

1 INTRODUCTION

- (1) We welcome the opportunity to set out our reply to the responses made to the CMA's Provisional Findings (PFs). In line with the CMA's clear direction this reply focuses on new evidence and arguments raised in those responses, including Ofwat's response to the PFs (**Ofwat's PFs Response**) in particular:
- in **Section 2** we provide some **commentary on the process of the redetermination**, including Ofwat's approach to the redetermination and its assertions that there are 'fundamental errors' in the CMA's PFs and that the PFs represent a significant departure from regulatory precedent. In **Annex 3** we provide a comparison with recent regulatory precedent in support of some of our conclusions. We also address the misleading presentation of the impact of the PFs on customer bills;
 - in **Section 3** we respond to Ofwat and other parties' key points in relation to **risk and return**, focusing on Ofwat's arguments against 'aiming up', selecting a point estimate in relation to the cost of equity and the cost of embedded debt allowance in the PFs. We also provide more detailed comments on the relevance of the CMA's redetermination for NERL and each of the individual parameters in **Annex 1**. For completeness we also provide a table in **Annex 2** which provides references to where the other points in Ofwat's PFs Response on WACC have been addressed in past submissions; and
 - in **Section 4** we respond to Ofwat's and other parties' key points in relation to **costs and outcomes** focusing on Ofwat's arguments about: the use of 2019/20 data and the base cost models; the CMA's provisional allowance for our Industrial Emissions Directive (IED) compliance costs; the CMA's approach to allowing additional costs to deliver the reduction in leakage; the CMA's provisional allowance of funding for our Essex Resilience Scheme; and the CMA's approach to setting allowances for growth.

2 COMMENTS ON THE PROCESS OF THE REDETERMINATION

- (2) When this redetermination process is complete, the regulator and companies will be working together to deliver critical services to customers. A redetermination is an important part of our regulatory regime and it is appropriate for all parties to comment on the PFs in an evidence-based way. We are pleased that the CMA has conducted the process transparently and fairly. This includes turning down the bilateral request for the Chairman of Ofwat to provide one on one feedback to the CMA Panel. We do not believe it is constructive or helpful that the process be conducted in this manner. In order for all stakeholders to have continued trust in the regulatory regime it is important for such approaches to be actively discouraged by the CMA in favour of its orderly and transparent evidence-based process.
- (3) Regarding the areas of challenge detailed in Ofwat's 'fundamental errors' paper, whilst these are for the CMA to assess in reaching its final redetermination, we do not consider that the limited examples highlighted by Ofwat demonstrate either procedural failings or flawed decision making on the part of the CMA. Notably, the issues flagged by Ofwat relate to areas where the CMA has reached a different conclusion to Ofwat and we see limited new evidence in these submissions.
- (4) In particular, we disagree with Ofwat's assertion that the CMA should give greater weight to Ofwat's evidence and arguments than those of the Disputing Companies given its statutory role to provide assistance and advice to the CMA.¹ We do not believe that this is the correct statutory interpretation of Section 14(5) WIA91. The CMA has granted numerous opportunities for Ofwat to provide that advice and assistance to the CMA and has clearly paid significant attention to Ofwat's FD19 and its written and oral submissions during the

¹ Ofwat PFs Response Fundamental Errors, paras. 1.51, 1.54.

redetermination process. Ofwat has also had the opportunity to provide the CMA with detailed teach-ins and workshops, some of which took place prior to the commencement of the redetermination. Other sessions were attended by all parties, but the Disputing Companies only attended as observers and were not allowed to put forward an alternative view.

- (5) Furthermore, the CMA has gone further than in previous determinations: allowing Ofwat a third submission to deal with 'new arguments' (which, in retrospect, would not be considered to be new); organising a specialist roundtable for the parties experts to discuss issues arising on the WACC; and allowing all parties to respond to the other parties responses to the PFs and making arrangements for additional hearings. We are grateful for the care that the CMA has taken to afford opportunities for the main parties and third parties to air all of the arguments. We are therefore bemused that Ofwat is seeking to argue that the CMA has not taken proper account of the evidence that it has adduced, and consider that the complaint is not one of not taking Ofwat's views into account, but rather that the CMA has not chosen to agree with every aspect of Ofwat's FD19.
- (6) Indeed, we note that Ofwat's criticisms that there is a deficiency in the CMA's rationale for its decisions, or the process it followed, tend to be in areas where Ofwat disagrees with the CMA's legitimate exercise of its regulatory judgement. Ofwat does not criticise the CMA's decision making, rationality or lack of evidence in areas where the CMA has agreed with Ofwat's positioning. In those areas where the CMA has reached a different decision to Ofwat, notably on the WACC, the PFs are detailed in their consideration of the evidence and robust in explaining the CMA's conclusions. They are certainly sufficient to pass the test of enabling Ofwat and the other main parties to respond effectively to the CMA's PFs.
- (7) We are confident that the CMA will be able to continue to run a fair and transparent process, listening and reviewing the evidence provided by all parties in a methodological way and always focussing on the right outcome for water customers.
- (8) Regarding the duration of the redetermination process, as the CMA is aware it has been our position that the CMA could, and should, reach its decision in time to allow its implementation into 2021/22 bills. We continue to believe that this would be the best outcome for customers.

