November 2020

Reference of the PR19 final determinations: Risk and return – response to provisional findings responses

Ofwat

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1. Introduction

1.1 In line with the correspondence from the CMA dated 22 October, we are focusing this response solely on new issues and evidence raised in the other parties' responses to the provisional findings.

1.2 In a number of instances, points raised by other parties are those that have been raised before – therefore where we do not comment on specific issues, it should not be taken that we agree with points raised by other parties; the comments we have set out in previous submissions stand. We do not respond to all of the points made in third party submissions, though we consider it is important to set out our response to the Energy Networks Association submission (and the accompanying Annex by Oxera) given the level of detail they have provided. We set out our views in this submission.

1.3 Our response to the CMA's provisional findings set out that the allowed return and incentive package proposed by the CMA materially alters the overall balance of risk and return in companies' favour at the expense of customers. The proposed base allowed return is above the level proposed by companies in their business plans, which in turn underpinned accompanying Board assurance that these business plans were financeable.

1.4 It is somewhat surprising therefore that each of the disputing companies claims the determination proposed by the CMA is challenging and proposes further amendments that would skew the risk and return package even further towards companies at the expense of customers. We therefore encourage the CMA to be cautious in accepting proposals put forward by these monopoly service providers and their consultants.

1.5 While we agree it is important for the CMA to consider the points raised by respondents on cost of equity parameters, it is vital that the decisions the CMA takes over these parameters result in an overall allowed cost of equity that is reasonable. We submit that this should involve cross checks against a range of data sources, including market-to-asset ratios (MARs) and other forward looking

projections. This would bring continuity with the approach taken in previous appeals, for instance the 2014 Northern Ireland Electricity redetermination.[1]

1.6 Finally, we note a feature of the appeals process has been the tendency by some companies to focus on a subset of the available debt data to inform arguments on the appropriate allowance for embedded debt they should receive. This is a feature that has continued in company responses to the CMA's provisional findings. To assist the CMA in reaching a reasonable decision to the cost of embedded debt, we provide new analysis of the whole sector's embedded debt over 2020-25. This data draws on the audited 2020 annual performance reports: adjusting the actual embedded debt interest cost and total borrowings position on 31 March 2020 for outstanding debt due to mature over 2020-25.

1.7 We set out illustrative analysis which suggests that our allowance for embedded debt from final determinations of 4.47% (nominal) was conservative. Considering WaSCs – which make up 95% of sector borrowing – we project an average actual cost of debt over 2020-25 of 4.05% nominal (assuming long term inflation of 2.0% CPIH and 2.9% RPI). There is however support for even lower figures – the equivalent range for companies with financial structures closer to the notional is 3.4% to 4.1%. We calculate figures in all cases that are materially lower than the CMA's provisional index-based point estimate of 4.81%, and submit that the CMA should take account of this analysis in its final determination allowance for the cost of embedded debt.

1.8 This response is accompanied by separate papers from Wright & Mason,[2] and Europe Economics.[3]

[1] For example, in the CMA's 2014 Northern Ireland Electricity Limited price determination, the CMA considered evidence to inform the cost of equity using forward looking approaches and other relevant cross checks. The CMA concluded that forward looking approaches that "analysts' forecasts may be subject to upward bias … [but] taken in the round, we consider they tend to support a range for the … market return of 5 to 6.5 per cent" (paragraph 13.155, pp. 13-31).
[2] Wright & Mason, 'Comments on ENA/Oxera', November 2020.
[3] Europe Economics, 'Comments on Water Company and Third Party Submissions', November 2020.

2. Our response to new issues raised in response to the provisional findings

Table 2.1: New cross-cutting Risk & Return issues

Topic area	Section reference	Company response	Ofwat response
Allowed return on debt: Embedded debt (use of actual costs)	Yorkshire Water (Response to provisional findings, paragraph 3.3.11) Anglian Water (Response to provisional findings, Section 5)	Yorkshire Water suggests it should be allowed sufficient revenue to cover its 4.93% nominal cost of debt. Anglian Water similarly claims the CMA has underfunded its 'efficient' cost of debt of 4.97% nominal. Anglian Water cites a sector 'balance sheet cross-check' of 4.95% to support its claim.	Whichever approaches are used to set an allowance for the cost of debt, there is a need to confirm that the final figure makes sense as a reasonable allowance for an efficient notionally-structured company, and that it preserves efficient issuance incentives that will benefit future customers. We agree with the CMA that setting the allowance for embedded debt based on a given company's actual costs would undermine incentives to issue debt efficiently. We nonetheless see it as informative to draw on statistics concerning the sector's company-level actual debt costs to confirm that our allowance is reasonable. We submit that such cross checks should also be carried out by the CMA. There are various approaches which could be taken in carrying out this cross-check, which we illustrate in Annex 1. A benchmark for WaSCs would be 4.05% nominal, based on a simple average of WaSC costs and reflecting the impact of debt falling due over 2020-25. This arguably overstates the efficient allowance for a notional company however - as many of the datapoints are companies geared far above the notional 60% due in part to debt financing large shareholder distributions or acquisitions. Focusing on a smaller subset of unsecuritised WaSCs which have kept gearing closer to the notional level,[4] we find support for a nominal cost of debt in the range 3.4% - 4.1%. Our calculations are based on audited information reported by companies in their 2020 Annual Performance Reports, adjusted for the CMA's long term view

[4] United Utilities, Severn Trent, Wessex Water, Northumbrian Water.

Topic area	Section reference	Company response	Ofwat response
			of RPI (2.9%) and taking account of debt that is due to mature in 2020-25. More detail is available in Annex 1 to this document and in the accompanying technical appendix.[5] Our approach is preferable to the approaches supplied by the disputing companies, as they tend either not to capture data up to March 2020 or to not refer sufficiently to sector-wide debt costs (as befits the notional perspective). For instance, we do not accept the validity of Anglian's 4.95% 'balance sheet cross check'. Anglian's workings indicate that they have taken the WaSC and large WoC median using our balance sheet approach for final determinations (4.45% nominal) and added 50bps, which the company says reflects Europe Economics' December 2017 view of the impact of swaps.[6] Putting to one side our view that swaps should not be included, this data is in any case seriously out of date as it is based on balance sheet positions as at March 2018 (or 2016, in the case of the 50bps). Our approach based on the 2020 Annual Performance Reports should be seen as giving the definitive view of companies' cost of embedded debt as it is based on the balance sheet position as at March 2020.
Allowed return on debt: Refinancing risk	Anglian Water (Response to provisional findings, Section 5, paragraphs 419, 421,) Northumbrian Water (Response to	Anglian and Northumbrian Water cite lower refinancing risk and better 'asset-liability matching' to justify the use of a 20 year trailing average and no downwards adjustment to the iBoxx A/BBB index. Anglian Water suggests that our introduction of a 10 year trailing average with 15bps	The evidence that our final determination measures have increased refinancing risk is weak. Our PR19 15 year trailing iBoxx A/BBB trailing average for embedded debt is the longest trailing average of any previous price control and is a significant extension to the PR14 10 year trail. It comfortably exceeds the 11-15 year extending trailing average proposed by Ofgem for its RIIO-2 (GT/ET/GD) controls (our final determination allowed cost of debt is effectively a 15-20 year extending trailing average). We have also supplied the CMA with evidence of companies issuing at tenors of up to 30 years following final determinations.[7]

[5] Ofwat, 'Technical Appendix: Using actual debt costs to derive a notional allowance for embedded debt', November 2020.
[6] Anglian Water, 'PF025 AW provisional findings response WaCC_financeability data', (Tab 'Tables 22-23')
[7] Ofwat, 'Risk and return – response to companies' 27 May submissions to the CMA', Table 3.3, p. 24.

Topic area	Section reference	Company response	Ofwat response
	provisional findings, paragraph 302)	'outperformance wedge' at PR14 resulted in a decline in tenor-at-issuance.	We submit that the fall in tenor-at-issuance cited by Anglian Water is a natural response to the evolution of the yield curve. The benchmark gilt yield curve was inverted at points of the 2000s (meaning it was cheaper to borrow at longer tenors); it subsequently normalised for most of the 2010-20 period. This is a highly plausible reason for the reduction in the tenor of debt at the sector level over this period which is not mentioned by Anglian Water. Further detail is set out in the accompanying Europe Economics paper. We submit that the CMA should critically appraise company arguments around 'asset-liability matching' at the sector level. It is not clear from submissions why this is beneficial to customers - particularly as it seems to imply slower pass through of falling interest rates to customer bills. Even if it is found to be beneficial, giving companies a higher allowance (the effect of the proposed 20 year trailing average) does not remove the financial incentive to beat the iBoxx A/BBB index by issuing at shorter tenors than 20 years. The evidence supports our view that the regulatory choice of trailing average is not the key determinant of a company's treasury policies.
Allowed return on equity: Total Market Return (Use of CPI and RPI inflation)	Anglian Water, (Response to provisional findings) paragraphs 385-386 Bristol Water, (Response to provisional findings), paragraphs 50-54	All four disputing companies appear to accept placing some weight on both CPI and RPI-stripped historical returns, albeit arguing that the CMA has placed too much weight on CPI-stripped evidence. ENA argue that the CMA should place no weight on the CED/CPI dataset. The ENA argue:	In our response to the CMA's provisional findings we explained our position that the CMA's ex-post range for TMR is biased upwards rather than downwards, contrary to claims by the disputing companies.[8] We respond below to ENA's arguments: ENA criticism of the CMA's discounting of the top end (6.3-6.6%) of its RPI range is surprising given that the implied 30bps adjustment is within the range of its consultant Oxera's own calculations.[9] Using September 2020 data, we estimate that the average difference in the formula effect in the 5 years before and after ONS's 2010 changes to inflation measurement alone was 43 basis points.[10] It is highly likely that comparisons to earlier periods would result in a higher formula effect difference due to the incremental addition of

[8] Ofwat, 'Risk and Return - response to the CMA's provisional findings', pp. 73-75, paragraphs 5.9-5.10.
[9] Oxera, 'Review of the CMA PR19 provisional findings', p. 5.
[10] Compares the period Jan 2005-Dec 2009 with Jan 2011-Sep 2020, source: https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/dra9/mm23

