]

> *"At the initial assessment of plans we assessed Bristol Water's claim for costs to purchase water from the [CRT] incorrectly. We treated it as part of abstraction charges and therefore as an unmodelled cost. We made an allowance only for the abstraction charges in our view of costs at the initial assessment of plans. For the draft determination we have further assessed the claim which relates specifically to the company's raw water purchase, and is separate from abstraction charges paid to the [CRT]. The company responded to our queries and provided more information. However, we reject the claim at draft determination. The company does not demonstrate its current cost of water is atypical and uniquely high. The payment represents the most efficient source of supply for many of Bristol Water's customers, and there are economies of scale from obtaining 45% of supply from a single source. We consider our modelled allowance, which includes industry costs for sourcing water is sufficient for the current [CRT] costs."*

514 In response to Ofwat's DD position, we provided further evidence as to the uniqueness of our cost base. This included demonstrating that our water resource costs, including the water purchase from CRT, as a proportion of total water wholesale costs are the highest in the industry.[293] Specifically, excluding our CRT payments reduces our proportion of water resource costs of total water wholesale totex to 11.0% (the fifth highest in the industry). This shows that, without these company-specific costs, we would not be an outlier in the sector. The

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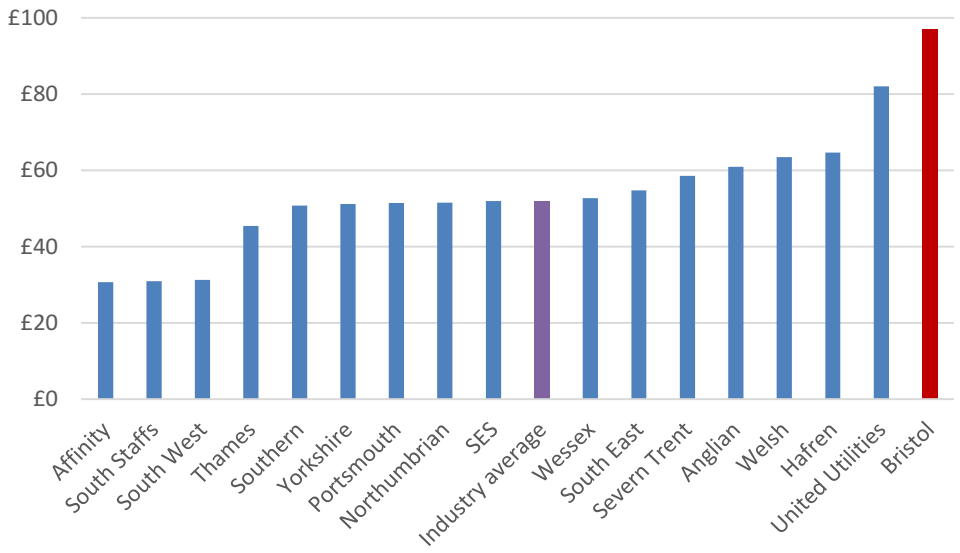
289 CMA15, Appendix 4.3, pages 5 to 6.
290 CMA15, Appendix 4.3, paragraph 28.
291 Ofwat (2019), FM_CAC_BRL_IAP.xls.
292 DD, 'Bristol Water Draft Determination', page 22 (https://www.ofwat.gov.uk/wp-content/uploads/2019/07/PR19-draft-determinations-Bristol-Water-draft-determination.pdf).
293 Bristol Water (2019): 'BW02 Cost and efficiency', page 66.

difference is even starker when we consider raw water abstraction costs (the component of the water resources control that includes our CRT payments) across companies – Figure C14.

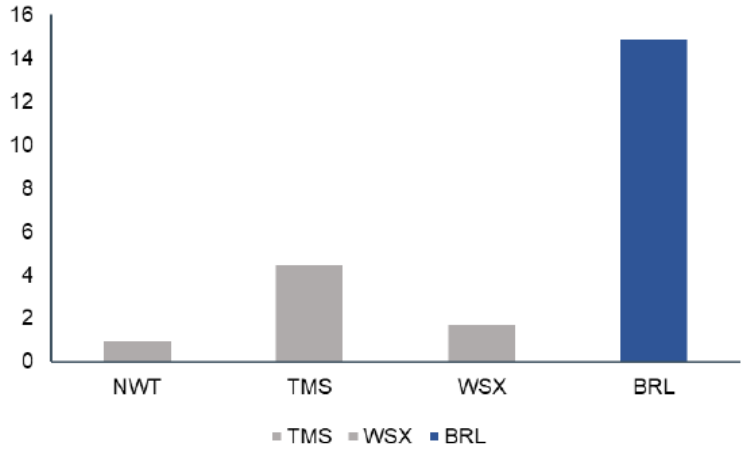
Figure C14 – Operating expenditure (excluding third party services) per Ml of distribution input, 2018/19



515 We sought to identify examples of other companies making similar payments and commissioned a report by NERA which compared our costs to other companies that undertake water trading and purchase water from the CRT.[294] The latter showed that our payments are significantly greater than other companies in the sector, again demonstrating the uniqueness of our circumstances. We do not agree with Ofwat that there are other examples that are comparable, but in terms of Ofwat's efficiency modelling used Elan Valley as an attempt to calculate a generous estimate (as we have imperfect knowledge of all arrangements that may exist). This is addressed further below. However, Ofwat continued to query whether there were other examples which affected its efficiency modelling and whether we saved money because of the scale of the supply (despite the simple operating unit cost comparison shown in Figure C15).

294 NERA (2019) 'Review of Ofwat's PR19 Draft Determination on Bristol Water's Special Factor on Canal and River Trust Payments'.

Figure C15 – Payments to the Canal and River Trust (£ per property)[295]



Source: NERA analysis of Ofwat data.

516 Because of Ofwat's continued challenge, and despite circumstances not changing since 2015, we considered further whether there is an implicit allowance in Ofwat's base cost models for our CRT payments. Despite Ofwat's cost models not having any specific cost driver variable to reflect the costs in question, an implicit allowance could arise from other companies having similar types of costs in their cost bases. We found no evidence to suggest that equivalent costs are incurred by any other company across the sector, but noted that Elan Valley could be of some relevance. We do not believe this is a valid comparison to the specifics of the G&S Canal as it is an aqueduct direct from a reservoir, but it could be relevant as a local average cost that is included in other companies cost bases and Ofwat's efficiency analysis – an implicit allowance. Based on our understanding of this scheme, we estimated an implicit allowance within Ofwat's base cost models of £21,000.[296] We then made a hugely generous assumption that there are 20 similar sites across England and Wales, increasing our estimate of an implicit allowance to £0.4 million and reducing our overall cost claim to £9.0 million. We then reduced our claim by a further 5% to reflect the proportion of the water abstracted from the G&S Canal (following treatment and distribution) that we sell on to Wessex Water.[297] This resulted in a revised cost adjustment of £8.6 million.[298] Mindful of Ofwat's statements in the PR19 Final Methodology that cost adjustment claims should be "*prudent*", "*appropriate*", "*efficient*" and "*challenging*", we used three methodologies to estimate this implicit allowance and chose the methodology which produced the highest number (£81,000 per year in AMP7) to revise our cost adjustment claim for CRT payments downwards.[299] In short, we provided an updated value of our claim, based on the most exaggerated views of what could already be allowed for within the model, to avoid Ofwat's 'all or nothing' approach.

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295 Ofwat's comparative benchmarking models control for the number of customers served by each company, so the relevant metric for assessing the uniqueness of these costs is the amount of the payment per customer.

296 Bristol Water (2019) 'Response to PR19 Draft Determination: BW02: Cost and Efficiency', pages 72 to 75.

297 Ofwat's cost assessment framework for bulk exports sits separately to the base cost models. Therefore, we strip out this proportion of the water purchase cost from our cost adjustment claim.

298 Bristol Water (2019), 'BW02 Cost and efficiency', page 75.

299 Bristol Water (2019), 'BW02 Cost and efficiency', page 75.

517 In the FD, Ofwat accepted the need for our cost adjustment claim, and our proposed deductions to our cost forecast (i.e. the £0.4 million implicit allowance adjustment, and the 5% adjustment for water sales), but applied an additional challenge of £2.7 million based on its interpretation of some supplemental analysis we provided in our DD response (intended to illustrate that any potential ancillary benefits from our CRT arrangement within the Ofwat cost modelling framework were likely to be more than offset by additional costs elsewhere in the value chain).[300] Ofwat stated:[301]

> *"We do not agree the unique contractual arrangement to source raw water, in itself, means that our models do not capture these costs and that an adjustment is required. Other companies incur alternative costs associated with owning water resource assets, which means that these costs are reflected in our models and in our base allowance. … The company does not present evidence which explains why the canal water purchase is any more costly than in-house water resource costs that other companies incur. We consider that there are many specific water resource costs that other companies incur that Bristol Water either does not, or does so at a lower level. Other companies incur the costs of maintaining and operating pumped storage reservoirs … and these costs will be captured in our base model allowances. The only difference is that Bristol Water pays a third party to provide the water resources from the canal (which is essentially a pumped storage reservoir) with the third party payment covering these costs that companies with in-house sources will otherwise incur. However, we include all in-house costs within our base models together with these other companies' explanatory variables, and as these are not discrete purchases of services from a third party, these costs are not easy to separately identify within the water resources controls. … However, we do acknowledge … that there may be some additional costs incurred beyond the modelled base allowance. … and therefore make a partial allowance, excluding the annual savings identified by the company."*

518 Ofwat deducted "*the annual savings identified by [Bristol Water]*" of £0.535 million in each year of AMP7 to reduce Bristol Water's revised cost adjustment claim (£8.6 million) to £5.89 million across AMP7.[302] Ofwat made no comment on the implicit allowance we had already calculated and applied, and it had accepted.

519 In our DD response, we provided some high level indicative analysis of the raw water abstraction costs we incur, and compared the costs of abstracting from the G&S Canal (excluding the CRT payments) to the cost of abstracting from other sources. This indicative analysis, based on high level data, suggested that there may be some cost benefits of £0.535 million a year resulting from abstracting from the G&S Canal. We also provided some indicative analysis that these 'savings' were likely to be more than offset by higher costs elsewhere in the value chain. For example, the quality of canal water is comparatively poor and therefore requires a greater level of complex treatment. We estimated the additional

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300 FD, 'Bristol Water - Cost efficiency additional information appendix', page 6 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Bristol-Water-Cost-efficiency-additional-information-appendix.pdf).

301 FD, 'Bristol Water - Cost efficiency additional information appendix', pages 4 to 6.

302 FD, 'Bristol Water - Cost efficiency additional information appendix', page 6.

treatment costs to be £1.192 million, which would more than offset the potential benefit from the seemingly lower abstraction costs.[303]

520 In the FD, Ofwat did not accept our analysis that the higher treatment costs were likely to offset any potential 'savings', and instead used our high level indicative 'savings' analysis to reduce our cost adjustment claim. Specifically, Ofwat multiplied our indicative figure by five (to convert it into a five-year figure) and deducted it from our cost estimate.

521 Ofwat also undertook some further analysis on the costs of abstracting from the G&S Canal.[304] This involved proportioning overheads in line with the number of water sources. Ofwat took our total water source figure (25) and allocated 1/25th of our overheads to the G&S Canal source costs. However, Ofwat's analysis contained a clear error, as five of our sources (as reported in our asset register) relate to abstraction from the G&S Canal. Therefore, Ofwat's overhead allocation should have been 5/25ths to the G&S Canal source costs. In any event, we do not accept that this overhead allocation is logical, compared to using volumes as an overhead driver for central water resource planning and monitoring costs.

522 In addition, Ofwat stated:[305]

> *"Bristol Water claims that the additional treatment complexity expenditure is not captured by the base models which offsets most of the benefits of sourcing the canal water including any impact of economies of scale. The water abstraction, storage and treatment facilities are co-located but outside the company's area of operation. We consider that the location has no impact on the savings as the operational workforce can be based on this large operational site. We consider treatment complexity variable captures costs of treating canal water adequately in our base models. This change in our models since PR14 also means that one of the CMA justifications for making an allowance is no longer valid."*

523 However, Ofwat provided no analysis to support the view that our higher treatment costs are adequately addressed through the Ofwat base cost models.

524 As the NERA Report explains, Ofwat has two models for water resources:

- **WRP1** includes a variable that captures the percentage of water treated at complexity levels 3 to 6; and
- **WRP2** includes a variable that captures the weighted average treatment complexity of water.[306]

525 NERA go on to state:[307]

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303 For example, we only considered the impact on direct abstraction costs (whereas a more complete analysis would consider other ways that the water source impacts on our costs base) and it does not consider whether any of the ancillary costs/benefits should have an implicit allowance adjustment (which could be positive or negative). And no analysis was undertaken on whether the direct abstraction costs are already considered to some degree within the Ofwat models.

304 FD, 'Bristol Water - Cost efficiency additional information appendix', page 5.

305 FD, ' Bristol Water - Cost efficiency additional information appendix', page 6.

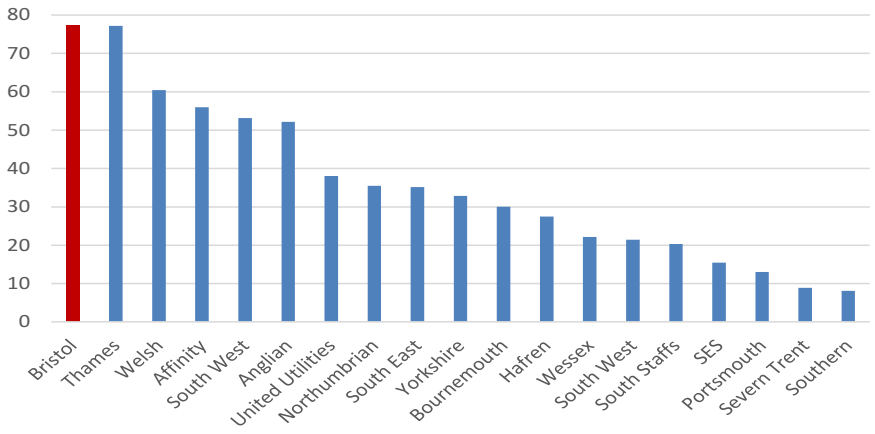
306 NERA Report, paragraph 159.

"Ofwat does not include both variables in a single model. In its triangulation of results to set base cost allowances, Ofwat averages across its water resources plus … models that each include only one of the above variables. Consequently, Ofwat's final base cost allowance for treatment costs can be thought to comprise an average of the above two approaches."

526 In general, the higher the treatment level complexity, the higher the costs (hence the use of such variables). NERA conclude that neither of Ofwat's control variables for the complexity of water treated adequately compensates us for the extra costs of treating water from the G&S Canal.[308]

527 Specifically, the complexity variable in WRP1 does not fully cover the additional costs to which we are exposed. It groups the proportion of treated water at works for complexity levels 3 to 6 together. This does not reflect the fact that we have an extremely high proportion of water treated at complexity levels 5 to 6 relative to other water companies, driven primarily by water sourced from the G&S Canal.[309] This is shown in Figure C16.

Figure C16 – Average proportion of water treated at complexity levels 5 and 6 (2012-2019)[310]



528 Moreover, whilst Ofwat's control variable for complexity in WRP2 does distinguish between water treated at level 3 and level 6 complexity levels, Ofwat's use of the logarithm of the weighted average complexity score of water in this model means that its base cost allowance still does not compensate us for the costs of treating more complex water. This is because the assumptions made by Ofwat – without justification or evidence – mean that it will tend to overcompensate water companies which have relatively low complexity levels and undercompensate water companies who have relatively high scores of water treatment complexity. As we have amongst the highest weighted average treatment complexity - because we treat water from the G&S Canal – Ofwat's allowed base costs therefore undercompensate us for the costs we incur efficiently to treat our water.[311]

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307 NERA Report, paragraph 161.
308 NERA Report, paragraph 162.
309 NERA Report, paragraph 165.
310 Data taken from Ofwat (2019) 'Feeder model 1: Wholesale water – Master data'.
311 NERA Report, paragraphs 166 to 169.

529 We further note that the complexity level classification is an imperfect measure for treatment works complexity in any event. For example, our treatment works Littleton and Purton (which both treat water taken from the G&S Canal) are classed as complexity level 5, but are exposed to much higher levels of water quality risks than other works with the same complexity classification. A comparison between these sites and our other level 5 sites is shown in Table C10.

Table C10: Mapping of Source to Treatment Works, Risks to Processes

Treatment works	Water Quality risks requiring treatment		Complexity of Treatment
	No. Unique Unacceptable Risks	No. Unique Medium Risks	
Littleton	16	23	SW5
Purton	16	23	SW5
Banwell	15	13	SW5
Barrow	14	12	SW5
Stowey	12	7	SW5

530 Therefore, even if Ofwat explicitly controlled for level 5 complexity – which it does not – it would not capture the additional costs that we incur at these sites.

531 As the NERA Report concludes:[312]

> *"Contrary to Ofwat's claim that its "model suite now captures treatment complexity", Ofwat's approach to cost allowances does not adequately compensate Bristol Water for the efficient costs it incurs to treat the unusually complex water from the Gloucester and Sharpness Canal. Of Ofwat's two "control variables" … one does not reflect differences in the costs that Bristol Water would efficiently incur to treat water with complexity level 3 and complexity level 6; and … the other undercompensates Bristol Water for having a higher weighted average of complexity of water."*

532 We note for completeness that we initially submitted a cost adjustment claim to Ofwat in relation to higher treatment complexity costs. However, when Ofwat changed its base cost models to include the treatment complexity variable, the headline value estimated in our submission ceased to be material (based on Ofwat's definition of materiality) on its own. It is, however, greater than the 'savings' Ofwat has deducted from our claim.

533 Our cost adjustment claim included an estimate of a 'residual claim' – that is, the additional costs we incur due to the high levels of complexity at our Littleton and Purton works that would not be picked up in a model that uses the standard complexity classifications. Table C11 shows a comparison of the costs at our Littleton and Purton works to the costs of our other level 5 works.[313]

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312 NERA Report, paragraph 175.

313 Bristol Water (2018) 'Cost and Efficiency – C5A Technical Annex: Cost Adjustment Claims' (https://www.bristolwater.co.uk/wp-content/uploads/2018/09/BRL.C5A.Cost-Adjustment-Claims.pdf).

Table C11: Treatment work site comparison of costs per Ml to other WS5 works at Bristol Water, 2016/17 and 2017/18

2016/17	Purton	Littleton	Other SW5 works
Treatment work costs (£/Ml)	181.31	178.50	159.51
Cost difference to SW5 works (£/Ml)	21.80	18.99	-
Treatment work output (Ml)	34,582	10,943	-
Total cost difference to SW5 works (£m)	0.754	0.208	-

2017/18	Purton	Littleton	Other SW5 works
Treatment work costs (£/Ml)	177.52	161.02	155.30
Cost difference to SW5 works (£/Ml)	22.22	5.72	-
Treatment work output (Ml)	34,036	12,199	-
Total cost difference to SW5 works (£m)	0.756	0.070	-

534 As can be seen, the total additional costs at Purton and Littleton (relative to other level 5 sites) in 2016/17 was £0.962 million, and in 2017/18 was £0.826 million. In both years considered, the additional treatment complexity (that would not be picked up in Ofwat's models) significantly exceeds the £0.535 million of potential offsetting 'savings' adjustment.

535 We therefore consider that Ofwat was wrong to use our high level indicative 'savings' analysis to reduce our cost adjustment claim as, among other things, it does not take into account the difference in costs from treating the water. In short, and as NERA conclude:[314]

> *"Ofwat's base cost allowance does not adequately control for the extra costs that Bristol Water incurs to treat water from the [G&S] Canal."*

536 Finally, we note that no such offsetting adjustment was applied in CMA15. In fact, the CMA's decision to allow our cost adjustment claim for CRT payments relied in part on the extra costs of treating water from the G&S Canal. The CMA stated:[315]

> *"We considered whether there were any closely associated offsetting factors that should be taken into consideration. For instance, if a company takes water from a third party (e.g. bulk supply from another water company or from a canal) this might enable it to avoid some costs that other companies in the industry incur, such as maintenance costs for abstraction and raw water transportation and water treatment costs. In the case of the water from the Sharpness Canal, we did not consider that there were factors that were likely to offset the payments to the Canal and River Trust. The water that Bristol Water abstracts from the Sharpness Canal requires treatment by Bristol Water, and*

314 NERA Report, paragraph 176.
315 CMA15, Appendix 4.3', paragraphs 19 and 20.

Bristol Water's submissions argued that the quality of raw water from the canal was worse than was typical for river sources. From a high-level review, abstraction from the Sharpness Canal did not seem a significant benefit to Bristol Water in terms of raw water transportation costs: the abstraction point from the canal at Purton is outside Bristol Water's area of appointment, and did not seem to be in a particularly convenient location; it is not close to Bristol and is further from the main areas of demand than other water sources used by Bristol Water. Our wider review of Bristol Water's water treatment costs … did not identify significant factors that were likely to offset the additional costs relating to Canal and River Trust payments."

16.2 The proposed remedy

537 Based on the above, we request that the CMA allow our cost adjustment claim relating to payments to the CRT in full (£8.6 million), as it did in CMA15. This would result in a £2.7 million increase to our cost allowance relative to Ofwat's FD.[316]

17. Enhancement opex error

17.1 The issue

538 Ofwat has reduced our base opex allowance by £3.3 million as a result of an error in applying the implicit allowance adjustment that estimates what past enhancement opex is included in base cost modelling. This was despite the reduction being greater than the £1.1 million of enhancement opex we proposed in our plan for AMP7.

539 The relevant background to this error is that Ofwat's base cost models use historical data to forecast future base expenditure. At DD stage, Ofwat considered there was a risk of double counting because the historical data may include opex from enhancements and Ofwat's AMP7 enhancement allowances also include opex. Ofwat therefore made an adjustment to correct for this.

540 The adjustment involved estimating how much of the base cost allowance might be driven by past enhancement opex. Ofwat looked at data from six companies in a single year (2017/18) to reach its estimate. Ofwat then deducted this 'implicit allowance' from companies' base cost allowances.

541 Ofwat described its approach as follows:[317]

"Our base models use historical data to derive the relationship between base costs and cost drivers, which we use to forecast future expenditure (see above). The historical data includes total opex, some of which relates to historical enhancement activities. Our forecast of future expenditure will therefore include an allowance for enhancement opex.

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316 [✂

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317 FD, 'Securing cost efficiency technical appendix', page 36.

Since we make totex allowances for enhancement activities, which include opex and capex, our allowance would be double counting the enhancement opex.

To ensure that customers do not pay twice for enhancement opex, once through our base allowance and once through our enhancement allowance, we estimate the implicit allowance in our base models and remove it from our base allowance."

542 Ofwat's approach was criticised by companies at DD stage for several reasons including the significant variation of enhancement opex proportions across companies (resulting in a highly sensitive model); the six companies' data revealed substantially higher enhancement capex in 2017/18 than the industry average; and the approach assumes enhancement opex ceases at the end of the 2015-20 period, whereas in practice some opex solutions will continue and need to remain in the base allowance.

543 In the FD, Ofwat acknowledged the concerns and confirmed that it had taken steps to remedy certain of these:[318]

"We acknowledge the lumpiness and the variation in proportion of enhancement opex across companies. We also acknowledge that some opex solutions may continue beyond the 2015-20."

544 Ofwat stated that it had re-run the analysis using 2018/19 data and had included a greater number of companies within the analysis. However, Ofwat continued to exclude Bristol Water and other company data.[319]

545 Despite Ofwat's adjustments in the FD, the application of the 'implicit allowance' for Bristol Water is unjustified for the following reasons.

(1) Ofwat has deducted more enhancement opex from our base cost allowance than we proposed in our business plan

546 The result of Ofwat's adjustment for an 'implicit allowance' for Bristol Water (as for other companies) is that Ofwat has deducted more enhancement opex from our base cost allowance than we proposed in our business plan. This is not a reasonable outcome.

547 Ofwat's approach results in a £3.3 million reduction to our base cost allowance on the basis of the 'implicit allowance'. Yet we only proposed a total of £1.1 million of enhancement opex in our plan.

548 The problem arises because Ofwat's approach only considers gross enhancement opex. Some investments give rise to opex costs, while others reduce opex costs. By only considering the cost increases, Ofwat has overstated the extent that base cost allowances should be reduced.

549 This relationship is illustrated in Table C12, which provides a breakdown of the impact on opex from our investment programme, including AMP6 enhancements (increases and decreases). Our **net position** for the opex impact of the investment programme is almost zero at £0.1

318 FD, 'Securing cost efficiency technical appendix', page 38.
319 FD, 'Securing cost efficiency technical appendix', page 39.

million (albeit it remains positive). However, it is significantly less than the gross figure. This reveals that too much opex has been deducted from base as a result of Ofwat's approach of only considering **gross opex impacts** from past enhancements. We had already deducted this impact as part of our base opex forecast (and do not know the extent to which Ofwat considered whether other companies had taken such impacts into account).

Table C12: Bristol Water's opex impacts from enhancement

Cost category	Opex increase, £m	Cost category	Opex decrease, £m
Active leakage control	+£1.9m	IT investment and upgrade benefits to existing services	-£1.5m
Water resource management plan actions	+£0.8m	Internal process improvement	-£0.7m
Customer side leakage repairs	+£0.6m	Monitoring of resource usage	-£0.6m
Network monitoring loggers	+£0.6m	Other items	-£0.5m
Reduction of customer minutes lost	+£0.6m	Environmental performance	-£0.3m
		Alderley cryptosporidium membrane self-cleaning	-£0.3m
		Customer analytics	-£0.2m
		Water resource catchment management	-£0.2m
		Consolidation of resources	-£0.1m
Total	**+£4.5m**	**Total**	**-£4.4m**

550 When we pointed out the resulting flaw at DD stage and put a proposal to Ofwat to cap the implicit allowance to correct for this problem,[320] Ofwat dismissed the issue:[321]

> *"One representation suggests we should cap the implicit allowance at the total enhancement opex in each company's plan. We do not agree with capping enhancement opex to that in the plan. The enhancement opex implicit in our base allowance is based on historical data and is therefore unrelated to what companies are proposing in their business plans for 2020-25."*

551 This is not a reasonable response given the clear nature of the error. Capping the implicit allowance at the total level of enhancement opex was an appropriate remedy which would have been easy to implement.

320 Bristol Water (2019), 'Response to PR19 Draft Determination – Document BW02: Cost and Efficiency', page 46.
321 FD, 'Securing cost efficiency technical appendix', page 39.

(2) Ofwat's error gives rise to a material reduction in our overall base cost allowance

552 If the implicit allowance were capped at our total level of enhancement opex, then our cost allowance would increase by £2.2 million. This is on the basis of capping the implicit allowance at the lower end of the actual enhancement opex (as at the IAP) and the base model enhancement implicit allowances (as at the DD). This is a reasonable approach given that Bristol Water was excluded from Ofwat's calculation of the industry implicit allowance.

553 Ofwat's error gives rise to a reduction in our overall base cost allowance which is material when considered in combination with other measures.

17.2 The proposed remedy

554 We request that the CMA increase our base costs by £2.2 million to correct for the enhancement opex error.

18. Enhancement efficiency error

18.1 The issue

555 Ofwat has applied what it terms a "shallow dive" assessment when assessing the efficient cost of several of our enhancement schemes. This has resulted in Ofwat wrongly imposing an additional 10% efficiency challenge without assessing the efficiency of our enhancement costs.

556 By way of background, Ofwat applied a threshold in determining whether to conduct shallow dive or deep dive efficiency assessments. Shallow dive assessments were described as "light touch" and involved the application of a "company-specific efficiency factor":[322]

> *"If the expenditure is below 0.5% of the company's water or wastewater wholesale totex, we carry out a shallow dive assessment. Our shallow dive is light touch and we allow the costs after applying a 'company-specific efficiency factor' (discussed below) where appropriate. At our discretion we may carry out a deep dive assessment for investments that are below but close to this threshold, particularly where we are assessing other companies' proposals through a deep dive".*

557 Ofwat explained that the "company-specific efficiency factor" was derived from each company's base cost efficiency:[323]

> *"In the absence of comparative evidence to use as an efficiency challenge, we use the company's base cost efficiency as evidence of the overall efficiency of the company's business plan cost proposals. To challenge proposed costs we use the 'company efficiency factor'. A company efficiency factor is the ratio of our view of efficient modelled base costs to the company view of modelled base costs over 2020-25."*

322 FD, 'Securing cost efficiency technical appendix', page 50.
323 FD, 'Securing cost efficiency technical appendix', page 50.

558 In the FD, Ofwat applied a shallow dive challenge at the maximum level of 10% to seven of our enhancement categories, as summarised in Table C13.

Table C13 – Enhancement categories where Ofwat applied 10% efficiency challenge

Enhancement category	Our position, £m	Ofwat's position, £m	Cost gap, £m	Cost gap, %
Drinking Water Protected Areas (schemes)	1.496	1.346	0.150	10%
Making ecological improvements at abstractions (Habitats Directive, SSSI, NERC, BAPs)	1.796	1.616	0.180	10%
Eels Regulations (measures at intakes)	0.415	0.374	0.042	10%
Freeform[324]	1.415	1.274	0.142	10%
Invasive non-native species	0.547	0.492	0.055	10%
Investment to address raw water deterioration (THM, nitrates, Crypto, pesticides, others)	1.559	1.403	0.156	10%
Water Framework Directive measures	0.235	0.212	0.023	10%
Total	**7.463**	**6.716**	**0.747**	**10%**

559 Taken individually, each challenge is relatively small (as the 10% challenge is applied to a small cost base). However, cumulatively the deductions amount to £0.747 million, which adds further to the materiality of the overall cost challenge imposed by the FD.

560 We consider Ofwat's approach to be unjustified for three reasons.

(1) Ofwat was wrong to impose further efficiency challenge absent an efficiency assessment

561 We had already applied challenging efficiency targets to our enhancement expenditure and do not consider Ofwat's further challenge to be justified absent a proper assessment. This is particularly the case given that, as shown below, in areas where Ofwat did conduct a detailed efficiency assessment, our costs were assessed as efficient.

562 In cases where Ofwat conducted a detailed efficiency analysis using benchmarking models, our enhancement costs were assessed to be efficient relative to our peers, as shown in Table C14.

[324] Ofwat's 'freeform' category captured enhancements which were not included within its other categories. For Bristol Water this expenditure related to catchment management for Water Framework Directive water body status, SSSI condition and algae control.

Table C14 – Ofwat's enhancement benchmarking models

Enhancement category	Our position, £m	Ofwat's models, £m	Efficiency margin, £m
Meeting lead standards	0.325	1.313	0.988
Metering	9.394	11.795	2.401
Total	9.719	13.108	3.389

563 Similarly, in cases where Ofwat conducted deep dive assessments (undertaking more of a bottom-up approach) to review our enhancement costs, Ofwat deemed our plan to be efficient in the majority of cases.

564 Indeed, the only area of our enhancement plan that received material challenge from Ofwat in the FD was expenditure relating to resilience – where Ofwat took a different view on whether all of the schemes were needed, and adjusted the related resilience performance commitment accordingly. They deemed the costs for the schemes accepted to be efficient.

565 An assessment of need is not applicable to the cost categories to which the shallow dive was applied as these enhancement items are required by statute.

566 For other enhancements in our plan (excluding resilience), our DD response included a proposal for £17.1 million[325] and this was allowed in full by Ofwat in the FD – i.e. it did not impose further efficiency challenge on the costs that it assessed via a modelling or deep dive approach.

567 Given these factors, it is wrong for Ofwat to impose an additional efficiency challenge on certain of our costs on the basis of shallow dives which did not involve any efficiency assessment.

(2) Ofwat's decision to derive a company-specific efficiency factor using base costs was unjustified

568 Even if it was reasonable for Ofwat to impose some level of additional efficiency challenge on the basis of shallow dives, Ofwat's application of the company-specific efficiency factor was flawed.