2.1 FD19 CONTAINED MORE NOVELTY THAN THE CMA'S PFS

- (9) We do not agree with Ofwat's characterisation of some limited issues as novel departures from existing regulatory precedent.² In fact, on the contrary, the CMA's PFs represent a move back to regulatory precedent and consistency from novel features which Ofwat itself introduced in FD19, including on occasion without prior consultation.³ In Annex 3 we provide a table of examples that demonstrate that FD19 contained novel approaches across all the fundamental building blocks by examining several elements against previous recent regulatory precedent. Indeed, it should not be a surprise that Ofwat's FD19 was itself the most significant departure from regulatory precedent. The CMA is in the unmatched position of hearing from four appellants in this redetermination: this has never occurred in 30 years of independent economic regulation. In deciding to appeal to the CMA company boards are likely to pay very close attention to previous regulatory and CMA precedent on all matters as this is the only guide that boards have as to whether their arguments are likely to be accepted or not. Simply put, if Ofwat had not departed so materially and completely from regulatory precedent itself, then we would not be in this situation.
- (10) In any event, it is well accepted that in a redetermination the CMA places itself in the shoes of the regulator. The CMA exercises its discretion in the way that it considers is best calculated to meet the statutory duties and accords with the UK Government's strategic priorities and objectives. Ofwat's FD19 is a sensible starting point for that assessment, but the CMA is not bound by it, nor is it bound to place greater weight on Ofwat's submissions than those of the companies as Ofwat suggests.

² Ofwat PFs Response Fundamental Errors, paras. 1.28-1.30; 1.15.

³ For example Ofwat's change to the catch-up benchmark between DD19 and FD19: see NWL SoC Sections 5.4.3.3 and 5.4.3.5.

- (11) Precedent from past CMA determinations is informative, particularly in the context of ensuring compliance with the principles of best regulatory practice of transparent, consistent, proportionate and targeted interventions. However, as Ofwat acknowledges a decision reached in one sector does not necessarily provide a binding precedent for another, given that there may be a multitude of reasons why one panel reaches a different decision to another; for example because it is a different sector, the regulator in question has different duties or a different balance of duties or there has been new evidence or data coming to light which carries a greater weight.⁴ Regulation is not intended to be completely static and it is open to any regulator to reach a different conclusion, particularly in the context of a full redetermination on the merits. The CMA is entitled to reach different conclusions based on the thorough review of the evidence and facts, including new and updated information, placed before it.⁵

2.2 CUSTOMER BILLS ARE FALLING MATERIALLY UNDER THE PFS

- (12) We consider it important that information which goes into the public domain is accurate and informative for our customers and stakeholders, especially at a time when Covid-19 is increasing anxiety amongst our most vulnerable customers.⁶ It is simply neither correct nor responsible in that context for Ofwat to characterise the PFs as representing a further £1.9 billion in cost for all water customers,⁷ when in fact our customers will see a drop in bills of £80 (Northumbrian) or £33 (Essex & Suffolk) per annum, or £634m of benefit over the AMP.⁸ Unsurprisingly, Ofwat's characterisation has been widely adopted by the media without any of the clarification needed to place those numbers in the proper context.
- (13) Ofwat's statement about the cost to customers is dramatically overstated having been inflated by reference to companies which accepted FD19 and to whom the PFs do not apply. Similarly, the assertion by Citizen's Advice that the CMA's decision will cost customers £3.7bn is also misleading as it presumes the same WACC will be applied in the energy sector.⁹ This is an assumption too far, particularly given Ofgem's own clear statement that it considers the CMA's findings in this redetermination to be specific to the water sector.¹⁰
- (14) Equally, it does not seem reasonable to compare the current 2020/21 prices (or the FD19 WACC) that were set on the basis of Ofwat's flawed FD19 decisions with the revised prices or returns determined by the CMA that will replace FD19 in full across the whole of AMP 7. The correct approach is to compare the last agreed and accepted determination (the last year of AMP 6, 2019/20) with the CMAs PFs.
- (15) We provide this comparison in Figure 1 below. We also compare the bill changes under the PFs against other time periods and recent price changes in other competitive sectors of the economy. We would highlight to the CMA that:
- bills are falling by c.22% under the CMA's PFs: this is the largest price reduction across all of the companies in the sector and the largest price reduction in our history since privatisation;
 - under the PFs for a customer in our Northumbrian region receiving a combined service, the bill reduction from 2019/20 levels is £80 per year (£400 over 2020-25). For customers in our Essex and Suffolk region receiving a water service, the bill reduction is £33 per year (£165 over 2020-25);
 - the bill reduction under the PFs is greater than the significant reduction that we set out in our own business plan, which itself was the largest offered by any company in the sector; and

⁴ Ofwat Response Overall Stretch, para. 3.20. See also Ofgem's Submission on the PFs, para. 7.

⁵ Ofwat Response Overall Stretch, para. 3.5.

⁶ We understand that the CMA intervened to correct some of the erroneous figures that made their way into the public domain and are grateful to the CMA for doing so.

⁷ Ofwat PFs Response Overview, p. 3.