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	Northumbrian Water, (Response to provisional findings) paragraphs 275, 277-283 Yorkshire Water, (Response to provisional findings) paragraph 3.3.17 ENA (Response to provisional findings section 4(a)); and Oxera (Appendix to the ENA response, section 1.3)	• The CMA incorrectly ignores the top end of the CED/RPI distribution; • Treating the CED deflator in both CPI and RPI analysis is erroneous; • The 1950-1996 CPI series is unreliable	items and methodology changes which have increased RPI's volatility (and thus the formula effect). Overall, this suggests that the CMA's shortening of its upper bound ex-post TMR range is conservative. ENA's conclusion that the CED can only be used as part of the RPI series is based on analysis by Oxera using its bespoke composite implied consumption deflator which is not recognised by the ONS. We reject Oxera's assertion that this is more consistent with how the Feinstein (1973) CED has been calculated. Our own comparison of the latter-day CED equivalent - the ONS implied deflator for household final consumption expenditure (HHFCE) – suggests that it behaves more like CPI.[11] The ENA's assertion that the CED/CPI series is unreliable for 1950-1996 appears to be primarily based on its consultant Oxera's suggestion that formula effects were estimated using adjusted RPI indices rather than individual price quotes, thereby embedding a degree of formula effect. This is not an appropriate standard of evidence on which to decide the weight placed on the series. The ENA's description of backcast CPI as 'unreliable' is also misleading based on our correspondence with ONS, which confirms that it uses this data for official purposes. For example, ONS has relied on it to deflate historical national accounts data for current editions of the Blue Book. We note that the ONS is in the process of revising its backcast series and producing a new historical CPIH series with a due date by end 2020. We submit that the CMA should draw on this revised data should it become available in time to inform its final determinations. We note also the views expressed by Ofgem[12] that the CMA's approach of using the forward-looking RPI-CPI 'wedge' to adjust CED/CPI figures to an RPI basis is problematic. This is as modern-day RPI's well-rehearsed tendency to overstate inflation (which drives a higher RPI-CPI wedge) ends up materially affecting what is meant to be a historically focused estimate. The end result is

[11] Ofwat, 'Further note to CMA on hearing cost of capital issues', August 2020, pp. 3-4.
[12] Ofgem, 'Response to the CMA's provisional findings', November 2020, pp. 10-11, paragraphs 35-39.

Topic area	Section reference	Company response	Ofwat response
			an estimate of required future returns that moves with the RPI-CPIH wedge – Ofgem note this is contrary to the objectives of the Johnson Report and HM Treasury to move away from RPI. We agree with Ofgem that this is a good reason to focus on CPI when deflating historical equity returns.
Allowed return on equity: Total Market Return (ex-post estimators)	Anglian Water, (Response to provisional findings, section 4.1) ENA (Response to provisional findings section 4.b)	Anglian Water argue against the CMA's decision to exclude the non-overlapping estimator on the grounds that it is potentially more efficient. ENA propose that the CMA include the 'Cooper estimator', which applies a positive uplift to the 1 year arithmetic average, following Cooper (1996)[13]	As noted in the CMA's provisional findings, only 6 observations inform the non-overlapping estimator at the 20 year holding period consistent with the CMA's investment horizon. This makes the estimator particularly prone to volatility caused by atypically high or low-return years being selected. To give some indication of this volatility, it is worth considering the range of values this estimator would have taken based on the last 5 years. The CED/CPI range is 6.8%-7.6% (CPI), while the CED-RPI range is 6.4%-7.1% (RPI). It does not seem reasonable for such volatility in expected returns to arise based on the addition of so few years of data. ENA's proposal is based on the premise that the 'capital budgeting' perspective is relevant. This perspective holds that the estimate of TMR used by regulators should be thought of as a discount rate rather than the market benchmark used by CAPM investors to estimate required returns for other investments. This is a novel perspective, not accepted by economic regulators in previous cost of capital estimation exercises, or currently. As noted by Wright & Mason in their accompanying note, the Schaefer paper cited by ENA makes a distinction between compounders and discounters, but does not argue that regulators should play one role or the other – instead concluding they should set an unbiased estimate of the expected annual return.[14] . As noted by Wright & Mason - and consistent with the academic literature (i.e. Blume, JKM) - in the presence of long horizons and serial correlation, the arithmetic mean of the annual return will be biased upwards relative to the true arithmetic mean. ENA's suggestion that this issue is corrected for by giving companies a return even higher than this figure is therefore completely

[13] Cooper, 'Arithmetic versus geometric mean estimators: Setting discount rates for capital budgeting', 1996.
[14] S. Schaefer, 'Comments on CMA views on Estimating Expected Returns', April 2020, p. 5, paragraph 21.

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			illogical. The CMA has already stated that its provisional TMR range is 'comfortably at the top end of investors' current expectations regarding market returns over the next few years'.[15] Adopting the ENA's proposal would bias the allowed return even further above the level expected by investors.
Allowed return on equity: Risk-free rate (CAPM requirements)	Anglian Water (Response to provisional findings paragraph 397) Northumbrian Water (Response to provisional findings, paragraph 261)	Anglian Water and Northumbrian Water argue that investors cannot short bonds to borrow as shorting bonds requires investors to post collateral	Europe Economics argue that the relevant requirements of CAPM are that investors can owe a risk free asset as well as hold a risk free asset (there is no requirement for investors to be able to issue their own new risk free asset or to otherwise create new risk-free asset) and that investors can go longer or shorter in the risk-free asset. Indeed, as referenced by Europe Economics, Black's 1972 paper specifically refers to shorting in his scenario of 'no riskless borrowing', defining it as being 'the case in which there is a riskless asset available, such as a short-term government security, but in which investors are not allowed to take short positions in the riskless asset'. This is further evidence that it is the ability of investors to short the risk-free asset (not create risk-free debt) which is the relevant criterion for the CAPM to hold. Further details are set out in the Europe Economics report that accompanies this submission.
Allowed return on equity: Risk-free rate (forward rates uplift)	Anglian Water (Response to provisional findings, paragraph 403) Bristol Water (Response to provisional findings paragraph 63)	Anglian Water, Bristol Water, Northumbrian Water and Yorkshire Water all argue that the CMA should apply a forward rates uplift to the level of the risk-free rate.	There are different approaches to incorporating the predicted future path of interest rates in the RFR estimate. The CMA's approach is logical and defensible, being based on the principle that ex-post adjustments should be viewed with suspicion if there is no evidence that they improve forecast accuracy. Our use of a forward rate uplift at final determinations was based on a different context - notably a shorter (1 month) trailing average. The CMA's use of a 6 month trailing average already builds in a substantial implied rate rise relative to spot yields; no further increase is necessary.

[15] CMA, 'Provisional redetermination of Ofwat's price control 2020-25', September 2020, p. 557, paragraph 9.221.

Topic area	Section reference	Company response	Ofwat response
	Northumbrian Water (Response to provisional findings paragraphs 267-270) Yorkshire Water (Response to provisional findings, Table 1)		
Allowed return on equity: Risk-free rate (The beta of gilts)	Energy Networks Association (Response to provisional findings, section 5a); Oxera (Appendix to the ENA report, section 2.3)	Oxera provide new empirical evidence in support of its view that UK government bonds have a negative beta and argue that the true lower bound for the CAPM risk free rate is higher than UK government bond yields. Oxera argue this requires a 50 basis point uplift for a 'convenience premium'.	Oxera's finding of a negative beta for gilts is based on using 5 year rolling regressions of FTSE All-Share daily returns on daily returns for two indices composed of UK Gilts (the iBoxx ILG index, and the UK benchmark 15-year index). In the accompanying note to this submission, Wright & Mason point out Oxera's confused application of the concept of the risk-free rate. The authors note that long-dated gilts are not risk-free at shorter horizons than the duration of the instrument due to the possibility of price fluctuations. This implies Oxera's use of high frequency data is misguided and would only be appropriate with a risk-free rate proxy that is of correspondingly short maturity. As the authors point out, such a proxy would give a much lower point estimate and would also run contrary to the CMA's preference for a long-run investment horizon. Europe Economics note that Oxera's findings are dependent on using daily data. Running 5 year rolling regressions involving UK gilts and the FTSE All-Share index but using monthly data gives a wide beta range of around -0.25 to 0.35. P-values are generally higher than 0.1 suggesting that most coefficient estimates are not statistically different from zero at the 90 per cent confidence interval. This weakens Oxera's argument that gilts have a negative debt beta, even if we were to accept that gilts are risk-free over horizons shorter than their tenor. We note Ofgem's suggestion of 20 year SONIA swaps as a relevant datapoint to

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			inform the CMA's point estimate for the risk-free rate.[16] While still subject to some inflation and interbank risk which moves the yield above a true risk-free rate, we consider that this datapoint is greatly preferable to the AAA-rated corporate bond indices used for the CMA's provisional findings. As noted by Europe Economics previously,[17] and Ofgem, the yields of bonds in these indices are likely to embed material premia to compensate for risks around default, liquidity, inflation and complexity.
Allowed return on equity: Equity beta (AGRF Report proposals)	AGRF Ltd 'A Response to The CMA's Provisional Findings on Water and the Estimation of Beta', October 2020	The AGRF paper argues that the CMA's unlevered beta estimate of 0.31 lies below a reasonable mid-point estimate. The paper newly suggests estimating beta a) using the whole sample of data going back to 1991; or b) based on a sample from October 2014 to September 2020 but missing out data from the 'early COVID' period of March – June 2020.	Plotting frequency of unlevered beta estimates from the CMA's (June 2005–June 2020) analysis shows stronger support for the bottom end of the CMA's overall 0.27–0.32 range (see Figure A2.1 in Annex 2); thus we strongly dispute that the CMA's use of 0.31 understates the true figure. The novel suggestions offered by the AGRF paper do not improve on the standard regulatory approach of placing weight on varying frequencies and lengths of estimation window. On the first suggestion, increasing the span of historical data captured in beta estimation to the extent suggested by the AGRF paper includes periods when Severn Trent and United Utilities were not close to being 'pure play' water companies; thus rendering the beta estimates an unreliable guide to notional company beta. For instance: • Prior to 2006, United Utilities owned two telecoms businesses (Your Communications, and Vertex). • Prior to 2006, Severn Trent owned Biffa – a waste management company. The paper has not attempted to control for this and so it is not clear why including this data would result in an improved estimate of the water beta. We submit that the CMA does not need to place any weight on this new evidence.

[16] Ofgem, 'Response to provisional findings', November 2020, pp. 7-8,
[17] Europe Economics, 'Issues arising from CMA Expert Panels', August 2020, Section 1.1.