569 Ofwat derived the company-specific factor from the base cost models on the basis that it assumed companies had adopted consistent approaches to costing elements of their plans:[326]

> *"We consider it is appropriate to use a measure of base cost efficiency to challenge enhancement costs because we expect companies to use consistent approaches to costing all elements of their plans. In calculating the company-specific efficiency factor*

325 This was incorrectly stated by Ofwat as £17.6 million, due to Ofwat not taking into account a change in our proposals for security expenditure.

326 FD, 'Securing cost efficiency technical appendix', page 50.

we remove enhancement opex from the company's view of modelled base costs. We also remove an enhancement opex implicit allowance from our view of base costs, and consider the impact of real price effects. We add any successful cost adjustment claims to a company's base costs, as well as any reallocation of costs from enhancement areas that we consider to be base or growth related proposals. We do these adjustments so that the company efficiency factor reflects the most appropriate and consistent view of the efficiency gap on base costs."

570 In fact, we applied different efficiency challenges to our opex and capex forecasts because our enhancement forecast is predominantly capex, while our base forecast is mostly opex. Ofwat's assumption, therefore, does not hold true in our case, which undermines its approach.

571 Moreover, any assessment Ofwat undertook of the 'gap' between base cost efficiency and enhancement costs is vitiated by the number of errors in the base cost assessment and cannot be relied upon.

(3) Ofwat was not justified in applying the maximum 10% efficiency challenge

572 Ofwat provided no evidence as to why it was appropriate to apply the maximum 10% efficiency challenge for the seven enhancement categories listed.

573 Ofwat had a choice as to the level of efficiency challenge it could apply ranging from zero to 10%:[327]

"In shallow dives we cap the company efficiency factor between a minimum of zero and a maximum of 10%. We do not use a five percent floor as in deep dives because in shallow dives we do not look for evidence that the cost is efficient, due to immateriality, so a five percent floor would risk overstating the efficiency challenge."

574 In the FD, Ofwat did not explain why it had determined that it was appropriate to apply a 10% efficiency challenge to the seven enhancement categories and not some lower figure. For other enhancements in our plan (excluding resilience), our DD response included a proposal for £17.1 million.[328] In the FD Ofwat allowed this full amount – i.e. it made no efficiency challenge on the enhancement costs that it assessed via modelling or under a deep dive assessment.

575 Moreover, the difference between our overall assessment of base costs (£409 million) and Ofwat's position in the FD (£381 million) is 6.9% – i.e. well below 10% (in circumstances where we consider the 6.9% challenge to be excessive).

576 It was wrong for Ofwat to have applied the maximum 10% level of challenge to seven of our enhancement categories when it applied a less stringent overall efficiency challenge.

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327 FD, 'Securing cost efficiency technical appendix', page 50.

328 This was incorrectly stated by Ofwat as £17.6 million, due to Ofwat not taking into account a change in our proposals for security expenditure.

18.2 The proposed remedy

577 We request that the CMA increase our costs by £0.75 million to correct for the enhancement efficiency error.

19. Licence fee error

19.1 The issue

578 On 20 December 2019 – just four days after publication of the FD – Ofwat wrote to inform us that it plans to propose, and consult upon, an increase in the licence fee cap to "*future proof the cap for … changes in coming years*".[329]

579 Under Condition N (Fees) of our Licence, we are required to pay fees to the Secretary of State to cover Ofwat's costs. This licence condition also contains a formula which sets the cap for our contribution.

580 Our contribution is currently capped using the sum of:

(i) the amounts calculated as S x A for each Charging Year in the Relevant Five Year Period (where S is the amount of £18.8 million, as increased from November 2015 to the November immediately before the Charging Year using RPI (for any period up to November 2019) and CPIH (for any period thereafter) and A is the relevant company's share of the turnover of the Appointed Businesses of all appointed water companies for the relevant year; and

(ii) an amount equal to 0.3% of the average of the annual turnover of the Appointed Business, over the previous Asset Management Plan (AMP) period.

581 Ofwat's proposal is to increase the percentage of average annual turnover in (ii) above to 0.7%. Ofwat stated:[330]

> *"the impact of the amendment to the formula would be to increase the overall cap by 26% on average before inflation – equating to an increase in the cap for the AMP of less than £50m".*

582 Ofwat initially proposed to commence its formal statutory consultation on this licence modification in January 2020. However, we have subsequently been informed that Ofwat will run its consultation in the second half of 2020 (in order to have full knowledge of the outcome of the Comprehensive Spending Review (CSR) carried out by Government). Ofwat states:[331]

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329 Ofwat, Letter from Rachel Fletcher to Mel Karam headed "Proposed increase in Ofwat's licence cap for 2020-2025" dated 20 December 2019. This letter refers to "*ongoing costs over the coming AMP*" which include "*funding for RAPID, which was supported by water companies (£2.94m) and employer pension contributions mandated by the Cabinet Office (£1m)*". In Ofwat's subsequent letter regarding the proposed increase in the fee cap – dated 22 January 2020 (see below) – we note that it states: "*These changes are largely to allow for ongoing RAPID work, pension costs and also the wider scope of activities we are now carrying out*" (emphasis added).

330 Ofwat, Letter (via email) from Rachel Fletcher to Chief Executives headed "Ofwat Licence Fee Cap" dated 22 January 2020.

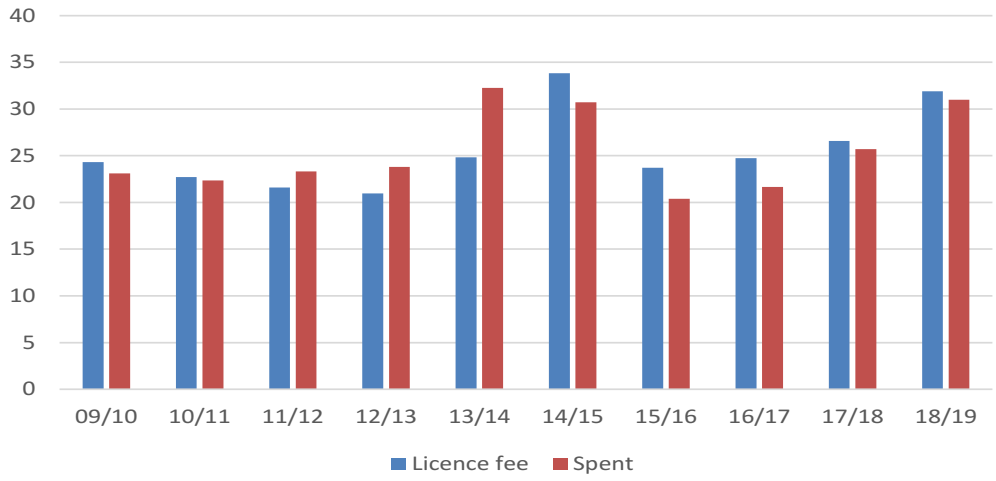
331 Ofwat, Letter (via email) from Rachel Fletcher to Chief Executives headed "Ofwat Licence Fee Cap" dated 22 January 2020.

"While the CSR process will test the appropriateness of our cost forecasts, we fully expect our costs over the next 5 years to be higher than they have been over the previous AMP … While any increase is likely to be less than 0.1% of company annual turnover, your company should plan accordingly."

583 If Ofwat takes its proposal forward, we have calculated that it will increase the cost of our licence fee by 26% above inflation – equating to £0.4 million – over AMP7.[332] (We set out the basis for this calculation below, but Ofwat will of course be able to provide the exact assumptions behind the figures in its letters regarding the real terms increase expected over the next control period.)

584 Ofwat's letter states: *"We continue to see the cap in the licence as a limit, not a target to aim for in agreeing our budget with Government. We will continue as we have in past years to return any material unspent amounts from our budget to you and hence water customers."* However, we note that Ofwat has historically spent close to the licence fee value, as shown in Figure C17.

Figure C17 – Ofwat's licence fee and expenditure (£m, in 2019/20 prices, RPI)
Bristol Water calculations from Ofwat forward programmes and annual reports



585 Based on the above, there is therefore no reason to expect material rebates going forward.

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332 This is based on the assumption that by "less than £50m", Ofwat is considering a figure in the range £45m-£50m. Bristol Water's contribution rate to Ofwat's licence fee is c.0.95%. Applying this rate to the implied range gives a total Bristol Water contribution of between £428,000 and £475,000. Over 5 years, this would amount to an increased cost to Bristol Water of up to £584,000, or £680,000 over the amount paid in the 2017/18 base year). If Ofwat does not spend the entire cap, and its indicative budget of £31.4m for 2020/21 is representative (noting that this is traditionally the low year for Ofwat expenditure as it peaks for price reviews), then a cap at 0.5% (reflecting the broad increase in indicative budget for 2020/21 compared to 2015/16) rather than the current 0.3% would result in an additional cost to Bristol Water of £460,000 over the 2017/18 base year. An alternative method for estimating the increase is to apply the stated 26% increase figure to Ofwat's total budget over AMP6. This gives a total estimated (real terms) increase in our licence fee of £318,000. A further alternative is to take the stated 0.1% – £0.1m per year at £100m company annual turnover – which equates to £0.5m for the five year AMP period (noting, of course, that Ofwat states that any increase is likely to be less than this figure). Having regard to these estimates, we consider a working estimate of £0.4 million is reasonable.

586 As Ofwat made no allowance in the FD for this above inflation increase (although, given the timing, it would of course have been aware of it), and as we are under a licence obligation to pay the fees determined in accordance with Condition N, the additional cost is clearly outside management control.

19.2 The proposed remedy

587 We request that the CMA increase our cost allowance by £0.4 million to reflect this development (noting that the CMA has previously stated that, as it is making a fresh determination, it considers that it should, in principle, consider any further issues that have arisen since Ofwat made the disputed determination).[333]

588 Whilst relatively low value, we consider that this error is material as it has broader implications as a matter of regulatory principle[334] and, in combination with the other reductions in our cost allowances impacts our financeability.

20. Conclusion

589 There is no evidence that Ofwat considered the risk that materially reducing our wholesale cost allowances – either singularly or in combination with other measures – might create or deepen a fundamental financing challenge for Bristol Water.

590 Ofwat's allowed return on capital is already lower than what is required for a notionally efficient company that has equivalent scale to Bristol Water. Having an insufficient cost allowance further exacerbates the financeability challenge for our business, and the ability for investors to earn the required cost of capital on a mean expected basis.

591 In Table C15, we list the errors and the corrected cost in £m.

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333 CMA15, paragraph 2.15.

334 CMA (2015), 'British Gas Trading Limited v The Gas and Electricity Markets Authority: Final determination', paragraph 3.61 (https://assets.publishing.service.gov.uk/media/5609588440f0b6036a00001f/BGT_final_determination.pdf); CMA (2015), 'Northern Powergrid (Northeast) Limited and Northern Powergrid (Yorkshire) plc v The Gas and Electricity Markets Authority', paragraph 3.58 (https://assets.publishing.service.gov.uk/media/5609534de5274a036c000012/NPg_final_determination.pdf); and CMA (2016), 'British Telecommunications plc v Office of Communications: Final determination', paragraph 2.35 (https://assets.publishing.service.gov.uk/media/5767bd34ed915d3cfd0000a2/bt-talktalk-final-determination.pdf).

Table C15: Summary of cost allowance errors in £m (2017/18, CPIH)

Errors	£m (2017/18, CPIH)
Service level error	£14m - £15m
Leakage error	£7m - £19m
Benchmark error	£2.5m
Frontier shift error	£2.6m
Input price error	£2.0m
Growth and developer services error	£4.1m
CRT error	£2.7m
Enhancement opex error	£2.2m
Enhancement efficiency error	£0.7m
Licence fee error	£0.4m
Total	**£38m - £51m**

592 Correcting these errors results in an increase in our cost allowances ranging from £38 million to £51 million. A central estimate for this range is £45m. Cumulatively, these errors amount to a value that is greater than the c.£30 million gap between our plan and Ofwat's FD. This could be seen as further evidence of the ambition of our plan and is consistent with the extensive cost benchmarking that underpinned our plan and the service level improvements we propose.

20.1 The proposed remedy

593 Overall, we request that the CMA remedy the cost allowance errors by increasing our cost allowances under the FD.

Section D: Balance of risk errors

21. Introduction

594 A balanced regulatory determination in terms of risk requires the following conditions:

- a cost of capital that reflects a cost of debt, gearing and cost of equity level that reflects efficient financing for a notional company with relevant characteristics to the company in question;
- a central forecast for assumed cost that an efficient company can realistically achieve for a typical level of service outcomes, with sufficient financial headroom to withstand plausible cost shocks; and
- a regulatory framework with mechanisms and incentives that are consistent with the expected returns to shareholders.

595 In the FD, Ofwat **introduced significant asymmetric downside risk** which does not reflect a balanced determination.

596 Introducing asymmetry into a regulatory framework is not wrong as a matter of principle. However, as a result of the **cost of capital errors** and the **cost allowance errors** in the FD, we have limited financial resilience to absorb cost or performance incentive shocks (for example, arising from severe weather) – see **Section A: Financeability error**.

597 As a consequence, Ofwat's interventions that result in this level of downside risks are not justified. Nor are they supported by evidence.

598 The errors are:

- the **ODI error**;
- the **cost sharing error**;
- the **gearing error**; and
- the **balance of risk financeability error**.

599 The consequence of these errors is that we cannot expect to earn a reasonable rate of return on our efficient level of costs in the 2020–2025 period, contrary to Ofwat's finance duty.

600 We request that the CMA remedy the balance of risk errors by: making specific adjustments to ODIs to reduce the negative asymmetry of the RoRE range; setting the cost sharing rate at 50%; and removing the gearing outperformance sharing mechanism. Each of these proposed adjustments is based not only on the overall negative asymmetry in the FD, but also on the fact that the particular forms of each incentive chosen by Ofwat are not in customers' long-term interests.

22. The ODI error

22.1 The issue

601 Ofwat wrongly set the penalty rate too high for the outcome delivery incentives (ODIs) for both the mains burst and per capita consumption (**PCC**) performance commitments (**PCs**). The errors result in greater negative asymmetry in the overall RoRE range compared to our business plan – i.e. an FD p10/p90 RoRE range of -2.9% to +0.8%.[335] Given the lack of financial resilience under the FD as a result of the **cost of capital errors** and the **cost allowance errors** it was unreasonable for Ofwat to impose additional downside risk on us in this manner. The result is that we cannot expect to earn a reasonable return on our efficient level of costs, contrary to Ofwat's finance duty.

602 Ofwat's methodology for PR19 required companies' business plans to include a series of PCs whereby they commit to provide more stretching service levels for their customers. Companies were required to propose ODIs based on extensive customer engagement and research. ODIs can result in underperformance penalties if companies do not deliver their PCs, and outperformance payments if companies exceed their PCs. The design of the framework was broadly in line with the ODI framework which Ofwat adopted at PR14. Ofwat set an indicative range of ±1% to ±3% of RoRE for financial ODIs.

603 In line with the guidance in Ofwat's PR19 Final Methodology, the PC and ODI package we included in our business plan was strongly driven by evidence on customer preferences – and what customers are willing to pay for – while also being triangulated to ensure that a balanced view was taken across a range of sources.[336] Our process for researching customer views is detailed in Section C1 of our initial business plan and summarised below in Table D1.[337] Ofwat's view of the high quality of our approach was evidenced in the IAP.[338]

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335 Ofwat quotes the FD p10/p90 RoRE range for ODIs as -2.15% to +0.8%. At all stages of the price review when Ofwat changed incentive components (such as targets), it did not reflect company evidence of the p10 and p90 levels. For instance, if a higher collar on underperformance was set, then Ofwat did not adjust the p10 level to the new collar. We show the data based on our evidence on p10 and p90 levels provided in our DD response document BW03: Delivering Outcomes For Customers, updated for the FD ODI design.

336 PR19 Final Methodology, page 239.

337 Phases 6 and 7 represent the additional customer engagement we undertook when responding to the IAP and DD.

338 Ofwat (2019), 'Bristol Water - Test area assessment', page 1, stated, "*A robust, balanced and proportionate evidence base has been used, and the company has demonstrated a clear line of sight from the results of its customer research and engagement to the outcomes its business plan will deliver for customers*" (https://www.ofwat.gov.uk/wp-content/uploads/2019/01/Bristol-Water-Test-area-assessment.pdf).

Table D1 – Summary of our consultation process with customers

Phase	Date	Activities
Phase 1: Taking Stock	September 2016 – March 2017	Conducting a review of engagement to date and refreshing the understanding of customer priorities. This included collating data and conducting customer segmentation exercises
Phase 2: Gathering Evidence	March 2017 – February 2018	Conducting more in-depth analysis of customer priorities. This included working with a range of vulnerable customers, local groups involved in environmental activities and surveying customers who had previously experienced disruption.
Phase 3: Testing Options	March 2018	Testing of programme options through deliberative research and focus groups to test what customers thought about these options and whether they had been presented clearly enough.
Phase 4: Consulting on our plans	April and May 2018	Customer consultation on draft plans. This included three possible plans which represented slower, suggested and faster paths to the same long-term ambitions.
Phase 5: Refining and acceptability	June to August 2018	Responding to feedback received from customers on draft plans. Additional research was conducted on a small number of areas where customers had mixed views on plans. Conducting final acceptability testing to confirm that the plan was acceptable to the vast majority of customers via a telephone survey, online surveys and focus groups.
Phase 6: Refining Post-IAP	March 2019	This research was undertaken in response to the actions listed by Ofwat at the IAP, including our ODI focus groups and final acceptance testing. A key finding from this phase was that there was overall strong support for our proposed ODI package.
Phase 7: Refining Post-DD	August 2019	This research was undertaken in response to the DD, including an ODI survey and a customer forum on our ODIs. Key findings included overall strong support for our proposed ODI package and the scale of underperformance incentives in our plan, with a high number rejecting Ofwat's proposed underperformance penalties, particularly on per capita consumption. Customers were concerned about the company being short of money if hit with penalties for weather-related events such as mains bursts, which might then result in a shortfall in investment. Customers also felt that a better balance between rewards and penalties was in their interests.

604 We commissioned ICS Consulting to undertake overall acceptability testing of our plan. As part of our ICS acceptability testing we consulted customers on the package of incentives. The

overall range of incentive preferences from customers supported a balanced incentive package.

605 In accordance with Ofwat guidance,[339] we carried out a risk distribution analysis of our proposed PCs and ODIs in our business plan, assessing p10 and p90 positions.[340] This assessment produced a RoRE range for ODIs[341] of -2.3% to +1.1%, which fell within the range that Ofwat had set out as guidance within its methodology statement of ±1% to ±3%. Although our business plan therefore included a degree of negative asymmetry, this was largely driven by the fact that, for some measures, it is not appropriate to have outperformance rewards (for example, our target for ensuring water quality compliance, and asset health measures such as mains bursts). In the round, given the package of cost and return allowances we were proposing in our business plan, we were able to support a modest degree of negative asymmetry within the ODI package.

606 In some cases, such as leakage and metering, the negative asymmetry reflects areas of enhancement investment in the business plan. The ODI, together with the totex sharing, reflects a return of investment at the FD. Ofwat reflects this in our FD specifically for metering and Glastonbury Street Network Resilience ODIs as end of period adjustment. These are examples of ODIs where the downside asymmetry is an appropriate part of a balanced determination and is not liable to be significantly influenced by factors outside of short-term management control, such as severe weather. We do not dispute this element of downside asymmetry. However, Ofwat was wrong to introduce asymmetric downside risk in the ODI package under the FD where:

- this does not reflect customer preferences for incentives;
- this is outside of short-term management control as a result of external factors, such as severe weather;
- there is not a significant level of enhancement investment to justify downside asymmetric risk; and
- there is insufficient evidence to support Ofwat's intervention in incentive rates.

607 A full list of our proposed PCs and associated ODIs is included in our FD and summarised in Annex 3. There are two key ODIs in respect of which Ofwat has made material errors of judgement. Our position on these in our business plan was as follows:

- **Mains bursts:**[342] For this ODI, we set a penalty-only incentive, because it is a longer-term asset health measure where customer benefit valuation was likely to be less than the

339 Final Methodology, 'Appendix 2: Delivering outcomes for customers', page 77 (https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-2-Outcomes-FM-final.pdf).

340 A p10 scenario represents a downside scenario where there is a one in ten change of performance being worse than the level considered. Conversely, a p90 scenario represents an upside scenario where there is a one in ten change of performance being better than the level considered.

341 Excluding C-MeX and D-MeX.

342 The Mains bursts PC is defined as the number of mains bursts per thousand kilometres of total length of mains. Mains bursts include all physical repair works to mains from which water is lost. This is attributable to pipes, joints or joint material failures or movement, or caused or deemed to be caused by conditions or original pipe laying or subsequent changes in ground conditions, such as changes to a road formation, where the costs of repair cannot be recovered from a third party.

cost. We departed from Ofwat's standard formula.[343] Instead, we set the penalty rate based on the following formula: 5 x (unit cost x 50% customer sharing rate). We did this because we wanted to maintain a balance of incentives towards long term asset health (but with a deadband in the incentive levels to reflect normal weather variation). Customer valuation for mains burst reduction was less than the cost, as customers preferred incentives on the leakage and supply interruption incentives they were more likely to experience. This resulted in a penalty rate of -£19k/burst per 1000km main.

- **Per capita consumption (PCC):**[344] For this ODI we set both reward and penalty incentives. We calculated these using the standard Ofwat formula of:[345]

  ODI underperformance = Incremental benefit – (incremental cost x p)

  ODI outperformance = Incremental benefit x (1 –p)

  Where 'p' is set to 50% to reflect a forecast cost sharing rate, and the source of the incremental benefit value was customer valuation for metering and water efficiency (based on stated preference, deliberative event, and slider surveys). This resulted in a penalty rate of: -£24k/l/p/d and a reward rate of £14k/l/p/d.

608 In the IAP,[346] Ofwat recognised our high quality and wide ranging use of customer engagement techniques including a mixture of 'business as usual', traditional and innovative approaches. However, in a few specific areas Ofwat proposed interventions, and/or requested further information. For mains bursts and PCC, Ofwat noted that there was substantial variation in proposed ODI rates across companies, and requested further information on how we developed our business plan proposals, which we provided.

609 In the DD, Ofwat increased our penalty rate for mains bursts and PCC to the industry average rate. Ofwat considered that we had not provided sufficient justification for the rates falling outside of Ofwat's 'reasonable range' (+/- 0.5 standard deviations from industry average):

- **Mains bursts:** Ofwat noted that we had used costs to set the incentive rate, tested using cost benefit analysis, and suggested that we could have improved this through "triangulation with customer engagement valuations".[347] Ofwat therefore increased the penalty rate to the industry average of -£41k/burst.[348] This ignored the explanation in our business plan that our proposed penalty rate was greater than the level that would have been obtained through using our customer willingness to pay (**WTP**) data.[349]

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343 Ofwat's standard formula measures the incremental benefit of PC outperformance/incremental cost of underperformance, and assumes a customer share of 50%. PR19 Final Methodology, 'Appendix 2: Delivering outcomes for customers', page 91.

344 This Per capita consumption PC relates to the reduction in the average amount of water used by each person that lives in a household property (litres per person per day or l/p/d), in percentage reduction from 2019-20 baseline using a three year average.

345 PR19 Final Methodology, 'Appendix 2: Delivering outcomes for customers', page 91.

346 Ofwat (2019), 'PR19 initial assessment of plans: Overview of company categorisation' (https://www.ofwat.gov.uk/wp-content/uploads/2019/01/PR19-inital-assessment-of-plans-Overview-of-company-categorisation-FINAL.pdf).

347 DD, 'Bristol Water – Delivering outcomes for customers actions and interventions', page 7 (https://www.ofwat.gov.uk/wp-content/uploads/2019/07/PR19-draft-determinations-Bristol-Water-Delivering-outcomes-for-customers-actions-and-interventions.pdf).

348 DD, 'Bristol Water – Delivering outcomes for customers actions and interventions', page 7.

349 Bristol Water (2018), Business Plan, 'C3: Delivering Outcomes for Customers', page 198.

- **PCC**: Ofwat noted that we had made adjustments to the triangulated marginal benefit value of the ODI, including a downward adjustment to reflect an overlap with metering, but concluded that we had provided insufficient evidence for Ofwat to confirm this was appropriate. Ofwat therefore increased the penalty rate to -£66k/l/p/d and the reward rate to £55k/l/p/d.[350]

610 In our DD response, we responded to Ofwat's comments as follows:

- **Mains bursts:** we adopted the Ofwat intervention on the ODI rate for mains bursts (-£0.041m/bursts per 1000km) noting that our customer WTP data suggested a much lower value. We did not adopt Ofwat's imposition of a lower mains burst target. This decision was based on calibrating the p10 downside asymmetry in the DD (c.4.5% RoRE) back to 2.5%.[351]

- **PCC:** we clarified that the bulk of water efficiency savings proposed were from metering, which from a single customer WTP needed allocation between the two incentives. We had therefore allocated 25% of efficiency savings to PCC and 75% to metering, reflecting long-term savings expected from metering, with the remainder allocated to on-going water efficiency promotions (including to previously metered customers). Rather than accept Ofwat's intervention imposing the industry average, we proposed a compromise of using the industry lower quartile position, which was less of a divergence from our customer WTP research (though still above the level customers would be willing to pay). If we had proposed this rate in our plan, it would have fallen within Ofwat's 'reasonable range', and therefore would have been accepted. The additional customer research we undertook highlighted the low priority and weight that should be applied to per capita consumption reduction, and that the NERA triangulated customer WTP value[352] was of more relevance than the individual piece of research on PCC valuation that Ofwat had highlighted. We demonstrated through our customer research that PCC is a very low customer priority for incentives. This is because customers do not want companies to be compelled to force consumption reductions on customers (particularly the vulnerable) because of the large incentives.[353]

611 In the FD, Ofwat did not accept our proposals:

- **Mains bursts:** Ofwat maintained the increased penalty rate of -£41k/burst, and newly explained that it considered our customer engagement evidence to be "mixed and unclear". Importantly, Ofwat had not raised these concerns in the DD, even though our customer engagement evidence was based on focus groups research we undertook after the IAP (and which we then used to support follow-up research to inform our DD response and supplement our earlier findings).

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350 DD, 'Delivering outcomes for customers actions and interventions', page 13.

351 ODI calibration proposals were part of Ofwat's expectations for DD responses.

352 NERA/Traverse (May 2018), 'Acceptability Testing Survey Report'. Based on this evidence, we rejected the view that consideration of other companies' valuations is a valid part of producing a triangulated valuation. At our customer forum in the phase 7 stage of our customer research, participants felt the penalty for the worst performing year was too harsh as it is largely outside of Bristol Water control and too many external factors could influence this, i.e. meter take-up and hot weather. In addition, customers responding to the ODI survey (A40. Draft Determination ODI Research August 2019) were not supportive of high financial incentives for this metric.

353 Bristol Water (2019) 'A40. Draft Determination ODI research August 2019' and 'A3f. Customer Forum August 2019'.

- **PCC:** Ofwat rejected our compromise proposal and instead changed its approach to treat the metering performance commitment as a scheme performance commitment and calculated the ODI rates based on the unit cost of the scheme, on a cost recovery basis, therefore not reflecting customer WTP. On this basis, Ofwat refused to apply a 75% reduction to our triangulated customer WTP values for PCC, and instead concluded (again) that these incentive rates should reflect 100% of the customer WTP.[354]

612 In total, Ofwat estimated that the RoRE range resulting from our outcome package was -2.15% to +1.00%.

613 Ofwat was wrong to depart from the ODI rates we had proposed for mains bursts and PCC for three reasons.

(1) Ofwat failed properly to take account of our evidence on customer views

614 We had provided clear evidence for our mains bursts ODI that customer views did not support Ofwat's increased penalty rate. Ofwat had been concerned that customers were not informed why the underperformance incentive would significantly outweigh the outperformance incentive.[355] This was not the case. Moreover, several groups recognised that we are already working hard to prevent mains bursts and considered that Ofwat's penalty rate was unlikely to provide an incentive for further investment.[356]

615 On our **PCC** ODI, Ofwat should not have used our full customer WTP to set the reward rate. As we submitted to Ofwat in our DD response, doing this without adjustment would involve double-counting the reduced consumption impact resulting from metering, which would then be included both in the per capita consumption and in the metering incentives. Even though Ofwat moved the metering ODI in the FD to be cost-based rather than based on customer WTP,[357] Ofwat's incentive rates on the PCC ODI are still out of line with the relative importance indicated by our customer views research. We do not believe this is sufficient to resolve the double-counting challenge we made, and the outcome results in incentives out of line with customers' views. For example, PCC represents 11.3% of the total p10 level of underperformance incentives and 8.7% of the maximum underperformance penalty. This is the third highest underperformance risk after supply interruptions and mains bursts. This compares to the results from the customer research that indicated PCC ODI should rank 18th out of 22 financial incentives.

616 Ofwat was not justified in departing from our plan given the basis of our customer evidence. Ofwat relies on a belief that differences in WTP arises from methodological differences in surveys, a potential we controlled for in our innovative experiments. Ofwat set a series of rules for not taking a standard approach which no companies passed for any of the outcome incentives. Ofwat did not conduct the study we suggested in our response to the 'fast track'

354 FD, 'Bristol Water – Delivering outcomes for customers final decisions', page 8.
355 See section 3 of Bristol Water (2019), 'Response to the PR19 Draft Determination, BW03: Delivering outcomes for customers' (https://www.bristolwater.co.uk/wp-content/uploads/2019/08/BW03-Delivering-Outcomes-for-Customers-PD.pdf).
356 Summarised in section 3 of Bristol Water (2019), 'BW03: Delivering outcomes for customers'.
357 Which we do not accept is a more appropriate basis for setting the ODI.

DDs,[358] or consider the consequences through the independent reviews submitted with our DD response from ICS Consulting.[359] As ICS Consulting summarised:

> *"…The processes that have been built around ODIs at face value are very worthy endeavours. Engaging with customers about outcomes and value have been very successful activities in recent years. But are they mis-directed at what is the essentially narrow technical exercise of calibrating incentive payments and is it right that industry comparisons appear to have been restored to take precedence over local views?"*

(2) Ofwat incorrectly estimated the ODI RoRE range

617 Ofwat's estimation of the ODI RoRE range is incorrect. Ofwat has simply applied top-down adjustments to the p10 and p90 positions to reflect changes. When making changes to performance levels in the FD, Ofwat failed to also change the p10 and p90 levels in the RoRE analysis.

618 Our analysis of the FD indicates a much greater negative skew with p10/p90 RoRE range of -2.9% to +0.8%. This is significantly more asymmetric than our business plan submission of -2.3% to +1.1%.[360]

619 We have adjusted the p10 and p90 levels to reflect our position as set out in the BW03 Outcomes document that formed part of our response to the DD, adjusted where there are more significant interventions.

620 Ofwat's failure to correctly estimate the ODI RoRE range means that it has not properly considered the impact of increasing the penalty rates for the mains burst and PCC ODIs on our financeability, in breach of its finance duty.

(3) Ofwat's interventions have exacerbated the negative asymmetry of the ODI RoRE range

621 Had Ofwat properly assessed the impact of the ODI RoRE range, the degree of negative asymmetry would have been evident. Indeed, when considering a wide range of upside/downside scenarios than the p10/p90 position, the asymmetry of the overall ODI package in the FD is even more apparent.[361]

622 Figure D1 illustrates the results of our Monte Carlo analysis of the outcomes package. This shows in particular that the FD ODI package includes a long tail of downside risk, and a significant negative asymmetric skew. The expected downside is significant, and is not remunerated elsewhere within the overall price control framework.