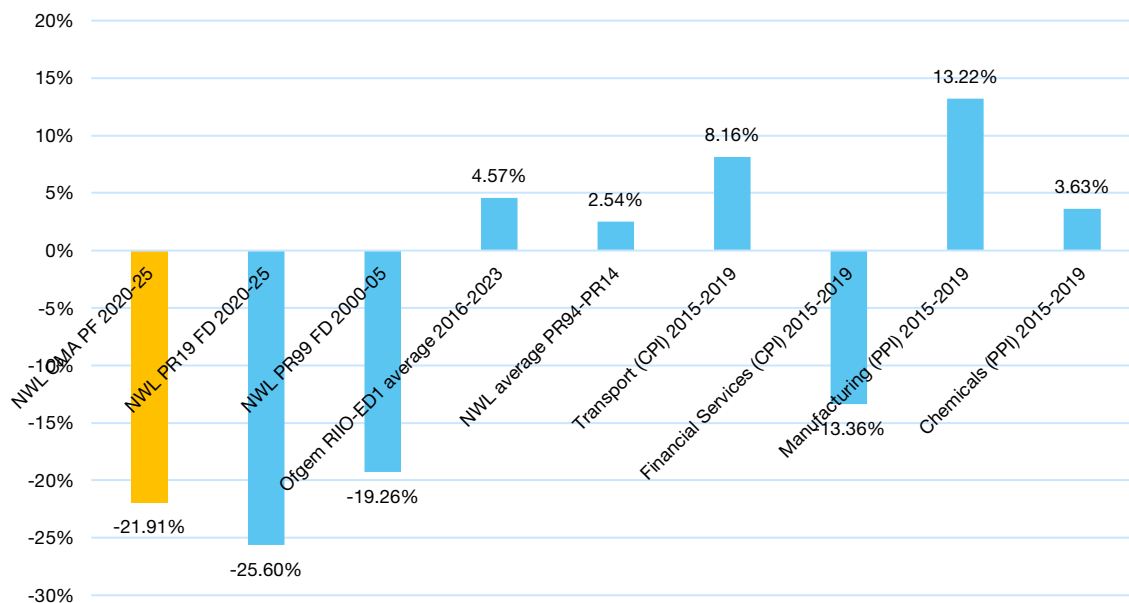
⁸ See Appendix 1: NWL Analysis of 2020-25 bills.

⁹ Citizens Advice Submission on the PFs, Section 1(c); Various articles, e.g. <https://www.wired-gov.net/wg/news.nsf/articles/Citizens+Advice+CMA+water+decision+could+cost+consumers+3.7bn+and+sets+dangerous+precedent+03112020104000>

¹⁰ Ofgem submission on the PFs, paras. 6-7.

- the bill reduction is materially greater than recent changes in prices across the four capital intensive sectors examined where competition provides a strong spur on efficiency.

Figure 1: Comparison of NWL and other sector bill changes



Source: Figure 42, SoC updated for CMA PFs

- (16) We reiterate that it is essential that the bill impacts on customers are considered correctly and presented reasonably.

3 RISK AND RETURN

- (17) We disagree with Ofwat’s arguments and analysis on the allowed return in its PFs Response.¹¹ Ofwat re-presents several arguments it has previously made on various cost of equity parameters which the CMA has already considered, alongside new expert reports which, in part, support the arguments that we have made, for example in relation to setting beta. Ofwat also argues that the CMA should not have ‘aimed up’ in setting the WACC. As we have demonstrated the CMA’s point estimate is closer to the midpoint of a reasonable range: in practice there has been limited ‘aiming up’.¹² Moreover, the CMA’s rationale for choosing the point estimate within the range is clear and well evidenced.¹³
- (18) Ofwat presents new analysis on the cost of debt which appears to deliberately confuse the balance sheet cross check with the index-led approach. It is partial and incorrect in concluding that the CMA’s approach would overfund the sector for its actual cost of debt.¹⁴ We correct Ofwat’s errors and show actual results which support the CMA’s provisional conclusions.
- (19) During this process we, the other Disputing Companies and non-appellant companies have argued that Ofwat made errors in setting the FD19 allowed return. Indeed, Ofwat’s cost of capital decision for FD19 is close to the bottom of the CMA’s reasonable range when a wider range of evidence is included,¹⁵ suggesting real room for movement. If WACC has been set incorrectly then it must be reset. That is precisely why the redetermination process exists and reflects a key focus of the financing duty. The focus must be on setting the appropriate return based on the evidence: this is a fundamental pillar on which the credibility of our regulatory system rests.

¹¹ Ofwat PFs Response, Risk and Return.

¹² NWL PFs Response, Section 7.

¹³ PFs, paras. 9.631-9.680.

¹⁴ Ofwat PFs Response, Risk and Return, para. 4.3.

¹⁵ NWL PFs Response, Section 7, Table 18.

- (20) We are a responsible company and put customers at the heart of our business, both in terms of planning and delivery of services. We invest both for the delivery of vital services and the future resilience of the system and are statutorily entitled to earn a reasonable return on that investment.¹⁶ As the CMA has itself acknowledged even in the context of the PFs, that return has fallen materially since the last price review in line with market evidence.¹⁷ In fact, absent Ofwat's FD19 in which the CMA has identified important errors, the CMA's PFs would be the lowest ever return set in a water price control determination since privatisation.
- (21) We do not consider it is appropriate for the CMA's determination of a reasonable return to be characterised by another regulator in the press as unjustified shareholder returns. This undermines the proposition that the UK has a stable regulatory regime, which could have a detrimental effect on investor sentiment. Equally, the focus of a CMA redetermination should be evidence and argument rather than sentiment: redeterminations are not referenda. Moreover, the WACC is arguably the most technical area in any redetermination. Both Ofwat and the CMA have argued that in such areas customer conversations should not be determinative. Similarly, we do not consider that the CMA's decision should be unduly influenced by the theoretical possibility of potential read across into other sectors.