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			The CMA is aware of our previously expressed views on the inappropriateness of structural break tests.[18] In addition, we agree with Europe Economics' concerns set out in their accompanying report regarding the AGRF paper's updated breakpoint-led estimation period: • **Inconsistent application of principles:** The authors stated earlier in the appeals process that 'the optimal method for estimating the long run unconditional beta is to use the longest run of data available since the last identified structural break'.[19] However, their preferred sample does not start from their latest identified structural break at the start of the 'early COVID' period. • **Arbitrary exclusion of 2 month 'early Covid' period:** AGRF justify this by arguing it is characterised by temporary volatility and so should not be reflected in forward-looking betas. Yet as set out in Figure A2.2, Annex 2, much of the excluded data strongly resembles the low volatility 'late Covid' period which is included. More generally we agree with Europe Economics that it is problematic to exclude periods of volatility associated with a manifestly systematic risk from beta estimation. Investors' decision making is influenced by how assets perform in periods of market turbulence. To exclude such periods of consideration from the assessment of beta is to neglect one of the key motivating factors for investors in holding these assets.
Allowed return on equity: Debt beta	ENA (Response to provisional findings, Section 7, pp.16-17)	ENA cite analysis by their consultants Oxera which argues that Europe Economics have made four errors in deriving their point estimate of 0.15 for the debt beta for final determinations:	Europe Economics responds to the points raised by Oxera in the accompanying report to this submission. We summarise its responses below: • **Wrong risk-free rate:** EE agrees with Oxera that the assumed RFR (and indeed other components; e.g. cost of new debt, TMR) should be consistent between the decompositional analysis and the wider analysis informing the allowed return. Using the CMA's estimates for these parameters, EE calculates a debt beta under the decompositional

[18] Ofwat, 'Further note to CMA on hearing cost of capital issues', August 2020.
[19] AGRF Ltd, 'A Report on the Estimation of Beta for Regulatory Charge Control Purposes', April 2020, p. 14.

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	Oxera (Annex to ENA submission, Section 3, pp. 16-20)	• The risk-free rate assumption is incorrect • The expected loss assumption is an underestimate • The liquidity premium is not in line with Competition Commission precedent from Bristol Water (2010). • EE used a different formula to the Competition Commission at BAA (2007). Oxera conclude that after correcting for these errors, a debt beta of 0.05 would be appropriate.	approach of 0.13-0.15 – i.e. only slightly different to its original point estimate of 0.15. • **Underestimates expected loss:** EE notes that Oxera uses a higher probability of expected default (0.3% and 0.8%), as these figures correspond to general corporate debt with an A and BBB rating, respectively. EE states that it uses a lower probability of default range of 0.01% - 0.2% because these figures are specifically calculated for the utilities sector. EE considers that the data it has used is more relevant to the water sector. • **Liquidity premium not in line with precedent:** EE suggests that the most relevant precedent is the 2020 NERL RP3 redetermination in which the CMA's approach was mathematically equivalent to using a decompositional approach with no liquidity adjustment. EE calculates that using the CMA's assumptions for parameters but no liquidity adjustment gives a debt beta range of 0.16-0.18 – again close to its point estimate of 0.15. • **Formula different versus the CC approach in 2007:** EE accepts that the formula it used is slightly different to that of the CC, but concludes that the impact is nugatory – less than a basis point of difference when calculating its original 30bps liquidity premium.
Allowed return on capital: Long-term Inflation assumptions	Yorkshire Water (Response to provisional findings, Section 3, paragraphs 3.3.3 - 3.3.8)	Yorkshire Water argue that short term inflation forecasts suggest a rate of CPIH and RPI inflation below the CMA's long-term forecasts of 2.0% and 2.9%, respectively. The company suggests that this will result in companies not recovering the full amount of the CMA's allowed nominal cost of capital of 5.57%.	The short-term inflation rate is not relevant to components of the cost of capital which are derived in real terms – indexing these components for in-year inflation does not mis-state their value or result in out- or underperformance in real terms. We recognise a short-term mismatch is possible between fixed inflation compensation paid to bondholders in the nominal interest rate and variable indexation of allowed revenues received by water companies. This is however of limited relevance at long investment horizons (consistent with the CMA's perspective) which logically must reflect inflation assumptions at that horizon in the return requirement. As demonstrated in both the CMA's analysis and that of Europe Economics in its accompanying note, CPIH inflation has tracked

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		The company suggests that the short-term inflation profile should be explicitly reflected in the CMA's calculations or used to justify further aiming up on the WACC.	a 2.0% target remarkably closely over the past two decades, as would be expected given the Bank of England's inflation targeting framework. We previously set out our disagreement with these proposals in our response to the company's 27 May submission,[20] but recognise there may be some value in reflecting evidence from more recent forecasts. We have two main observations: • **Intervening risks forecast error:** The response to Covid-19 could result in higher rather than lower inflation, as set out by a recent IMF note.[21] Indeed, HM Treasury's August 2020 average of forecasts suggests overshooting of targets in the medium term, with inflation lower than the CMA's long term forecasts for 2020 and 2021, but higher for 2022-2024.[22] We are concerned at the prospect of the CMA setting a lower inflation assumption followed by higher-than-expected inflation, which would see customers pay twice. • **Intervening skews the risk-reward balance in companies' favour:** As argued by Europe Economics in the accompanying note, this type of inflation risk is fundamentally systematic and reflected in water betas. It cannot be right that water companies should have this risk mitigated, while having a return set using historical betas that implicitly assumes it is unchanged.
Allowed return on capital: 'Aiming up'	Oxera annex to the Energy Networks Association response, p. 25.	Oxera considers we have mischaracterised our approach to setting the allowed return by making the assumption that	Oxera's view is not correct and is a misrepresentation of our position. We agree there are judgements to be made in determining the allowed return on equity. But this is exactly why a wide range of market data must be taken into account when determining the reasonable allowed return; it is also why a regulator must consider the relevance of bias in the ends of range estimates of

[20] Ofwat, 'Risk and return – response to common issues in companies' 27 May submissions to the CMA', paragraphs 3.8-3.12.
[21] IMF, 'The impact of Covid-19 on inflation: potential drivers and dynamics', September 2010.
[22] HM Treasury, 'Forecasts for the UK economy: a comparison of independent forecasts', August 2020.

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		there is no uncertainty in the cost of capital estimates.	individual parameters if those parameters are used to inform the final decision. Furthermore, we note that a policy of 'aiming up' has been a feature of regulatory decisions in other contexts, notably by the Commerce Commission in New Zealand, in the past this has drawn on other work by Oxera which has considered the costs and benefits of 'aiming up'.[23] We note that the most recent decision on the Fibre input methodologies (October 2020), the Commerce Commission sets out a detailed exposition of the arguments for aiming the cost of equity above the mid-point of its range. It concludes this is not in the best interests of end-users and that a departure from the mid-point is not justified.[24] On the question of 'aiming up' to address concerns of under-investment, the Commerce Commission specifically reference the view of its expert panel who said the regulator could probably avoid unintended consequences and find it easier to calibrate the intervention by going to the proximate cause rather than adjusting the allowed return.[25]
Allowed return on capital: Retail Margin	Northumbrian Water (Response to provisional findings, Section 7.7, paragraphs 313-322) Yorkshire Water (Response to	Northumbrian Water argues that the CMA's calculations should exclude retail creditors due to their being an artificial intra-company balance, and include measured income accrual balances. The company revises	We continue to take the view that a retail margin adjustment is necessary due to the higher risks faced by the retail control which bears the cost of revenue risk (i.e. bad debt) which has a strongly systematic component. We agree with Northumbrian Water that the correct building blocks to consider in a bottom-up derivation of the retail margin adjustment are a) the working capital requirement, and b) the return on fixed assets. The items Yorkshire Water suggests the retail margin should cover - Intangible assets such as software and contingent financial capital – are to a large extent

[23] See for example Oxera, Is a WACC uplift appropriate for UCLL and UBA? Where Oxera conclude for telecom services in New Zealand, that the evidence in support of an uplift 'is not strong, and requires significant speculation about the nature and scale of benefits of future innovation, and, therefore, does not contradict the continued use of a midpoint WACC'.
[24] Commerce Commission New Zealand 'Fibre input methodologies: Main final decisions – reasons paper', p. 10, paragraph X26, and pp. 481-516, paragraphs.714-6.861.
[25] Op cit. p. 510, paragraph 6.836.

Topic area	Section reference	Company response	Ofwat response
	provisional findings, Table 1, pp.32-33) Bristol Water (Response to provisional findings, Section 10.2, p. 16)	the CMA's approach to calculate an updated range of 0-3bps. Yorkshire Water argue that the CMA has: • made a computational error by using a vanilla WACC rather than a pre-tax WACC in its calculation of the required pre-tax retail margin; • failed to make allowance for the cost of financing investments in intangible assets (e.g. software); and • failed to make proper allowance for the cost of contingent financial capital. Bristol Water argue that the CMA's £22m retail margin implies an EBIT margin of 0.24% which is low compared to Ofwat's 1.0% for PR19 and PwC's 0.55%-1.1% proposed in 2014. The company suggest that this implies a retailer WACC of 24%, which seems unlikely.	funded by allowed opex for the retail control, which covers cost to serve and bad debt. Northumbrian Water's revised range assumes that working capital is financed at the appointee allowed return on capital. We disagree - as an inherently short term financing requirement, we consider that the cost ought to be significantly lower than the allowed cost of new debt. We do not agree with Yorkshire Water that it is appropriate to use the pre-tax appointee WACC as the financing cost of fixed assets. Consistent with our approach to setting the allowed return for wholesale fixed assets, it is not appropriate to fund equity investors' cost of corporation tax in the return on equity, as this cost is funded as a separate building block of allowed revenue. The CMA's definition of retail margin does not include working capital and fixed asset finance costs in the £22m, therefore it is not an EBIT margin and is not comparable with Ofwat and PwC estimates. For the same reason, it also cannot be described as a WACC.
Financeability: Relevance of the	Yorkshire Water, (Response to provisional findings,	Yorkshire Water argue there are features of the NERL determination that cannot be	Elements of the NATS determination which are relevant to the water determination as data sources are the same on issues such as risk free rate and total market return.