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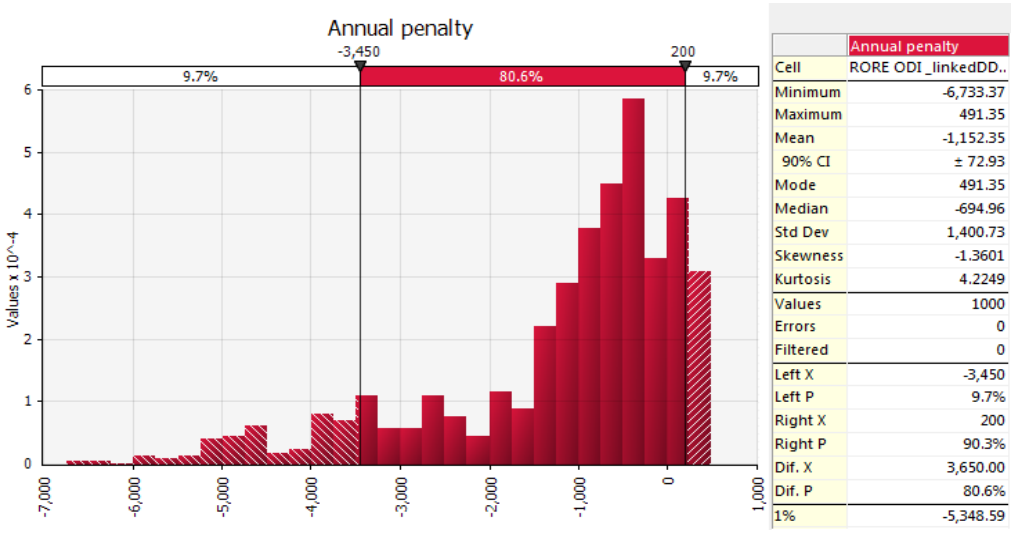
358 Bristol Water (2019): 'BRL_FastTrack PR19 DD_response".

359 ICS Consulting (2019): 'Will it all be Upper Futile in the end?', page 17 (https://www.bristolwater.co.uk/wp-content/uploads/2019/08/BW03-1-ICS-ODI-Think-piece.pdf).

360 See Annex 9: 'Bristol Water risk analysis'.

361 Annex 9: 'Bristol Water risk analysis'.

Figure D1 – Monte Carlo analysis of annual ODIs (FD)



	Annual penalty
Cell	RORE ODI_linkedDD..
Minimum	-6,733.37
Maximum	491.35
Mean	-1,152.35
90% CI	± 72.93
Mode	491.35
Median	-694.96
Std Dev	1,400.73
Skewness	-1.3601
Kurtosis	4.2249
Values	1000
Errors	0
Filtered	0
Left X	-3,450
Left P	9.7%
Right X	200
Right P	90.3%
Dif. X	3,650.00
Dif. P	80.6%
1%	-5,348.59

623 Given the outcome of the FD, we are not in a position to be able to absorb cost shocks and still expect to earn a reasonable return on our efficient level of costs. The ODI errors must therefore be corrected.

624 Adjustments are necessary to re-set our incentive rates for mains bursts and PCC in line with our business plan as follows:

- Mains bursts penalty rate should be revised from -£40k/burst per 1,000 km main to -£23k/ burst per 1,000 km main;
- PCC penalty rate should be revised from -£67k/l/p/d to -£31k/l/p/d; and
- PCC reward rate should be revised from -£56k/l/p/d to -£26k/l/p/d.

625 Making these adjustments will reduce the amount of negative asymmetry in the outcomes package overall. When these adjustments are made, the ODI RoRE range becomes -2.5% to +0.7%. While this is still negatively asymmetric, it is closer to being in line with our business plan proposal of -2.3% to +1.1% (and our DD response of -2.5% to +0.8%).

22.2 The proposed remedy

626 We request that the CMA remedy the ODI errors by re-setting our incentive rates for mains bursts and PCC in line with our business plan.

23. The cost sharing error

23.1 The issue

627 Ofwat's asymmetric totex cost sharing mechanism in the FD means that we must bear c.60% of any cost over-runs but only retain c.40% of underspend. It was wrong for Ofwat to expose us to this additional downside risk in circumstances where, as a result of the **cost of capital errors**

and the **cost allowance errors**, we have limited financial resilience in terms of our ability to withstand cost shocks.

628 In CMA15, the CMA noted that cost sharing mechanisms:[362]

> *"…affect[s] the degree of profit incentives that the company has to operate efficiently during the price control period, and the financial risk that the company faces in relation to the outcome of Ofwat's cost assessment"* (emphasis added).

629 Cost sharing rates are generally recognised as having two principle functions:

- Incentivising efficient delivery of outcomes, as companies bear a proportion of any overspend and retain a proportion of any underspend (and ensuring that customers benefit when companies perform better than expected); and
- Providing companies with a degree of protection against risks and uncertainty faced in delivering service commitments under their price controls, including the risk of error during the price control process.

630 Ofwat also recognised these purposes in the FD:[363]

> *"The mechanism therefore does two things: 1. It provides an incentive for companies to submit business plans that are efficient, by providing more favourable cost sharing rates for efficient plans. 2. It provides a risk sharing mechanism between customers and shareholders through the sharing of any over or underspend."*

631 The need to achieve a balance between incentivising efficient delivery of services and protecting companies against risks arising from the price control process has led, in all cases other than PR19, to cost sharing rates which are balanced and apply symmetrically to overspending and underspending.

632 Moreover, cost sharing rates have typically been calibrated in a narrow range centred around 50% (i.e. cost over/under-spends are shared 50:50 between the company and its customers). For example, the CMA chose not to replicate Ofwat's menu approach in its redetermination of Bristol Water's PR14 price control, and substituted a simpler approach to cost sharing based on a 50% symmetric sharing rate.[364]

633 The cost sharing mechanism adopted by Ofwat in the FD can be summarised as:[365]

- Ofwat determined the 'company view' of totex by averaging the totex figures in the company's 2018 business plan and the revised business plan submitted in August 2019;
- Ofwat calculated the ratio between the 'company view' of totex and Ofwat's own view (i.e. the figure Ofwat included in the FD);

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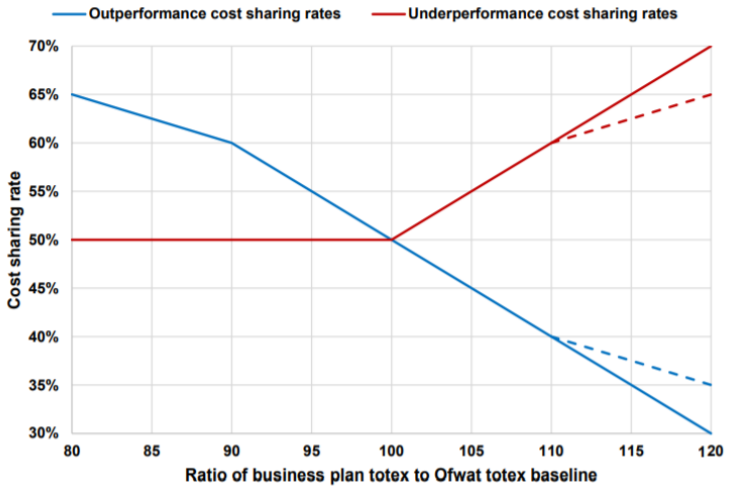
362 CMA15 Appendix 2.4, paragraph 8.
363 FD, 'Securing cost efficiency technical appendix', page 130.
364 CMA15, paragraph 3.54.
365 Note that this mechanism applied to companies – like Bristol Water – that were not classed as 'fast track' or 'significant scrutiny' in Ofwat's IAP. Other cost sharing rates were applied to companies in those categories.

- Ofwat applied separate outperformance and underperformance cost sharing rates based on how the level of this ratio compared to a fixed schedule: 50% rates were applied where the ratio was 1:1. Where the ratio was greater than 1:1, divergent outperformance and underperformance rates were applied.

634 Figure D2 illustrates Ofwat's mechanism for setting cost sharing rates based on the ratio between company and Ofwat view of costs. The cost sharing rate (y-axis) represents the percentage of any cost outperformance (the blue line) or underperformance (the red line) that the company bears with the balance being borne by customers.

Figure D2 – Ofwat methodology for setting cost sharing rates[366]



635 In the FD, Ofwat calculated a ratio for Bristol Water of c.110%, calculated as follows:

Figure D3 – Calculation of totex ratio

	Business Plan Totex				Allowed
	Sep-18	Aug-19	Weights	Weighted	per FD
	£m	£m	£m	£m	£m
Totex for Cost Sharing Rates Water Resources	79.9	75.9	50%	77.9	75.5
Totex for Cost Sharing Rates Water Network Plus	384.0	367.1	50%	375.6	335.8
(Figures exclude strategic water resources/diversions/3rd party costs)				453.5	411.3
				a	b
Ratio for calculating cost sharing rate (a/b)					**1.102**

636 The application of this ratio to Ofwat's methodology resulted in the following cost sharing rates:

- Outperformance: 39.76% (such that we bear c.60% of any cost overrun).

366 PR19, 'Securing cost efficiency technical appendix', page 131. The dotted lines show the rates that had been proposed in the DD and are not relevant for the FD.

- Underperformance: 60.24% (such that we retain only c.40% of any cost underspend).

637 The cost sharing rates are equally applicable to totex within the Water Resources control and Water Network Plus control, but exclude certain elements of totex, because they are subject to specific cost sharing mechanisms or are recovered outside the price control.[367] Therefore, the net allowed totex for Bristol Water that is subject to the cost sharing rates is c.£340 million compared to total allowed totex of £420 million.

638 Ofwat's asymmetric application of the cost sharing rate in the FD is wrong for three reasons.

(1) Ofwat was wrong to impose an asymmetric cost sharing rate when we cannot finance our plan

639 As a result of the **cost of capital errors** and the **cost allowance errors**, we have limited financial resilience under the FD and are at risk of not achieving a reasonable return on our efficient costs under the FD, contrary to Ofwat's finance duty. In these circumstances, it was wrong for Ofwat to impose significant downside risk on us through applying an asymmetric cost sharing rate.

640 Ofwat accepts that the cost sharing rate can contribute to an imbalance between risk and return. Indeed it adjusted the cost sharing proposal in its PR19 Final Methodology as a way of re-balancing risk and return.

641 The use of different sharing factors for outperformance and underperformance creates an asymmetry between the upside and downside risks for us. Under the FD, we will be required to absorb 60% of overspend while only benefitting from 40% of any underspend. In addition, the 40% customer contribution to overspend will not be received until the following regulatory period. We consider our business plan to be efficient and so we expect on balance that we will overspend compared to the cost allowance in the FD because of the **cost allowance errors**.

642 To demonstrate the potential scale of the asymmetry at PR19 in relation totex spending, we have compared the impact of various scenarios for outturn totex against the FD and compared the totex incentive outcome (penalty or reward) implied by the PR19 methodology with the incentive outcome that would have resulted from the application of the PR14 methodology, and with the incentive outcome that would result from the application of the 50% sharing determined by the CMA in CMA15. In each case, we assume that Bristol's planned totex is 110% of the FD allowed totex. The incentive outcomes under the PR19 methodology are calculated according to the cost sharing rates set out above (60% on underperformance, 40% on outperformance).

643 Under the PR14 methodology we assume that a "menu choice" has been made at 110 in the totex menu which results in an incentive rate of 48%, an allowed totex of 102.5% of base totex and an additional income penalty of £1.3 million per £100 million of totex.

644 We have calculated the impact on returns using each methodology in three scenarios:

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[367] This includes business rates; abstraction charges; grants and contributions; strategic water resources scheme costs; diversions not under s. 185 WIA; pension deficit recovery and third party costs.

- Totex outcome is as per our August 2019 submission;
- We spend at the p10 level of totex consistent with this submission; and
- We spend at the p90 level of totex consistent with this submission.

645 We assume that the elements of totex which are not subject to totex cost sharing are incurred at the level in the FD. This means, for example, that no sharing of out and under performance on business rates or abstraction charges, which are subject to different cost sharing rates, is included within our figures.

646 Table D2 shows the penalty or reward that would be borne by the company in each case. The figures for totex include only those costs which are subject to cost sharing reconciliation at PR19: they exclude business rates, abstraction charges and the other excluded costs identified above.

Table D2 – totex impact under sharing rate based on outturn assumptions

Scenario	Aug 19 Plan £m	P10 £m	P90 £m	P10/90 range £m
Outturn Totex (portion subject to cost sharing)	372.4	421.4	327.4	94.0
Penalty/(reward) based on PR14 menu	15.9	39.4	(5.7)	45.1
Penalty/(reward) based on CMA2015 cost sharing	16.0	40.5	(6.5)	47.0
Penalty/(reward) based on PR19 cost sharing	19.1	48.5	(5.2)	53.8

647 It can be seen from the results of the p10 and p90 scenario that there is both an increase in the level of the incentive: the range between the p10 and p90 scenarios is larger under the PR19 approach by c.£9 million compared to PR14 (c.£54 million compared to c.£45 million). This is an increase in the incentive range of c.19%. For the plan scenario the penalty has increased by c.20%.

648 In addition, the incentives on the p10/p90 range are more skewed: the incentive attaching to the upside is similar at PR14 and PR19 which means the difference attaching to the incentives is entirely on the downside (a c.£49 million penalty compared to a c.£39 million penalty).

649 It is also notable that the incentives under the CMA method are very similar to the PR14 incentives with only a slight increase in the incentive on both upside and downside.

650 The asymmetry of the cost sharing rate therefore exposes us to significant downside risk in circumstances where, as a result of our limited financial resilience because of errors in the FD, we have limited ability to withstand cost shocks. Ofwat was not justified in introducing an asymmetric cost sharing rate in these circumstances.

(2) Ofwat was wrong to depart from regulatory precedent without assessing the consequences of the asymmetry

651 The cost sharing approach at PR19 involves asymmetry in the treatment of out- and under-performance on costs in the vast majority of cases. Only where a company's totex plan exactly matches Ofwat's cost assessment would the cost sharing rates for out- and under-performance be the same. This is the first time a regulator has applied different cost sharing rates for out- and under-performance and, as such, this represents a substantial change in regulatory incentives. This change comes in the context of several factors which skew totex risk towards the downside, i.e. upper quartile service levels assumed to be in base efficiency, no catch-up glide-path beyond the upper-quartile, and a strong FS assumption with little recognition of real price effects – see **Section B Cost allowance errors**.

652 Table D3 shows how the PR19 cost sharing structure and rates compare to those used in other regulatory price determinations. For frameworks that are based on a totex approach, the rates themselves are more directly comparable with the PR19 approach. The right-hand column shows the cost sharing rate that would apply to a company whose plan is c.110% of the regulator's assessment of costs, as is the case for us in the FD.

Table D3 – Regulatory precedents of cost sharing rates

Price determination	Symmetric cost sharing?	Range of cost sharing rates[368]	Cost sharing rate where plan is 110% of model (only for totex based approaches)
Determinations with separate assessments of capex and opex			
Ofgem DPCR5	Yes	Capex, network and associated opex - 53% to 30% Other opex – 100%	
Ofgem GDPCR	Yes	Capex 40% to 20% Opex 100%	
Ofgem TPCR	Yes	Capex 25% Opex 100%	
Ofwat PR09	Yes	Capex 45 to 15% (CIS) Opex 100%	
CC Bristol Water PR09	Yes	As for Ofwat PR09 (CIS accepted)	
Determinations with assessments of totex			
Ofwat PR14	Yes	55% to 45% (menu depending on plan vs assessed costs)	48%
CMA Bristol Water PR14	Yes	50%	50%
Ofgem – RIIO-ED1 IQI	Yes	65% to 45% (IQI depending on plan vs assessed costs)	55%
Ofgem – RIIO2	Yes	15% to 50 % (depending on cost confidence)	15% to 50% (depending on cost confidence)
Ofwat – PR19	No	Under: 50% to 70% Out: 30% to 65%	Under: 60% Out: 40%

653 Table D3 shows that the cost sharing rates applied in PR19 are more aggressive than in previous regulatory determinations, especially in the case of underperformance against the plan. Not only is the range of cost sharing penalties applied at PR19 wider, the potential highest cost sharing rates (for underperformance) is higher. Moreover, the application of the range is reversed in that companies with higher than assessed costs face higher, rather than lower, incentives (i.e. the risk is skewed and puts greater emphasis on Ofwat's cost assessment being accurate).

654 The impact of the cost sharing mechanism depends to a large extent on how the mechanism has been calibrated. When comparing between price determinations it is necessary to take account of not only the 'raw' incentive rate but also the degree of challenge in other elements of the price control. If these are more challenging, then the risks for the company of under-

[368] The percentages represent the deviation from allowance borne by the company. These are the theoretically available ranges in the mechanism rather than the (generally narrower) range of rates observed for companies covered by each price control.

performing on cost, and the likelihood of facing underperformance cost sharing become greater, all else being equal.

655 The approach in PR19 involves elements that are new and more challenging compared to other determinations (which are separately articulated as errors in this statement of case):

- Change to the totex cost benchmark from upper quartile to the 4th company (in water) which is a more aggressive benchmark standard than that adopted by Ofwat at PR14 or by Ofgem to date (i.e. the **benchmark error**);
- Frontier shift assumptions which assume the future benefit of a totex approach (i.e. the **frontier shift error**);
- Recovery of overspend from customers is delayed until the following price control, a departure compared to Ofwat's approach at PR14 in which ex-ante cash flows allowed assumed cost recovery based on 25% of the gap between Ofwat's benchmark and the company plan, allowing some recovery from customers during the review period; and
- Limited financial resilience (as a result of the **cost of capital errors** and the **cost allowance errors**).

656 Therefore, the calibration of the cost sharing rates at PR19 leads to harsher underperformance incentives (comparing the rates applied). Ofwat was wrong to have departed from regulatory precedent and to have introduced asymmetric risk in circumstances where, because of the **cost of capital errors** and the **cost allowance errors**, we lack financial resilience under the FD.

(3) Ofwat has failed to ensure there is sufficient protection against modelling error

657 A core purpose of the cost sharing mechanism is to provide some protection for companies from the possibility that costs turn out differently to expectations. However, Ofwat has chosen to strongly emphasise the goal of incentivising companies to be efficient over providing reasonable costs protection for the companies which deliver services.

658 Ofwat justifies its approach by reference to its expectation of a step-change in efficiency relative to the status quo considering the demands of a "*changing economy*"[369] – although Ofwat has not explained this context or why this would affect the cost sharing mechanism.

659 The cost sharing rates applied are critically dependent on Ofwat's own assessment of costs. Modelling of costs and other cost assessment methods are inevitably imperfect – see the **cost allowance errors**. Indeed, as Ofwat has confirmed, there is an inevitable degree of error in modelling costs and these errors are symmetrical:[370]

> *"Our cost models are just as likely to overstate a company's efficient cost allowance as they are to understate it."*

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369 PR19 Final Methodology, page 136.

370 PR19 Final Methodology, 'Appendix 11: Securing cost efficiency', page 11 (https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-11-Cost-efficiency-FM.pdf).

660 While Ofwat recognised the need to take into account the "*quality of our cost models efficiency forecasts*"[371] in its PR19 Final Methodology, there is no obvious consideration in Ofwat's published documents of the impact of either model inaccuracy or levels of confidence of other cost assessment techniques when the cost sharing rates were determined later in the process.

661 Moreover, Ofwat's model makes no attempt to account for the varying level of confidence in respect of specific elements of cost modelling. This is contrary to regulatory precedent. For example, Ofgem's RIIO-2 proposals explicitly recognised this point by calculating a Blended Sharing Rate which applies a very low incentive rate (15%) to elements of totex over which there is little confidence.[372]

662 In CMA15, the CMA also raised the need to account for potential modelling error, in this case in relation to choice of benchmark. The CMA found that the modelling was not as robust as would be required to set an upper quartile benchmark, and so applied a cost target based on the median company:[373]

> *"The regulatory precedent from Ofgem and the CC has also recognised that a less demanding benchmark than the upper quartile may be appropriate in cases where there was less confidence in the modelling results. The effect of modelling error and limitations will tend to mean that an upper quartile benchmark will require levels of efficiency that are, in practice, greater than the upper quartile. […]*
>
> *We were concerned that an efficiency benchmark based on an upper quartile efficiency concept would be overly demanding if applied to the results of the econometric models that we used. This was a judgment in the light of the issues we had identified both from our review of Ofwat's econometric models and from our development of alternative models."*

663 The way in which Ofwat introduced and amended its cost sharing mechanism was also flawed because of the potential adverse consequences. The concept of an asymmetrical cost sharing mechanism was proposed by Ofwat in its draft price control methodology. Concerns were raised by a number of companies that the impact of the proposals would be to encourage the submission of artificially low-cost plans to achieve beneficial cost sharing rates. Consequently, Ofwat adjusted the mechanism in its PR19 Final Methodology to limit underperformance sharing rates to 50% for companies proposing costs lower than Ofwat's own assessment.

664 At DD stage Ofwat further tightened the cost sharing mechanism to encourage companies to deliver low-cost plans (for example, by increasing the maximum cost sharing rate for underperformance for companies with a totex ratio of 110% to 120% to Ofwat's allowed totex, and by removing the upfront inclusion in revenues of amounts which companies could recover from customers as a result of overspend, instead delaying recovery to the following price control).

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371 PR19 Final Methodology, page 147.

372 Ofgem (2019), 'RIIO-2 Sector Specific Methodology – Core document', paragraph 11.39 (https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_core_30.5.19.pdf).

373 CMA15, paragraphs 4.222 and 4.224.

665 This iterative approach may have resulted in the setting of an artificially low industry cost baseline. This is because the way that the cost sharing mechanism has been implemented does not incentivise companies to reveal what they truly believe are their efficient costs but instead to submit a business plan with lower costs than Ofwat's assessment, with the aim of receiving more favourable cost sharing rates.

666 As a result of Ofwat's failure to account for possible errors in its cost modelling, including the iterative process by which the cost sharing mechanism was developed, Ofwat's modelling in the FD does not produce an effective benchmark for the purposes of calculating an individual company's cost sharing incentive.

23.2 The proposed remedy

667 We request that the CMA adjust the cost sharing rates in the FD. An appropriate cost sharing rate would be 50% applied symmetrically to overspend and underspend compared to the (revised) CMA determination of allowed totex. We do not propose any adjustments to the categories of totex to which the rate is applied.

668 If, contrary to our case above, the CMA decides to retain Ofwat's approach to calculating the cost sharing rate, then this should be recalculated (taking into account any adjustments made by the CMA to allowed totex). This would ensure that the cost sharing rate is consistent with the rest of the CMA's redetermination and avoid the position whereby the cost sharing rate is partially dependent on an outdated view of efficient expenditure.

24. The gearing outperformance sharing error

24.1 The issue

669 In the FD, Ofwat introduced a gearing outperformance sharing mechanism which requires companies to pay customers (through reducing bills) if gearing exceeds certain thresholds. The payment is calculated as 50% of the difference between the notional cost of equity and the actual nominal cost of debt for all debt above 65% gearing. The trigger threshold is 74% in 2020/21 reducing to 70% by 2024/25. In our case, the factors which are likely to drive an increase in our gearing are Ofwat's **cost of capital errors** and **cost allowance errors** which have reduced our financial resilience under the FD. It is therefore not reasonable for Ofwat to have applied this mechanism to Bristol Water.

670 Ofwat first consulted on introducing a gearing outperformance sharing mechanism in '*Putting the sector back in balance*'.[374] The consultation noted concerns that had been expressed about certain water companies' financial structures (including high leverage) not being in the consumer interest and the perception that companies were making excessive profits. None of these concerns specifically applied to Bristol Water.

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374 Ofwat (2018) 'Putting the sector back in balance: Consultation on proposals for PR19 business plans' (https://www.ofwat.gov.uk/wp-content/uploads/2018/04/Putting-the-sector-back-in-balance-consultation-on-proposals-for-PR19-business-plans.pdf).

671 In our consultation response we therefore disagreed with the blanket imposition of the gearing outperformance sharing mechanism for all companies when it was clear that the concerns it was seeking to address did not apply to us. We proposed a targeted approach following assessment of individual companies' responses to the over-arching challenge. In particular, we highlighted some of the practical implications of the mechanism and suggested changes to mitigate potential adverse financial consequences arising from the mechanism, including an increased threshold rate, use of a dead-band and using actual inflation rates.

672 Ofwat later made formal changes to the PR19 methodology[375] to include an illustrative gearing outperformance sharing mechanism, while retaining the possibility that companies might put in place their own mechanisms provided they had a substantially equivalent effect.

673 At the IAP stage Ofwat noted that a number of companies with high gearing had either not accepted its proposals in their business plans or had proposed what it saw as inadequate alternative mechanisms. However, Ofwat made no specific reference to gearing when assessing our plan.

674 In our revised April 2019 business plan, we proposed a mechanism for sharing an element of allowed returns should gearing exceed 70%. This was similar to Ofwat's default mechanism; however our proposal was subject to two important principles.

675 The first principle was that we intended to maintain levels of gearing during 2020-2025 at a level well below the level to trigger the mechanism, to allow for downside risks that affected the timing of investment not to be penalised in addition to the existing regulatory incentives. To achieve this, we needed Ofwat to take into account our efficiently-incurred finance costs and cost base, so as not to jeopardise our ability to maintain our gearing level.

676 The second principle was that £12.5 million of our preference shares should be excluded from our gearing calculation. This was to ensure consistency with the treatment of preference shares by the CMA in CMA15, as explained below.

677 In the DD, Ofwat rejected our proposed adjustment for preference shares and imposed the default mechanism.

678 We challenged this in our response, but there was no movement in the FD.

679 Ofwat was wrong to have introduced the default gearing mechanism in our FD for the following reasons.

(1) The FD is likely to drive an increase in gearing because of our lack of financial resilience

680 As a result of the **cost of capital errors** and the **cost allowances errors**, we have limited financial resilience under the FD, which is exacerbated by the imposition of additional downside risk – see **Section A Financeability error**.

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375 Ofwat (2018), 'Putting the sector back in balance: position statement on PR19 business plans' (https://www.ofwat.gov.uk/wp-content/uploads/2018/04/Putting-the-sector-in-balance-position-statement-on-PR19-business-plans-FINAL2.pdf).

681 These factors are likely to drive an increase in our gearing, which puts us at greater risk of breaching the gearing outperformance sharing mechanism threshold.

682 The asymmetry of the mechanism exposes us to significant additional downside risk in circumstances where, as a result of our limited financial resilience, we have limited ability to withstand cost shocks. It was not reasonable or appropriate for Ofwat to introduce the mechanism in our FD in these circumstances. Ofwat has therefore failed in its finance duty.

(2) The gearing sharing mechanism is an unprecedented intervention into companies' capital structures, and is inconsistent with the cost of capital

683 This is the first time that an explicit, sector-wide adjustment to differentiate allowed returns depending on the actual financial structure adopted by a company is to be implemented by a UK regulator. To date, the notional level of gearing has been set as a reference point, not as a regulatory determination of what type of financial structure might be appropriate or desirable. The mechanism is independent of the level of returns allowed by the price control: it partitions the core 'allowed return' depending on the adopted financial structure.

684 It therefore involves Ofwat taking a view about the appropriate level of gearing in the sector and specifically deterring companies from gearing up beyond a specific level. This approach is unprecedented. Given our financial situation, we cannot see its relevance as part of our determination, even if Ofwat could justify the application to companies with high gearing.

685 There seems to be no evidence that there is any market failure in the capital markets themselves which would require a regulatory intervention to limit gearing. The market for financing of utilities has been liquid and efficient, as well as being highly competitive and dynamic, including significant innovation. The capital market for RCV-based networks is generally considered to be deep, in terms of quantum of issuance and capacity to fund new investments, characterised by high demand and providing constant access to financing in different market conditions; it has also allowed for some of the longest tenors among all corporate debt financing. There has been no evidence of restricted investor appetite for UK water corporate debt and companies have continued to have unrestricted access to both debt and equity capital, as evidenced by continuous corporate debt issuance and equity transactions.

686 There has been also no suggestion that the cost of debt paid by companies is inefficient (e.g. higher than an index benchmark of equivalent credit rating). In fact, Ofwat has argued that water companies continue to access debt markets at a lower cost than benchmarks (the 'outperformance wedge' effect). This in itself suggests that debt issuance has been efficient, allowing for variations over time.

687 Ofwat's argument appears to be that, in highly geared companies, retained earnings may be shared as dividends over a smaller equity base, resulting in equity holders benefiting from higher returns without any corresponding 'benefit' to customers. It could be that higher equity returns are not accompanied by increased risk for equity holders, or that such increased risk does not exist, or that it exists but is borne by someone else.

688 This idea conflicts with accepted finance theory (Modigliani and Miller's Financial Structure Irrelevance Proposition) which holds that, under certain conditions, the cost of capital is invariant to capital structure. It is well-established that as leverage increases, the cost of debt

may increase but the cost of equity will increase to reflect the increased risks faced by equity holders. This is contradicted by the proposed mechanisms which reduce allowed return in consequence of increased gearing.

689 Lender protection mechanisms in structured finance do not change this relationship in practice: they may lower cost of debt but in doing so require a corresponding increase in the cost of equity, since features such as reserve requirements and liquidity buffers have the effect of locking up cash which could otherwise be available to equity. These provisions, therefore, have the effect of further concentrating equity.

690 One of those conditions required for the Modigliani and Miller proposition to hold is that there are no taxes. This clearly does not hold: there is a tax benefit of debt finance and this suggests an optimal gearing rate. However, for the water sector, regulation is designed in such a way that the companies cannot benefit from leverage above the notional level since the ex-ante revenue allowance for each company already includes an allowance for tax calculated based on the projected actual level of gearing (where this is higher than the notional level). Therefore, companies are not able to drive returns by leveraging up to outperform against their tax allowance and, effectively, return this benefit to customers.

691 All UK regulators, including Ofwat to date, have recognised the basic Modigliani and Miller principle. The proposals, as drafted, constitute a significant departure from this principle and from how Ofwat has been setting the cost of capital allowance in the water sector since privatisation (and how UK regulators have set the cost of capital in other sectors). Ofwat's policy so far has been that of capital structure neutrality, thus neither incentivising nor penalising any particular deviations from notional gearing. Ofwat has done this by setting a notional gearing and the WACC on that basis, which the companies would earn regardless of how they chose to finance their operations in practice.

692 Ofwat attempts unsuccessfully to deal with such criticisms in its position statement.[376] Ofwat asserts that:[377]

> *"…increasing gearing above the notional level may increase the probability of default, increasing risk to consumers of service interruption and/or (ii) increase pressure from bondholders to restrict future cash outlays thereby creating pressures which may limit, for example, future investment."*

693 No evidence is put forward to support the assertion, which has no relevance to Bristol Water apart from the pressure caused by Ofwat's FD.

694 Ofwat builds on this point to assert that such increased risks would not be borne by customers in a competitive market and therefore in the case of regulated monopolies there should be equivalent measures which encourage companies to consider the interests of customers. It further argues that the requirement to ensure future financeability and the existence of regulatory mechanisms to enable price controls to be re-opened may lead to reduced exposure to systemic risk or increased expectations of future cash flows. It states that risk

376 Ofwat (2018), 'Putting the sector in balance: position statement on PR19 business plans', pages 47 to 50.
377 Ibid.

transfer mechanisms such as special administration, designed to protect customers from risk in the case of company failure are both costly and imperfect.

695 However, all of these points seem to relate to the risk characteristics of the regulatory regime and should be reflected in the setting of an allowed return commensurate with that risk. Such regulatory measures have resulted in low costs of capital which have certainly been of benefit to customers. It is the allowed return which is the primary means of allocating risk between a company and its customers. Without any evidence that higher gearing in fact leads to greater risk, it does not seem justifiable to limit allowed returns to highly geared companies.

(3) Even if it were appropriate to introduce a gearing outperformance sharing mechanism, the default mechanism is triggered at too low a threshold for us

696 Our revised April 2019 business plan did not envisage gearing rising significantly from its current low level. We forecast actual gearing of 66-67% in each year of the price control period, substantially below the trigger level for the default mechanism.

697 Under the default mechanism applied to us in the FD the amount to be paid is calculated as:

Gearing difference x Financing outperformance difference x Sharing rate

Where:

Gearing difference = Actual gearing – 65%

Financing outperformance difference = Notional cost of equity – Actual cost of debt

Sharing rate = 50%

698 The amount is to be calculated for each year of the price control in which the gearing exceeds a trigger point, which will be 74% in 2020/21 and reduces by 1% each successive year until 2024/25.[378]

699 Given the FD revenue allowance was substantively lower than that required to finance our plan, we are far more likely to experience an increase in gearing (for the reasons explained above).