3.1 SELECTING A POINT ESTIMATE FOR THE COST OF EQUITY

- (22) Ofwat's new evidence from its academic advisers Wright and Mason (**W&M**)¹⁸ appears more in line with our academic advisers, in terms of the correct approach to the calculation of beta, than both Ofwat and the CMA. We submitted an academic paper on beta alongside our PFs Response by Professor Gregory, Professor Harris and Dr Tharyan.¹⁹ Empirical analysis using the approach recommended by W&M in fact supports asset betas in line with or materially above the CMA's estimates, with the daily asset beta being 0.36.²⁰ This compares to the CMA's range of 0.27-0.32, Ofwat's point estimate of 0.29 and the CMA's point estimate of 0.31.
- (23) Ofwat and its advisers submit that the RFR estimate should be close to the ILG rate, based on the marginal investors in water being net lenders, rather than borrowers. However, under the zero beta CAPM, the RFR should be based upon the marginal investor in the market portfolio, not the identity of the marginal investor for the particular asset being priced.
- (24) Accepting the CMA's cost of equity ranges as given, we disagree with Ofwat's critique of the CMA's approach and rationale for aiming-up for three main reasons:
- it should not be controversial that there is asymmetry in the CMA's PFs, which should be priced into the WACC (if the asymmetry itself is not addressed). Therefore, the CMA's 10-20bp RORE downside (based on ODIs only) should be a floor to the CMA's aiming-up on the cost of equity;
 - we disagree with Ofwat/EE's claim that the parameter ranges are normally distributed and consider a uniform distribution assumption to be the most appropriate. However, even if a normal distribution assumption is correct, EE has materially underestimated the standard deviation, hence its incorrect conclusion that the 75th percentile is close to the mid-point; and
 - the CMA is not aiming up to incentivise new or more investment, as most of Ofwat's new material on aiming-up assumes, but simply to mitigate the risk of getting the cost of equity wrong because of the inherent estimation error.
- (25) Ofwat submits that the CMA's provisional allowed return is high compared to international precedents.²¹ It presents a figure from a Moody's report, which it uses to illustrate that the

¹⁶ S2(2A) WIA91.

¹⁷ PFs, para 9.682.

¹⁸ Wright & Mason Cost of capital considerations, 26 October 2020 (**W&M**).

¹⁹ PFREP003 'A Response to the CMA's Provisional Findings on Water and the Estimation of Beta', October 2020, Gregory A, Harris R, and Tharyan R (**Report on PFs Beta**).

²⁰ PFREP003 Report on PFs Beta

²¹ Risk and Return, para. 2.1 to 2.17

CMA's provisional allowed equity return is above the average for European electricity companies for 2020 – 2023.

- (26) Ofwat's sample also appears selective. For example, the average return on equity authorized by state public utility commissions in the US in the first half of 2020 ranged from 8.25% - 10.42% (nominal), with an average of 9.55%.²² In Canada, the return on equity for 2018 – 2020 was set at 8.5% for all utilities.²³ These are considerably higher than the CMA's provisional estimate of the cost of equity.
- (27) In addition, Ofwat's analysis does not take into account the following:
- Moody's chart excludes factors that would increase the overall allowed return, for example 'aiming up' in Ireland and the 'F factor' in Italy.²⁴ This was a footnote to Moody's exhibit, which Ofwat did not include in its submission;
 - comparability across the countries. It is necessary to consider differences in factors such as inflation and setting of the TMR. A bottom-up approach would be required to ensure comparability;
 - the figures in the Moody's report reflect its forecast of allowed equity returns based on draft/final decisions or expected movement in risk-free rates. There is therefore some judgement involved in the forecasts of these rates and on where regulators will likely land where final determinations have not yet been published; and
 - Ofwat should also take into account other aspects of the regulatory regime. For example; the approach to setting allowed costs and incentives. In Germany, for example, an efficiency factor is applied to historic controllable costs, but not on non-controllable costs which can be adjusted during the price control if required.²⁵ In comparison, Ofwat sets cost allowances ex-ante based on various cost models.

3.2 CONCEPTUAL APPROACH TO EMBEDDED DEBT

- (28) Ofwat's new analysis of the benchmark-led approach continues to confuse the balance sheet cross check, which is used to estimate the actual cost of debt across the industry, with the benchmark-led notional approach. The balance sheet cross-check and benchmark-led notional approach are separate exercises and should be treated as such – otherwise the benchmark-led approach collapses into setting the cost of debt based on the actual cost of debt for the sector, and the approach is no longer benchmark-led.
- (29) Ofwat's use of APR evidence to show that the CMA's embedded cost of debt allowance is too high is selective and misleading as APR data is not comparable to the regulatory allowance for embedded debt. Ofwat's own balance sheet cross-check evidences this (both the figures themselves including swaps and Ofwat's own acceptance that adjustments to reported numbers are required).
- (30) Overall Ofwat has misrepresented the CMA's PFs as over-funding the cost of embedded debt across the sector. The properly calibrated balance sheet cross check implies a cost of debt of 4.95% (14bps higher than the PF allowance for embedded debt costs) and is consistent with: (1) the equally weighted inverse trombone (4.95%); and (2) the range implied by the adjusted RCV-weighted approach (at least 4.95%) (see Figure 4 in Annex 1).
- (31) Ofwat's primary concern with the outperformance wedge evidence hinges on two bonds, with tenors which are much longer dated than the iBoxx average, outperforming the iBoxx. This is evidently a very small sample size upon which to draw conclusions. In fact taking into account the informational value of the full sample, both the KPMG and Ofwat analyses are consistent with the conclusion that there is no material Halo Effect, when rating and tenor are controlled for.

²² S&P Global, *Electric ROE Authorizations Drift Lower In H1'20 As Virus Worries Continue*, <https://www.spglobal.com/marketintelligence/en/news-insights/research/electric-roe-authorizations-drift-lower-in-h1-20-as-virus-worries-continue>

²³ Alberta Utilities Commission, <https://www.auc.ab.ca/Pages/rate-of-return.aspx>

²⁴ Moody's (2020), 'Lower returns hit key ratios, but regulatory consistency still supports credit quality', September. Exhibit 2.