Topic area	Section reference	Company response	Ofwat response
CMA's NERL determination	paragraphs 3.4.7 to 3.49)	directly applied to the water appeal, including that (i) the UK government has a 49% stake in NATS and NATS is underpinned by Government support which meant that financeability did not feature in its decision and (ii) NATS was overwhelmingly influenced by Covid-19.	There is also read across to other regulatory mechanisms, including the use of an RCV and regulatory reconciliation mechanisms. We have explained previously that the allowed return should be set at a level that reflects reasonable expectations of investors. We acknowledge the CMA took account of the Government support which may have impacted its assessment of financeability in its NATS decision, but financeability is only one check that should be considered. Financeability is a check on adequacy on adequacy of cashflows, broader checks are also required to test whether the allowed return on debt and equity are reasonable and consistent with investor expectations.
Financeability: dividend assumption	Anglian Water (Response to provisional findings p.95, paragraphs 473-475)	Anglian Water sets out the dividend yield used by the CMA for its financeability analysis (itself based on our final determination which adopted a policy of restricting notional dividends to finance RCV growth) should increase to reflect the allowed equity return in the provisional findings. The company compares this to Severn Trent and United Utilities intention to pay dividend yields on regulated equity of over 6% over 2020-25.	Equity investors may be expected to earn returns in different ways across the investment cycle. We note the financial ratios presented by the CMA in the provisional findings for Anglian Water show average gearing across 2020-25 close to the notional level of 60%. As such, the CMA is correct to apply a dividend restriction in the financeability assessment for Anglian Water (an alternative approach would be to assume notional equity injection). In its response to our draft determinations, Anglian Water concluded that dividend yield could be reduced to improve notional company ratios, meaning that it agreed a lower dividend yield should be used in its final determination than it is now proposing the CMA should apply.[26] The final determinations for Severn Trent and United Utilities do not have the same level of investment as for Anglian Water and therefore do not have substantial RCV growth. The target dividends for 2020-25 include prior and anticipated outperformance from the previous and current price review periods. Severn Trent has a history of outperformance resulting in additional revenue for 2020-25.[27] United Utilities' dividend policy for 2020-25 is based on

[26] Anglian Water, 'PR19 draft determination representation', August 2019, p. 160.
[27] Severn Trent plc, 'Q3 Trading update and AMP7 dividend policy', January 2020.

Topic area	Section reference	Company response	Ofwat response
			a base dividend return of 4% nominal plus the profit after tax in relation to non-appointed activities and an amount not greater than demonstrable outperformance versus the final determination, including accumulated outperformance in prior periods that has been retained by the group.[28]
Financeability: allowed return	Northumbrian Water (Response to provisional findings, p.69, paragraph 335)	Northumbrian Water sets out that it agrees with the CMA that financeability concerns can only be addressed by setting the correct cost of capital, as opposed to adjusting more peripheral regulatory levers such as PAYG rates, the capital structure or the timing of cash flows.	The relative weighting of the cost of debt and cost of equity in the allowed return has a direct impact on the free cash flow (equity returns) and the level of interest to be paid. Therefore setting an appropriate notional gearing level within the capital structure cannot be considered a 'peripheral regulatory lever'. The level of the allowed return earned as cash in period directly impacts the level of cash flow ratios and is directly related to the inflationary index used to deflate the nominal return. Again this is not a peripheral tool to assessing the financeability of the final determinations.
Financeability: financial ratios	(Response to provisional findings Anglian Water pp. 92-93, paragraphs 462-465) Bristol Water (Response to provisional findings, p.56, paragraph 273) Northumbrian Water (Response to	Companies argue that the provisional determinations are weakly positioned against the target credit ratings of Baa1/BBB+. Anglian Water argues that Moody's and Fitch advise targeting the 'middle' of the range for adjusted interest cover. The company also sets out that the FFO/net debt at 9.8% is below the threshold of	We are surprised that companies have made comments that they are weakly positioned against the target credit rating of Baa1/BBB+ based on the provisional determinations, given that: Anglian Water, Northumbrian Water and Yorkshire Water provided Board assurance that their business plans were financeable on the basis of an allowed return that is lower than the CMA's provisional determination. The Board assurance statements are underpinned by financial ratios that are broadly consistent with or lower than the financial ratios set out in the CMA's provisional findings. For example, in its April business plan Anglian Water's average FFO/net debt ratio was 9.44%.[29] The CMA has provided companies with what it considers to be an efficient level of totex in its provisional determinations and has 'aimed-up' the allowed return achieving ratios commensurate with its target credit rating. Customers

[28] United Utilities Group plc, 'United Utilities acceptance of final determination and dividend policy update', January 2020.
[29] Anglian Water, 'PR19 Business plan data tables – ANH', April 2019, App 10.

Topic area	Section reference	Company response	Ofwat response
	provisional findings, p.71, paragraph 350)	10% for a Baa sub-factor rating on the Moody's scale. Bristol Water set out that the CMA has calibrated the allowed return such that the adjusted interest cover at 1.54x is just above the minimum threshold of 1.5x. Once the implications of the totex gap and the risks resulting from asymmetry, it claims there is little equity buffer left. Projected cash flows, after accounting for the totex gap, would not be sufficient to ensure a Baa1 credit rating, Northumbrian Water state that it considers the adjusted interest cover implies a weak Baa1 rating, taking account of efficient financing costs before adjusting to reflect expected losses on ODIs.	should not be expected to pay even more to provide a buffer to this target credit rating to account for companies' inefficiencies.
Financeability: credit rating agencies	Anglian Water (Response to provisional findings, p. 93, paragraph 466)	The disputing companies refer to the pronouncements from the credit rating agencies Moody's and S&P in support of their view that there is insufficient headroom.	The credit rating agencies rate the companies on the basis of their actual capital structures and take account of specific circumstances, such as adjustments for prior period performance, and the impacts of derivative and group arrangements. We have set out previously the specific circumstances relevant to each company's credit rating.[32]

[32] Ofwat, 'Reference of the PR19 final determinations: Risk and return – response to common issues in companies' statement of case', May 2020, pp. 16-27, paragraphs 2.19-2.42.

Topic area	Section reference	Company response	Ofwat response
	Bristol Water (Response to provisional findings, pp.56-57, paragraphs 275-276) Northumbrian Water (Response to provisional findings, pp. 71-72, paragraphs 352-353)	Moody's sets out that adjusted interest cover still falls below historical levels and is weakly positioned against its ratio guidance.[30] S&P sets out that the credit ratings remain under strain.[31]	Moody's sets out that the provisional findings are positive for the companies boosting adjusted interest cover by between 0.20-0.25x over AMP7; a material increase in interest cover. It also notes that as the higher return will be recovered over a shorter period, the uplift in credit metrics will be higher over this period. We note that based on the level of the financial ratios within the provisional findings S&P state "We anticipate that the provisional findings would support the respective companies' credit metrics over AMP7."
Financeability: asymmetric risk	Anglian Water (Response to provisional findings p. 93-94, paragraph 464 and 468) Bristol Water (Response to provisional findings, p. 57, paragraph 37 Northumbrian Water p. 72, paragraph 355)	Bristol Water and Northumbrian Water argue that the expected loss resulting from asymmetric risk should be included in cash flows and ratios. Anglian Water notes that the CMA has not modelled expected penalties arising from asymmetric ODI mechanisms. It also sets out 'If the cost allowances and performance targets are unachievable then the cash flows and credit ratios of the notional company under the 'base case' scenario will not	Bristol Water and Northumbrian Water set out that the financial ratios remain commensurate with a Baa1/BBB+ rating after taking account of the asymmetric risk. The financeability assessment must be based on an efficient company meeting all of its commitments to customers. Moving away from this principle reduces the incentives for companies and rewards poor performance and risks compensating the company for the impact of the penalties that the CMA states it expects companies to face.

[30] Moody's Investors Service, 'CMA appeals give higher returns', October 2020, p. 1.
[31] S&P Global Ratings, 'UK Water Utilities: Was appealing Ofwat's determination worth it?', October 2020.

Topic area	Section reference	Company response	Ofwat response
		provide a meaningful indication of actual financeability.'	
Financeability: downside scenario testing	Anglian Water (Response to provisional findings pp. 94-95, paragraph 472) Bristol Water (Response to provisional findings pp. 57, paragraphs 277-38) Northumbrian Water (Response to provisional findings pp.74-76, paragraphs 362-373) Yorkshire Water (Response to provisional findings p. 7, paragraph 1.1.8)	The disputing companies set out the CMA has understated the downside scenario used in its financeability assessment highlighting the limited headroom under the provisional determinations. The disputing companies have typically applied a downside scenario based on their own estimate of asymmetry in RoRE and the totex downside incorporating the gap between the company and the CMA. Bristol Water states that under its downside scenarios there is likely to be a very limited cash buffer to manage this risk indicating an increase in revenues is required.	The CMA has targeted a credit rating two notches above the minimum investment grade. This in itself provides substantial headroom to the credit rating requirements set out in companies' licences. We agree with the CMA that (i) a downside scenario of 1% on RoRE throughout 2020-25 represents an overly pessimistic scenario,[33] and (ii) that financial ratios are not applied mechanistically by credit rating agencies (and indeed comprise only one element of credit analysis).[34] We agree with the CMA that companies facing a financeability constraint have a responsibility to consider a range of mitigating actions to address the impact.[35] And that disputing companies have typically presented the results of more severe downside risk analysis but have chosen to not provide details of any action management or investors may take to mitigate the impact.

[33] Competition and Markets Authority, 'Provisional findings report', September 2020, p. 700, paragraphs 10.71 and 10.91.
[34] Competition and Markets Authority, 'Provisional findings report', September 2020, p. 691, paragraph 10.63.
[35] Competition and Markets Authority, 'Provisional findings report', September 2020, p. 700, paragraph 10.92.