700 As a result, it was not reasonable for Ofwat to maintain the default level of gearing for us in the FD. Ofwat should have imposed a higher threshold at which the mechanism was triggered.

701 As our current level of gearing is in line with what the Ofwat mechanism appears to consider a reasonable range for a notional company (60-65%), Ofwat should have taken into account the impact of differences in view of financing and incentives (c.10% gearing) and increased the threshold and trigger point to 75%.

[378] Actual gearing and actual cost of debt are as reported in the relevant Annual Performance Report. The calculation is in nominal terms. The nominal notional cost of equity is as set out in the FD.

(4) Even if it were appropriate to introduce a gearing outperformance sharing mechanism, Ofwat should have adjusted the default mechanism and treated preference shares as equity

702 Ofwat was wrong to dismiss our evidence that adjustments should be made to the default gearing outperformance sharing mechanism so as to treat £12.5 million of preference shares as equity.

703 These shares confer on us the ability to defer coupon payments, i.e. the covenant with holders is much looser than would be the case with a debt instrument. The instruments are traded and therefore not normally considered contractual. Preference shares are paid out of profit available for distribution, and resolved to be distributed. These instruments therefore are more akin to equity than debt.

704 This principle was recognised and accepted in CMA15 where the CMA noted:[379]

> *"Bristol Water had also issued preference shares. It has included these shares in its calculation of its actual cost of debt. However, preference shares have both debt and equity-like features. For example, they have a pre-determined payment amount similar to debt; however, they are of indefinite maturity, which is similar to equity".*

705 Ofwat's approach to treatment of preference shares under the gearing outperformance sharing mechanism is also inconsistent with its financial assumptions for PR19 where Ofwat considers preference shares as equity not debt:[380]

> *"We exclude Bristol's preference shares from the cost of debt calculation as their irredeemable nature makes them non-pure debt which we considered an unlikely inclusion in an efficient notional company's debt financing mix. Contractual, fixed payments indicate that they should contribute to gearing".*

706 This inconsistency is not justified because the impact of the application of the gearing outperformance sharing mechanism is to adjust the allowed return.

707 In addition, Ofwat appears to have mischaracterised the nature of the obligations attaching to the preference shares. Payments are dividends and the instruments traded (which are not normally considered contractual). These are subordinate to debt and it is irrelevant whether they are 'fixed'. The logic for any inconsistent treatment does not hold.

708 Any gearing outperformance sharing mechanism imposed on Bristol should therefore treat the £12.5 million of preference shares as equity.

24.2 The proposed remedy

709 We request that the CMA remedy the gearing outperformance sharing error by removing the gearing outperformance sharing mechanism in the FD.

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379 CMA15, paragraph 10.87.

380 PR19, 'Aligning risk and return technical appendix', page 127.

25. Balance of risk financeability error

25.1 The issue

710 Ofwat was wrong to have applied mechanisms in the FD which introduce significant asymmetric downside risk for us in circumstances where we have limited financial resilience to absorb cost shocks because of the **cost of capital errors** and the **cost allowance errors**.

711 These mechanisms significantly increase the level of risk exposure we face as a company without any corresponding remuneration for the risk. The mechanisms also contribute towards there being a material expected loss.

712 Ofwat has not sufficiently considered the effect of the FD in terms of our ability to finance our plan. Had it conducted a proper financeability assessment this would have revealed the shortcomings in the FD – see **Section A: Financeability error**.

713 Ofwat's confidence that we can finance our plan under the FD despite it having introduced significant asymmetric downside risk, appears to be driven by no more than a general assumption that, **regardless of the degree of downside risk**, companies generally retain an ability to outperform price controls:[381]

> *"The downside skew in the forecast return from outcome delivery incentives and totex should not be reflected in a higher allowed return on capital.*
>
> *In principle, information asymmetry between us and companies and a lack of a full understanding of risks and opportunities, means that actual company performance can be very different to what companies predict at a price review. Due to X-inefficiency, a monopoly provider can have a degree of slack in its level of cost and service. In response to a regulatory challenge from a new price review, monopoly providers may therefore be able to improve performance by improving efficiency and reducing slack.*
>
> *In PR14 there was also a downside skew in the forecast return on regulatory equity for both totex and outcomes. During PR14 companies have on average outperformed on totex and outcome delivery incentives, as shown below. In addition outcomes and cost performance risk should be diversifiable, in that it will affect a specific company positively or negatively, and so should not affect the overall industry return on capital.*

714 It is not our position that introducing asymmetric downside risk is wrong as a matter of principle. Indeed, our proposed ODI package has a level of negative asymmetry which is similar to the forecast range which Ofwat considered to be acceptable at PR14. It is the **material extent** of the asymmetry that renders our FD unacceptable.

715 In PR14 Ofwat failed to secure our financeability and we were required to request a redetermination from the CMA, which resulted in a higher totex allowance, adjusted ODI rates and a higher cost of capital. We have broadly incurred costs in line with CMA15 and have slightly underperformed on ODIs over the control period.

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381 PR19, 'Overall level of stretch across costs, outcomes and allowed return on capital appendix', page 48.

716 Ofwat's view that there has been general outperformance during this control period somewhat overstates the position. For the 2015-2019 period,[382] 9 out of 17 of the companies underperformed overall on Ofwat's PR14 RoRE assumptions.[383]

717 In PR19, we are exposed to a step-change in performance metrics, a much lower WACC, an asymmetric cost sharing rate and a gearing outperformance sharing mechanism. The package is different – but it is all towards the downside.

718 We show in Table D4 a comparison of the downside skew in the Bristol Water FD compared to the three listed companies that form Ofwat's reference point through water industry risk in the measurement of equity beta.[384] This shows that the difference between upside and downside (the skew) is more heavily negatively weighted for us than these comparators, which highlights the impact of the **cost errors**, **financing errors** and **balance of risk errors**, particularly in terms of ODIs.

Table D4: Comparison of RoRE skew

	RoRE skew cost	RoRE skew ODI	RoRE skew financing	RoRE skew total
Bristol Water	-0.26%	-1.33%	-0.89%	-2.48%
United Utilities	0.27%	-0.25%	0.10%	0.12%
Severn Trent Water	0.30%	-1.04%	0.02%	-0.71%
South West Water	0.24%	-0.34%	0.08%	-0.02%
Average of three listed	0.30%	-0.50%	0.10%	-0.20%

719 The consequence of the **balance of risk errors** therefore is that we cannot expect to earn a reasonable rate of return on our efficient level of costs in the 2020-2025 period. This is contrary to Ofwat's finance duty and must be remedied.

25.2 The proposed remedy

720 We request that the CMA remedy the balance of risk errors by:

(a) correcting the ODI error by making specific adjustments to ODIs to reduce the negative asymmetry of the overall RoRE range;

(b) correcting the cost sharing rate error by setting the cost sharing rate at 50%; and

(c) correcting the gearing outperformance sharing error by removing the gearing outperformance sharing mechanism.

382 Figures for 2020 have yet to be reported.

383 Ofwat (2020) 'Monitoring financial resilience', page 9 (https://www.ofwat.gov.uk/wp-content/uploads/2020/01/Monitoring-financial-resilience-report-2018-19.pdf).

384 See KPMG SCP Report, page 30, for an explanation of this calculation.

Annex 1: Glossary

AICR	Adjusted cash interest cover ratio. The AICR measures the scope to make interest payments after meeting costs that have been expensed and RCV run-off. AICR is a more conservative measure than the unadjusted interest cover and provides an indication of coverage assuming companies could not reduce RCV run-off. This is a key financial ratio for the assessment of financeability.
Asset beta	The asset beta is a measure of the inherent systematic riskiness of a business' operations, before allowing for gearing.
AMP	Asset management plan. An AMP period is the period over which a price control applies.
AMP7	The AMP period from April 2020 to March 2025 (in respect of the PR19 control period).
BEIS	Department for Business, Energy and Industrial Strategy.
Botex	Base total expenditure.
Bps	Basis points. A basis point is one hundredth of a percentage point.
BRL	Ofwat standard 3 letter code for Bristol Water.
C-MeX	Customer measure of experience. C-MeX replaces the service incentive mechanism (SIM). C-MeX compares the experience of a water company's customers with that of other water companies, and the experience of customers in other sectors. It covers the satisfaction of all water company customers, not only those who have contacted their water company.
CAA	Civil Aviation Authority.
CAPM	Capital asset pricing model. CAPM is an economic model that describes the relationship between risk and expected return for securities. The model states that the expected return of a security (or portfolio) is the rate of return on a risk-free security plus a risk premium. The risk premium depends on the volatility of the security compared with the volatility of a representative market portfolio. The CAPM is often used by regulators to calculate the post-tax cost of equity.
CC	Competition Commission.

CC10	The CC's determination in respect of Bristol Water's price control following a reference from Ofwat under section 12(3)(a) of the Water Industry Act 1991. The CMA's report was presented to Ofwat on 4 August 2010.
CED	Consumer expenditure deflator.
CMA	Competition and Markets Authority.
CMA15	The CMA's determination in respect of Bristol Water's price control following a reference from Ofwat under section 12(3)(a) of the Water Industry Act 91. The CMA's report was presented to Ofwat on 6 October 2015.
COLI	Cost of living index.
CPIH	Consumer prices index including owner occupiers' housing costs.
CRI	The DWI's Compliance Risk Index.
CRT	Canal and River Trust. The CRT is responsible for 2,000 miles of UK waterways, including the G&S Canal, through which Bristol Water receives half of its raw water.
CSA	Company-specific adjustment to the allowed cost of capital.
D-MeX	Developer services measure of experience.
DD	Draft Determination. Ofwat's DD in respect of Bristol Water was published on 18 July 2019.
DDM	Dividend discount model. DDM is a quantitative method used for predicting the price of a company's shares based on the theory that its present-day price is worth the sum of all of its future dividend payments when discounted back to their present value.
Debt beta	The debt beta is a measure of the volatility, or systematic risk, of debt in comparison to the market as a whole.
DWI	Drinking Water Inspectorate.
EA	Environment Agency.
FD	Final Determination. Ofwat's FD in respect of Bristol Water was published on 16 December 2019.
FFO	Funds from operations. FFO measures companies' debt burden in relation to operational income. This is a key financial ratio for the assessment of financeability. It is also a key ratio for rating agencies, although each rating agency may make specific

	adjustments to FFO and/or net debt for its calculations.
Final Methodology	Ofwat's PR19 final methodology for the 2019 price review, December 2017.
Frontier Shift	Productivity improvements (for example in technology or ways of working) expected by Ofwat to shift the efficiency frontier for the sector.
G&S Canal	Gloucester and Sharpness Canal, through which Bristol Water receives half of its raw water.
GARCH	Generalized Autoregressive Conditional Heteroscedasticity. GARCH is an estimator used to derive econometric estimates of beta.
Gearing	Gearing measures the capital structure of companies and is therefore critical to the assessment of financeability. This is also a key financial ratio for rating agencies, although each rating agency may have its own definition of net debt.
IAP	Initial Assessment of Plans. Ofwat's IAP of Bristol Water's business plan for 2020–2025 was published on 31 January 2019.
iBoxx index	Bond indices compiled by IHS Markit and commonly used as a regulatory benchmark for the cost of debt.
IPP	Input Price Pressure.
JKM	The Jacquier, Kane and Marcus estimator is a holding period-weighted average of geometric and arithmetic averages.
Monte Carlo analysis	A risk management technique used for conducting a quantitative analysis of risks, using random number simulation and probability distributions.
NE	Natural England.
NIE Determination	CC's final determination in relation to Northern Ireland Electricity Limited price determination, presented to the Northern Ireland Authority for Utility Regulation, 26 March 2014.
NPV	Net present value. The NPV is the difference between the present value of cash inflows and the present value of cash outflows over a period of time.
ODI	Outcome Delivery Incentives. These were introduced during PR14 and have been retained by Ofwat for PR19. ODIs are the financial or reputational (non-financial) incentives for companies to outperform and avoid underperformance against each of their performance commitments.

	Most performance commitments have ODIs that will be assessed and settled on an annual basis during the price control period (an 'in-period' ODI); some performance commitments will be assessed and settled once at the end of the price control period (an 'end-of-period' ODI). ODIs with financial incentives may be structured to be triggered in the event of either outperformance or underperformance (referred to as 'out and under' type of ODI), only in the event of outperformance ('out').
OLS	Ordinary Least Squares. OLS is an estimator used to derive econometric estimates of beta.
ONS	Office for National Statistics.
p10/p90	These are terms used in risk distribution analysis. A p10 scenario represents a downside scenario where there is a one in ten change of performance being worse than the level considered. Conversely a p90 scenario represents an upside scenario where there is a one in ten change of performance being better than the level considered.
PAYG	Pay as you go. PAYG is the proportion of total allowed expenditure that is recovered in each year of the price review period. Along with RCV run-off, balances the recovery of costs between different generations of customers. A company's choice of PAYG and RCV run off rates affects bills for current and future customers.
PCC	Per capita consumption. This is one of the common performance commitments applicable to all companies.
PFAs	Post-financeability adjustments.
PR09	The price control period corresponding to AMP5, i.e. 2010-2015.
PR14	The price control period corresponding to AMP6, i.e. 2015-2020.
PR19	The price control period corresponding to AMP7, i.e. 2020-2025.
RAG rating	Red Amber Green rating. A system for rating status reports.
RCV	Regulatory capital value. This is a vital component of how price limits are calculated, and represents a measure of the capital base of a company when setting price limits. It reflects the allowed expenditure to be recovered from future customers. Expenditure not recovered in the current period through PAYG is added to RCV and recovered in future periods through RCV run-off. The RCV is inflated each year to maintain the RCV at current prices.
RfR	Risk-free rate. The theoretical rate of return on an investment with

	zero risk.
RoRE	Return on regulatory equity. Return to shareholders as a proportion of the equity component of RCV calculated by reference to the notional capital structure.
RPE	Real price effects. RPEs reflect the extent to which the input prices (including wages) that a company faces may grow faster, or slower, than the RPI which is used for the wholesale price control indexation.
RPI	Retail price index.
S&P	Standard and Poor's. S&P is a credit-rating agency.
SCP	Small company premium. A company-specific adjustment to the allowed cost of capital.
Secretary of State	Secretary of State for Environment, Food and Rural Affairs.
SELL	Sustainable Economic Level of Leakage. This is the point where the marginal cost of water leakage (i.e. not fixing the leak) would equal the marginal cost of leakage control (i.e. fixing the leak), and which therefore theoretically delivers the 'least-cost' level of benefit to customers.
SEMD	The Security and Emergency Measures (Water and Sewerage Undertakers) Direction 1998 – commonly referred to as SEMD – directs undertakers to maintain plans to provide a supply of water at all times.
SIM	Service Incentive Mechanism.
TFP	Total-factor productivity. The ratio of aggregate output to aggregate inputs, used as a measure of economic efficiency. Also known as "multi-factor productivity".
TMA	Traffic Management Act.
TMR	Total Market Return. The total return on the market portfolio over a given period of time which includes all returns including interest, dividends, distributions and capital gains.
Totex	Total expenditure. This is capital expenditure and operating expenditure.
UKRN	UK Regulators Network. The UKRN comprises regulators from the UK's utility, financial and transport sectors, including Ofwat.
WACC	Weighted-average cost of capital. The WACC is calculated as the cost of equity multiplied by the percentage of equity assumed for

	the notional company plus the cost of debt multiplied by the percentage of debt assumed for the notional company. It represents the allowed return for the providers of equity and debt finance.
WaSC	Water and sewerage company.
WIA91	Water Industry Act 1991 (as amended).
WINEP	Water Industry National Environment Programme, which is a programme of actions companies must undertake in order to meet their statutory environmental obligations.
WoC	Water only company.
WRMP	Water Resource Management Plan.
WTP	(Customer) willingness to pay. This was a key measure taken into account when formulating companies' cost allowances.

Annex 2: Statutory Framework

1. Legislation

1.1 Water Industry Act 1991

1 The principal piece of legislation governing the water industry in England and Wales is the Water Industry Act 1991 (as amended) (**WIA91**).

2 Under section 7 WIA91, the Secretary of State for Environment, Food and Rural Affairs (**Secretary of State**) has a duty to ensure that, for every area of England and Wales, there is at all times an appointed water company (**company** or **companies**, as appropriate). Under section 6 WIA91, appointments may be made by the Secretary of State or, with the consent of or in accordance with a general authorisation given by the Secretary of State, by Ofwat.

3 Each company has an individual Instrument of Appointment and is regulated through the conditions of that licence as well as by relevant legislation.

4 The WIA91 also sets out the main functions and duties of companies (including in relation to water supply, the requirement to prepare, publish and maintain a water resource management plan (**WRMP**), the quality and sufficiency of supply, customer service and information provision) and defines the duties and powers of Ofwat (including its powers of enforcement).

1.2 Other legislation

5 The WIA91 is supplemented by other legislation relating, in particular, to the protection of the environment and human health (as administered primarily by the Drinking Water Inspectorate (**DWI**),[385] the Environment Agency (**EA**)[386] and Natural England (**NE**).[387] This covers, for example, quality standards for drinking water, abstraction, the discharge of wastewater and other polluting discharges into the environment, and procedures governing operational development.

6 Of particular note in this context is the Water Industry National Environment Programme (**WINEP**), which is a programme of actions companies must undertake in order to meet their statutory environmental obligations. Companies are required to include relevant environmental schemes in their business plans, and making adequate provision for these schemes is a requirement of Ofwat's price control.

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385 The DWI is part of Defra and regulator for the water industry in respect of the quality of drinking water supplies.

386 The EA is responsible for the protection and improvement of the environment, with a duty to secure the proper use of water resources.

387 NE is an independent public body whose purpose is to protect and improve England's natural environment. It has powers to advise and direct water companies with regard to their environmental impact.

2. Our licence

7 Ofwat's main regulatory instrument is the licence, which imposes conditions on regulated company activities. Ofwat is responsible for monitoring, and where necessary enforcing, compliance with the licence.[388]

2.1 Licence conditions

8 Licence conditions include those relating to: charges, new connections, undue discrimination and undue preference, regulatory accounting statements, customer information, leakage procedure, ring-fencing of assets and restrictions on disposals of land, levels of service and service targets, underground asset management plans, the provision of information to Ofwat, termination and replacement appointments, interruptions in supply due to drought, provision of combined and wholesale water supplies, obligations in relation to the Market Arrangements Code, and introductions of water under the water supply licensing regime.[389]

9 Two licence conditions of particular importance in the present context are outlined below.

Condition B (Charges)

10 Under Condition B of our licence (the **Licence**), the charges that Bristol Water can make for its retail[390] and wholesale activities are controlled by Ofwat, which carries out five-yearly periodic reviews for this purpose. This system of price controls is intended to allow Bristol Water sufficient revenue in order to finance the efficiently costed activities necessary to meet its statutory duties, whilst also incentivising future efficiency improvements.

11 Condition B provides for separate five-year price controls for wholesale activities for Network Plus Water Activities and for Water Resources Activities in the supply of water, and permits Ofwat to set multiple price controls for Retail Activities. These activities are defined as follows:

- "Network Plus Water Activities" are all activities carried out by Bristol Water in performance of its functions as a water company other than Water Resources Activities and Retail Activities;
- "Retail Activities" are activities that constitute the provision of goods or services by Bristol Water directly to one or more end-users, and ancillary activities, including ownership of meters, designated by Ofwat from time to time; and
- "Water Resources Activities" are activities carried out by Bristol Water in performance of its functions as a water company in connection with abstraction licences, raw water abstraction, raw water transport and raw water storage, and ancillary activities

388 See sections 18-22F WIA91.

389 See Bristol Water's Licence at https://www.ofwat.gov.uk/wp-content/uploads/2019/01/Bristol-Water-Consolidated-Appointment-amended-February-2020.pdf.

390 Household retail functions are provided through the Pelican joint venture with Wessex Water. (Bristol Water Group also shares ownership of Water 2 Business with Wessex Water, which is the non-household market retailer that Bristol Water transferred business retail activities to when the business retail market was established on 1 April 2017.)

designated by Ofwat from time to time (but not including water treatment and treated water distribution).

12 Condition B also provides that, if Bristol Water does not accept Ofwat's determination of its price controls, Ofwat must refer the determination to the CMA.[391] Ofwat's final determinations for Bristol Water in the last two price reviews were referred for redetermination under this provision.

Condition I (Ring-fencing)

13 Condition I of the Licence provides that Bristol Water must "*use all reasonable endeavours to ensure that it … maintains at all times an issuer credit rating which is an Investment grade rating*".[392]

14 It defines "Investment grade" as "*a rating recognised as investment grade by Standard and Poor's Rating Group (or any of its subsidiaries) or by Moody's Investors Services Incorporated (or any of its subsidiaries) or any equivalent rating from any other reputable credit rating agency which has comparable standing in the United Kingdom and the United States of America*".[393]

15 In CC10, the Competition Commission "*accepted that [it] should not reach a determination that would cause Bristol Water to breach this duty*".[394]

3. Ofwat's statutory duties

3.1 Primary duties

16 Under section 2(2A) WIA91, Ofwat must act in the manner which it considers is best calculated to:

- further the consumer objective to protect the interests of consumers, wherever appropriate by promoting effective competition;[395]
- secure that companies' functions are properly carried out;
- secure that **companies are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of their functions** (the **finance duty**); and
- further the resilience objective (the **resilience duty**).[396]

391 Ibid., at paragraph B15.
392 Ibid., at paragraph I30.
393 Ibid., at paragraph I31
394 CC10, paragraph 10.7.
395 Section 2(5A) WIA91 defines "consumers" to include both existing and future consumers. In addition, we note Ofwat has previously stated that, as water and sewerage services are essential to all, it considers the public interest and its duties to be closely aligned, (see https://www.parliament.uk/documents/upload/ofwat.pdf dated 9 February 2007).

17 These are known as the **primary duties**. The CMA has previously made clear that they should not be applied in isolation, are intended to complement, not conflict with, each other, and should each be given equal weight.[397] With regard to the latter, we note this means the requirement that Bristol Water be able to finance its functions is not a subsidiary consideration to protecting the consumer interest. It is clear that Ofwat must further the consumer interest *and* secure financeability.

18 Two primary duties of particular importance in the present context are outlined below.

Finance duty

19 Ofwat has stated that it interprets the finance duty as:[398]

> *"a duty to ensure that an efficient company can finance its functions, in particular by securing reasonable returns on its capital".*

20 This interpretation may be based on the general duty on water companies under section 37(1) WIA91 "*to develop and maintain an efficient and economical system of water supply*" and/or the secondary duty to promote efficiency addressed further below, but is in any event accepted.

21 This is approach has been endorsed by the CMA which, in CMA15, stated:[399]

> *"In the specific context of the finance duty, we considered that this principal duty needed to be balanced against the principal duty to further the consumer objective of protecting the interests of consumers, which would include the interest in having a ready supply of potable water at reasonable prices and the resilience duty. The finance duty also needed to be balanced against the principal duty to secure that the functions and activities of water companies are properly carried out. … We noted that the further duty on the CMA to perform its duties in this reference in the manner it considers to be best calculated to promote economy and efficiency on the part of water companies was a duty that was subject to, and so subordinate or secondary to, the principal duties mentioned above. Nevertheless, we considered that the duty of securing that the functions and activities of a water company are properly carried out and the duty to further the consumer objective themselves implied that we should consider the need for these functions to be carried out efficiently, irrespective of the further duty to actively promote economy and efficiency."*

22 The effective obligation on Ofwat is to ensure the financeability of an efficient water company. Similar duties apply in other regulated sectors,[400] although the finance duty under WIA91 stands out – within WIA91 and in comparison to similar duties in respect of other regulated

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396 Section 2(DA) WIA91 defines the "resilience objective". It is, in essence, to secure the long-term resilience of companies' water supply and wastewater systems, and to secure that they take steps to enable them, in the long term, to meet the need for water supplies and wastewater services.

397 CMA15, paragraph 3.4.

398 See, for example, PR19 Final Methodology, Section 11.

399 CMA15, paragraph 3.4.

400 See, for example, section 3A Electricity Act 1989 where Ofgem is obliged to have regard to *"the need to secure that licence holders are able to finance the activities which are the subject of obligations imposed by or under this Part…"*.

sectors – in that it specifically identifies the need for Ofwat to secure that companies can secure reasonable returns on capital.

23 The requirement to "*secure*" that efficient companies can finance their functions and secure reasonable returns on capital is a strict test. It can only be met if Ofwat is satisfied that Bristol Water can attract sufficient funds efficiently to discharge its statutory and regulatory obligations.

24 In the FD, Ofwat explained its approach to assessing financeability, which focused on its view of a notionally efficient company:[401]

> *"Our financeability assessment considers whether the allowed revenues, relative to efficient costs, are sufficient for an efficient company to finance its investment on reasonable terms and to deliver its activities in the long term, while protecting the interests of existing and future customers".*

25 In *Firmus Energy*, the CMA recognised that any assessment of financeability needed to be company-specific:[402]

> *"Financeability is a term used by regulators to decide if a firm has the ability to pay off its providers of debt and equity finance. In price controls, … it is generally assumed that financeability is achieved when the rate of return (or WACC) has been set at a high enough rate, such that the revenues and therefore cash flows made by the firm are sufficient to pay investors and lenders".*

26 This highlights the critical relationship between financeability and allowed returns. The finance duty is met if the regulator has set a revenue allowance which gives a 'reasonable' rate of return on an efficient level of costs, where 'reasonable return' means a return consistent with the risk of the regulatory framework and consistent with what investors can earn on investments of comparable cash flow risk. In practice, financeability is ensured when the expected return on the investment is consistent with the allowed return, which is an outcome of the overall price control *if* costs including the cost of capital have been appropriately set.

27 This means that our financeability results from Ofwat's decisions about key parameters of our FD:

- **Allowed costs** which should reflect the efficient level of spend we need to deliver on our plan as well as to provide the committed level of quality to customers;
- **Allowed return** based on relevant market evidence of the cost of capital which provides a level of return that is commensurate with the risks faced by Bristol Water under the regulatory framework; and
- **Regulatory financial incentive mechanisms** (e.g. performance targets, caps and collars, ODI penalty and reward rates on ODIs, cost sharing incentives) which affect our returns depending on performance, and therefore affect the cash flow risk to capital providers.

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401 FD, page 69.

402 *Firmus Energy*, paragraph 7.60.

28 The financeability tests act as an overall cross-check of the regulatory determination when these elements are taken as a whole.

29 The CMA has recognised the above when assessing our financeability in CMA15. The CMA stated that both cost allowances as well as financing costs need to be 'reasonable' so that, on balance, the settlement results in a financeable outcome where capital can be raised at the allowed rate of return: [403]

> *"We have made an assessment of Bristol Water's wholesale totex requirements (Section 7) and its financing costs (Section 10). In doing so, we have determined a reasonable level of costs that Bristol Water could be expected to incur. If these estimates are reasonable, then Bristol Water should be able to finance its functions, since it will be able to raise finance at our assumed rates, and meet its operational and investment requirements." (emphasis added)*

Resilience duty

30 Ofwat considers resilience to extend to financial, corporate and operational resilience:[404]

> *"…resilience has always mattered to Ofwat, […], and while this duty has now been formalised our approach has always considered the need for resilience in services, […] and in ensuring that companies are demonstrating both financial and corporate resilience."*

31 This position has been confirmed most recently by Rachel Fletcher, Ofwat Chief Executive:[405]

> *"Water companies must provide resilient services to their customers. To do that, they need to be financially resilient".*

32 Securing financial resilience is therefore an important factor for Ofwat in meeting its resilience duty.

3.2 Secondary duties

33 Under section 2(3) WIA91, Ofwat must also act in the manner which it considers is best calculated to:

- promote economy and efficiency by companies (the **efficiency duty**);
- secure that there is no undue preference or discrimination by companies;
- secure that consumers' interests are protected where companies sell land or interests/rights in or over land;

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403 CMA15 page 360, paragraph 11.75.

404 Ofwat (2016), 'Monitoring financial resilience', November, slide 3 (https://www.ofwat.gov.uk/wp-content/uploads/2017/05/Monitoring-financial-resilience-updated-May-2017.pdf).

405 Ofwat, 'PN 14/19 Ofwat confirms package of measures aimed at strengthening financial resilience in water companies' (https://www.ofwat.gov.uk/pn-14-19-ofwat-confirms-package-of-measures-aimed-at-strengthening-financial-resilience-in-water-companies/).

- ensure that consumers are protected as regards any unregulated activities of companies; and

- contribute to the achievement of sustainable development (the **sustainability duty**).

34 These are known as the **secondary duties**, and are subordinate to the principles contained in the Primary Duties. As above, the CMA has previously made clear that they should not be applied in isolation.[406]

35 The two most commonly referenced secondary duties are the efficiency duty and the sustainability duty.[407]

Overarching duty

36 Ofwat has an **overarching duty** in section 2(4) WIA91 **to have regard to the principles of best regulatory practice,** including the principles under which regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases in which action is needed.

37 These echo the principles of good regulation initially defined by the Better Regulation Taskforce in 1997, and which have since been supplemented by the Government's "Principles for Economic Regulation" published in April 2011.[408] These principles establish a set of overarching principles for economic regulation, namely: accountability, focus, predictability, coherence, adaptability and efficiency. The detailed application of these principles in the water sector is reflected in Defra's strategic policy statement.

Strategic Policy Statement

38 Ofwat must also carry out its functions in accordance with the strategic policy statement (**SPS**) published by Defra under section 2A WIA91, which sets out the Government's strategic priorities and objectives for Ofwat's regulation of the water sector in England.[409]

39 The current SPS identifies three priorities:

- securing long term resilience;

- protecting customers; and

- making markets work.

40 These priorities, and the associated objectives, are summarised in the table below.

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406 Ibid., paragraph 3.4.

407 See, for example, PR19 Final Methodology, Section 1.4.

408 See BIS (now BEIS) (2011), 'Principles for Economic Regulation' (https://www.gov.uk/government/publications/principles-for-economic-regulation).

409 See Defra (2017), 'The government's strategic priorities and objectives for Ofwat' (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/661803/sps-ofwat-2017.pdf). This came into force on 22 November 2017.

Priority	Objectives
Securing long term resilience: Ofwat should challenge the water sector to plan and invest to meet the needs of current and future customers, in a way which offers best value for money over the long term.	▪ To further a reduction in the long-term risk to water supply resilience from drought and other factors, including through new supply solutions, demand management and increased water trading; ▪ To challenge companies to improve planning and investment to meet the wastewater needs of current and future customers; ▪ To challenge water companies to ensure that they assess the resilience of their system and infrastructure against the full range of potential hazards and threats and take proportionate steps to improve resilience where required; ▪ To encourage the sustainable use of natural assets by water companies through appropriate regard to the wider costs and benefits to the economy, society and the environment.
Protecting customers: Ofwat should challenge the water sector to go further to identify and meet the needs of customers who are struggling to afford their charges.	▪ To challenge companies to improve the availability, quality, promotion and uptake of support to low income and other vulnerable household customers; ▪ To promote an enhanced focus by water companies on the needs of small business customers that may struggle to access the best deals.
Making markets work: Ofwat should promote markets to drive innovation and achieve efficiencies in a way that takes account of the need to further: (i) the long-term resilience of water and wastewater systems and services; and/or (ii) the protection of vulnerable customers.	

41 Ofwat must keep these priorities and objectives under review and report on the steps it has taken in response.[410]

42 The CMA is required to make its redetermination in accordance with the same statutory provisions and duties as applied to Ofwat when it made the FD, and in accordance with Condition B of the Licence.[411] In addition, the CMA has previously stated that, as it is making a fresh determination, it considers that it should, in principle, consider any further issues that have arisen since Ofwat made the disputed determination.[412]

410 For example, on 13 December 2017, Ofwat published a document outlining how its PR19 final methodology supports the achievement of the priorities and objectives of the UK Government (see https://www.ofwat.gov.uk/publication/uk-government-priorities-2019-price-review-final-methodology/).