²⁵ https://www.bundesnetzagentur.de/EN/Areas/Energy/Companies/GeneralInformationOnEnergyRegulation/IncentiveRegulation/Tools/IncentReg_Tools-node.html

- (32) Ofwat's RCV-weighted trailing average assumes the notional firm was not refinancing any debt pre 2010 and assumes no index linked debt for the notional company. When these assumptions are relaxed, the weighting approach does not materially differ to the simple average. Moreover, using sector wide actual RCV growth links the notional cost of debt too closely to actual data across the companies, creating arbitrary winners and losers that cannot be predicted ex ante and based on factors which cannot be controlled by the notional company.

3.3 GREEN RECOVERY

- (33) Ofwat notes our statements on green recovery and suggest this implies we have plenty of scope to advance investment.²⁶ The process for considering Green Recovery proposals has not yet begun and is still not entirely clear. As we set out in the letter Ofwat references, any new investments would need to be subject to a new price control and an assessment of their impact on the financeability of the business.²⁷ Moreover, some of the schemes identified in that letter have formed part of our CMA case in any event. It is disappointing that Ofwat has chosen to misrepresent our desire to support our customers and local communities through this difficult time to advance its case.

4 COSTS AND OUTCOMES

- (34) In relation to the allowed costs and service levels to be achieved, Ofwat largely agrees with the CMA's provisional decisions.²⁸ We addressed costs and service levels in our PFs Response and do not repeat those points here. Ofwat's submission provides very little in the way of new evidence but does make some additional arguments and suggestions as to how the PFs should be amended. In the following sections we respond in a concise and targeted way to those arguments where we consider the issues to be material.

4.1 THE USE OF 2019-20 DATA IN THE BASE COST MODELS

- (35) We still consider that analysis including the 2019-20 data in the base cost models provides useful insights for the CMA to consider.²⁹ It reinforces our view that the FD19 and PFs base cost allowances are too challenging as a consequence of not reflecting the latest cost information. It results in the level of challenge being applied being more demanding than a historical upper quartile.
- (36) Ofwat notes its view that the APR commentary "*suggests significant investments were brought forward*" from AMP 7 to meet future performance commitments and implies that this might invalidate the use of the 2019/20 data.³⁰ We do not think such a position is sustainable:
- the total brought forward transition totex for 2019/20 was £129m.³¹ This was only 1.4% of industry totex in 2019/20 and was much less than the £407m (17/18 prices) of transition totex allowed in PR14 for 14/15;³²
 - data for 2019/20 in no way seems to be atypical. 2019/20 costs are 0.7% lower than 2018/19 costs for water and are in line with the AMP6 average for wastewater;³³
 - even if companies have brought forward some investment, this is likely to be consistent with company behaviour in previous AMPs and may also occur in the final year of AMP 7. We have not seen any evidence to suggest that this creates a bias in the assessment

²⁶ Ofwat PFs Response, Risk and Return, para. 2.19.

²⁷ Northumbrian Water Letter to DEFRA on 'Green Economic Recovery – The Water Industry's role in building a resilient future'; 10 September 2020: "We have opportunities to accelerate investments from AMP8 in flood resilience, water supply resilience to water stressed areas, environmental protection, and securing water supply through innovative technologies. **This would require regulatory support to re-open the price control, bringing forward revenues to fund these schemes and we would also need to ensure that the overall package remains financeable and the Company can continue to meet its required credit rating in light of any additional financing that is required to deliver these projects.**" (emphasis added)

²⁸ Ofwat PFs Response, Costs and Outcomes.

²⁹ NWL PFs Response, Section 3.2.1; PFREP002 Oxera Report on 19/20 data

³⁰ Ofwat PFs Response Costs and Outcomes, para. 2.46.

³¹ SOC417 PR19 FD Securing Cost Efficiency Technical Appendix, p.149.

³² Ofwat FD14 Policy Chapter A4 – reconciling 2010-15 performance, p.74 https://www.ofwat.gov.uk/wp-content/uploads/2015/10/det_pr20141212legacy.pdf

³³ PFREP002 Oxera Report on 19/20 data, p.9.

of AMP 7 efficient costs. Instead, we consider it is appropriate to examine the full regulatory cycle.³⁴ We present further evidence of similar actions in 2014/15 to show that this is not a material and if anything there may have been more significant at the end of AMP 5; and

- Ofwat’s implication contradicts its own position that there is not a link between costs and performance and that therefore additional funding/investment is not required to deliver the improvements.³⁵ It cannot be simultaneously true that companies do not need to spend more to deliver service improvements and that companies have spent money during AMP 6 to do precisely that.

(37) As mentioned above, companies made similar comments in their 2014/15 APRs about bringing forward from AMP 6 into AMP 5 and about “reinvesting” some of the totex outperformance in the resilience of the network to improve service and ODI performance. These examples from a review of the WASCs reporting commentaries are set out in the table below.