Topic area	Section reference	Company response	Ofwat response
Gearing outperformance sharing mechanism	South East Water (Response to provisional findings p.12) Thames Water (Response to provisional findings p.5, paragraph 25)	South East Water request that the CMA recommends that a review is needed as to whether the application of the gearing outperformance sharing mechanism for 2020-25 is appropriate for the industry. Thames Water requests the CMA to recommend that the mechanism should not be applied in its current form to any company going forward.	The gearing outperformance sharing mechanism is part of the 2020-25 price control package for all companies that accepted their final determinations and chose not to ask for a reference to the CMA. Their determinations have not been referred to the CMA. These representations seek to persuade the CMA to go beyond its statutory role in this process. We consider it would be inappropriate for the CMA to make recommendations about the final 2020-25 price control packages for other water companies.
Overall balance of risk	Anglian Water (Response to provisional findings Chapter B paragraph 52) Bristol Water (Response to provisional findings, Paragraph 217-220, Table C2, paragraph 226) Northumbrian Water (Response to provisional findings, Section 8.2.2, paragraph 358)	All four disputing companies argue for the existence of asymmetric downside skew to expected returns in the CMA's provisional findings: • Anglian Water argues that the CMA's central case estimate of performance on totex and ODIs of -0.1% to -0.2% return on equity understates its probable losses, arguing instead for a figure of -0.4%. • Bristol Water argues that the CMA has not considered the impact of cost sharing rates on asymmetry and has made the negative skew in	The risk and return package proposed in the provisional findings is materially to the benefit of disputing companies compared with the package accepted by those companies that chose not to appeal their determinations and we maintain that companies are strongly incentivised to outperform their determination and strive to minimise the scope of any downside impacts. In its assessment of downside scenarios, we encourage the CMA to consider the scope available for companies to mitigate downside risks, this includes for example, dividend retention, equity injection and other business and regulatory mitigation measures available to companies. This includes, for example, revisiting expenditure plans and requesting us to defer in period ODI adjustments that exceed 1% RoRE. This means that downside scenarios for financial ratios such as Adjusted Interest Cover Ratio (AICR) are likely to be overstated. In addition, careful interpretation is required when using standard credit metric thresholds for assessing the impact of downside scenarios (for example the investment grade threshold of 1.1x on AICR for Moody's). This is because, in a downside scenario, ratings agencies provide a rounded assessment of the company's prospects, taking into account the reasons for the downside performance, and management plans to restore financial performance. It is therefore possible, in a downside scenario, for a company to

Topic area	Section reference	Company response	Ofwat response
	Yorkshire water (Response to provisional findings, Section 6, paragraphs 6.4.1 – 6.4.4). Also Economic Insight Appendix: 'Financeability of the notionally efficient firm: a bottom up analysis'	ODIs worse with its intervention. • Northumbrian Water estimates that its expected return on equity is 15 to 66bps lower than the provisional allowed return due to its forecast performance on totex and ODIs. • Yorkshire Water cites analysis from Economic Insight which finds that expected performance of the efficient firm on totex and ODIs is likely to give rise to an expected return on equity 110bps lower than the CMA's provisional allowed return.	retain investment grade ratings, even if credit ratios temporarily fall below the target ranges for investment grade ratings.
ODI skew	Anglian Water (Response to provisional findings Chapter B, paragraph 52, Chapter G, paragraph 338) Bristol Water (Response to provisional findings, Section 20, pp. 49 –	All four disputing companies say that the CMA has underestimated the extent of the expected negative ODI payments resulting from the outcomes package and provide alternative estimates showing an expectation of greater net penalties.	We consider the estimates of ODI skew produced by companies to be highly unreliable and biased. Anglian Water's model is simply based on calculating the ODI payments at the level of the performance it considers it will achieve. This rests on the assumption that the CMA has been too challenging in its provisional finding of performance commitment levels. It is largely unrelated to the impact of asymmetric ODI rates. The remaining companies provide more detailed Monte Carlo analysis. As with Anglian Water, Northumbrian Water and Yorkshire Water embed an assumption that the performance commitment levels are in general too stretching. Bristol Water's model assumes that most performance

Topic area	Section reference	Company response	Ofwat response
	50, paragraph 224 – 229, , Annex 2, pp. 73-77 paragraph 1-10,) Northumbrian Water (Response to provisional findings, Section 8.2.2, paragraph 358, p. 73, Section 8.2.3, paragraph 365, p. 75) Yorkshire Water (Response to provisional findings, Section 2.4, paragraph 2.4.1 b), p. 16; Section 2.4; paragraph 2.4.9 – 2.4.15; pp. 19-20 ; Section 6.4 pp. 57-58; Annex 1, p. 7)		commitment levels (except for PCC) equal the P50 outcome, but utilises the company's own estimates of P10 and P90. We think the P10 and P90 estimates are not reliable estimates of efficient performance. Moreover, these Monte Carlo models assume a fairly symmetrical distribution of performance (in the case of Northumbrian Water and Yorkshire Water) or downward skew in performance (in the case of Bristol Water). As our response to the provisional findings shows, this is incorrect – instead there is a positive skew in outcomes. We comment further in Annex 3. PwC have also provided analysis on expected returns, including on ODI payments.

Table 2.2: Our response to new issues raised by Bristol Water on the CMA's company specific adjustment

Topic area	Section reference	Company response	Ofwat response
Company-specific adjustment: embedded debt	Response to provisional findings, Section 11 (Embedded debt) pp. 17-21	Bristol Water argues there is evidence supporting a small company premium higher than iBoxx + 10bps, citing: • PwC (2014)[36] analysis which Bristol Water purported to show that the spread of WoC bonds above WaSCs was above 30bps. • PwC (2014) analysis of bank debt costs suggesting the spread of WoC bank debt above the WaSc equivalent was 20-40 basis points. • KPMG analysis featuring a selection of large and small WoC bonds (nominal and index-linked). The company claims these WoC bonds were issued on average at a premium of 22bps above the iBoxx A/BBB allowance • Bristol Water argues the CMA should dismiss Europe Economics' analysis of spread-to-benchmark gilt	PwC's finding of an average premium of 30bps comparing small WoC to WaSC bonds is based on just 3 small WoC bonds –this is too small a sample and does not incorporate Artesian borrowing, which dominates small WoC balance sheets and that of Bristol Water. In addition, there is doubt that PwC's and Europe Economics' analysis fairly reflects the reality of Bristol Water's effective Artesian borrowing costs. From Europe Economics' analysis, the average small company spread to benchmark gilt is in the range 170-183bps. PwC's report suggests a small WoC spread to benchmark gilt at issuance of 210bps on average when considering listed bonds. Yet Bristol Water's presentation to the CMA in its site visit of 12 June stated an average spread to benchmark gilt of 70-80bps for its Artesian borrowing at issuance – much lower than the PwC or EE small company average. While we note PwC's finding on bank debt, this type of debt does not account for the majority of company financing. In particular, the iBoxx A/BBB constituents are bonds not bank loans, so applying the 20-40bps uplift to the iBoxx yield would be an error of conflation. We do not consider that large WoCs should form part of the dataset used to estimate the small company premium. These companies have been able to regularly issue listed bonds and PwC (2014) found little evidence to suggest that they have a higher cost of embedded debt than the WaSCs. We also have concerns with the approach used by Bristol Water to compare index-linked bond yields to the nominal iBoxx A/BBB yield. The company uses breakeven inflation in gilts to derive a nominal coupon from the real coupon. However, liquidity premia in index-linked gilt yields may mean that breakeven inflation is a distorted measure of true inflation expectations amongst investors.

[36] PwC, 'Company specific adjustments to the WACC' A report prepared for Ofwat,' August 2014.

Topic area	Section reference	Company response	Ofwat response
		finding a small company premium of 10bps, as this analysis does not control for credit rating.	Finally, we note that Europe Economics' finding of a 10bps small company embedded debt premium to the large company benchmark is consistent with the current CMA allowance (large company benchmark + 10bps). It does not control for credit rating, but it does control for timing and tenor-at-issuance. We question the extent to which it is possible to control for all three without descending to riskily small sample sizes.
Company-specific adjustment: new debt	Response to provisional findings, Section 12 (New debt) pp. 21-32	Bristol Water queries the CMA's finding that recent issuance suggests it is able to outperform the CMA's proposed cost of new debt benchmark (the iBoxx A/BBB), arguing that that the appropriate comparison should be to a benchmark that has a higher credit rating and longer tenor.	We dispute that Bristol Water's Baa1 credit rating at the time of issuing its Sun Life loan (25/05/2018) was misaligned with the iBoxx A/BBB 10+ non-financials weighted average credit rating. It has been argued by companies that the average rating of this index is Baa1,[37] and this is also the finding from our analysis. We submit that a simple way of comparing Bristol Water's new debt issuance costs with the notional company, consistent with the CMA's notional benchmark from its provisional findings (i.e. the iBoxx A/BBB) is to use KPMG's constructed A/BBB iBoxx yield curves for Anglian Water.[38] Analysis of iBoxx data suggests that the iBoxx A/BBB had a weighted average of 21 years-to-maturity on the 25/05/2018 signing date of the Sun Life 10yr nominal loan, and yield of 3.27%. This suggests a spread of -66bps given the loan's coupon of 2.61%. The KPMG iBoxx yield curves suggest a yield difference on the day of issue between a 10 year iBoxx A/BBB bond and a 21 year one of 46bps. Subtracting this from the -66bps spread suggests that, if Bristol Water had chosen to issue at a tenor consistent with the iBoxx A/BBB (21 years) it would have achieved a spread of -19bps. This is significantly below the CMA's assumed benchmark of iBoxx A/BBB + 10bps for embedded debt, and demonstrates that Bristol Water would not require a small company premium for new debt issuance if it were to receive an allowance based on the iBoxx A/BBB.

[37] For instance, Southern Water, https://beta.southernwater.co.uk/media/2743/securing-long-term-resilience.pdf, p. 9.
[38] SOC519_AW_KPMG Embedded debt databook REDACTED.xlsx, tab 'iBoxx yield curves from R'.

Topic area	Section reference	Company response	Ofwat response
			We note that this result is broadly similar if using Bank of England nominal yield curve data to infer 21 year borrowing costs. Under these assumptions, the spread to iBoxx A/BBB for 21 year bank debt would be -24bps.
Company-specific adjustment: embedded debt (RCFs)	Response to provisional findings, Section 12 (New debt) pp. 30-31	Bristol Water suggests that the revolving credit facilities (RCFs) expose it to refinancing risk and so cannot be used for financing the RCV.	We interpret Bristol as arguing that RCF costs should not be used to estimate the company's actual financing costs for the purpose of setting a regulatory allowance. RCFs are widely used in the water sector as part of companies' financing mix. Though used for liquidity purposes as stated by Bristol Water they can also be used to manage the cost of carry by allowing companies to match drawdown of debt to the relevant amount required for investment in a given period and then subsequently refinancing such debt through the longer term debt markets. These types of facility also provide companies with flexibility when they access the longer term debt markets. The shorter duration of these facilities does not in itself imply undue refinancing risk when used with longer-term financing as part of an overall financing strategy which seeks to limit the amount of debt falling due in any given year.
Company-specific adjustment: issuance and liquidity costs	Response to provisional findings, Section 12 (New debt) p. 30	Bristol Water compares its 16bp fees on its £50m 10 year loan with ING with the 10bps assumed by the CMA for provisional findings.	Bristol Water's discussion suggests that, amortised over the 20 year notional tenor chosen by the CMA, fees on the ING loan would be 8bps – within the 10bps allowance for provisional determinations. The allowance for issuance and liquidity costs allowed in our determination has not been a contentious issue. We therefore submit that the CMA should apply caution before assuming a small company premium in issuance and liquidity fees.
Company-specific adjustment: embedded to new debt ratio	Response to provisional findings, Section 13 (Embedded to new debt ratio) pp. 32-33	Bristol Water argues that an assumed share of 5% new debt is appropriate for the notional small company structure, citing: • 'Lumpy' debt profiles due to inability to time investment or refinancing favourably.	'Lumpy' investment profiles do not necessarily imply 'lumpy' debt issuance profiles. Companies are capable of financing using a range of maturities which can achieve a smoother profile of new debt share over time. Bristol Water's recent debt issuance shows that the company is capable of cost-effectively issuing small amounts of debt at shorter tenors to achieve this. We suggest therefore that this is not an issue which warrants making a bespoke assumption for.