411 Section 14(6) WIA91.

412 CMA15, paragraph 2.15.

Annex 3: List of areas not in dispute

1 The CMA has asked us to set out the topics that we believe are not in dispute and to explain why this is the case. These are summarised below:

- The residential retail price control –the amount allowed by Ofwat is very similar to our own plan and this is consistent with our historic efficient position.
- PR14 performance adjustments –no issues arose during the process.
- The level of performance commitments – these align to the Bristol Water plan and we accept these as a package. The approach to outcome incentives in general is also not a major area of difference, although there are two specific aspects of incentives design that contribute to excessive risk and do not align to customer's priorities.
- The form of the control for wholesale water including water resources, water network plus and the developer services activity adjustments.
- The scope and treatment of enhancement capital expenditure, with the only exception being where Ofwat applies efficiencies derived from their assessment of base cost efficiency. Ofwat's decision on resilience spend in the FD is not an area of dispute.
- The future markets approach, with the potential for further water trading including strategic water resource developments that are likely to include Cheddar 2 reservoir as part of the national infrastructure developments to support water resources and the environment in the South East.
- The specific Ofwat proposals for risk mitigation and cost recovery, including:
  - the Notified Item for the Canal and River Trust cost arbitration;
  - the PAYG and RCV run off rates;
  - the bill profiling in the FD;
  - the 75% cost sharing rate due to uncertainty in business rates and Environment Agency abstraction charges; and
  - the ODI outperformance sharing above 3% of RoRE.

2 Given the degree of convergence between us and Ofwat, we do not consider it necessary for the CMA to review areas of our determination which are not identified as being in dispute. However, should the CMA decide to do so, either on its own initiative or as a result of

submissions from other parties, we will of course provide relevant evidence to support the CMA's redetermination in this regard.

Annex 4: Initial Observations on Ofwat Submissions

1. Introduction

1 In order to assist the CMA, we set out below some initial high-level observations on:

- key documents submitted by Ofwat on 19 March 2020 as part of its reference; and
- the transcript of Ofwat's third 'teach in' session for the CMA held on 25 February 2020 (and provided to us on 25 March 2020).

2 This is not intended to be a definitive view on the points put forward by Ofwat, but rather to provide some immediate clarifications and observations to aid the CMA's process at this stage. In accordance with the administrative timetable for the redetermination, we understand that we will have an opportunity to make further and more detailed comments on Ofwat's position in due course (i.e. in our response to Ofwat's reply).

3 Please note that this section has been redacted to exclude confidential information on our latest forecasts. Redactions for confidential information are clearly marked by [✂].

(1) Ofwat 023 - Reference of the PR19 final determinations: Explanation of final determination for Bristol Water

4 In paragraph 1.23, Ofwat states that "*evidence from the share prices of the listed water companies and credit rating agencies after [the FDs] provides further evidence that the allowed return is not too low*". We note that this is likely to do more with wider market risk and, for Pennon, the speculation on their recent successful sale of Viridor for £4.2bn. From a regulatory perspective, the listed companies were fast-tracked by Ofwat. We set out in **Section B Cost of capital errors** the evidence provided on the relevant notional company, and the difference in skew in regulatory incentives for Bristol Water in the FD compared to the listed companies.

5 We also note the view of Moody's in their recent credit opinion on Bristol Water,[413] which is relevant to the point raised by Ofwat.

6 In paragraphs 1.25 and 2.42, Ofwat states that "small companies in competitive markets cannot expect to pass higher size-related financing costs on to their customers unless they either provide a service whose higher quality compensates for its increased cost or find offsetting efficiencies elsewhere". We agree that Ofwat should reflect service quality in its

[413] Moody's Investors Service (24 March 2020): Credit Opinion on Bristol Water plc – Update following downgrade to Baa2, negative outlook.

cost allowances, and set out the evidence we provide on this in **Section C Cost allowance errors**. Ofwat also highlights mergers and pooling financing arrangements (the main water industry example being the Artesian arrangements that form a significant part of our efficient cost of debt) as ways in which small companies can remedy financing diseconomies of scale themselves. We address these points in **Section A Financeability error** and **Section B Cost of capital errors**. It is important to note that in Ofwat's 'customer benefits' test, the measurement is not whether customers of Bristol Water benefit, but rather the value to non-Bristol Water customers in other areas, valued only through Ofwat's regulatory incentives. We address this in **Section B Cost of capital errors**.

7 In paragraph 1.27, Ofwat states that three WaSCs have higher financing costs than Bristol Water. Ofwat does not consider the derivatives or swaps (not included in the cost of capital) that are likely to lead to this result. We note that Ofwat appears to argue that Bristol Water is larger than other small WoCs and has a cost of debt lower than the actual cost in 2018/19 of some WaSCs.[414] It is not surprising that using a WaSC median cost means that some companies (particularly those selected by Ofwat with higher gearing levels) appear to have a higher cost of debt than Bristol Water. However, as we set out in this statement of case, correcting Ofwat's approach to estimating our cost of debt results in a cost of debt for Bristol Water of 5.09% rather than 4.73%. Therefore, Bristol Water's cost of debt is actually higher than the figures that Ofwat quotes for Dwr Cymru (5.04%) and Yorkshire Water (4.91%). This suggests Ofwat supports an actual cost of debt approach, which we would also support as it is consistent with the CMA's recent provisional findings report in the NATS price redetermination[415] and CMA15. We provide evidence on adjusting for inflation in the comparison in **Section B Cost of capital errors**. We further note that one of the companies used by Ofwat in its comparison, Southern Water, also has a significant proportion of Artesian embedded debt – one of the key reasons for our requirement for a CSA on the cost of debt.

8 In paragraphs 1.32 and 2.9, Ofwat states that we have outperformed across the first four years of AMP6 on the totex allowance set in CMA15. Whilst Ofwat goes on to acknowledge that we forecast an overall totex overspend for the five year period in our DD response , it fails to make this important point in the cross-cutting issues document (see further below).

9 We faced some challenges in the early years of AMP6 as the business implemented a new operating model and significant levels of staff and management turnover, driven by the efficiency programme 'Project Channel'. This manifested in costs being lower than allowed in CMA15. These costs have remained below the allowed level from 2015/16 to 2018/19. 2019/20 expenditure has been higher, in part due to the exceptional costs incurred in association with the extended PR19 process (in particular on all the evidence and analysis

414 Ofwat (2020) 'Reference of the PR19 final determinations: Explanation of our final determination for Bristol Water', page 24, paragraph 2.40.

415 CMA, NATS (En Route)/CAA Regulatory Appeal: Provisional findings report, 24 March 2020.

required on the CSA as can be seen from the extensive KPMG reports), and the CRT arbitration process. We exclude expected CMA costs in 2019/20 (similarly to 2015/16) as this follows Ofwat's guidance on excluding costs that are not expected to have a customer benefit (and cost recovery is a matter for the CMA as part of the redetermination).

10 A summary of our wholesale totex expenditure against the CMA15 allowance is provided below:

Table AN4.1: Summary of wholesale totex expenditure against CMA15 allowance

Wholesale totex (net of grants and contributions) £m	**15/16**	**16/17**	**17/18**	**18/19**	**19/20**	**AMP6 Total**
Allowance	99.04	95.9	95.5	94.8	96.3	**481.5**
Third Party Costs	(1.15)	(1.1)	(1.1)	(1.1)	(1.1)	**(5.7)**
Pension Deficit Repair Costs	(0.36)	(0.4)	(0.4)	(0.4)	(0.4)	**(1.8)**
Baseline Allowance	97.5	94.4	94.0	93.3	94.8	**474.0**
Expenditure	73.5	85.9	104.2	105.8	121.6	**491.0**
Pension Deficit Repair	0.4	0.1	-	-	-	**0.5**
Other cash items	0.1	-	-	-	-	**0.1**
Actual Totex	74.0	86.0	104.2	105.8	121.6	**491.6**
Transition expenditure	0.77	-	-	-	-	**0.8**
Excluded costs:						
Third Party	(1.3)	(1.3)	(1.7)	(1.5)	(1.3)	**(7.1)**
Pension Deficit Repair	(0.4)	(0.1)	-	-	-	**(0.5)**
CMA	(1.2)	-	-	-	(4.7)	**(5.9)**
Other cash items	(0.1)	-	-	-	-	**(0.1)**
Totex less Excluded Costs	71.8	84.6	102.5	104.4	115.5	**478.7**
Underspend/(Overspend)	25.7	9.8	(8.4)	(11.0)	(20.7)	**(4.7)**
Cumulative under/overspend	25.7	35.5	27.1	16.0	(4.7)	

11 A summary of the forecast movements in AMP6 reconciliations against the FD is as follows:

Table AN4.2: Summary of forecast movements in AMP6 reconciliations against the FD

[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]

12 This data is likely to change and the final position could either be reflected in the CMA's redetermination or adjusted separately through Ofwat's PR19 reconciliation rulebook process. We note that the latter may be simpler administratively, and these adjustments should not affect the decisions that the CMA is required to make.

13 In paragraph 1.33, Ofwat states that our "*performance in the 2015-20 period has led to a number of [ODI] underperformance penalties, reflecting a poor level of service performance in areas that are under Bristol Water's influence or control*". Ofwat goes on to note that we are "*forecasting an improvement in some of the key areas of performance as a result of actions [we have] taken and in [our] business plan targeted incentives on areas that mattered most to [our] customers but which had the widest range of underperformance incentives in the industry*". This is due to the confidence we have in our improvement and transformation. [✂

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14 This includes a significant improvement in the leakage performance, where the ODI applies on average over the period for 2015-20. We have voluntarily excluded technical data improvements from this measure of leakage, and also reduced bills in 2019-20 to compensate customers for the performance at that point. We believe that this measure goes beyond the

approach taken across the industry as a whole, and should be considered in the context of the changes in leakage now being reported for the new standardised measure. The changes in company reported data as a result of standardisation of leakage data is shown in the table below (% increase or decrease compared to current company definition). As you will observe, most companies see an increase in leakage once technical data assumptions are standardised, the significant exceptions being Bristol Water and Portsmouth Water.

Table AN4.3: Changes in company reported data as a result of standardisation of leakage data (% increase or decrease compared to current company definition)

	Change shadow %	
Company	2019-20	2024-25
ANH	6.7%	13.0%
HDD	4.0%	4.6%
NES	-1.9%	2.1%
NWT	0.4%	1.5%
SRN	-1.8%	0.0%
SVE	-1.9%	2.7%
SWB	3.2%	1.3%
TMS	4.5%	5.1%
WSH	9.5%	3.6%
WSX	0.6%	3.1%
YKY	8.1%	22.5%
AFW	11.1%	8.0%
BRL	**-4.4%**	**-11.2%**
PRT	**-7.9%**	**-13.1%**
SES	0.4%	3.4%
SEW	-0.7%	4.8%
SSC	3.1%	9.3%

15 Ofwat notes the significant degree of performance improvement we are targeting. The PR14 targets were generally more ambitious than other companies, for instance targeting a reduction in leakage performance. [✂

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Table AN4.4: Performance against PR14 PC targets

Year	2015/16	2016/17	2017/18	2018/19	[✂]416	[✂]
PCs met	14/21	15/21	9/21	9/21	[✂]	[✂]
%	67%	71%	43%	43%	[✂]	[✂]

16 ODI penalties have only been incurred against the following measures:

- Meter penetration – where we have experienced significantly lower customer demand to switch to meters than anticipated, and have been unable to compensate through increased change of occupier metering. This is largely outside of immediate company control.

- Mean Zonal Compliance –marginal failures occurred in two years, largely attributable to sample failures at customers' taps due to tap fittings, which is substantially outside of immediate company control, and is one reason why the DWI are replacing this measure with the Compliance Risk Index (CRI).

- Burst mains – the upper control limit was exceeded in 2017/18, mainly due to the freeze/thaw events of March 2018. The ongoing effects of this period also led to the reference level target being exceeded in 2018/19, and an RCV adjustment penalty being incurred. Without the impact of these severe weather conditions that affected most companies, performance has improved. Ofwat noted in its review of the "Freeze-thaw" incident that Bristol Water performed well, showing good resilience to the incident as a whole from a customer perspective.[417]

- Supply interruptions – targets were missed in 2015/16, 2017/18 and 2018/19. 2017/18 and 2018/19 performance was impacted by the March 2018 freeze thaw. In 2017/18 we also experienced a small number of events which caused interruptions to a large number of customers, notably at Willsbridge where 35,000 customers were affected, adding 55 minutes to our average interruption duration. We have delivered significantly improved performance in 2019/20 and forecast performance lower than the target level. However, the nature of the supply interruption target is that a relatively modest scale of incident can result in a significant failure against this target, given the high level of reliability the industry is targeting.

416 Annual survey measure excluded from forecast.

417 https://www.ofwat.gov.uk/wp-content/uploads/2018/06/18-06-15-Bristol-Water-letter.pdf.

- Leakage – it was necessary for us to agree an amendment to our reporting approach with Ofwat to ensure that data was reported on the same basis which the target was set. This was ambiguous in the PR14 definition as to whether technical data changes should be taken into account, and the Board of Bristol Water took the view that this ambiguity was not in customer's interests and clarity was required. This involved accepting that no benefit of better information, such as more recent data on underlying consumption levels, should be taken into account in calculating ODI. Some of these data changes include the benefits of leakage reduction measures, which is why historically such new information has always counted against achieving leakage targets. This was the cause of a significant penalty, which up to the end of 2018/19 saw £2.9m accrued. [✂

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17 A summary of ODI penalties incurred by year is shown below. Now leakage performance has been recovered, it is a reasonable conclusion that the remaining ODI penalties have significant factors that are outside of short term management control, and indicate that the business is fundamentally performing well. This is important context for why the ambitious improvements proposed for 2020-25 and associated incentives are not in dispute, except for the incentive rates for mains bursts and per capita consumption (which are less controllable and vulnerable to weather factors).

Table AN4.5: Summary of ODI penalties incurred by year

	[✂]					
[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
[✂]				[✂]		[✂]
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[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
[✂]						
[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

18 [✂

]

19 [✂

]

20 In paragraph 1.40, Ofwat notes the impact of past performance on our credit rating. We anticipated this in our business plan in targeting an actual ratio of Baa2 rather than a relevant notional ratio of Baa1. We have specifically excluded the post financeability adjustments in our analysis of the relevant notional company, as explained in Section 7 of the KPMG Financeability Report. We do not therefore think that our approach to financeability analysis in this regard is a matter of dispute.

21 In paragraph 1.43, Ofwat states that the size of the difference on costs between Bristol Water and Ofwat is much smaller than in previous price reviews that were referred to the CMA. Whilst this is the case, it is also worth stating that these redeterminations were more heavily focused on the scope of enhancement expenditure. We set out in **Section C Cost allowance errors** the context of the Bristol Water plan in terms of comparison to historic spend and, given the low financeability headroom for cost shocks which Ofwat acknowledge in the FD, we consider the cost gap to be significant.

22 In paragraph 2.15, Ofwat states that its review of alternative models "*did not reveal any significant factors that would warrant a material adjustment to Bristol Water's base allowance*". We set out our view on this, including the clear evidence on leakage as an explanatory variable, in **Section C Cost allowance errors**. We provided equivalent evidence to Ofwat in our DD response, in advance of Ofwat revealing the alternative modelling. We consider this to be an area of focus for the CMA's redetermination.

23 In paragraph 2.21, Ofwat sets out its view that we provided limited evidence on our costs in relation to water resources. We set out our evidence on this in **Section C Cost Allowance errors**, including references to the information we provided.

24 In paragraph 2.40, Ofwat states that Bristol Water is the largest of the WoCs which requested a CSA at PR19. We are not sure this is factually correct, as South Staffs Cambridge Water made a CSA request at DD response stage, which was granted by Ofwat. South Staffs Cambridge is larger than Bristol Water in terms of customer base and turnover.

25 In paragraph 2.52, Ofwat describes its checks on the reasonableness of ODI rates. Based on the FD, we do not believe there is a single example of Ofwat diverting from its calculated range for customer evidence. For instance, we show below the Ofwat output for one assessment

summary for mains bursts, which is repeated for all of the other metrics where company incentive estimates fall outside of Ofwat's view of a reasonable range. This is Ofwat's assessment of "Does the company have a compelling reason for the rate it has proposed and has it explained how that rate benefits customers?"

Figure AN4.1: Ofwat assessment summary for mains bursts[418]

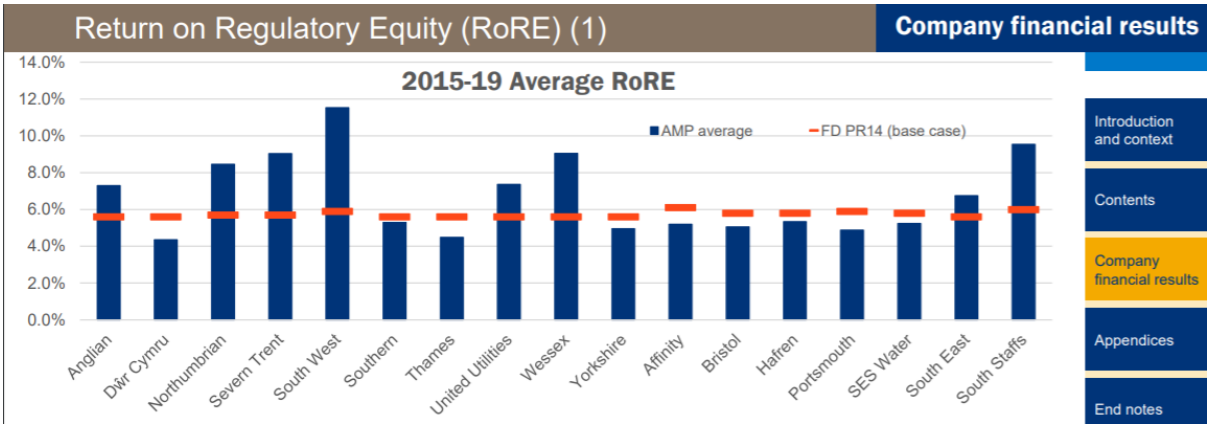
Mains repairs		
Company	ID	Assessment
AFW	Mains repairs_AFW	n/a
ANH	Mains repairs_ANH	Fail
BRL	Mains repairs_BRL	Fail
HDD	Mains repairs_HDD	Fail
NES	Mains repairs_NES	n/a
PRT	Mains repairs_PRT	Fail
SES	Mains repairs_SES	n/a
SEW	Mains repairs_SEW	n/a
SRN	Mains repairs_SRN	n/a
SSC	Mains repairs_SSC	Fail
SVE	Mains repairs_SVE	n/a
SWB	Mains repairs_SWB	n/a
TMS	Mains repairs_TMS	n/a
UUW	Mains repairs_UUW	n/a
WSH	Mains repairs_WSH	Fail
WSX	Mains repairs_WSX	n/a
YKY	Mains repairs_YKY	n/a

26 We set out in **Section D Balance of risk errors** the references to our extensive testing and reasons we set out for Ofwat on alternative theories on differences in customer Willingness to Pay (**WTP**), which we do not think can readily be explained as "methodological differences". The independent report that we provided to Ofwat from ICS Consulting with our DD response[419] provides a novel take on this topic.

27 In paragraph 2.53, we note that Ofwat's view on experience of regulatory incentives for PR14 does not appear to apply to WoCs, for whom only two out of 7 have outperformed the PR14 RoRE over 2015-19. Ofwat's financial resilience report includes the following information on RoRE performance over 2015-19.

418 Ofwat (2019) 'ODI-rates-non-customer-facing.xlsx'.
419 ICS Consulting (2019), 'Will it all be Upper Futile in the end?'.

Figure AN4.2: RoRE performance 2015-2019[420]



28 With regard to Figure 2.1 at paragraph 2.58, we note that the company's representation view did not have a RoRE return central point at 3.96% as the graph suggests, but rather 4.5%. Although the graph is a useful presentation, the context of the lower equity return is also relevant. We note that on totex skew our original business plan was balanced in terms of totex ranges but, as we were largely adjusting our plan to reflect information on frontier efficiency potential and forecasts of relative price effects, inevitably this reduced our view of totex upside and increased our view of totex downside.

29 In paragraph 2.61, Ofwat sets out its view that the long-dated capital structure is a matter under Bristol Water's control. **Section B Cost of capital errors** demonstrates that this is not a reasonable assumption, and should be considered in the context of a five year price control set with reference to a notional company different in characteristics to Bristol Water, and also the CMA's recent provisional findings report in the NATS price redetermination[421]and CMA15. Ofwat states under totex sharing and financeability that companies tend to outperform their business plan submissions. We expect the CMA will wish to explore this further, but the ex-ante allowed revenue reflecting totex sharing mechanism that Ofwat originally suggested as part of its PR19 methodology, but then changed at DD stage, is not our preferred solution to the lack of financeability in the FD, as there is sufficient evidence that our plan costs are efficient and it is simpler and more appropriate to set totex incentives symmetrically as in CMA15.

30 In paragraph 2.73, Ofwat states "*there was a risk that companies with poor past performance may propose weak incentives*". Based on paragraph 1.33 (addressed above), it is not clear whether Ofwat believes this applies specifically to Bristol Water. Our research was very

420 Ofwat (2020), 'Monitoring financial resilience'.

421 CMA (2020), NATS (En Route)/CAA Regulatory Appeal: Provisional findings report' (https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf).

transparent about past performance and how it impacted our future plans and incentives, and Ofwat's IAP feedback recognises this.

31 In paragraph 2.76, Ofwat raises the issue of triangulated WTP values and the use of the lowest value for leakage. We dispute these statements as they do not address the expected willingness to pay research.[422] However, as the leakage incentives rates in the FD are very similar to those proposed in our business plan, we do not believe this is a significant area of dispute (£191k/Mld underperformance and £164k/Mld outperformance in the FD compared to £191k/Mld underperformance and £163k outperformance/Mld in our business plan). We note, though, that Ofwat (re)quotes concerns on leakage that it withdrew when we reiterated our evidence, having made errors in the calculation of leakage incentive rates in the DD that could not be replicated.

32 As NERA comment:[423]

> "*Bristol Water's approach to testing alternative business plan options through the NERA/Traverse acceptability testing was not consistent with "industry best practice", in the sense that no published regulatory guidance prescribed or required this form of research. In fact, this research represented an innovation that built on the industry guidance designed to address a limitation of triangulation based on expert judgment, that it leads to a range of potential values and may not provide a single, precise estimate. Bristol Water therefore commissioned a survey, asking customers to choose between the alternative business plans that would result from applying the high, low and central WTP results from its triangulation in the company's CBA modelling. Using customers' choices between these plans allowed Bristol Water to further refine its triangulated "point estimate" of customers' willingness to pay.*
>
> "*Therefore, rather than concluding the triangulation process with a subjective expert judgment as to a reasonable point estimate, which would have been consistent with industry best practice, Bristol Water went beyond this and further tested this point estimate with customers using an objective, survey-based to better inform its ODI incentive rates.*"

33 The innovation in this research was that WTP incentives were triangulated over different levels of price and quality of service options, which also tested how these priorities changed as the 'starting bill' changed (e.g. base service efficiencies or reduction in the cost of capital). Segmentation into typical customer groups was included, and an 'expected' marginal WTP

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422 NERA/Traverse (May 2018), 'Acceptability Testing Survey Report'.

423 NERA (March 2019), 'Ofwat's assessment of Bristol Water's approach to Triangulation'.

could be calculated from the different base price level, and the incremental price and service quality package choices in the experiment.[424]

Figure AN4.3: Percentage of Respondents who Accepted Given Business Plan by Customer Segment

Plan:	Baseline price group:	Social Renter	Young Urban Renter	Comfort-able Family	Safely Affluent	Mature and Measured	Thirsty Empty Nester	All segments
Low P/Q	Base	88%	88%	94%	N/A	95%	100%	91%
	Base +£9	75%	93%	80%	100%	85%	100%	88%
	Base +£17	67%	68%	64%	100%	81%	60%	71%
	All groups	**78%**	**84%**	**81%**	**100%**	**88%**	**80%**	**84%**
Medium P/Q	Base	86%	54%	92%	100%	76%	67%	72%
	Base +£9	60%	76%	87%	100%	69%	80%	77%
	Base +£17	63%	57%	93%	100%	81%	50%	72%
	All groups	**70%**	**61%**	**90%**	**100%**	**75%**	**67%**	**74%**
High P/Q	Base	56%	67%	61%	67%	59%	100%	62%
	Base +£9	67%	52%	63%	100%	44%	80%	56%
	Base +£17	63%	55%	76%	67%	52%	100%	62%
	All groups	**60%**	**58%**	**67%**	**71%**	**52%**	**89%**	**60%**

Note: there were no "safe affluent" respondents in the sample who were presented the low P/Q plan with baseline prices. Source: NERA analysis.

(2) Ofwat 001 - Reference of the PR19 final determinations: Overview

34 In paragraph 1.11, Ofwat states that we are currently underspending the CMA15 allowance. However, it omits to note that we are forecasting to overspend by the end of 2020 (which, as set out above, it recognises in the document explaining Bristol Water's FD). Our updated analysis confirms this is likely to be the case, and includes additional expenditure which was not foreseen at the time of our DD response. This one-off expenditure is not particularly relevant to the redetermination, other than there is no evidence companies are outperforming PR14 cost allowances, and for Bristol Water the context of a 10% reduction over the 2014-2019 historical expenditure would be more pertinent as context.

35 In paragraph 4.55, Ofwat states regarding assessment of enhancement proposals: "*Where the expenditure was not material, we used a proportionate approach ("shallow dive") and challenged the expenditure using our estimate of base costs in inefficiency (i.e. if we considered that the company's proposed base costs were 5% above what is efficient, we challenged low materiality enhancement proposals on the premise that they were 5% above what is efficient)*". Our understanding is that this is incorrect, as otherwise the adjustment would reflect the

[424] NERA/Traverse (May 2018), 'Acceptability Testing Survey Report', page 24.

Ofwat final base totex gap of 6.9%. Rather, we understand that Ofwat's "shallow dive" was based on the historic base efficiency position analysis in April 2019, and company proposals. DD plan proposals have no bearing on this calculation. We set out our evidence for this in **Section C Cost allowance errors**. What is pertinent is that Ofwat fails to take account of company enhancement efficiency proposals, and makes a "shallow dive" efficiency haircut irrespective of whether companies have made any efficiency adjustment in their own bottom up costing.

36 In paragraph 4.108, Ofwat states: "*Challenges to Bristol Water's financial resilience arise particularly because of its reconciliation adjustments associated with underperformance in meeting its performance commitment levels in 2015-19*". We dispute this. This statement of case shows that a key challenge arises from Ofwat not considering the efficient financing costs of a relevant notional company to Bristol Water, and in particular Ofwat's decision not to apply a CSA uplift despite clear CMA precedent from two previous references.

37 Ofwat also states that we fell short of its expectations in one area of our proposed dividend policy for 2020-25. We note that this is based on Ofwat's opinion (which we do not share) that we could have made one diagram clearer – although Ofwat accepted that the supporting wording clearly stated that we would adjust base dividends for actual regulatory performance.[425] We further note that it has little (if any) bearing on this redetermination. In the present context, it would be helpful if Ofwat could be specific about the relevance and impact of any issue it raises so that material issues can clearly be distinguished from more trivial points.

38 Finally, we note Ofwat's acknowledgement, at paragraph 1.15, of the current and evolving situation regarding COVID-19, which has arisen since the FD. We, like Ofwat, are considering the impact of this unprecedented situation on the CMA's redetermination and would also welcome an opportunity to make further representations on this in due course. In addition, we note for completeness that there are other ongoing issues which may have a bearing on the CMA's redetermination (e.g. the Valuation Office Agency has provided companies with draft valuations of their total Rateable Value (RV) since the FD[426]), of which we will keep the CMA fully apprised.

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425 FD, page 81, *"The company indicates that dividends may be either increased or lowered from the base depending on the actual performance of the company but we note that diagrams provided by the company in its representations could make this clearer".*

426 Ofwat included a Notified Item for water cumulo business rates in the FD, with a 75% share of any difference in cost affecting customer bills. Since the FD, the Valuation Office Agency (**VOA**) has provided companies, including Bristol Water, with draft valuations of their total Rateable Value (**RV**). This draft valuation is the second stage in the process, with representations and then a final VOA position expected in May 2020, prior to implementation from 1 April 2021. At this stage, the valuation only covers the RV and not the rate, which can go up or down depending on all valuations. Therefore it is likely that there will be sufficient information to consider the new RV in the CMA's provisional and final redeterminations. [✂

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(3) Ofwat 002 - Reference of the PR19 final determinations: Key elements of the methodology appendix

39 In the table on page 25, Ofwat states in relation to the resilience action plans: "*Bristol Water's submission met our expectations in most but not all areas…*". We note that Ofwat provided positive feedback, in particular highlighting Bristol Water as one of the two examples of good practice used in the FD.[427] We do not believe we have any outstanding actions on the areas in which Ofwat feel we fell short, as the relevant details were included in the supporting evidence to our resilience action plan.[428]

40 We note that, on page 34, Ofwat highlights a comparison of historical and forecast base costs for Anglian Water. We include information on Bristol Water comparisons between historical and forecast base costs in **Section C Cost allowance errors**.

(4) Ofwat 003 – Reference of the PR19 final determinations: Cross-cutting issues

41 In paragraph 3.9, Ofwat states that we had amongst the highest outperformance on the PR14 cost allowances. Ofwat then goes on to state that: "*Given this good historical cost performance, we considered our cost challenge to be achievable*". We do not understand (a) why Ofwat make this statement given our totex forecast across 2015-20 as a whole, and (b) given the significant reduction below historic costs Ofwat acknowledges our plan represents, how this demonstrates that the cost challenge is achievable.

42 In paragraph 3.16, Ofwat gives Europe Economics' proposed range for frontier shift as 0.6% to 1.2% per year. In paragraph 3.17, it states that this is in line with other recent regulatory decisions, which fall within the range of 0.7% - 1.0% per year. The majority of these decisions set the productivity growth level at 1%, including CMA15. We note that Ofwat's use of 1.1% therefore falls outside of other recent regulatory decisions. We explore this in **Section C Cost allowance errors**.

43 In paragraph 3.19, Ofwat explains its rationale for extending frontier shift to generic enhancement costs. It does not mention that it has extended the frontier shift to unmodelled costs that are externally driven taxes and charges. We address this in **Section C Cost allowance errors**.

44 In paragraph 3.20, Ofwat highlights a Bristol Water plan assumption of 0.9% RPE adjustment being offset by a 0.9% frontier shift challenge. To clarify, this was based on extensive evidence

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427 FD, 'Securing Long Term Resilience' page 13 (https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Securing-long-term-resilience.pdf).

428 PR19, 'Bristol Water final determination' page 30, and Bristol Water (2019) 'C4DD Bristol Water Clearly Resilient', section 5.3 (https://www.bristolwater.co.uk/wp-content/uploads/2019/08/C4DD-Bristol-Water-Clearly-Resilient-systems-thinking-approach-and-act....pdf).

including third party expert reports from NERA set out in our original business plan. This is clearly referenced in the data table commentaries reference Ofwat supplies, and demonstrates that we did in fact consider frontier shift and relative price effects separately (even if the two elements happened to offset each other in value). It does not provide any justification for Ofwat to impose a further frontier shift for Bristol Water without similar analysis.[429] We note, however, that this had no impact on Bristol Water as we remained below Ofwat's cost benchmarks on enhancement where it applied a frontier shift, although we got no benefit from this efficiency position in the overall totex allowance.