Table 1: Examples of 2014/15 spend brought forward from AMP 6

Company	Extracts from company reports
Anglian ³⁶	<p><i>“We delivered significant cost efficiencies against our Final Determination over AMP5, enabling us to reinvest an additional £235 million to further support resilience and the protection of customer supply.”</i></p> <p><i>“Alongside our AMP5 programme, we also delivered a £57.0 million AMP6 Transition Programme. This early AMP6 spend has enabled us to mitigate the loss of efficiency resulting from the dip in activity from one AMP period to another, and reduces pressure on our supply chain caused by the stop-start approach experienced in previous AMP transition periods. By starting design work on our AMP6 schemes early, we enable construction through the summer months and ensure we deliver our early AMP6 outputs both efficiently and in line with our regulatory and customer commitments.”</i></p>
Northumbrian ³⁷	<p><i>“We also brought forward investment into 2014-15 for three additional AMP6 phosphorus removal schemes. Also, two AMP6 bathing water schemes (Saltburn and Seaham) were brought forward and are due for completion in 2015-16.”</i></p>
South West ³⁸	<p><i>“In preparation for the European Union’s revised Bathing Water Directive – which came into effect in 2015 – South West Water has already carried out an £18.9m programme of targeted improvements at key beaches around the region.”</i></p>
Thames ³⁹	<p><i>“We have generated capital efficiencies of circa £150 million in the last 5 years – the shareholders have reinvested these savings into our networks.”</i></p> <p><i>“We have brought forward a scheme from the regulatory period 2015-20 to mitigate the previous risk seen to London, and in Guildford we have specifically targeted leakage control to address the shortfall reported last year.”</i></p>
United Utilities ⁴⁰	<p><i>“Around £200 million of capital savings has been reinvested in projects that deliver benefits to customers or the environment.”</i></p>
Yorkshire ⁴¹	<p><i>“Over the AMP6 period a total of £2,141.5m of gross regulated capital expenditure associated with the delivery of the wholesale water and wastewater programmes has been invested including the early start spend of £15.2m in 2014/2015.”</i></p>

Source: NWL analysis of company reports

³⁴ This is consistent with the FD19 and PFs use of the last 5 years of data in the modelling to set the upper quartile efficiency benchmark. The selection of the most recent 5-year cycle provides the best guide to future expenditure requirements by removing the impact of any reprofiling of expenditure undertaken by companies.

³⁵ Ofwat PFs Response Costs and Outcomes, Section A5.

³⁶ Osprey Acquisitions Limited, 2015 Annual report, p. 33 <https://www.awg.com/siteassets/reports/oal-annual-report-march-2015.pdf>

³⁷ Northumbrian Water, APR 2014-15, p. 66 <https://www.nwg.co.uk/about-us/nwl/how-we-are-performing/annual-performance-report/>

³⁸ South West Water, Company Annual Performance Report and Regulatory Accounts, p.13 <https://www.southwestwater.co.uk/about-us/documents/Annual-reports/>

³⁹ Thames Water, Annual report 2014/15, pp. 7 and 23,

⁴⁰ United Utilities, 2015 Annual report, p. 8 <https://www.unitedutilities.com/corporate/investors/Reports-and-presentations/annual-reports/>

⁴¹ Yorkshire Water, APR 2019/20, p. 219 https://www.yorkshirewater.com/media/2584/29938_yw_annual_performance_report_2020_web.pdf

- (38) We think these examples show that the quotes included by Ofwat in its response to RFI019 are therefore not atypical and are part of the normal operation of the companies at the end of an AMP.
- (39) Ofwat raised concerns about the treatment of non-section 185 diversion costs in its PF response. In the analysis provided by Oxera they use the 2019/20 business plan forecasts for these costs to exclude them from the analysis which are a good proxy for what is a small area of expenditure.
- (40) Finally, we note that Ofwat says that its “*base allowances were calibrated against companies’ forecast of base costs in 2020-25*” and that its “*base allowance for companies was and remains reasonable, with 12 companies forecasting base costs below what we have allowed*”.⁴² As we have pointed out in our previous responses we do not think that such a calibration is appropriate or meaningful as:
- the FD19 approach to setting cost sharing rates incentivised low rather than efficient costs which undermines their use as a benchmark for comparison or calibration;⁴³
 - consistent with this incentive companies reduced the forecasts in their submissions much more significantly at PR19 (by 8% in water and 7% in wastewater) than they did at PR14 (a 1% rise in water and a 3% fall in wastewater);⁴⁴ and
 - the total base cost challenge in FD19 compared with the original business plans from the companies was significant, at 7.4% for water, and 9.1% for waste.⁴⁵
- (41) We therefore attach little weight to Ofwat’s arguments in this area as they are undermined by its own incentive and the evidence of stretch vs the original plans.

4.2 BASE COST MODELLING

- (42) In its response to the PFs, Anglian Water raises new arguments in relation to two issues that we respond to below:
- the use of average pumping head (APH) and booster pumping stations as cost drivers; and
 - the specification of the two integrated water models.

4.2.1 The use of average pumping head and booster pumping stations as cost drivers

- (43) As we have set out previously we disagree that APH is a better measure of topography related costs.⁴⁶
- (44) Responding to the first of the new arguments, we do not think that APH has higher data quality than booster pumping stations. Anglian states that:
- “two reported confidence grades for booster pumping stations have grade 4 accuracy (10%-25% accuracy), compared to one for distribution APH and none for aggregate APH.”⁴⁷*
- (45) We are unable to reconcile these assessments of the confidence grades. Ofwat’s August submission to the CMA shows a different picture as per the table replicated below.⁴⁸ Whilst it is true that two companies reported grade 4 accuracy for booster pumping stations, the confidence of the data is notably worse and none of the APH variables have fewer than two grade 4 assessments. Second, for APH, we are not aware of any aggregate reporting of APH – Anglian’s own analysis of APH calculates aggregate APH from its constituent parts⁴⁹ – we are therefore not aware of any confidence grades being reported for aggregate APH.

⁴² Ofwat, PFs Response Cost and Outcomes, para 2.47.

⁴³ SoC, Section 6.4.3.1

⁴⁴ NWL July Reply, Table 2.

⁴⁵ NWL Reply, Table 10.