Topic area	Section reference	Company response	Ofwat response
		• Bristol Water's low enhancement totex as a share of total totex • Higher RCV growth in WaSCs.	Individual company circumstances should not directly inform notional small company considerations. This is as the gap between the allowed cost of embedded and new debt would otherwise powerfully distort incentives to invest efficiently for the long-term, to the detriment of customers. We do not agree that WaSCs currently have higher RCV growth than small WoCs or that historically higher growth justifies a bespoke assumption for small companies. Comparing these two groupings based on PR19 final determinations, nominal WaSC RCV was scheduled to increase by 16.8% over 2020-25, while the equivalent figure for small WoCs was 36.6%.[39] We expect strong RCV growth for WoCs will continue due to planned measures to improve drought resilience and reduce abstraction for environmental reasons – these measures will grow the wholesale water RCV.
Company-specific adjustment: cost of equity	Response to provisional findings, Section 14 (Small company premium (CSA) - equity) pp. 34-37	The majority of arguments are repeated from earlier submissions. The company suggests the CMA has not acknowledged its evidence on RoRE ODI cost and financing skew.	We have previously shared with the CMA our assessment of Bristol Water's case for a small company premium on the cost of equity, though without addressing the RoRE skew issue.[40] RoRE risk ranges reflect company-specific factors and so are of limited use in assessing differences between WaSCs and WoCs in terms of systematic risk exposure. The risk ranges also reflect company and regulatory assumptions. The CMA rejected PwC's RoRE evidence for this reason in its redetermination of Bristol's price control in 2015 – the same considerations are relevant in the current appeal. While continuing to claim that a small RCV drives 'thin margins', Bristol Water is selective in its use of evidence. For instance the retail margin increases the base equity RoRE for smaller companies because the retail margin is larger as a proportion of regulatory equity than for water and sewerage companies.

[39] Includes SES Water, South Staffs, Portsmouth.
[40] Ofwat, 'Response to Bristol Water's 27 May submission to the CMA', June 2020.

A1 Using actual debt costs to derive a notional allowance for embedded debt

A1.1 This annex provides a high-level summary of a possible approach to estimating a reasonable allowance for the cost of embedded debt for an efficiently-financed notional company over 2020-25. This approach is based on the cost of debt reported by companies in their audited 2020 Annual Performance Reports. We adjust this for debt that is due to mature in 2020-25. As the analysis is underpinned by each company's own audited information, the CMA can have confidence that the underlying data reflects the circumstances of each company. More detail is available in the accompanying technical appendix to this document.[41]

Methodology

A1.2 Our analysis draws on the audited 2020 annual performance reports. We adjust the actual embedded debt interest cost and total borrowings position on 31 March 2020 for outstanding debt due to mature over 2020-25.

A1.3 We calculate the evolving weighted-average nominal interest rate for embedded debt for each company by reflecting the removed interest cost and principal of maturing debt in the updated weighted average nominal interest rate for each year.

A1.4 We triangulate our results using two sources of granular debt data to inform our calculations of debt falling due:

- **2018 Business plan submissions:** Granular data on embedded debt instruments as at March 2018 submitted by companies as part of their PR19 business plan (Table App20). We have supplemented this data with details for instruments issued in the April 2018 to March 2020 period which we identified.
- **Listed bond data:** Data on outstanding listed bonds collated by KMPG for Anglian Water using the Refinitiv Eikon financial data terminal.

[41] Ofwat, 'Technical Appendix: Using actual debt costs to derive a notional allowance for embedded debt', November 2020.

A1.5 We focus on two cuts of the results data which we think are particularly informative:

- **WaSC simple average:** WaSCs account for 95% of March 2020 sector borrowings. The representative company for the sector is therefore WaSC-like and the notional allowance should be set accordingly.
- **Notional low/high range:** A simple average of WaSC borrowing costs will in practice overstate the appropriate notional allowance, as it will capture outlying data points – including the low yields achieved by South West Water and the impact on yields of companies that have carried out a financial restructuring with the result that gearing is well above the notional level. We propose a high/low range based on companies with non-securitised structures which have gearing close to the notional 60%. For the lower bound, we use an average of Severn Trent and United Utilities.[42] For the upper bound, we use an average of Wessex Water and Northumbrian Water.[43]

Key results and discussion

A1.6 Table A1.1 sets out our projection of average embedded debt costs over 2020-25. These projections are based on a simple average of the relevant companies' weighted-average nominal cost of debt in each year.

Table A1.1: Simple average notional company benchmarks derived from projected embedded debt costs

Companies	Data source for debt falling due	2020/21	2021/22	2022/23	2023/24	2024/25	Average 2020-25
WaSCs (All)	2018 BP submissions	4.07%	4.04%	4.04%	4.03%	4.08%	**4.05%**
	Listed bond data	4.07%	4.06%	4.05%	4.01%	3.99%	**4.04%**
Notional (low: SVE, UUW)	2018 BP submissions	3.42%	3.37%	3.35%	3.40%	3.38%	**3.38%**
	Listed bond data	3.42%	3.42%	3.41%	3.45%	3.39%	**3.42%**
	2018 BP submissions	4.13%	4.18%	4.20%	4.05%	4.09%	**4.13%**

[42] Severn Trent and United Utilities have March 2020 RCV gearing of 64.9% and 67.7%, respectively
[43] Wessex Water and Northumbrian Water have March 2020 RCV gearing of 66.2% and 67.2%, respectively

Companies	Data source for debt falling due	2020/21	2021/22	2022/23	2023/24	2024/25	Average 2020-25
Notional (high: NES, WSX)	Listed bond data	4.13%	4.13%	4.13%	3.96%	3.93%	**4.06%**

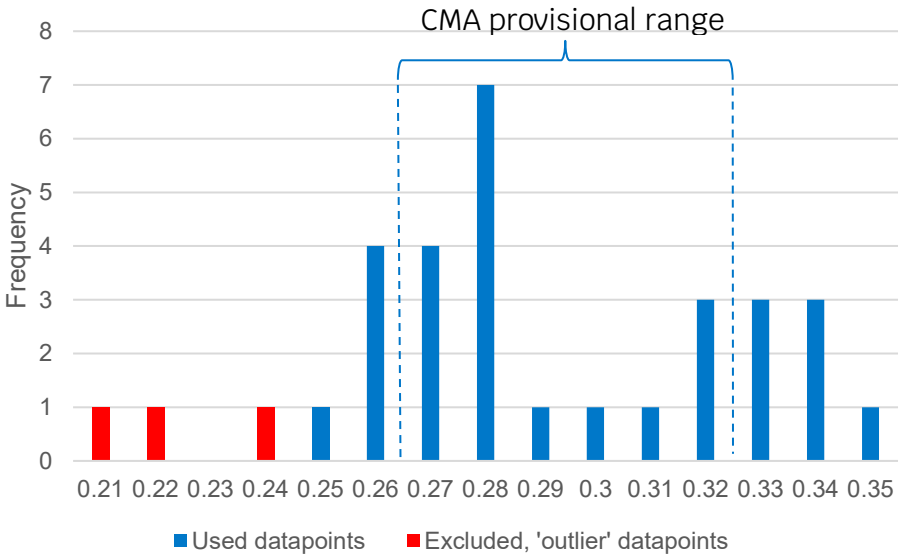
Source: Ofwat analysis of PR19 business plan and Refinitiv Eikon data

A1.7 Table A1.1 suggests that a benchmark formed using a simple average of WaSC costs would indicate a notional allowance of around 4.05%. The low-high range indicated by considering a smaller subset of non-securitised WaSCs closer to the 60% notional gearing gives a range of 3.39% to 4.13%.

A1.8 As can be observed by comparing the results for the two sources of granular debt data, the overall allowance is not particularly sensitive to the choice of source.

A2 Cost of equity issues

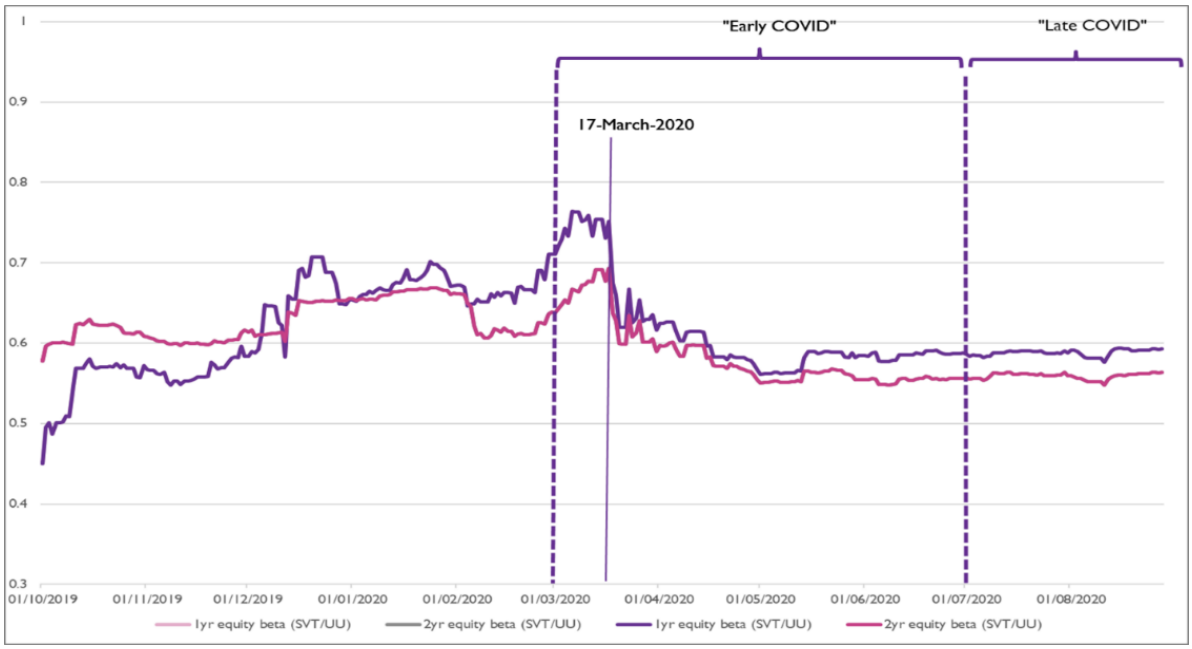
Figure A2.1: Frequency plot of CMA unlevered beta results for Severn Trent and United Utilities, June 2005 – June 2020



Source: Ofwat analysis of CMA provisional findings

A2.1 Figure A2.1 shows that the modal observation is an unlevered beta of 0.28, and that there is generally significantly more support for an unlevered beta point estimate taken from the lower end of the CMA's overall 0.27-0.32 provisional range.