45 In paragraph 3.51, Ofwat states that "*the data suggests a positive correlation between [its] estimates of historical cost efficiency and good outcome performance*". Ofwat goes on, in paragraph 3.53, to state that "*it is possible for a company to have both upper quartile outcome performance and upper quartile cost efficiency at the same time*" (although we note, as a separate observation, that Ofwat went beyond upper quartile cost performance in the FD). When replicating Ofwat's Figure 3.1, the R2 of the regression line is 0.15, indicating a very weak positive correlation between supposed quality and historical efficiency. We therefore consider that this analysis is insufficient to justify Ofwat's statement that "*better outcomes could be associated with lower costs*." Not only is the correlation weak, there appears to be a structural break within the plots. If the group is split in half, above and below the median efficiency rank there is a clear negative relationship between quality and efficiency. It is also worth noting that, according to Ofwat's graph, Bristol Water face a larger efficiency challenge than 5 other companies who are perceived as relatively poor performers on quality (noting this is not the case on a forward looking projection more relevant to PR19, as Ofwat refers to in paragraph 3.55).

46 The comparative performance measures used to compare 'quality' and cited by Ofwat in Appendix A are supply interruptions and leakage. On supply interruptions, our performance was skewed in particular by the large interruption at Willsbridge in 17/18, which added 55 minutes to our reported figure. On leakage, Ofwat recognises that we are upper quartile on the leakage per km of main measure, and we are industry leading when normalised by number of properties served, but this performance is not reflected in the measures used for 'quality'. In **Annex 9** we discuss and demonstrate our above average performance across a range of measures which are important to our customers, such as water quality and leakage. We think Ofwat should at least update its analysis to use the more comparable data for leakage and supply interruptions, and for water service include a measure of water quality. We explore this topic further in the addendum to this Annex (see below).

47 In paragraph 3.56, Ofwat sets out why leakage reductions should be funded through base. This contradicts the report produced by PwC which discusses funding approaches for leakage.

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[429] Bristol Water (2018), 'PR19 business plan C5: Cost and efficiency', page 49.

PwC note that their results may suggest "*Ofwat's [FD] funding approach is insufficient for funding more ambitious reductions in leakage…*".[430]

48 PwC's finding that "*historical spending, particularly spending associated with maintaining the long-term capability of assets and supply-demand balance demand-side enhancement funding, appears to have a small but statistically significant impact on leakage performance*"[431] contradicts Ofwat's statement that there is no evidence that higher levels of cost necessarily lead to better outcomes. PwC's report also suggests that companies operating at the upper quartile of leakage face higher marginal costs, which rise as companies' drive further reductions in leakage. Companies in the upper quartile will likely have higher base costs due to the increased marginal cost of achieving further leakage, and in maintaining past leakage reductions, particularly when using modern active leakage control methods where (as with Bristol Water) there is good coverage automated network monitoring and control. Once a reduction is achieved, it becomes a base cost to maintain that level of network leakage.

49 It is also worth noting that Thames Water were an outlier on leakage costs in the PwC analysis, and PwC suggested that an alternative approach could be taken for Thames, which Ofwat did through the exceptional conditional allowances put in place specifically for that company in the FD. It is therefore puzzling that Ofwat ignored the remainder of the PwC analysis by placing additional hurdles for Bristol Water to applying the results of this modelling, although Ofwat did make an adjustment for Anglian Water. We address this in **Section C Cost allowance errors** on leakage.

50 In paragraph 5.54, Ofwat states that companies closest to notional gearing have an investment grade ratio of Baa1. We note that these are listed companies and Dwr Cymru which is mutually owned. The next lowest company in 2018/19 was Bristol Water at c.62% (excluding preference shares) or 64.5% (including preference shares), and our rating action following the FD is Baa2 negative. As Ofwat also notes that Dwr Cymru has higher interest costs than Bristol Water, if the link stated by Ofwat in this section holds true, we believe this confirms that Ofwat made a clear error in the cost of capital and financeability assessment for Bristol Water, as we describe in **Section A Financeability error**.

51 In paragraph 5.75, Ofwat discusses the CSA benefits assessment, and whether a company strengthened the PR19 benchmarks. In the FD, Ofwat moved to a fourth best position as a benchmark, whereby the benchmark is only affected by the position of the fourth placed company rather than the companies who are within the upper quartile. Ofwat did not address this point in the benefits assessment. We discuss this further in **Section B Cost of capital errors**.

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430 PwC (2019), 'Funding approaches for leakage reduction', page 6.

431 PwC (2019), 'Funding approaches for leakage reduction', page 6.

52 In paragraph 5.77, Ofwat states that it "*preferred to rely on [its] simpler analysis of retail benefits rather than KPMG's evidence…*". In paragraph 5.79, Ofwat describes its decision to profile future period benefits based on the forecast profile over PR19, rather than what it considers an unrealistic assumption of constant benefits. We dispute Ofwat's view on both of these points. On the future period benefits, we believe it is re-using the PR19 profile which is hypothetical and unrealistic for the purposes of the customer benefits test. To illustrate this, we use supply interruptions as an example:

Table AN4.6: Supply interruptions 2020-2025

	2020-21	2021-22	2022-23	2023-24	2024-25	
BRL	00:04:12	00:03:36	00:03:00	00:02:24	00:01:48	
UQ	00:04:17	00:03:58	00:03:40	00:03:22	00:03:00	
UQ without BRL	00:04:19	00:04:15	00:03:55	00:03:28	00:03:05	
Benefit of BRL without a glidepath	**0.02**	**0.17**	**0.15**	**0.06**	**0.05**	**0.09**
Ofwat UQ glidepath	00:06:34	00:06:10	00:05:46	00:05:22	00:04:59	
Ofwat UQ glidepath without BRL	00:06:32	00:06:09	00:05:46	00:05:23	00:05:00	
Benefit (disbenefit) of BRL after Ofwat's glidepath	**- 0.02**	**- 0.01**	**-**	**0.01**	**0.01**	**- 0.00**

53 The table above shows the impact that Bristol Water has on Ofwat's upper quartile benchmarking for supply interruptions. In the FD, Ofwat shows a trivial single period benefit of c.£38k, which reflects the yellow cell – the glidepath removes much of the impact of Bristol Water shown above. Assuming this lack of potential customer benefit because of a glidepath continuing, compared to using the 2024-25 position without a glidepath (the green cell) is not an unrealistic assumption, given the poor logic of the Ofwat customer benefits test as a whole. As we set out elsewhere, if the CMA follows its previous views on the customer benefits test, then there is no need for it to consider these points.

54 In paragraph 6.28, Ofwat notes that, in 2012, the Competition Commission stated: "*if shareholders were able to withdraw large sums in periods with strong cash flow, it was reasonable they should also be willing to supply finance in periods of weaker cash flow*". We do not consider this is relevant to Bristol Water and its shareholders, given that dividends have been limited to within the group during AMP6 and the gearing of the company has reduced from 73% to 65% in this period. For transparency, we show below historic gearing and dividend yield levels.

Figure AN4.4: Bristol Water - Historic Gearing Levels

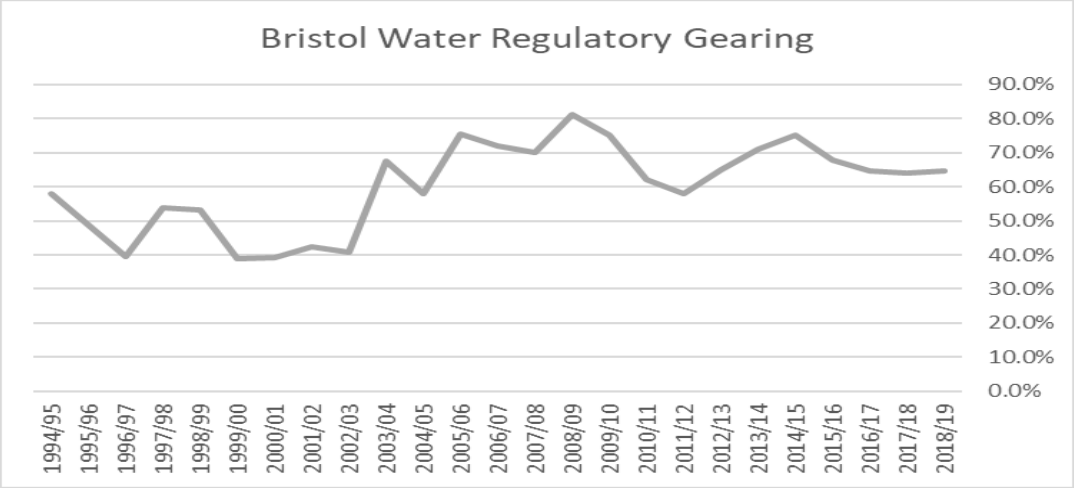
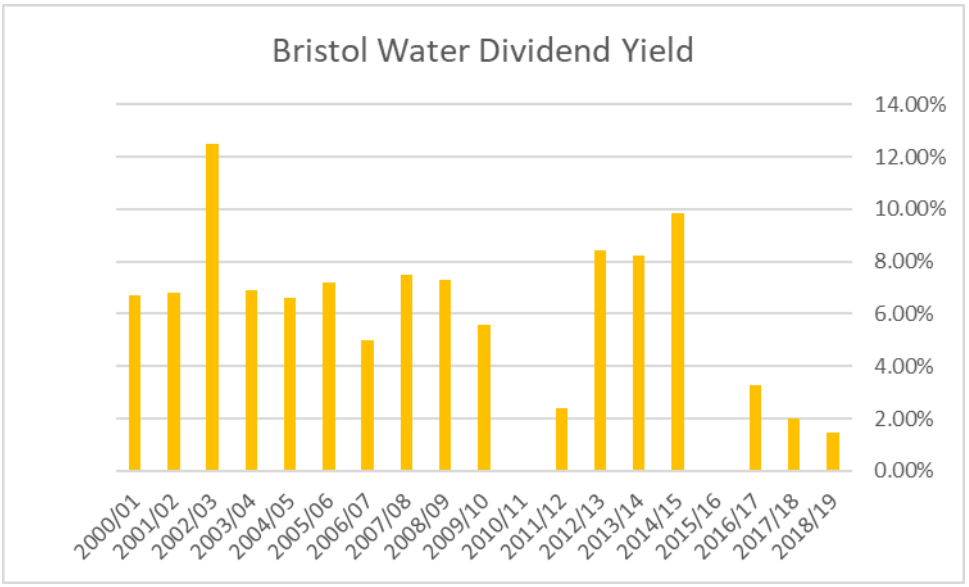


Figure AN4.5: Bristol Water - Historic Dividend Yield Levels



55 In paragraph 6.29, Ofwat states: "*we note the financial ratios for Bristol Water under its actual structure are impacted by matters that it is able to influence or control, for example related to its past performance*." As explained above, KPMG's financeability analysis of the relevant notional company excludes the impact of ODI penalties.

56 In paragraph 6.37, Ofwat refers to our view, expressed in our response to the consultation on the fast track draft determinations, "*that the use of financial levers may be a sensible approach to support minimum financial ratios for the notional capital structure*". The quote from our response below is helpful in the context of a FD where such adjustments are made for 12 companies:[432]

> "*We would note though, that if such adjustments were required over a wide range of notionally structured financial ratios, it will be important for Ofwat to take this into account in the industry cost of equity used in final determinations. We think it would be useful for Ofwat to explore this point in the July draft determinations. It may be that these financial ratio challenges relate to timing of investment, but note with the "sector balance" gearing sharing proposals (which we support) there is less headroom to assume an increase in gearing within the five-year period in determinations than in the past, despite the lower notional gearing assumption at 60%.*"

57 Ofwat's default assumption in its financeability assessment was that timing differences are the cause of any notional ratio issues. We deal with the implications of Ofwat failing to address this point in the FD within both **Section A Financeability error** and **Section D Balance of risk errors.** It is worth noting that, at this early stage of the PR19 decision-making process, we also highlighted the issue of the assumption that WTP ranges vary between companies because of methodological differences (rather than reflecting customer preferences) and the alternative hypothesis that Ofwat could explore.

58 In paragraph 6.50, Ofwat states: "*Financial ratios in our financeability assessment could be improved by increasing the assumed proportion of index-linked debt in the notional company. Index-linked debt benefits cashflow financial ratios as the inflationary element of the interest cost accretes to be paid on maturity of the debt, and because index-linked debt has a cash interest charge that reflects a real rather than a nominal coupon it can materially improve cash interest cover ratios*". This is not a realistic assumption for Bristol Water, as set out in **Section A Financeability error**.

59 In paragraph 7.18, Ofwat sets out the impact of ODI penalties on financial ratios and the company's credit rating. We have already addressed above the reduced final ODI penalties that arise from improved performance in 2019/20.

2. Other observations

60 We have reviewed the transcript of Ofwat's third 'teach in' session for the CMA held on 25 February 2020 – provided to us on 25 March 2020 – and note the reference in that transcript (at page 44) that, with reference to the CSA customer benefits test, Ofwat are concerned that

[432] Bristol Water (2019), 'BRL_FastTrack PR19 DD_response".

allowing for a premium may prevent a merger. Specifically, Ofwat states: "…*it is allowing for the possibility that, if the small company premium was not provided, there may be transaction activity which may mean the loss of that comparator, which is why the relevance of the merger analysis. I guess we would observe that, since we have been doing this, there have been mergers. At PR14, we allowed some companies – some small companies, some water-only companies output company specific premium and others were not allowed a premium. There were two mergers, one of a company that received an uplift and one of a company that did not*." Ofwat goes on to state: "So, *it is not clear that there is a causal link but, nonetheless, we accept the point that there is certainly the potential for that to take place*".

61 As per CMA15, we believe there is no such causal link. The Pennon/Bournemouth merger occurred with an allowed small company premium on the cost of debt and the Severn Trent/Dee Valley merger without this. In both cases, however, it appears that the Artesian debt remains in place post-merger.

3. Addendum: Extending Ofwat's analysis of stretch and service levels

62 As referred to above, we set out in this addendum our extension of Ofwat's stretch and service level analysis (Appendix A to the Ofwat Cross-cutting issues reference document) to forecast levels of cost and service.

63 First, we provide the relevant context from Ofwat's FD:

- Ofwat argues that greater stretch was needed in the FD on cost allowances (e.g. from upper quartile to fourth company) because of information asymmetry. Ofwat uses evidence of historic outcomes performance to suggest that companies generally outperform on cost. As we show above, contrary to Ofwat's description, there is more balanced performance overall in 2015-2020 for industry costs against PR14 allowances, and PR14 did not include the same strength of benchmark or any application of frontier shift. We explain the context for Bristol Water of targeting below historical costs in our plan, having spent broadly in line with the efficient wholesale totex costs identified in CMA15 (which was a major improvement in previous efficiency levels, as Ofwat recognises).

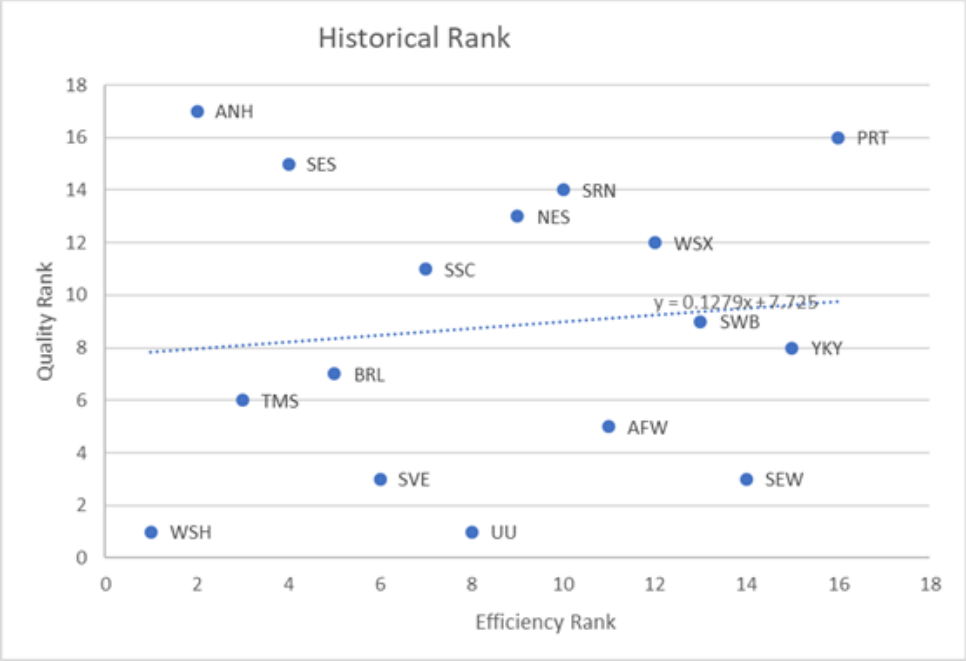
- The challenge for Bristol Water is not in dispute, as recognised by Ofwat in its reference documents and the third 'teach in' for the CMA. For instance, the transcript of the latter states: "*We consider that the company has challenged itself significantly on costs during this current price review*" (page 38) and "*Bristol Water submitted the lowest level of enhancement costs across the sector*" (pages 38-39). Also, Slide 27 of the accompanying Ofwat presentation highlights both of the above points, as well as our plan totex being c.10% below historic levels (and the FD 15%).

- Ofwat considers in the FD it should be data led in setting costs, outcomes and allowed return on capital, but then assumes information asymmetry rather than being led by the data on skewed RoRE incentives in the FD.[433]

64 Therefore, we attempted to replicate Ofwat's analysis for wholesale water base expenditure only, using the service delivery report metrics (Leakage, Water Supply Interruptions and WQ contacts) and both the historical and forward looking base efficiency challenge. We think this is a better comparison than looking at water and wastewater together.

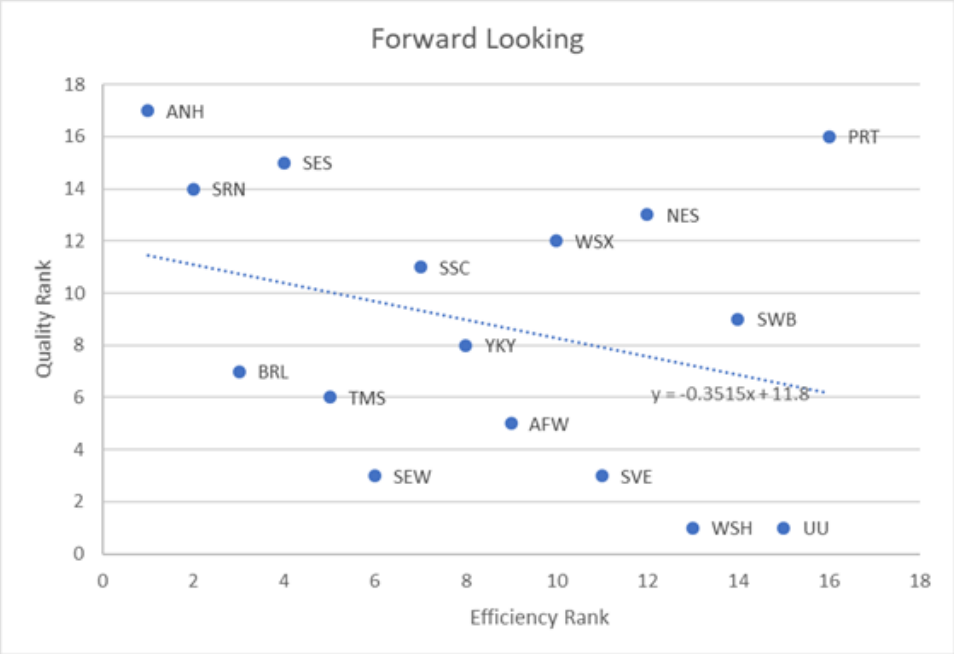
65 We ranked performance over 4 years and averaged for each of the metrics, and then averaged across the metrics and ranked to get a 'Quality Rank', where 17 is best and 1 the worst performer. The historical efficiency correlation is very weak. If you remove Portsmouth Water and Dwr Cymru, who are at the extreme ends of the performance spectrum, the correlation is negative at c.0.33.

Figure AN4.6: Historical Ranking



433 PR19, 'Overall level of stretch across costs, outcomes and allowed return on capital appendix', page 58.

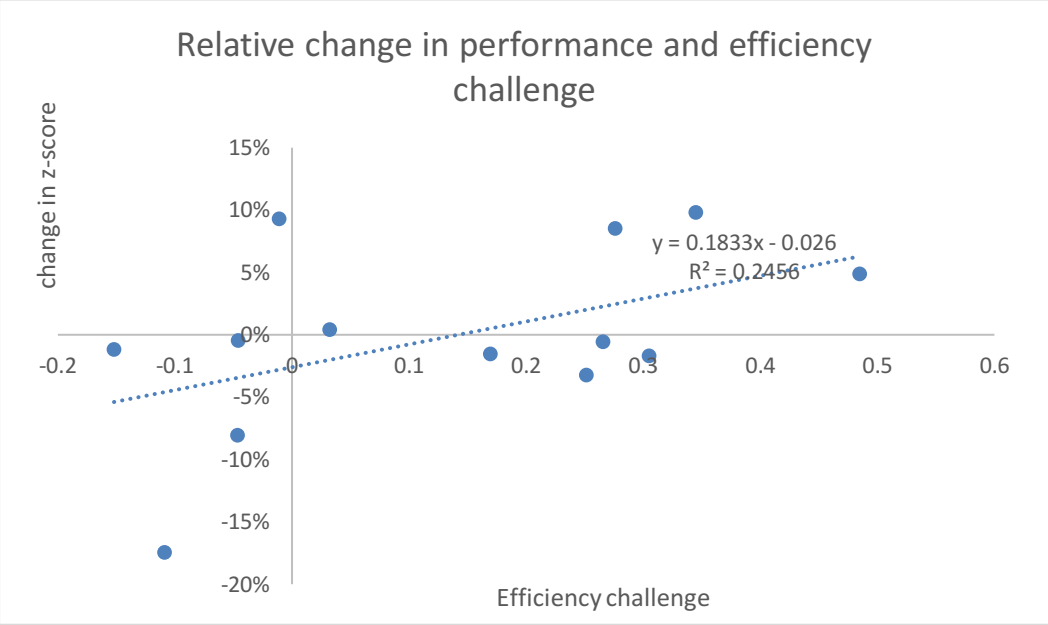
Figure AN4.7: Forward Looking Ranking



66 The forward looking ranking inverts the slope – more "efficient" companies have lower quality. One hypothesis could be that companies with lower quality are receiving higher enhancement allowances from regulatory obligations to recover shortcomings in past maintenance, rather than funding performance levels through base expenditure, and therefore appearing more efficient on analysis of base costs. Ofwat's application of stretch on cost and outcomes is therefore likely to be unachievable, and the mean outcome is a shortfall in returns to equity.

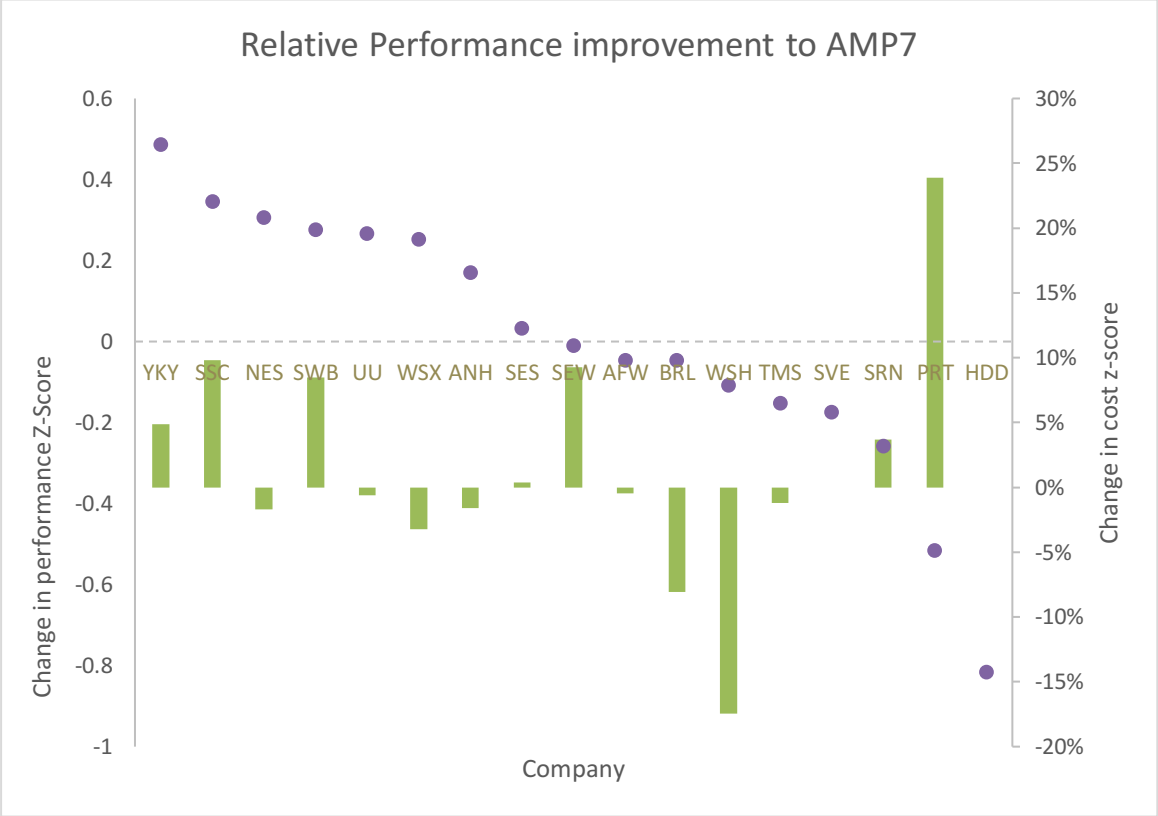
67 We explored this further with the change in spend against the change in the basket of performance measures using Z-scores to establish the difference from the mean, and how this changed between 2018/19 and 2024/25. This shows a similar positive correlation – a higher change in base water wholesale spend from the mean weakly correlates with a higher shift in relative performance.

Figure AN4.8: Relative change in performance and efficiency challenge



68 For Bristol Water, the change in relative performance is around average (despite the lower enhancement expenditure – see **Section C Cost allowance errors**), and the change in the base spend is the second highest challenge. Companies with the worst relative performance have the least improvement in some cases. Note that we could not replicate Severn Trent Water and Hafren Dyfrdwy Water cost performance improvement due to the merger.

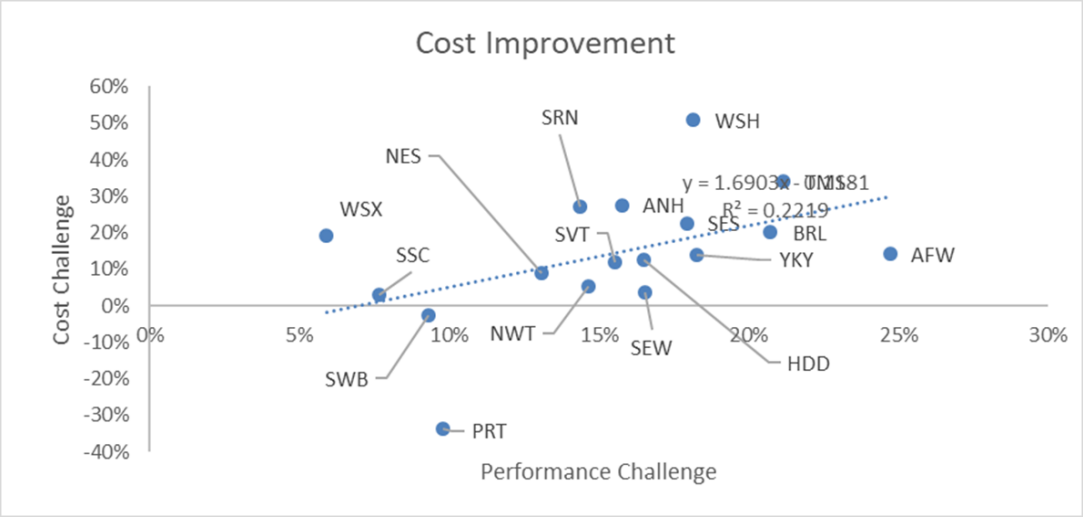
Figure AN4.9: Relative performance improvement to AMP7



69 There is the hypothesis that higher costs in 2018/19 reflect preparation for the industry towards AMP7 changes (as in costs are higher for companies that have more improvement to deliver). This suggests a measurement of gap to the upper quartile for a number of measures is relevant. Ofwat's contention that there is a positive relationship between quality and efficiency can then be translated into the cost challenge compared to historical spend at PR19, in terms of the base water cost challenge compared to the degree of performance change – the higher the performance change, the greater degree of cost challenge that companies face.

70 Overall, we conclude that there is no clear evidence of a positive relationship between high quality and high efficiency, which would provide confidence that setting targets for both cost and service based on individual upper quartiles would result in expected returns in line with the cost of equity.

Figure AN4.10: Cost improvement



Annex 5: List of expert reports

Name	Date
Economic Insight, 'Review of Ofwat's approach to the WACC at PR19 Draft Determinations'	March 2020
KPMG, 'Small Company Premium for Bristol Water' (Confidential and Non-Confidential versions)	March 2020
KPMG, 'Cost model review'	March 2020
KPMG, 'Estimating the Cost of Equity for PR19'	March 2020
KPMG, 'Financeability of Bristol Water under the PR19 Final Determination' (Confidential and Non-Confidential versions)	March 2020
NERA, 'Ofwat's Approach to Wholesale Cost Assessment in the PR19 Final Determination'	March 2020

Annex 6: Our story

1. Introduction

1 Bristol Water is a very different business from the organisation that produced the business plans for the PR09 and PR14 processes – both of which resulted in the company seeking redetermination of Ofwat's decisions on those plans by the CMA and its predecessor the CC.

2 Our PR19 plan was developed from strong foundations, building from our company strategy "Bristol Water … Clearly", which set out our long-term ambition for excellent community water experiences. We are committed to being a company that our communities trust and are proud of, delivering excellent experiences, and creating social and economic value for our customers and the regions we serve.

3 Both our company strategy (the golden thread of our plan) and our social contract (the vehicle through which our customers and stakeholders hold us to account for delivering our plan and our social purpose) are built on extensive customer engagement.

4 Being a small, local company with strong links to our communities helps us have the important conversations on water and environmental topics which we and our customers are passionate about.

5 Customer and stakeholder participation in what we do bring value to the communities we serve. It forms a key part of the experience of working with us, as a small local water company, to address the shared societal challenges that we face. Our full social contract and information about what it involves are available on our website.[434]

6 This Annex sets out why Bristol Water's 2020-2025 plan is different to the previous two. It does so by summarising the factors that differentiate the development of this business plan, namely:

- New ownership, a strengthened Board and Executive Team.
- Clear Board ownership of the company strategy and active scrutiny and challenge of the plan developed to deliver it.
- Extensive, rigorous, and innovative customer and stakeholder engagement.

[434] www.bristolwater.co.uk/socialcontract.

- Extensive use of third party peer review and challenge to provide comprehensive assurance.
- Robust review and challenge by an independent customer challenge panel.
- A clear plan for delivery of the business plan, with implementation running in parallel to Ofwat's process

7 This has been achieved against a clear recognition of the importance of trust, and development of a business plan not just focused on PR19, but on the modern relevance of the social purpose of small local water companies.

2. New ownership, a strengthened Board and Executive Team

8 A number of weaknesses in Bristol Water's historic governance were exposed during the reference of the PR14 business plan to the CMA and its subsequent redetermination.

9 Deficiencies were identified in the company ownership structure, strength and depth of skills on the Board and consequently the quality and challenge exerted by the Board over development of the business plan.

10 Shortly after the CMA's redetermination, in April 2016, iCON Infrastructure Partners acquired a 50% stake in Bristol Water, which was subsequently increased to 80% in December 2016.

11 iCON Infrastructure Partners are experienced investors in utility assets. They moved quickly, post-acquisition, to strengthen Bristol Water's Board governance arrangements – adopting the principles of the UK Corporate Governance Code and more recently Ofwat's Principles of 'Board leadership, transparency and governance'.[435] They also moved quickly to refresh and strengthen membership of the Board.

12 The Bristol Water Board now consists of an Independent Chair, four Independent Non-Executive Directors – chosen on the basis of their relevant experience to support the business to develop its future strategy and to strengthen the level of assurance and challenge required to support delivery of the strategy. In addition, three shareholder directors and two executive directors (the Chief Executive Officer and Chief Financial Officer) complete the Board.