⁴⁶ NWL July Reply, Base Costs Appendix REP2001, Section 2.1.1

⁴⁷ Anglian PFs Response, p.15, para 85

⁴⁸ Ofwat: Reference of the PR19 final determinations: Final submission to the CMA, August 2020 Appendix A1, page 42

⁴⁹ Anglian PF Response databook “PF020 AW provisional findings response botex data”

Table 2: Confidence grades for average pumping head and booster pumping stations as reported by companies

Company	Average pumping head				Number of booster pumping stations
	Water resources	Raw water distribution	Water treatment	Treated water distribution	
Anglian Water	C4	C4	D5	C3	B2
Northumbrian Water	A2	A2	A2	A2	B2
United Utilities	B4	BX	B4	B4	B2
Southern Water	B4	B4	C4	B4	B2
Severn Trent Water Ltd	C3	C3	C3	C3	A2
South West	A2	A2	B3	B3	B2
Thames Water	B2	B2	B2	B2	A4
Dŵr Cymru	B3	B3	B3	B3	B3
Wessex Water	C2	C2	C2	C2	A1
Yorkshire Water	B3	B3	B3	B3	A1
Affinity Water	B3	B3	C5	B2	A2
Bournemouth Water	A2	A2	B3	B3	A3
Bristol Water	C3	C3	C3	C3	B4
Dee Valley Water	B3	B3	B3	B3	A1
Portsmouth Water	A2	A1	A2	A2	A1
SES Water	B2	B2	B2	B2	A1
South East Water	B2	B2	B2	B2	A2
South Staffs Water	A2	A2	A2	A2	A1

Notes: The confidence grade is an alphanumeric code that companies assign to each data in their annual performance review submissions. The letter refers to reliability and the number to accuracy. A refers to the most reliable and 1 refers to the most accurate.⁶⁴ Companies reported confidence grades per each financial year. The grades presented in this table are based on the data covering the period 2011/12 to 2016/17.

Source: Ofwat: Reference of the PR19 final determinations: Final submission to the CMA, August 2020 Figure 1, page 42

- (46) Anglian also points out that companies revised their submitted data for booster pumping stations when Ofwat clarified the definition. Rather than undermining the data we see this as a strengthening of the data quality to ensure that the reporting was on a comparable basis between companies. No such improvements in definitions or reporting were undertaken for APH.
- (47) Second, we think that the analysis of correlation between power costs and the different variables is not a fair comparison.⁵⁰ The FD19 and PFs models clearly show a statistically significant relationship between totex and booster pumping stations per mains length but no such relationship for APH. As Anglian itself acknowledges in the same submission, it is “*standard econometric practice*” to drop insignificant variables and we see no reason why that practice should not apply here.⁵¹ The models therefore support the use of booster pumping stations.
- (48) In addition, the correlation comparison made by Anglian is not on a like for like basis: APH is multiplied by DI per property whereas the booster pumping stations per mains length variable used in the model is not. The charts therefore do not present a comparison between the alternative cost drivers as one has been modified but the other has not. When you multiply the booster stations per main length variable by DI per property, the negative correlations found in in the final two charts of Anglian’s Figure 1 turn into positive relationships.⁵² In any event, the correlations considered are partial and do not control for the impact of other cost drivers. We therefore do think this analysis supports the use of APH.
- (49) Finally, we do not think that changing the model to address what Anglian itself identifies as “*unique*” circumstances is appropriate.⁵³ If Anglian has unique circumstances which the

⁵⁰ Anglian PFs Response, pp 15-16, paras

⁵¹ Anglian PFs Response, p. 20, para 114

⁵² Anglian PFs Response, Figure 1, p. 16.

⁵³ “The region Anglian serves has a unique combination of being very flat, large and sparsely populated and having a high proportion of groundwater.” Anglian PFs Response, p14, para 80 (i)

model cannot address then a company specific adjustment seems more appropriate than adjusting the models industry-wide and including a variable with a low confidence grade and no statistical significance.

4.2.2 The specification of the two integrated water models

- (50) We disagree with the points made by Anglian on the specification of the wholesale water models.⁵⁴ As per our PFs response on the removal of the SWC1 model,⁵⁵ we do not think it is appropriate to decompose variables that are ratios designed to capture density or complexity into their constituent parts and then interpret the coefficients in isolation. We think the same arguments we raised in that instance are applicable here.
- (51) We think it is legitimate for the models to consider density and complexity variables that are the logarithm of the ratio of two different variables. There is a strong engineering and economic rationale to consider such variables as they will explain differences in efficient costs between companies. We therefore disagree with the characterisation that such variables arbitrarily restrict the models. It is perfectly reasonable to include variables that separately control for scale and density/complexity so that the individual impacts of these variables can be assessed to ensure they align with the expected economic and engineering rationale.

4.3 INDUSTRIAL EMISSIONS DIRECTIVE (IED)

- (52) We disagree with Ofwat's suggestion that "[i]f the CMA continues to make an allowance it should be considered as an enhancement allowance" and therefore be subject to the same cost sharing rules.⁵⁶
- (53) The provisional £12m allowance in the PFs is significantly less than the efficient costs provided in our detailed estimates, which predict costs in the range of c.£20m – c.£31m.⁵⁷ Based on our current understanding of the compliance requirements, we still expect to need to spend c.£20m as a minimum to achieve IED compliance during AMP7 and potentially much more.
- (54) Under the cost sharing rates proposed in the PFs this expected loss (c.£2m) can be managed whilst providing adequate protection to customers. A change to the totex sharing rates as proposed by Ofwat will more than double the efficient cost under-recovery that we will be exposed to in this area. If the CMA does choose to use the standard totex cost sharing rates, we think it is important that the CMA also revisits the detailed cost information that we have already provided to sense-check the scale of the cost under-recovery risk.
- (55) It should be noted that interventions and associated costs to ensure that sludge handling facilities comply with the IED are extremely site specific. We have an industry leading approach to Advanced Anaerobic Digestion (**AAD**) which results in 100% of our sludge being treated by AAD and recycled to land. This has been achieved as a result of our decision to focus sludge processing activities at just two sites: Howdon and Bran Sands. The economies of scale we have achieved through the construction of these two large bespoke sites have helped to make us the most efficient company for bio-resources.
- (56) This approach does, however, result in the bulk of IED compliance requirements falling upon these two sites.⁵⁸ Two examples of why this atypical setup drives costs in relation to IED compliance are as follows:
- a key requirement of the IED is that sufficient safe storage is available for processed sludge should access to land for sludge recycling not be available for any reason (for example during an outbreak of foot and mouth disease). Costs to provide this storage depend primarily on the extent to which spare land is already available on existing sites, and the proximity of these sites to urban areas - which dictates the type of storage