Figure A2.2: Recent evolution of 1-year and 2-year raw equity betas



Source: Europe Economics, 'Comments on Water Company and Third Party Submissions' November 2020

A2.2 Figure A2.2 shows that the 'Early COVID' date range which AGRF Ltd. suggests ought to be removed from the sample used to estimate beta includes a significant amount of data which closely resembles the 'Late COVID' data. 17 March is flagged for context as the day following the PM's announcement (on 16 March) that everyone in the UK should avoid "non-essential" travel and contact with others. This was widely interpreted as signalling an imminent lockdown.

A3 Estimates of expected ODI payments

A3.1 All four disputing companies say that the CMA has underestimated the extent of the skew resulting from the outcomes package, and provide alternative estimates showing an expectation of greater net penalties. Here we provide further explanation of why we consider these models to be unreliable.

Anglian Water

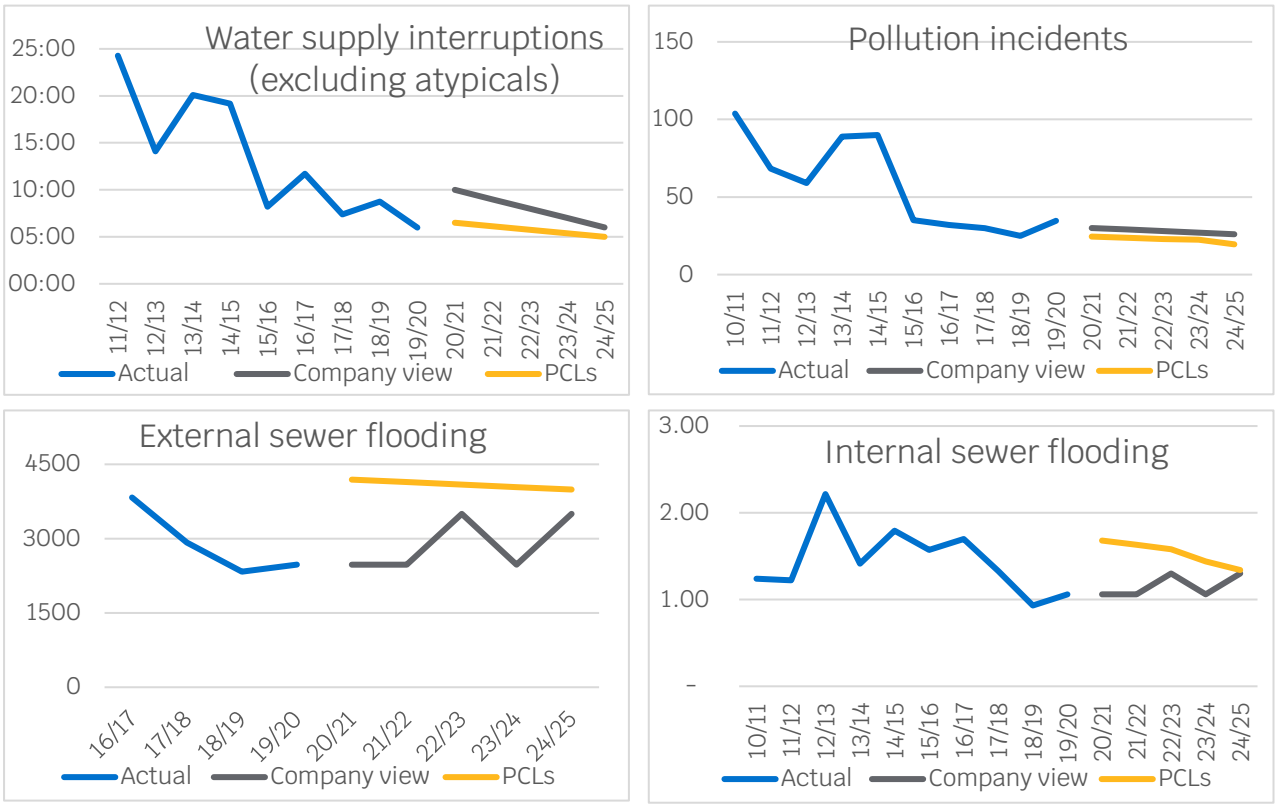
A3.2 Anglian Water estimates a loss of around 0.4% of RoRE (or £70.7 million) across AMP7 based on expert judgement on possible improvements permitted by the provisional expenditure allowances, the impact of Covid-19 and past experience of the impact of extreme weather events on performance. It is largely unrelated to the asymmetry of ODI rates. Rather, it is based on its assessment of its most likely performance relative to the PCL and the ODI underperformance and outperformance payments it would get if it hit those levels. It therefore rests on the assumption that the PCLs set in the CMA's provisional findings are generally too challenging. We do not consider these assumptions reflect an efficient company.

A3.3 Anglian Water provided its assumptions in a spreadsheet. In figure A3.1 we have provided examples of performance commitments where the company expectations are at odds with the improving trend since 2010. For water supply interruptions we have removed major one off events from the historical and forecast data to help show the underlying trend.[44] This shows that Anglian

[44] We do not consider it is correct to assume that external factors will lead to significantly higher water supply interruptions for efficient companies when modelling a P50. We note that six companies (Northumbrian Water, United Utilities, Wessex Water, Yorkshire Water, Portsmouth Water and South Staffs Water) had no year on year increase in average interruptions that was more than four minutes for the data we have available (2016-20). This period included the freeze thaw event which was not a typical event. Anglian Water assumed that it would have an incident that would add 8 minutes in 2023-24. The event in Leighton Buzzard in 2019-20 (for which it apologised for its failure) added 12 minutes and 40 seconds to performance. In any case it is clear that the underlying trend that Anglian Water have estimated is not in line with the historical trend, whether or not atypical events are assumed to occur.

Water's forecasts are biased and overstate expected underperformance and understate expected outperformance.

Figure A3.1: Anglian Water expected performance compared to historical performance



Water supply interruptions excludes Anglian Water's assumption of a major incident in 2023-24. We have used Anglian Water's assessment of water supply interruption performance in 2019-20 of 5:59 without the "one-off" event.[45] Historical performance taken from Anglian Water response to RFI007 except for external sewer flooding which is from APR shadow reporting. All data displayed back to 2010 where available.

A3.4 The biases present in Anglian Water's forecasts are for example:

- 2019-20 was somewhat wet and performance of wastewater metrics (pollution incidents, external sewer flooding and internal sewer flooding) reflected this atypical year. Anglian Water has assumed that this atypically poor performance is the appropriate starting point from which to estimate performance in the 2020-25 period for sewer flooding.
- Furthermore it has assumed that two out of five years in 2020-25 will have extreme weather increasing flooding further. It is inappropriate to not only use

[45] Anglian Water, Annual Performance Report 2020, July 2020, p. 81.

the higher level in 2019-20 (affected by the weather) as a starting point but also assume that extreme weather will make performance worse than this.

- It also says it has included the impact of Covid-19. We think this is inappropriate. As the CMA notes, the best mechanism for taking direct account of impacts of COVID-19 is for Ofwat to consider these as part of an industry-wide process'.[46]

A3.5 We consider the historical trends indicate that Anglian Water can meet all of its performance commitments and are likely to outperform assumptions on sewer flooding where it is industry leading. We expect it will earn positive net ODIs in the 2020-25 period if the performance commitments set in the provisional findings are left unchanged. That companies can be expected to earn outperformance from areas where they lead the sector is appropriate and provides incentives for all companies to invest for the long term.

Northumbrian Water

A3.6 Northumbrian Water states it expects a loss of between 0.15% and 0.30% of RORE in each year of the price control. However, the spreadsheet it supplied showed a loss of less than 0.15% in each year, which is similar to its estimate of 0.14% it provided in its statement of case[47]. We are unclear as to the reason for suggesting a higher mean expected loss than in its statement of case.

A3.7 Northumbrian Water's model is based on an assumption that outcomes are distributed symmetrically, with the standard deviations based on their data. This contradicts the evidence we provided in our response to the CMA's Provisional Findings which shows an upward skew.

A3.8 The model also assumes the PCLs are too challenging. It uses the P50 as its business plan proposals instead of the PCL. The results are heavily driven by its assumption that it cannot catch up with other companies on unplanned outage, reflected in an expected mean significantly above the performance commitment level. This assumption does not reflect an efficient company. Moreover, it has not taken account of the CMA's proposed deadband on unplanned outage (and for mains repairs it assumes that the deadband is both for underperformance

[46] CMA, 'Provisional findings', September 2020, pp. 95-6.
[47] Northumbrian Water, 'Statement of Case', April 2020, p. 193.

and outperformance, rather than just underperformance). Our analysis suggests that the corrected model returns results that have an expected positive value excluding unplanned outage.

Bristol Water

A3.9 Bristol Water's Monte Carlo model estimates a loss of £1.3m p.a. (around 0.5% of RORE) on the median basis. We assume this is based on the model used in previous submissions.

A3.10 There is little evidence that the individual assumptions made in that model (which are based on its own past performance) reflect an efficient company in the 2020-25 period. It claims the assumptions are based on expert judgement and historical observations, but provides little reasoning. It is also based on a downward skew in performance. This contradicts the evidence we provided in our response to the CMA's Provisional Findings which shows an upward skew.

A3.11 Moreover, Bristol Water itself chose not to use its understanding of covariance for its analysis of the overall risk and reward analysis in its business plan.[48] Instead it estimated the risk by summing the individual P10s (i.e. the "additive approach").This suggests it finds its own Monte Carlo analysis to be unreliable.

Yorkshire Water

A3.12 Yorkshire Water refers to analysis by Economic Insight submitted in their statement of case which estimates the expected RoRE from ODIs to be -1.1%. This model is based on a Monte Carlo model, also submitted in the PR19 period.