13 Since 2017, the Board has:

[435] Ofwat (2019)' Board leadership, transparency and governance – principles'.

- Appointed a new Chief Executive Officer with significant experience leading international and UK water, energy and infrastructure businesses.

- Restructured and refreshed the executive leadership team with particular focus on strengthening capability in the areas of asset management, strategy and regulation, operational delivery, and business transformation.

- Supported significant investment in people, centred around a new set of values established in recognition of a re-found social purpose appropriate for a local water only company.

- Approved additional investment in an asset management and operational transformation programme ('Project Channel'), which has driven rapid and sustainable improvements in underlying operational and financial performance since 2017.

14 The operational improvement – in both service and cost – achieved by the transformation programme has given the Board and Executive team confidence that the plan is underpinned by modern approaches to asset management with a focus on delivering long term resilience for customers and the environment.

15 The Board supported additional investment to secure improved operational performance for customers and the environment alongside a decision to retain equity in the business with the consequence that current shareholders have received no cash dividends over the period 2015-2020.

3. Clear Board ownership of the company strategy and active scrutiny and challenge of the plan developed to deliver it

16 Our strengthened Board and Executive have been intimately and actively engaged at all stages in the development of our business plan.

17 In 2017, the Board supported a plan – which built from an independent review of Bristol Water's approach to PR14 – to address a number of underlying business weaknesses which had contributed to the challenges identified with the 2015-20 business plan.

18 The critical first step taken by the Board, new Chief Executive and the Executive team was to set out an ambitious company strategy, built on the views of our customers and stakeholder priorities. This was published as the long-term ambition document "Bristol Water … Clearly" in January 2018.

19 In this ambition document, we set out how our new company strategy would build from the ideas of the founders of the business well over 150 years earlier and refocus Bristol Water around a strong social purpose – delivering excellence for its customers and communities.

20 In recognition that companies who want to be around for the long term must ensure that society and the environment are at the heart of everything they do, the Board and Executive set out a Purpose, Vision, and Mission to deliver on this:

- **Our Purpose**: To have a positive impact on society and the environment – building trust beyond water.
- **Our vision for the future is**: 'Trust beyond water – providing excellent customer experiences.'
- **Our Mission is:** 'To be a company which our communities trust and are proud of. In doing so, we will deliver excellent experiences and create social and economic value.'

21 Having set out the new company strategy, the Board established itself at the heart of the business plan development process, with an active role to both challenge and scrutinise plan development and its core content to ensure it would deliver the strategy.

22 This was achieved through three distinct lines of defence: commissioning a programme of internal and external assurance reporting to the Board, a dedicated PR19 Board sub-committee, and regular full Board challenge and review workshops.

23 There is strong evidence that through the Board governance and assurance arrangements, the Board directly influenced the final shape and quality of this plan. Our non-executive directors collectively spent over 200 days overseeing the process and understanding, challenging and contributing to the formulation of our plan.

24 The principal differences with previous plans include:

- A strong commitment to active, ongoing and innovative customer engagement – embodied by our social contract – this allowed the executive to focus on putting customers' views, staff engagement and stakeholder priorities at the centre of its long-term business planning.
- A sharp focus on evidence-based decision making – driven through PR19 Board sub-committee and full Board challenge workshops.
- Cross industry challenge – the depth and consistency of the Board's engagement in the development of the strategy has enabled the executive team to benefit from the extensive cross sector expertise of our Non-Executive Directors.

- A clear focus on balancing risk, resilience and delivery – a focus on the identification and mitigation of risk (including the dependencies and interrelatedness of risks) has enabled us to put in place robust plans to deliver the commitments we have made to customers with an appropriate balance of risk and reward between the company and our customers.

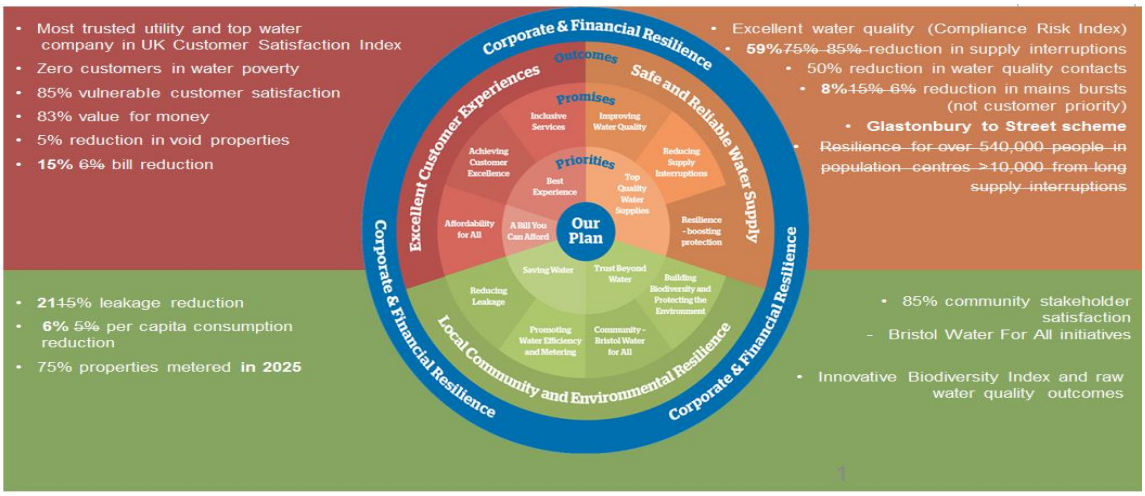
- Recognising that successful business plans are not just about asset investment, but how you deliver for those you serve, and not just what you target to deliver. This forms a key factor in the social contract.

25 Full details of the role that the Bristol Water Board played in the development of the PR19 business plan can be found in chapter 13 of section A1 of the revised submission documents.[436]

26 Figure AN6.1 below summarises the key customer priorities and promises to customers and the key outcomes that feature in the business plan. The most important metrics from the business plan are highlighted, which provide a reference point from the customer perspective for Ofwat's interventions during PR19.

27 The amendments shown in the diagram indicate the effect of the DD and then FD on key outcomes. The impact of the ODIs proposed in the business plan resulted in a central RoRE range of -2.3% to +1.1%, and our estimate of the FD is -2.9% to +0.8%.

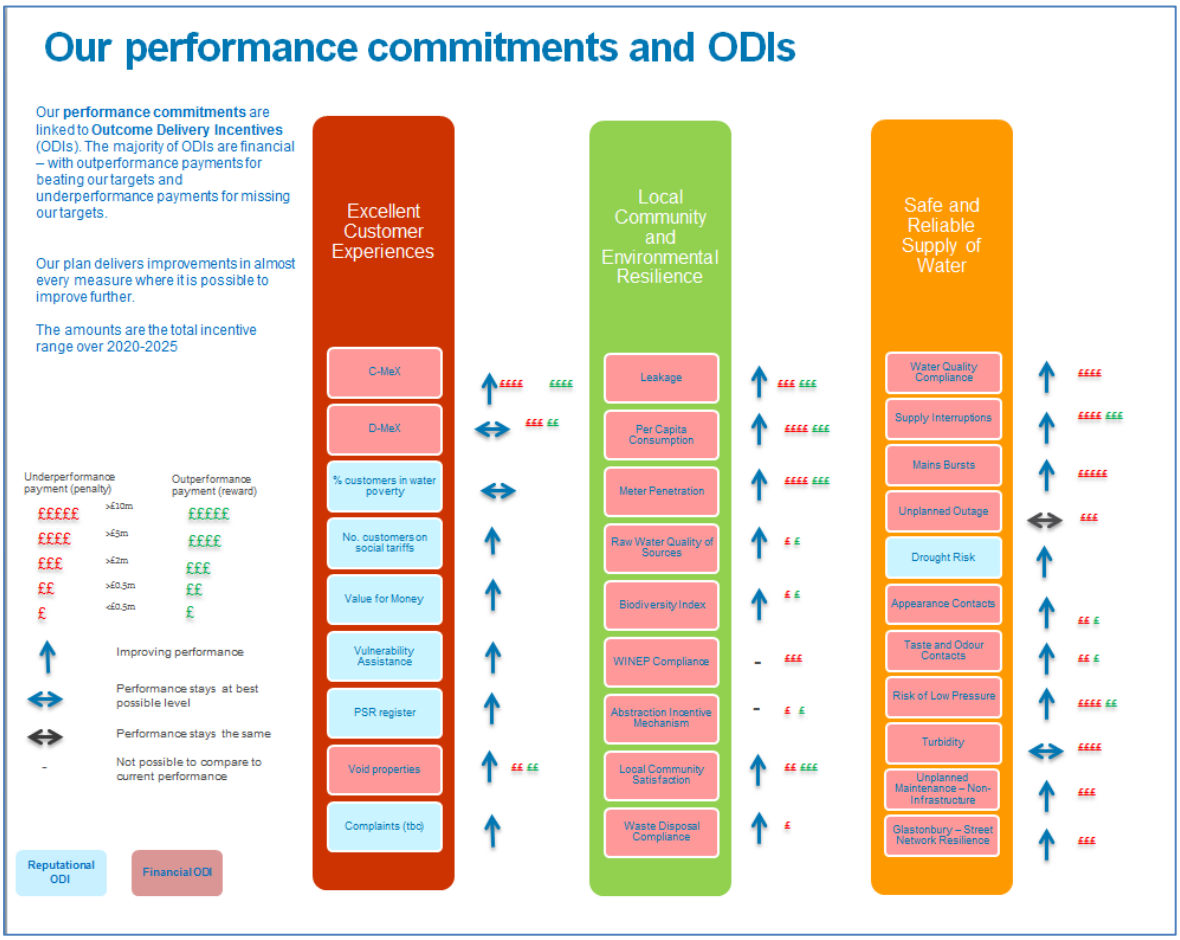
Figure AN6.1 – impact of the DD and FD on our business plan



436 Bristol Water (2019), 'Business plan Section A1: Bristol Water For All', pages 214-236.

28 The performance commitments which attach to the key outcomes above, along with a broad indication of relative outcome incentive levels set by Ofwat in our FD, is illustrated in figure AN6.2.

Figure AN6.2 – Our Performance Commitments and ODIs



4. Extensive, rigorous and innovative customer and stakeholder engagement

29 Our business plan for 2020-2025 was shaped by an extensive programme of customer and stakeholder engagement involving 50 pieces of research that captured responses from 37,000 customers.

30 As part of our customer engagement strategy, we defined our customer base and created customer segments to understand the impact of our operations and activities on customers of differing ages, income and other characteristics.

31 Our Customer Engagement Framework made use of a wide range of qualitative and quantitative research tools, using a mix of tried and tested methods alongside more innovative approaches (notably to support our assessment of customers' WTP).

32 We employed specialist consultants to assist with the design and implementation of the majority of our research and engagement activities, which included:

- **Deliberative workshops**: these comprised random groups of typically around 30 customers spending time learning about a particular element of the Bristol Water business and discussing it together. This approach was used to understand customer views on complex issues like how we meet water supply needs in the long term.
- **Focus groups and interviews**: these were often smaller groups of customers or individuals to understand their views on a very specific topic, or to hear from a particular group of customers like those who are struggling with their bills.
- **Surveys**: a wide range of surveys were undertaken to ask large numbers of customers what they think, for example the customer panel where up to 1,000 customers let Bristol Water know their views.
- **Economic valuation tools:** Bristol Water used six diverse types of valuation tool to determine customer attitudes to the value placed on Bristol Water's service which were used in setting Bristol Water's bill options. We embraced innovative new techniques like revealed preference surveys to investigate the actual costs customers face when supply is interrupted and integrated valuation studies into our deliberative workshops.
- **Customer forum:** this comprises a forum of about 40 informed customers that meets four times a year to feed into Bristol Water's business planning.

33 As a result of the wide range of customer engagement methods adopted, and the rigour with which they were used to shape the commitments in our plan, the Board was able to confidently conclude that our plan recognised and balanced the needs and requirements of

different groups, based on age, gender, ethnicity, household size, wealth and location (urban or rural).

34 Acceptability testing on our final plan demonstrated that 93% of those asked found our plan acceptable.

5. Extensive use of third party peer review and challenge

35 Our approach to business plan development has made extensive use of third party peer review and challenge to ensure our plan is robust, well-evidenced and draws on accurate information and forecasts. The Board Assurance Statements included with our September 2018 and April 2019 business plan submissions set out the actions that the full Board have taken to challenge company management and satisfy itself that it had done everything it could to secure the trust of our customers and present this in our plan.

36 The process for Board sign-off and endorsement of the business plan included reports from each of the independent assurers of our plan, and use of a Strategic Assurance Partner (PwC). This provided all Board members with the opportunity to engage directly with the source of the assurance and to question them on the quality of the data and forecasts underpinning the plan.

37 Assurance statements to the plan can be found referenced in the April 2019 "Board Assurance Statement REVISED" business plan document.[437]

6. Robust review and challenge by an independent customer challenge panel

38 Throughout the development of our plan we have been helped and guided by the independent Bristol Water Challenge Panel.

39 The Challenge Panel was set up to carry out three roles:

- To assure Ofwat of the quality of our customer engagement with Bristol Water customers.
- To scrutinise and challenge the extent to which the views, priorities and preferences of customers are reflected in our 5-year business plan for the asset management period from 2020-2025.

[437] Bristol Water (2019), 'Board Assurance Statement' – Revised.

- To scrutinise the performance of Bristol Water on the performance commitments and promises it made in its 2015-2020 business plan.

40 The panel members brought a range of strengths, skills and expertise relevant to the roles it carried out. The Panel is chaired by Mrs Peaches Golding OBE, Her Majesty's Lord-Lieutenant for the City and County of Bristol. Members of the Challenge Panel were drawn from business, public health, university academics, farmers, local councillors and more. Additionally, detailed knowledge of water, environmental and customer issues was provided by members representing The Environment Agency, Natural England and the Consumer Council for Water.

41 Over the course of developing our business plan, the Challenge Panel raised more than 600 challenges across our programme of customer engagement and research and the way we used the results of that research to shape our plan. One in four of the Panel's challenges resulted in a change in the way that Bristol Water conducts its business that benefits the customer. All challenges raised were successfully resolved by the company.

42 In its final assurance report on our business plan the Challenge Panel stated:

> "*the Challenge Panel is pleased to assure Ofwat of the high quality of customer engagement evident in the Bristol Water business plan; a plan that focuses on building trust, being transparent in its undertakings and inspiring confidence among its customers. The reduction in the cost of the bill will be welcomed by its customers. Customers will also be pleased with the environmentally-focused performance commitments that respond to customer expectations as identified in the customer engagement research activities.*"

7. A clear plan for delivery of the business plan

43 Our business plan promises to deliver much higher levels of operational and customer service performance at a much lower cost than during this current period. We are confident that we can deliver this step change in performance because of the actions that we have put in place, starting the delivery of business transformation in parallel with the development of our future plans.

44 Over the past few years we have been gradually improving our operational and customer service performance. In recognition that our future challenges would require further improvements in service and efficiency levels, we launched a Transformation Programme in 2018 to substantially improve our internal capability in people, processes and technology, as well as how we work and collaborate with our supply chain.

45 Our Transformation Programme provides alignment to the key drivers and performance improvements required in 2020-2025 via our leadership, culture and governance structure. The programme is governed by a Steering Committee chaired by the CEO and made up of

Executive Directors from across the business, each providing sponsorship for their respective areas.

46 A high-level summary of our strategy and our values inform and drive our Transformation plan which in turn is aligned with the delivery of our business plan for 2020-2025 is summarised in Figure AN6.3.

Figure AN6.3 – Our Transformation plan

47 Full details on our Transformation plan can be read in the revised plan section C7 from April 2019.[438]

438 Bristol Water (2019), 'C7 Track Record of Delivery' (https://www.bristolwater.co.uk/wp-content/uploads/2018/09/Section-C7-Track-Record-of-Delivery.pdf).

Annex 7: Our efficient plan

1. Introduction

1 Our business plan incorporates a significant efficiency challenge to be delivered for AMP7, at the same time as delivering step-change improvements in service levels.

2 For example, by 2025 we propose to deliver a:

- 21% reduction in leakage;
- 6% reduction in per capita consumption;
- 58% reduction in supply interruptions; and
- 50% reduction in water quality contacts.

3 This is all the more ambitious given that we are already an above-average performer across the majority of service measures – in particular for leakage and water quality (CRI and ERI), which are our customers' top priorities.

4 Our plan will deliver this step-change – which we estimate will cost £132 million[439] – while decreasing costs overall.

5 Overall, our plan is 10% below historical totex[440] in the period 2014/15-2018/19. We were one of only two companies to propose totex costs lower than the comparable historic period, which underlines the strength of the efficiency challenge we targeted in our plan.[441]

2. Our plan in context

6 Since the last price review, we have cut our costs and become far more efficient. We have operated within the parameters of CMA15, changing the balance to more wholesale opex and less wholesale capex reflecting a change to asset management and operational focus to

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439 The £132m represents the amount of cost allocated to outcome incentives (an efficient marginal cost), with the remainder of the cost being base service that cannot readily be attributed to individual outcome choices. We received our highest 'substantial' level of assurance from Ofwat on this key aspect of preparing a business plan.

440 Comparison to the period 2014/15 to 2018/19, consistent with Ofwat's FD presentation.

441 Ofwat (2019), 'PR19 Initial Assessment of Plans: Historic Expenditure Companies' Forecasts and Ofwat's Challenge' (https://www.ofwat.gov.uk/publication/pr19-initial-assessment-of-plans-historical-expenditure-companies-forecasts-and-ofwats-challenge/).

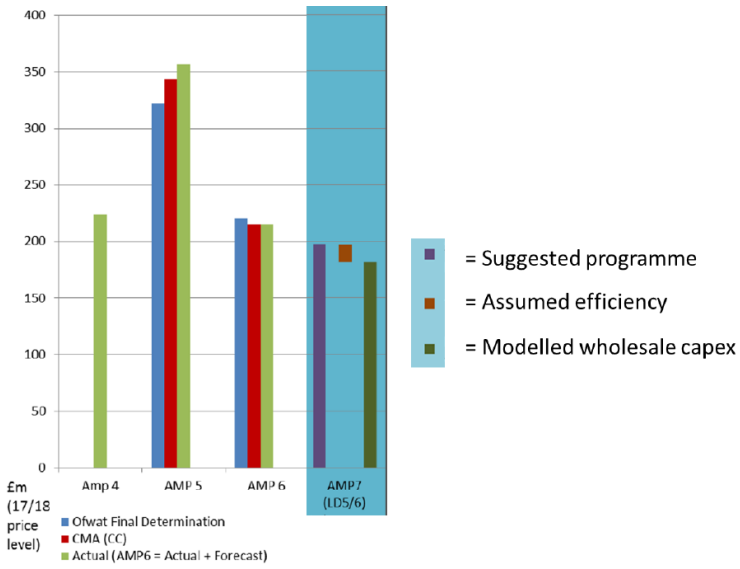
improve performance. Expenditure was higher in the latter years of the 2015-2020 period, in part to make early progress given the ambitious scope of our 2020-2025 plan.

7 At the start of AMP6 we launched 'Project Channel' – a change programme designed to help us adapt to the requirements and opportunities of working in a totex environment, focused on delivering outcomes, and to deliver the efficiencies needed in AMP6. Project Channel delivered much of the step-change reduction in cost which was required to meet CMA15 on a sustainable basis.[442]

8 Much of our improvement – particularly with respect to asset management – is a result of building a bottom-up view of the schemes and interventions required to meet the needs of our customers through industry-leading practice. The schemes we anticipate delivering in AMP7 maintain our trajectory of lower costs. Our initial plan recognised that efficiencies would deliver stable capital investment, but with an increase in headcount and operating cost reflecting that service improvements were largely to be delivered through day-to-day operations, at an overall efficiency totex cost.

9 Figure AN7.1 below, taken from our September 2018 plan, shows our proposed AMP7 capex spend compared to previous price control periods:

Figure AN7.1 – Capex investment over Price Reviews[443]



442 This was achieved through a range of business change initiatives such as: organisation re-design and headcount reduction; improved commercial management; improved energy management; improved asset management to re-profile our capital investments; consolidation of business premises to reduce rates; and innovation (i.e. engaging the business as part of a cultural change to transformation and continuous improvement).

443 Bristol Water (2018), 'Document C5: Cost and Efficiency', page 59.

3. How we developed our plan

10 Our September 2018 plan was developed by assessing a long-term (2045) horizon, and then testing customer preferences for the pace of improvement. This allowed us to test customer valuation for service level improvements at different levels of the 'starting bill', which we believe is aligned to Defra's SPS[444] and Ofwat's priorities for PR19.[445]

11 We discovered that those customers who were most price sensitive were also more vulnerable to service failures (and so, for example, would benefit from improved resilience to water quality or supply interruptions). Customers with lower incomes did not want bill increases, but were comfortable with investment in service and the environment. This evidence allowed us to optimise our plan to a low cost, as well as delivering a significantly improved level of service (particularly leakage, supply interruptions and water quality contacts) which customers cared about most, building support for biodiversity and raw water quality environmental improvements, and working with local stakeholders to deliver much wider public value.

12 In developing our plan, we assessed the potential efficiency gains that could be achieved over the next control period on both a 'top-down' and a 'bottom-up' basis. These two approaches are described below. We prepared our plan based on the following approaches to costs:

- For **opex**, we considered the benefit from the capital investment programme (as can be seen with our low enhancement opex costs).
- For **capex**, we tested our own costs against external benchmarks wherever possible, with our optioneering tested with internal challenge and independent external expert reviews. This was before applying the programme level of efficiency.

3.1 Our 'top-down' efficiency assessment

13 In our top-down approach, we looked at the available evidence for our efficiency position relative to other companies based on external forecasts of input price pressures and how the industry frontier of efficiency may change in the future.

14 We focused on econometric modelling of our *base costs* relative to other companies in the sector, which reflects our view that econometric modelling of enhancement expenditure is

444 Defra (2017), 'The government's strategic priorities and objectives for Ofwat'.

445 Ofwat (2017), 'UK government priorities and our 2019 price review final methodology' (https://www.ofwat.gov.uk/wp-content/uploads/2017/12/UK-Govt-priorities-FM.pdf).

unlikely to be robust. This is in line with CMA15, in which the CMA stated that benchmarking models were not appropriate to fully assess enhancement expenditure.[446]

15 We commissioned both NERA and Oxera to undertake a wide range of cost modelling analyses to help inform our view of the scope for potential efficiency savings.

16 Oxera's analysis included:

- Analysing the effects of using more recent data in the modelling approaches applied in CMA15. This suggested that there was material scope for us to improve our efficiency when assessing data over the period 2013/14 to 2015/16. But using our 2015/16 position, the analysis suggested that our efficiency was in the range of +1 to -2% relative to the industry upper quartile.[447]

- Re-running Ofwat's PR14 cost models to include more recent data. These showed a significant improvement in our efficiency over time. Based on our 2015/16 position, the models suggested that we were in a range from 1% behind to 11% ahead of the upper quartile.

- With our input, identifying the most appropriate cost drivers to propose for use within PR19 base cost modelling. The development of these models was collectively commissioned by a group of water companies, including Bristol Water. As such, the model development process was informed by the respective views of the participating companies. This analysis resulted in similar conclusions in respect of Bristol Water, namely that our level of efficiency had significantly improved over time, and for the year 2015/16 we were between 4% and 12% above the industry upper quartile (i.e. we were relatively efficient).

17 NERA's analysis included:

- With our input, developing proposals for new PR19 models. NERA's own view of an appropriate form of benchmarking models to apply at PR19 was based on use of a Monte Carlo tool to help identify the most important cost drivers, and expert judgement as to which cost drivers to include. The Monte Carlo approach involved running 4,000 regressions for each value chain element, and then screening the results against a series of criteria selected to help ensure the models derived were robust.

- Using this statistical approach, identifying cost drivers that are relevant to the industry as whole, in terms of explaining differences in costs across companies, not just for Bristol Water. In particular, this removes the reliance on judgement to determine which

446 CMA15, paragraph 3.29.
447 Oxera (2017), 'Preliminary view on Bristol Water's efficient level of BOTEX', page 14.

variables to include and exclude from models and therefore represents a more balanced, industry-level perspective of what good models would look like. These models were provided for inclusion within Ofwat's consultation on cost models for PR19.

- Replicating the most useful models that were included in Ofwat's early consultation on cost models for PR19.[448]

18 A number of these approaches suggested that we were more efficient than the industry upper quartile. However, in order to provide a strong challenge to our business, we selected the top end of this range as our 'triangulated' top-down view – i.e. an efficiency improvement of 1% would be required to reach the industry upper quartile based on our 2016/17 cost position.

19 In addition to modelling the gap between our position and the industry upper quartile, we also commissioned NERA to assess the level of frontier shift that could be expected in the sector over time and to provide estimates for RPEs (input price increases that are expected to be above the rate of inflation).

3.2 Our 'bottom-up' efficiency assessment

20 In our bottom-up approach, we undertook an assessment of the business need for investment, driven by risk assessment with internal and external validation, to forecast the cost of the investment activities and associated unit costs that make up our plan. In developing this assessment, we received support from ChandlerKBS and review by Atkins.

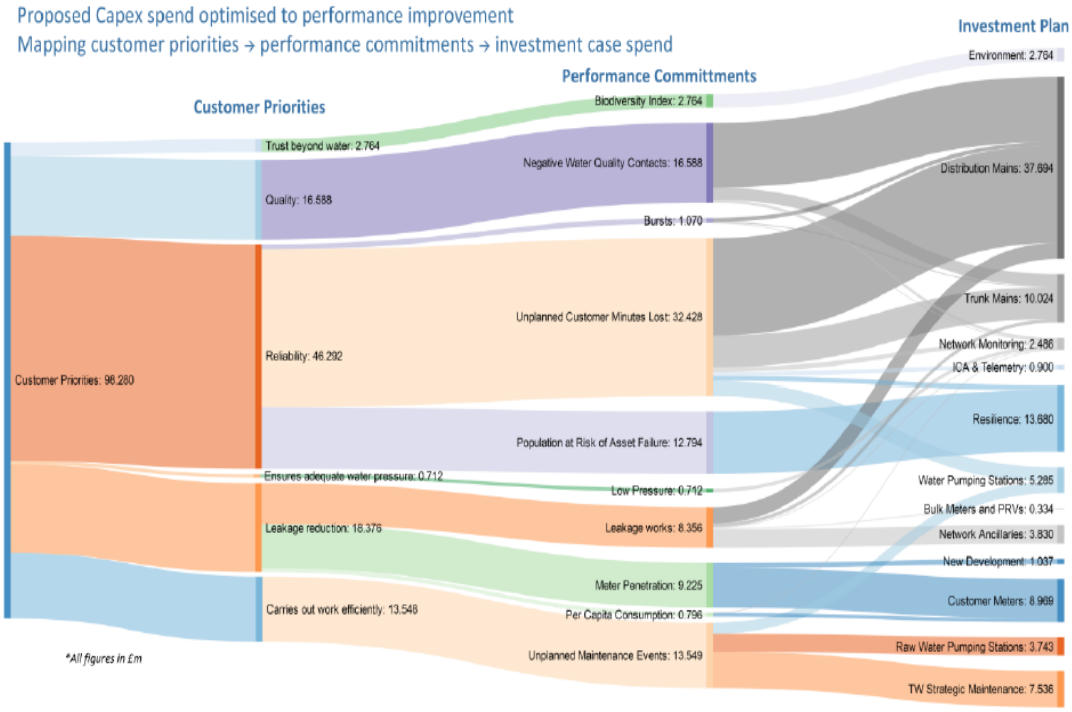
21 The starting point was to understand our customers' priorities and determine associated performance commitments. Our customer research considered both the next planning period and further ahead.

22 We adopted totex principles to determine how we should invest in order to deliver these priorities and associated performance commitments. The totex approach we adopted considered which was the best solution based on it being the lowest cost over the whole life of the asset, regardless of whether it is operational or capital expenditure.

23 Figure AN7.2 illustrates how we mapped our customers' priorities to our investment plan:

[448] Ofwat (2018), 'Cost Assessment for PR19: a consultation on econometric cost modelling' (https://www.ofwat.gov.uk/wp-content/uploads/2018/03/Cost-assessment-for-PR19-A-consultation-on-econometric-cost-modelling.pdf).

Figure AN7.2: Mapping customer priorities to performance commitments and investment spend[449]



24 We undertook detailed bottom-up cost benchmarking within the water industry, and external process and overhead reviews involving expertise from other sectors.[450]

25 Our Business Improvement and Innovation team started the solution identification stage on initiatives aimed at delivering our efficiency position in 2017. This 'bottom up' work provided a guide on how much business change we could challenge ourselves to deliver as shown in Table AN7.1.

449 Bristol Water (2018), 'Document C5: Cost and Efficiency', page 48.

450 For example, through participation in a European Benchmarking exercise, we have sought to understand how our efficiency compares against a group of 47 companies from across the continent and further afield.

Table AN7.1: Summary of initiatives designed to deliver efficiencies by phase

Phase	Activities
Phase 1. Benchmarking Activity	We employed third parties (Enzen and Hackett) to review our business and benchmark our position. This gave us some high-level areas of focus and challenge as we moved into our efficiency review, particularly for head office and overhead costs, which are harder to model through top-down econometric approaches.
Phase 2. Efficiency Assessment	We conducted subject matter expert (SME) interviews across all areas of our business and this gave us an initial view of where we could seek efficiency. 65 initiatives were initially identified, and these were grouped into high-level themes/benefit drivers.
Phase 3. External review and prioritisation	To ensure sufficient ambition, we brought in an external consultancy, Baringa, to review these initiatives, and prioritise them based on value and maturity. This work was split into two review phases (forming our external assurance). The first phase identified a large number of initiatives to remove, due to low value and scope. The second phase identified additional opportunities, and grouped the remaining initiatives based on key themes, such as Energy Management, and Continuous Improvement.
Phase 4. Internal review	Following the external review, the remaining initiatives were reviewed internally by business SMEs, to highlight any limitations (operational or other), and to verify the underlying assumptions and calculations. SMEs provided consensus on the remaining initiatives, and gave us confidence that we had sought out appropriate efficiency areas.
Phase 5. Innovation challenge	For the specific investment cases within our plan we engaged a third party, Isle Utilities, to undertake a market scanning exercise and identify where we could pursue likely future benefits. These activities helped ensure we continued to push the industry frontier forward. Isle Utilities undertook a review of our investment cases, prioritising focus areas according to the impact on outcomes, expenditure and the long term ambition of the company. Within these focus areas, Isle undertook a market scanning exercise of technologies that we should aim to exploit in the next AMP, in order to deliver the investment cases as effectively and efficiently as possible.

26 In total, our bottom-up view of efficiency was that there was scope for an 8% reduction in costs on our proposed investment programme.

4. The overall position in our initial plan

27 For our **opex** forecast, we included the triangulated view of 'catch-up' efficiency based on the top-down modelling described above – i.e. a 1% improvement in efficiency from our 2016/17 position to catch up to the upper quartile efficiency benchmark (a single, 'one-off' efficiency improvement). In 2017/18, we incurred significant additional operating costs due to exceptional operating incidents. Therefore, when re-basing to a 2017/18 starting position (the

base year for our plan), we increased our level of catch-up efficiency to 3.2% to offset the increase in costs.

28 For our **capex** forecast, we reduced our cost forecast by 8%. This was the forecast of efficiency improvement from our bottom-up assessment. We then increased the 8% efficiency challenge to include for the net effect of our view of frontier shift and real price effects that were forecast to occur before the start of the control period. This increased the initial efficiency challenge to 8.8%.

29 We then applied our view of **frontier shift** to both our opex and capex. This was 0.7% and 0.9% p.a. respectively. It should be noted that our frontier shift figure for capex was slightly higher (more challenging) than the rate estimated by NERA. This reflected our bottom-up view of the scope for potential future savings.