A3.13 We have a number of concerns with this model and its application for this purpose. The model is based on the industry performance on only the first two years of PR14. It assigns PCs to each of the PR19 price controls and found the percentage outperformance and underperformance. For most performance commitments, it uses a triangular distribution with its view of the most likely outcome and the minimum and maximum values are aligned to the PCs assigned to the relevant price control. For four PCs (leakage, mains repairs, per

[48] Bristol Water, 'Statement of Case', April 2020 p. 245, paragraph 33.

capita consumption and external sewer flooding) it has defined mode, minimum and maximum based on expert judgment, but did not provide full details.

A3.14 These parameters chosen in the model are unlikely to accord with an efficient company as they embed an assumption that the PCLs are too challenging. Moreover, there is no indication that it assumed any correlations between performance commitments. Furthermore, using maximum and minimum values puts significant weight on individual results which can lead to atypical results.[49] The model is also based on only two years' data.

[49] An example of how percentage changes can lead to atypical results is United Utilities PR14 PC Contribution to rivers improved. This measures the cumulative length of rivers it would improve over the five year period. The PCL was 6.6km in 2016-17 increasing to 159.5km in 2019-20. It delivered early, improving 82.6km by 2016-17, but by 2019-20 it simply met the PCL and was no longer outperforming. The 1151% outperformance in 2016-17 does not reflect a reliable data point of how companies can outperform performance commitments. It is the result of how this particular performance commitment was specified. In the analysis we provided to the CMA in our response to the provisional findings we considered the p10 to p90 range that excludes such outliers.

A4 Modelling expected ODI returns

Background

A4.1 In our response to the CMA's provisional findings, we showed evidence of a positive skew in performance distribution. Specifically, we presented evidence of companies' outcomes performance over the 2015-20 period. We looked at the percentage difference between companies' outturn service performance and their PR14 performance commitment levels (PCLs). We showed that mean performance is above 0% and greater than median (P50) performance. [50]

A4.2 In this annex, we extend the analysis by applying the P10, mean and P90 performance from the 2015-20 distribution to disputing companies' PR19 ODI packages. This allows us to estimate the ODI returns they could earn in PR19.

A4.3 Our analysis suggests that the positive skew in the PR14 performance distribution means that expected PR19 ODI returns are positive for each company. The extent of outperformance ranges between 0.05% and 0.37% of RoRE. This corrects for the fact that the performance commitment levels for some PCs were more challenging level in PR19.

Baseline approach

A4.4 We begin by calculating P10, mean and P90 performance from the 2015-20 performance distribution. As in our response to the CMA's provisional findings, we consider the percentage difference between companies' outturn service performance and their PR14 performance commitment levels (PCLs) in each year, and then aggregate this data across all performance commitments and all companies to calculate the sector distribution. Our analysis includes all numerical PR14 performance commitments (i.e. performance commitments that can be one of a range of non-zero numerical values so excluding, for example, some scheme specific PCs and other pass/fail PCs).

[50] See Annex 2 of our submission "Risk and return – response to CMA provisional findings"

A4.5 Table A4.1 shows the P10, mean and P90 points of this distribution.[51] It shows on average, companies outperformed their PCL by 5.2%. The P50 was also slightly positive at 0.6% in line with our finding that the PCLs set using the "current upper quartile" approach were not challenging enough.

Table A4.1: Key statistics from the 2015-20 performance distribution (all numerical PR14 performance commitments)

Percentile	Statistic	2015-20 performance (%)
90	P90	38.3%
80	P80	21.0%
70	P70	9.9%
60	P60	4.2%
50	P50	0.6%
40	P40	0.0%
30	P30	-1.5%
20	P20	-4.4%
10	P10	-14.8%
Average of observations between P10 and P90 levels[52]	Mean	5.2%

A4.6 We then apply the P10, mean and P90 performance levels from Table A1 to the disputing companies' PR19 ODIs in the CMA's provisional findings. By combining companies' standard and enhanced ODI rates with all other ODI parameters including collars, deadbands, caps and enhanced ODI thresholds, we are able to calculate projected ODI returns under the P10, mean and P90 performance levels for each individual PR19 ODI.

A4.7 We then add up these ODI returns for each disputing company to estimate company-level ODI returns using the P10, mean and P90 performance assumptions.

[51] This is also show in table A2.1 on page 121 of our submission "Risk and return – response to CMA provisional findings"

[52] As explained in our response to the CMA's provisional findings, we consider the mean average of values between P10 and P90 both because the dataset contains some extreme values and because extreme values are generally excluded by caps and collars.

Baseline findings

A4.8 Table A4.2 and table A4.3 below captures the total estimated ODI returns across 2020-25 for each disputing company, expressed in £m and approximate % RoRE terms respectively.

Table A4.2: Estimated ODI returns over 2020-25, by company (£m)

Company	P10 (£m)	Mean (£m)	P90 (£m)
Anglian	-182.82	38.06	196.47
Bristol	-13.98	3.73	7.82
Northumbrian	-183.52	46.71	243.14
Yorkshire	-317.62	63.00	375.18

Table A4.3: Estimated ODI returns over 2020-25, by company (approximate % RoRE)

Company	P10 (% RoRE)	Mean (% RoRE)	P90 (% RoRE)
Anglian	-1.15%	0.24%	1.24%
Bristol	-1.34%	0.36%	0.75%
Northumbrian	-2.24%	0.57%	2.97%
Yorkshire	-2.31%	0.46%	2.73%

A4.9 Overall, we find little evidence to support disputing companies' claims that expected ODI returns are negative. Across all four companies, we find that net ODI payments under the mean performance scenario are positive. This simply reflects that mean performance across the 2015-20 distribution is positive. More importantly, we find that for three of the disputing companies, the extent of the positive ODI returns in the P90 performance scenario exceed the negative ODI returns in the P10 scenario. This suggests that the positive skew of the 2015-20 performance distribution outweighs any negative asymmetries in PR19 ODI rates (including the use of underperformance-only ODIs).

A4.10 For Bristol Water, we find that there is significantly less scope for positive ODI returns in the P90 performance scenario. This result is primarily driven by relatively tight outperformance caps applied to the leakage (and per capita

consumption) ODIs for this company. To demonstrate this, we undertake the same analysis, but with all outperformance caps removed from companies' PR19 leakage ODIs. This does not affect the P10 or mean estimates for any company, but will affect the P90. The results, presented in Table A4.4 and A4.5 below, show substantially increased P90 returns for Anglian Water and Bristol Water. Notably, we also find that Bristol Water's P90 returns become greater than its P10 returns in absolute terms, reversing our finding from Table A4.2 and Table A4.3. It has little or no effect for Northumbrian Water and Yorkshire Water.

Table A4.4: Estimated ODI returns over 2020-25, by company (£m) – with all PR19 leakage ODI caps removed

Company	P10 (£m)	Mean (£m)	P90 (£m)
Anglian	-182.82	38.06	253.31
Bristol	-13.98	3.73	16.31
Northumbrian	-183.52	46.71	249.35
Yorkshire	-317.62	63.00	375.18

Table A4.5: Estimated ODI returns over 2020-25, by company (approximate % RoRE) – with all PR19 leakage ODI caps removed

Company	P10 (% RoRE)	Mean (% RoRE)	P90 (% RoRE)
Anglian	-1.15%	0.24%	1.59%
Bristol	-1.34%	0.36%	1.57%
Northumbrian	-2.24%	0.57%	3.04%
Yorkshire	-2.31%	0.46%	2.73%

Refining estimate of mean performance

A4.11 We have further refined our analysis to estimate of mean PR19 ODI returns. Rather than applying the mean 2015-20 performance level to PR19 ODIs, we instead calculate implied PR19 ODI returns under each decile of the 2015-20 performance distribution (from P10 to P90). The deciles of the 2015-20 performance distribution are taken from Table A1 above. We then calculate the simple average of these decile-based returns (effectively giving all deciles equal

weight) to identify an approximate mean PR19 ODI return. Table A4.6 captures our estimates of the mean PR19 ODI return for each company. It shows the mean ODI returns remain consistently positive (even with the leakage caps in place). This suggests that the significant positive skew in the PR14 performance distribution means that expected PR19 ODI returns are positive.

Table A4.6: Mean ODI returns over 2020-25, by company (£m and approximate % RoRE)

Company	Mean (£m)	Mean (% RoRE)
Anglian	16.85	0.11%
Bristol	0.49	0.05%
Northumbrian	30.33	0.37%
Yorkshire	40.19	0.29%

A4.12 We further refined the analysis to correct for the fact that at PR14 the PCLs set using the "current upper quartile" approach were not challenging enough, leading to a slightly positive P50 of 0.6% in the PR14 aggregated data shown above. We redid the analysis but impose that the P50=PCL for the PR14 common PCs, which shifts the distribution down for these performance commitments. [53]

A4.13 We find that this correction does not alter the positive expected ODI payments. This is shown in Table A4.7. The expected payments are reduced slightly but still range from 0.02% - 0.30%.

Table A4.7: Mean ODI returns over 2020-25 correcting for outperformance on common PCs, by company (£m and approximate % RoRE)

Company	Mean (£m)	Mean (% RoRE)
Anglian	12.26	0.08%
Bristol	0.21	0.02%
Northumbrian	24.65	0.30%

[53] We undertook a similar exercise in our response to the CMA's provisional findings to showed that the positive mean was not due to our slightly looser approach to setting performance commitments in PR14 - see table A2.1 on page 121 of our submission "Risk and return – response to CMA provisional findings".

Company	Mean (£m)	Mean (% RoRE)
Yorkshire	31.62	0.23%

Limitations of this analysis

A4.14 We consider that this analysis confirms that expected ODI payments will be positive in PR19. There are limitations to this analysis, although these tend to suggest these are underestimates.

A4.15 First, this analysis uses past outcomes performance to project future ODI performance. This includes inefficient performance, including for example management failures at Thames Water and Southern Water that led to enforcement action, as well as more isolated impacts of localised management failures (such as Anglian Water's water supply interruption failure in 2019-20). This means that the estimates are below what we would expect of an efficient company.

A4.16 Second, this analysis applies an additive approach to calculating ODI returns at the company level. In other words, we calculate P10 and P90 ODI returns for each individual ODI, and we then add up these individual ODI returns to generate company-level estimates. This approach assumes that companies simultaneously achieve P10 or P90 performance across all of their ODIs. This is unlikely, and does not take account of correlations in performance across related groups of ODIs. For these reasons, we consider that our results may overstate the range of potential ODI returns, but still demonstrate the positive skew of the ODI package.

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

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