30 Table AN7.2 summarises the efficiency challenges we included within our plan. The table presents opex and capex separately. However, it should be noted that our plan was fully integrated, with interactions between investment cases and their effect on opex fully modelled (for instance before applying the 3.2% opex efficiency, the benefits of the investment programme to operating efficiency had already been adjusted).

Table AN7.2 – Summary of business plan efficiency assumptions

	Initial efficiency	Frontier shift p.a. from 2020	Total efficiency improvement by 2025	£m efficiencies	Real price effects p.a. from 2020
Wholesale opex	-3.2%	-0.7%	-6.7%	£22m	1.8%
Wholesale capex	-8.8%	-0.9%	-13.2%	£26m	0.9%
Wholesale totex	*-5.1%*	*-0.8%*	*-9.7%*	£48m	*1.4%*

31 This level of forecast improvement represented a significant challenge, particularly given that our cost base was already much more efficient than historically. Our wholesale net totex in the initial Business Plan was £457m.

5. Changes to our plan during PR19

32 At **IAP stage**, Ofwat proposed a cost allowance that was 12.9% lower than that included in our initial plan. In total, this represented a £66 million gap relative to our plan. We reassessed our plan, making a series of specific adjustments in response to Ofwat's challenge, and revised our assumptions for input price pressure down by 0.4% p.a.

33 We revisited some of our bottom-up efficiency assumptions and decided, in the round, to take a more aggressive approach on the level of future efficiency improvement and possible cost control of Real Price Effects. Our approach to business transformation informed the judgements the Board considered for the efficiency assumptions we made. For instance, the progress in the new network maintenance contract provided greater confidence that future wage inflation could in part be mitigated through this new contract, compared to the standard assumptions we had originally applied from the NERA study. We also considered some new information, such as the Government requiring all councils to implement the Traffic Management Act permit schemes.

34 Our updated efficiency position as of our April 2019 response to Ofwat is summarised in Table AN4.3.

Table AN4.3 – Summary of revised business plan (April submission) efficiency assumptions

	Initial efficiency	Frontier shift p.a. from 2020	Total efficiency improvement by 2025	£m efficiencies	Real price effects p.a. from 2020
Wholesale opex	-3.6%	-1.1%	-7.8%	£31m	1.4%
Wholesale capex	-9.2%	-1.3%	-13.8%	£27m	0.5%
Wholesale totex	*-5.8%*	*-1.2%*	*-11.8%*	£58m	*1.0%*

35 In total, our revised plan wholesale totex came to £449 million, an £8.2 million decrease from our business plan submission.

36 At DD stage, Ofwat made a cost allowance that was 13.8% lower than our revised plan. This represented a gap of £70 million between the DD and our revised plan. This was despite the additional efficiencies we had proposed in our response to the IAP.

37 In our response to the DD, we assessed whether there was any scope for further efficiency improvements within our plan. We made a top-down additional efficiency assumption of a 2.6% reduction to our base costs. This was based on progress with our transformation plan, particularly the new network maintenance contract which was concluded in July 2019, ready for 1 October 2019 implementation. Other examples of the efficiency gains between developing our plan in 2018 and responding to the DD in 2019 include:

(a) Improving our leakage performance, with the average number of leaks identified by each leakage inspector improving from 1.5 per week in March 2018 to 7 per week in

November 2018. The initial cost in 2018/19 and improved performance, together with new contract, gave confidence on our plan efficiency potential.

(b) Rationalising our scheduling teams to provide a better end to end process, with a net saving of 36 FTEs, which enables the future efficiencies in our revised plan.

(c) We have delivered IPSOS, an innovative Network Optimisation and Automation project, by installing a fully integrated system to manage and automate all water production and pumping schedules, leading to reduced energy costs in readiness for AMP7.

(d) We are installing a gas-fired power station to move our largest water production site at Purton towards self-sufficiency from the electricity grid, reducing energy costs in readiness for AMP7.

38 In our DD response we also made an additional frontier/relative price effects efficiency assumption of 0.55% p.a. to our base costs. We knew that these assumptions would be hard to deliver in practice, but our Board was determined to challenge management by taking an ambitious approach to innovation on cost and service levels. This reflected information that Ofwat revealed on relative efficiency during PR19, and our willingness to embrace this challenge, unless we had compelling evidence that this comparative information did not reflect an efficiency position relevant to or reasonably deliverable for Bristol Water. Our DD response included wholesale net totex of £435 million.

39 In the FD, Ofwat increased its view of our required cost allowance from the draft determination to £420.2 million. However, a £32 million cost gap remained. £3.9m relates to a difference in resilience scope which we do not dispute as Ofwat made equivalent adjustments to the related ODI. Adjusting for this and strategic water resource schemes which was a new requirement, we have a **c.£30 million cost gap** to our plans based on the FD.

Annex 8: Refinancing options

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Annex 9: Bristol Water risk analysis

1. Introduction

1 This Annex sets out our approach to assessing outcome delivery incentives (ODI) risk inherent in the FD. Bristol Water has analysed the ODIs from Ofwat's PR19 FD. The analysis is based on:

- an assessment of the p10 (underperformance) and p90 (outperformance) levels set out in the Bristol Water response to the DD (BW03: Delivering Outcomes for Customers).[452] This sets out the p10 and p90 levels for individual ODIs.
- Updates to the p10:p90 levels to reflect the Ofwat FD, where this is necessary because the design of ODIs has changed.
- A Monte Carlo simulation, which looks at the probability distribution of each incentive rate, and the interaction of different ODIs. This produces an expected mean and median performance incentives value, as well as modelled total p10 and p90 levels.

2 The overall ODI risk level follows the same approach carried out throughout our business plan (see Section C6: Financeability, Risk & Return, and Affordability[453] and BW04: Financial Issues DD response document[454]).

(1) Individual p10:p90 levels

3 The individual p10 (underperformance) and p90 (outperformance) levels for PCs based on which we carry out our risk analysis of the FD are set out below. Only PCs for which there are financial ODIs are included (i.e. PCs with reputational-only ODIs are excluded).

4 C-MeX and D-MeX incentives are also excluded below, as Ofwat considers these separately, and we assume they distributed around zero (up to 6% upside only, 12% downside). As these are relative performance measures, we do not consider the interaction with other ODIs as other companies may face similar circumstances which means C-MeX and D-MeX would operate independently as incentives (if performance fell for all companies because of adverse weather, for instance).

(2) PC01: Water Quality Compliance (Compliance Risk Index)

5 We set our p10 range at a CRI score of 3.89 based on our historic performance (and close to the industry 2018 average of 3.87 CRI performance). Our p10 level is set at zero, which

452 Bristol Water (2019), 'BW03: Delivering outcomes for customers (Draft Determination response document)'.
453 Bristol Water (2019), 'Our business plan (revised), C6: Financeability, Risk & Return, and Affordability'.
454 Bristol Water (2019), 'BW04: Financial Issues (Draft Determination response document)'.

assumes full compliance can be achieved, in line with the expectations of the DWI. Our achievement of the service levels will arise from both direct asset investment as well as operational activities such as mains flushing (as stated in the trunk mains investment case), in a roughly 50/50 proportion.

(3) PC02: Supply interruptions

6 The p10 estimate reflects 21 minutes:36 seconds due to the risk of single events from third parties that may happen one in ten years, until after 2030 when the critical resilience investment will reduce the rare possibility of significant one-off events, although new risks may emerge. We see risks that it could increase rather than reduce in the future, such as the potential disruption of future roll out of EV charging networks. Progress on critical asset with low probability high consequence failures as we propose is consistent with these risks and a systems-based approach to resilience. It is our job to invest to avoid these risks, which we willingly accept, but do not wish to be hampered by an incentive framework.

7 Based on our plan the p90 level was set at 1 minute:30 seconds reflecting the full range of our investment and operational improvement modelling presented in our original plan (noting that this was constrained by customer WTP where marginal benefits = marginal cost across our whole programme, tested with our bill options/triangulation research on our draft business plan).

(4) PC03: Mains bursts

8 Our p10 level for mains bursts has been calculated in our Cost and Efficiency representation supporting document BW02-6 (Deliverability). It has been calculated at 164.7/1000km, which reflects the severe weather impact based on historic performance updated to reflect the current additional investment and improved performance/knowledge of the network. In our DD response, we proposed a 2025 proposed collar of 162.8/1000km, and so we adopted this as our revised p10 range by that point. This is consistent with our action to remove the deadband and adopt Ofwat's proposed glidepath collar. At the FD, a higher collar means 164.7 is used as the p10 level.

(5) PC04: Unplanned outage

9 We set for our plan an unplanned outage p10 level at 2%. The final Ofwat target is 2.34%, which we use as the p10 level, which means that all underperformance is outside of the p10 level.

(6) PC06: Customer contacts water quality – appearance

10 Our p10 and p90 levels have been set based on our historic performance, our deliverability plans and the robustness of our calm network strategy approach.

11 We will reduce discoloured water by continuing to target and replace those mains which are deteriorating, and systematically flush those areas where we detect increased iron

concentration in the water and/or have a number of discoloured water complaints. We will use targeted interventions to known hot spots and continue to work with other water companies to take into consideration best practice and innovation to drive improvements.

12 The p10 level is 1.37 contacts per 1,000 population and the p90 levels at 0.32 per 1,000 population. The p90 range reflects the potential for accelerated investment and the 'faster' investment plan outcome from our draft plan investment evidence.

(7) PC07: Customer contacts water quality – taste and odour

13 The p10 level is set at 0.65 contacts per 1,000 population and the p90 level at 0.14 contacts per 1,000 population, based on historic performance for p10 and long term ambitions based on the pace of raw water quality improvement from catchment management for p90.

(8) PC08: Properties at risk of receiving low pressure

14 Our p10 level of 96 has been set based on our historic performance. There are a number of properties on the register due to having a shared communication pipe which requires a higher surrogate pressure at the mains stop tap. Whilst there may be opportunity to undertake a number of joint supply separations, which will reduce the pressure required at the Bristol Water mains stop tap and improve the overall flow and pressure at affected properties, our p90 level of 9 properties reflects consideration that a number of properties will continue to remain at risk, regardless of the investment which we undertake. This is due to their geographical location and specific circumstances. It is therefore based on specific property information.

(9) PC09: Turbidity

15 Both p10 and p90 levels are set at zero, based on our historic performance (no turbidity failures have been reported over the last ten years).

(10) PC10: Unplanned maintenance non-infrastructure

16 Our p10 level has been set based on our historic performance. Our p90 level reflects our best performance to date. This means that the p10 level at 3,976 is above the underperformance collar of 3,601.

(11) PC11: Glastonbury-Street Network Resilience/Reducing Population at Risk of Asset Failure

17 At the FD, Ofwat changed this ODI to an end-of-period forecast of any further delivery delay at March 2025. We therefore deemed this whole scheme delivery to be outside of p10 underperformance risk level.

(12) PC17: Void Properties

18 Our p10 level has been set at historical levels (3.2%), where the p90 assumes a frontier level of performance can be achieved (1.6%), which is not a significant step change to our current performance, but will be hard to exceed as indicated by council tax void evidence of 1.8% which set our plan indicator. In the FD, Ofwat set the underperformance collar at 2.3% by 2025, which means all underperformance now falls inside the p10 level. The p90 level assumes a benign stable economy (good and bad economic circumstances can increase void rates for refurbishment and recession empty properties respectively). There is every reason to believe current performance is close to the best obtainable outcome. Beyond 3.2% p10 level is a 1 in 10 year recession event.

(13) PC18: Leakage

19 For our DD response, to assess the impact of our incentives we looked at the performance commitment sensitivity based on a high and low probability of events occurring. The p10 level represents limited improvements on the 2019/20 three year average of 2.2% reduction in 2020/21, 4.6% in 2021/22 and 5.1% from 2022/23. This reflects that 2019/20 forecast (at 38.34Ml/d) is 6.8% below the three year average (41.14Ml/d), and further improvements reduce the risk from severe weather events in a three year average. This makes the assumption that performance levels are not adjusted for any further than 2019/20 outperformance due to the early investment to hit the 15% reduction we have made. The p90 level reflects hitting a leakage target of 34Ml/d which reflects our long term current minimum achievable level before further innovation is applied. A small glidepath reflects the three year average and is 15.8% reduction in 2021/22 and 17.3% reduction thereafter.

20 As Ofwat reset the reduction to a new level of leakage, we set the p10 level for the FD as a small glidepath down to 40Ml/d, which reflects the level of improvement currently being achieved in 2019/20. This results in a 1.5% increase above current levels for 2020/21 (41.7Ml/d), a 1.7% reduction for 2021/22 after the higher 2018/19 drops out of the average (40.4Ml/d), and a 2.8% reduction for 2022/23 and beyond (40Ml/d). The p90 level reflects sustained improvement as shown in the table below:

Table AN9.1: Leakage PC p90 glidepath

	20-21	21-22	22-23	23-24	24-25
Ml/d	37.4	35.0	34.0	33.0	32.0
% 19-20 three year av. Reduction	-9.0%	-14.8%	-17.3%	-19.7%	-22.1%

(14) PC19: Per Capita Consumption

21 For our DD response, the p10 level assumes a -3% increase from the 2019/20 three year average baseline). The p90 level reflects the cap level (at a 9.9% reduction from the 2019/20 three year average baseline). These levels are closely linked to our meter penetration assumptions and water efficiency promotion strategies; these align to our Water Resource Management Plan 2019 programme.

22 For the FD, we reviewed the p90 level to a 9% reduction from the 2019/20 three year average baseline, reflecting the same technical data changes as updated for PC18: leakage. This is the same level of absolute reduction at a higher starting level for PCC.

(15) PC20: Metering

23 Ofwat updated the FD to reflect metering as an end of period adjustment. The p10 level is set at 64.5% in 2025 (based on a minimal level of optional and selective metering) and the p90 level at the target of 75%. This reflects that the target remains challenging to achieve as compulsory metering is not available as an option.

(16) PC21: Raw water quality of sources

24 The full range of performance sits within the p10 to p90 level, reflecting that this is an innovative ODI and the cap has been set to limit customer payment for outperformance, given it may be delivered at an unknown marginal cost beyond the Committed Performance Level which could be low or high in advance of innovation being tested.

25 The target assumes a constant rate of effort across the Mendip reservoir catchments in delivering catchment management and advice to farms as funded by Bristol Water. As there are a finite number of farms across the target catchments, it is currently predicted that engagement efforts will record a slowly diminishing rate of return in terms of uptake of measures and management which delivers a kg p loss reduction via the Farmscoper model. It is for this reason, that it is assumed that performance beyond the a small stretch on the 2024-2025 service level is not a probable outcome within AMP7.

(17) PC22: Biodiversity index

26 The p10 reflects the possibility of deterioration in biodiversity (for instance from operational activities or third party events) and is set at the original Biodiversity Index baseline from 2014/15. The p90 assumes the capped service level can be met, as this is the level of stretch supported by customers based on the maximum opportunity from the existing habitat survey. So the full range of performance is within the p10:p90 level as a stretching and novel ODI.

(18) PC23: Waste Disposal Compliance

27 The p10 reflects the revised collar level of 95% and the p90 reflects our best performance to date at 99%. Therefore, the full range of underperformance is within the p10 level.

(19) PC24: WINEP Compliance

28 The p10 and p90 levels demonstrate the potential for the schemes to not be delivered on time. We do not believe it is sensible to show delivery risk outside of p10 and p90 ranges, so have set p10 at zero and p90 at 100%. It is always possible that the whole of an environmental obligation and programme could change, but we do not assess the probability of this. After the FD we assessed that 2/3rds of non-delivery would be outside of p10.

(20) PC25: Local Community Satisfaction

29 The p10 reflects the 2019-20 baseline and the p90 assumes the 2024-2025 outperformance cap level can be met. The full range of performance should be considered within normal management control.

(21) PC26: Abstraction Incentive Mechanism

30 The p10 and p90 levels reflect the Shipton Moyne group site current baseline of 8.3 Ml/day or 3,029 Ml. The full range of ODI design is considered within the p10 and p90 range due to the nature of the AIM mechanism.

2. Assessing ODI p10:p90, mean, median and skew values

31 Building on the adjusted individual metric p10 and p90 levels set out above, we carry out Monte Carlo risk simulation on the ODIs in order to assess the overall impact.

32 Ofwat took its view in the DD that outcome incentives were not likely to be skewed in practice, because of the potential for innovation, and because of management of the interaction of ODIs.

33 We have applied the "conjoined variance analysis" that Ofwat suggested in the DD, as it was inherent in the Monte Carlo RoRE analysis for ODIs that we presented in our plan. However, it tends to support, rather than refute, the skewed risk claim. For this reason, we stuck with the traditional presentation of RoRE across the industry as the sum of estimates of the individual p10 and p90 ranges.

34 As an aside, like Ofwat we cannot speculate what innovation can do, and therefore we do not believe a narrower or skewed RoRE range for ODIs should be presented based on these historic relationships. If we knew with certainty what future relationships and risks were, we would not need the ODI framework or the current form of economic regulation. We are confident in our own data, as we show in our deliverability technical report,[455] because we have sophisticated network monitoring and operational information across our integrated network.

35 Our approach is described below.

36 The individual metrics are allocated to a probability distribution based on how stretching the individual incentives are. The table below shows the probability distribution that is applied, in £k per annum. 0% and 100% effectively reflect the p10 and p90 elements of value. The columns show the cumulative probability, so 0% is 0-10%, 25% is 10% to 25% etc. The 0% and 100% columns are therefore consistent with the p10 and p90 levels respectively as set out

[455] Bristol Water (2019), 'BW02-6: Deliverability (Draft Determination response document)'.

above. We only run this assessment for ODIs, and not for the C-MeX and D-MeX incentives which Ofwat considers separately, and we assume are distributed around zero (up to 6% upside only, 12% downside). As these are relative performance measures, we do not consider the interaction with other ODIs as other companies may face similar circumstances which means C-MeX and D-MeX would operate independently as incentives (if performance fell for all companies because of adverse weather, for instance).

Table AN9.2: Probability range of ODI payments by performance commitment

PC / cumulative probability distribution	0%	10%	25%	50%	75%	90%	100%
Water quality compliance	-1431	-361	0	0	0	0	0
Supply Interruptions	-1615	-1506	0	0	183	367	367
Mains Bursts	-2369	-1205	0	0	0	0	0
Unplanned Outage	-892	0	0	0	0	0	0
Risk of severe restrictions in a drought	0	0	0	0	0	0	0
Customer contacts about water quality – appearance	-180	-129	0	0	0	35	41
Customer contacts about water quality – taste and smell	-122	-84	0	0	0	31	31
Properties at risk of receiving low pressure	-1192	-337	0	0	101	201	201
Turbidity performance at treatment works	-1334	0	0	0	0	0	0
Unplanned maintenance – non-infrastructure	-293	0	0	0	0	0	0
Void properties	-207	-207	0	0	0	99	207
Leakage	-788	-257	0	0	64	128	502
Per Capita Consumption (PCC)	-1241	-685	-685	-178	0	430	548
Meter penetration	0	0	0	0	0	0	0
Raw Water Quality of Sources	-68	-34	0	0	24	48	48
Biodiversity Index	-27	-13	0	0	36	72	72
Waste disposal compliance	-26	-26	0	0	0	0	0
Water Industry National Environment Programme Compliance	-230	-74	0	0	0	0	0
Local community satisfaction	-211	-106	0	0	83	166	166
Abstraction Incentive Mechanism (AIM)	-9	-9	0	0	0	27	27

37 As an example, for AIM the £9k annual underperformance penalty and £27k outperformance payment applies in the 0 – 25% probability range for the penalty and the 75 – 100% probability range for the return respectively. For simplicity, and to allow recognition of conjoined risk, a discrete distribution is used, to reflect that individual metrics have a range of risk of occurring.

38 For most metrics, we assume there is a 'management deadband' where performance and cost is managed within a central range of performance. For instance, we show for water quality compliance that the above p10 range only applies in the 10-25% probability. 75% of the time zero incentives would apply. For outperformance we reflect that the power of incentives means there is targeting of upside, and for some metrics between p50 and p90 the outperformance applies across the entire range. Between 75% and 90% likely outperformance can be met 25% of the time (and in part 50% of the time for some metrics – e.g. see local community satisfaction). This takes a cautious approach to expressing downside risk, consistent with Ofwat's views on incentive power. We think this is realistic and consistent with the ambitious level of our plan. This analysis assumes that the expenditure allowed is in line with our view however, a necessary assumption to avoid double-counting downside skew. We do not believe that trade-offs on cost and incentives are acceptable to Ofwat's regulation, as Ofwat is clear that in accepting the FD companies are committing to deliver performance commitments in normal circumstances (i.e. persistently targeting underperformance on a metric would not be consistent with acceptance of the FD).

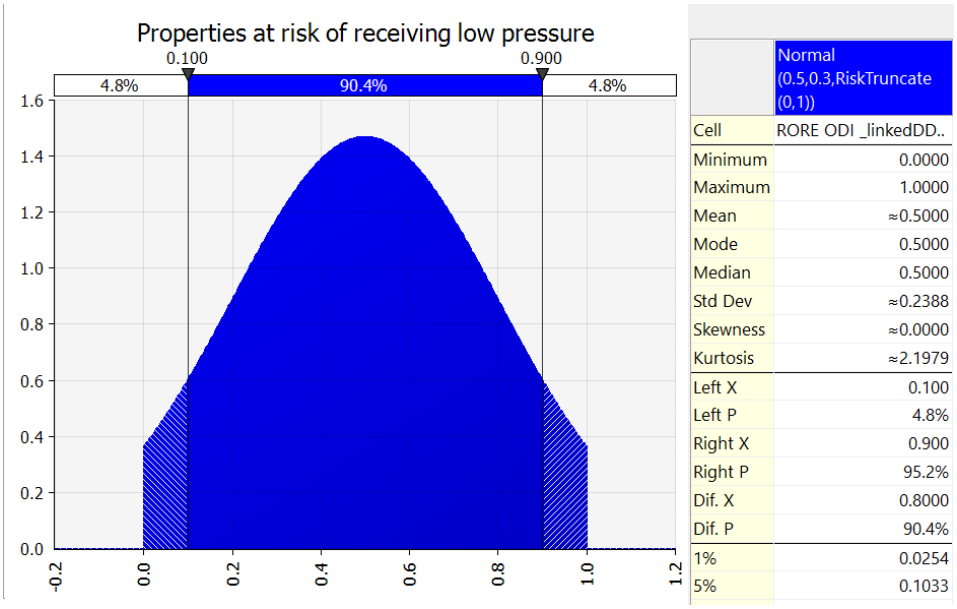
39 The exception to the above is per capita consumption. The probability distribution reflects a risk of underperformance up to 75% of the time, reflecting that underlying consumption is rising. The p10 level is assumed to occur in the 10% to 50% range with current performance maintained 50% of the time (50% to 75% range).

40 The conjoined risk between metrics is run in the following way:

- Most metrics are assumed to be independent between the ODIs (i.e. probability in the Monte Carlo simulation is between 0 – 100% for each individual metric, simulated by generating random probabilities for all ODIs independently, 1000 times as a simulation).

- The risk distribution is normal around 50% probability using the @Risk formula (=RiskNormal(0.5,0.3,RiskTruncate(0,1),RiskStatic(0.5)). This produces a risk distribution range that reflects that central ranges are likely, but exceptional upside and downside events have a discrete probability. This is a better reflection of water company incentives than assuming an even probability across the distribution range. This effectively means that a p10/p90 level only happens 4.8% of the time, although p50 is 50% of the time. This is a conservative assumption, but accounts for Ofwat's contention that management ambition and innovation reduce the skew on performance. An example of the risk distribution range for PC08 (Properties at risk of receiving low pressure) is included below.

Figure AN9.1: Properties at risk of receiving low pressure – risk distribution range



	Normal (0.5,0.3,RiskTruncate (0,1))
Cell	RORE ODI _linkedDD..
Minimum	0.0000
Maximum	1.0000
Mean	≈0.5000
Mode	0.5000
Median	0.5000
Std Dev	≈0.2388
Skewness	≈0.0000
Kurtosis	≈2.1979
Left X	0.100
Left P	4.8%
Right X	0.900
Right P	95.2%
Dif. X	0.8000
Dif. P	90.4%
1%	0.0254
5%	0.1033

- The same value of Monte Carlo risk probability that was generated was applied to supply interruptions and mains bursts. It also applies to leakage where supply interruptions and mains bursts are in adverse years (less than 50% probability on supply interruptions), but leakage operates independently in other years. This recognises that

as well as these performance areas linking together due to weather events or operational issues, leakage has a longer term improvement trajectory that can outperform when there are one-off supply interruption events caused by bursts, but less so when there are large numbers of small bursts that do not show up in supply interruptions. There is a lack of correlation across the industry between mains bursts and supply interruptions and between mains bursts and leakage, but we demonstrate in our deliverability plan the track record of evidence, within our investment cases, that explains this relationship.[456]

- The raw water quality of sources probability is linked to water quality compliance (for 30% adverse circumstances to reflect algal blooms), i.e. where the probability of water quality compliance is between 0 – 30%, the same probability number applies also to raw water quality of sources, but the probabilities are independent where water quality compliance probability distribution in the simulation is above 30%.

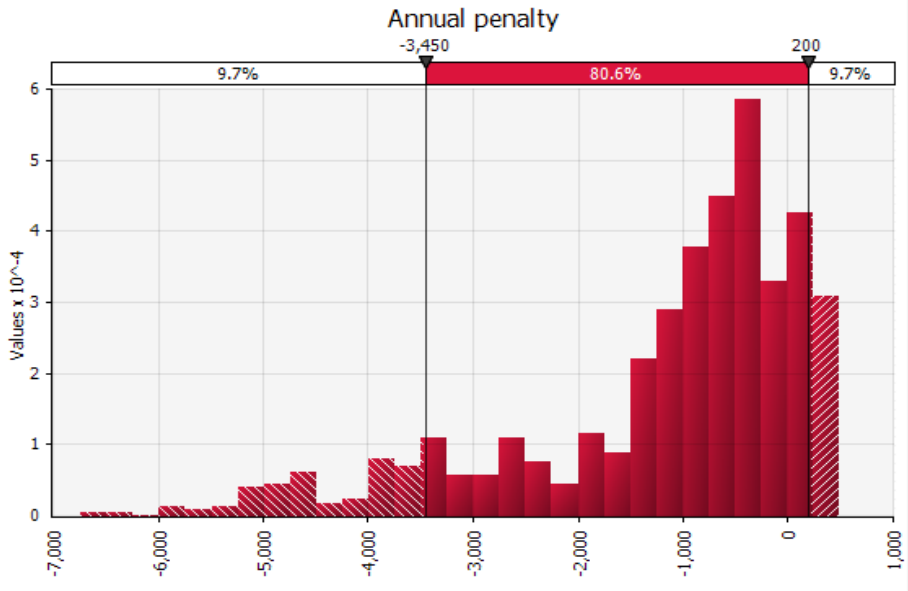
- The probability of delivery for the Biodiversity index with WINEP delivery probability: at 70% on the probability distribution, this relationship is assumed to exist as a positive contribution, with adverse external impacts 30% on the probability distribution that are independent, as WINEP is output delivery. This reflects a positive relationship between Biodiversity and WINEP delivery, but WINEP non-delivery does not directly impact biodiversity index non-delivery.

- Some risks that could link (such as abstraction incentives, metering and PCC) are seen as independent within the five year period as random factors (such as weather, housing market, customer preference and usage changes etc.) dominate the individual risks in the short term (they are long term WRMP plan links rather than delivery risk linked). Metering was removed from the distribution for the FD assessment, as was Glastonbury-Street Network Resilience, as these became end-of-period output delivery measures which are cost-recovery rather than outcome delivery as incentives.

41 The outcome of this analysis was the following annual ODI (on average) distribution, illustrated both as the annual penalty (in £m) and the annual RoRE (in %):

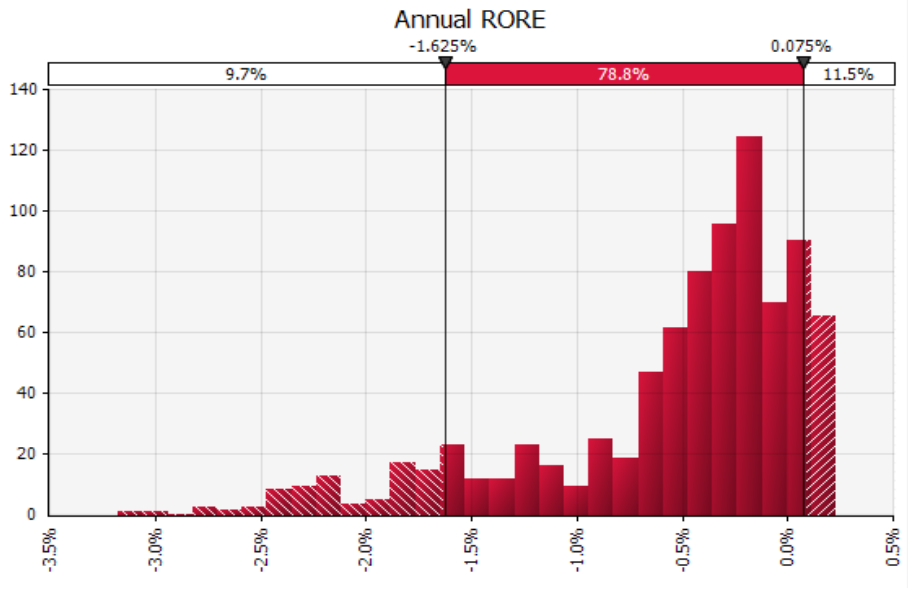
[456] Bristol Water (2019), 'BW02-6: Deliverability (Draft Determination response document)'.

Figure AN9.2: FD Monte Carlo analysis of range of Annual Penalty



	Annual penalty
Cell	RORE ODI _linkedDD..
Minimum	-6,733.37
Maximum	491.35
Mean	-1,152.35
90% CI	± 72.93
Mode	491.35
Median	-694.96
Std Dev	1,400.73
Skewness	-1.3601
Kurtosis	4.2249
Values	1000
Errors	0
Filtered	0
Left X	-3,450
Left P	9.7%
Right X	200
Right P	90.3%
Dif. X	3,650.00
Dif. P	80.6%
1%	-5,348.59

Figure AN9.3: FD Monte Carlo analysis of range of Annual RoRE



	Annual RORE
Cell	RORE ODI _linkedDD..
Minimum	-3.1742%
Maximum	0.2316%
Mean	-0.5432%
90% CI	± 0.03438%
Mode	0.2316%
Median	-0.3276%
Std Dev	0.6603%
Skewness	-1.3601
Kurtosis	4.2249
Values	1000
Errors	0
Filtered	0
Left X	-1.625%
Left P	9.7%
Right X	0.075%
Right P	88.5%
Dif. X	1.7000%
Dif. P	78.8%
1%	-2.5214%

Final risk distribution analysis

42 We updated our analysis to reflect the FD revenues and RCV. The FD summary is set out in the table below.

Table AN9.3: FD risk distribution

	Under performance as % of RORE	Out performance as % of RORE	Under performance £m p.a. (average)	Out performance £m p.a. (average)
Maximum range	-7.5%	1.8%	-15.6	3.7
Range excluding C-MEX and D-MEX	-6.8%	1.2%	-14.2	2.5
10% to 90% probability	-2.9%	0.8%	-6.0	1.6
Excluding asset health and C-MeX / D-MeX	-2.0%	0.7%	-4.2	1.4

43 The adjusted range, based on the adjusted mains bursts and PCC incentive rates we propose is set out in the table below.

Table AN9.4: Bristol Water proposed risk distribution

	Under performance as % of RORE	Out performance as % of RORE	Under performance £m p.a. (average)	Out performance £m p.a. (average)
Maximum range	-6.7%	1.7%	-13.9	3.5
Range excluding C-MEX and D-MEX	-6.0%	1.0%	-12.5	2.2
10% to 90% probability	-2.5%	0.7%	-5.2	1.4
Excluding asset health and C-MeX / D-MeX	-1.8%	0.6%	-3.8	1.2