⁵⁴ Anglian PFs Response, pp. 19-20, paras 106-117

⁵⁵ NWL PFs Response, section 3.2.2

⁵⁶ Ofwat, PFs Response Cost and Outcomes, p. 29.

⁵⁷ NWL Reply, Section 9.2; REP069 IED Enhancement Case Appendix.

⁵⁸ SoC para. 925.

required. Our two sites are very large and have limited spare land available – particularly in relation to the volume of sludge processed - and (Howdon especially) are in close proximity to urban areas – this drives higher costs; and

- a second key requirement is to adequately manage the risks associated with AAD plant failure, particularly the risk that such a failure could result in digestate (partially processed sludge) escaping and polluting the environment. These risks - and hence the need for additional investment to ensure that such an escape would be contained - are driven by factors such as the scale of the operating plant, proximity to major water courses (which might suffer pollution in the event of a failure) and the associated topology. Our two AAD plants are of significant scale, with Howdon specifically in close proximity to the river Tyne with a local topography that both increases pollution risk and also the cost of providing additional containment.

- (57) Other companies (including Anglian Water) with a more distributed approach to sludge processing, and as a result greater access to land for storage, and fewer challenges in terms of topography and proximity of large sites to urban areas and major water courses, could be expected to have significantly lower costs of compliance.

4.4 LEAKAGE

- (58) Our position on leakage remains as set out in our responses to RFI018 and RFI020. Specifically we concur with the position adopted by CMA in its provisional findings that:

- the leakage PC targets for AMP 7 represent a step change in expectations which will mean that companies will incur additional cost;⁵⁹ and
- that in previous AMPs leakage targets and totex allowances were set in tandem, with targets based on the SELL approach which reflected, amongst other things, each company's supply demand balance. As a result AMP 7 leakage reductions are a response to the change in the regulatory approach and should not be characterised as 'catch up'. Consequently, it is appropriate that associated costs should be allowed, even for below upper quartile companies.⁶⁰

- (59) Regarding Ofwat's response to RFI020, especially Q.11, we note that:

- Ofwat's assertion that leakage reductions delivered across the industry in 2019/20 lessen the challenge of achieving 15% reductions by 2024/25 overlooks the fact that the 2019/20 reductions reduce the baseline against which the 15% reductions apply; and
- Ofwat continues to state that companies will derive benefit in AMP7 from leakage investments made in AMP6. We accept this and have been transparent in our response to previous RFIs regarding the degree to which this is the case, but these impacts are often very marginal given the nature of driving further reductions in leakage.

- (60) Having established the principle that leakage reductions should be funded via an additional enhancement allowance we naturally concur with the need to demonstrate that any allowed costs are efficient.

- (61) While we acknowledge that more granular cost benchmarking can be complex, we believe that the information provided in support of our costs in response to RFIs should be sufficient.⁶¹ We also maintain that based on those responses our costs are efficient. The consistency of our proposals with our latest WRMP provides a further degree of assurance.⁶²

- (62) We suggest that CMA could consider benchmarking leakage costs at an aggregated level, followed by some form of deep-dive analysis should a companies' costs appear high. The

⁵⁹ PFs, para. 8.57.

⁶⁰ PFs, para. 8.64.

⁶¹ See NWL Responses to RFI012, RFI018A and RFI020.

⁶² See the DataTables for each water resource zone published in support of the WRMPS for Northumbrian Water and Essex and Suffolk Water (Table 5: Feasibility Options): <https://www.nwg.co.uk/responsibility/environment/wrmp/current-wrmp-2015-2020/>

more granular cost benchmarking could provide pointers should this further analysis be required.

- (63) Ofwat states that the leakage activities identified by the Disputing Companies benefit multiple performance commitments.⁶³ While our proposed activities are driven solely by the need to reduce leakage (and would not be happening if there was not a challenging target for leakage reduction), we acknowledge that these interventions will be made on an interconnected water supply system. This makes it inevitable that there could be some degree of consequential impacts on other aspects of performance, but this is both positive and negative. An initial qualitative assessment indicates that there is scope for the following knock on impacts on other common PCs:
- increased ALC activity is likely to increase the number of bursts identified and hence has the potential to increase reported burst numbers. This has been examined previously by the CMA.⁶⁴ Conversely pressure management schemes have the potential to reduce bursts;
 - a reduction in bursts due to pressure management investment may ultimately reduce occurrences of customer interruptions – improving performance against the associated PC. Conversely, should an interruption occur, pressure management has the potential to make the response to the interruption more complex and time consuming. Such a response typically involves “rezoning” – shutting off the damaged portion of the network and connecting to the supply in an adjacent area. This is more complex when a pressure managed area needs to be fed from a non-pressure managed area or vice versa. If the response takes longer as a result, this could have a detrimental impact on the associated interruptions PC; and
 - there is also the potential for pressure management schemes to have an adverse impact on our C-Mex score as some customers may experience a change in water pressure which, whilst still better than minimum standards, may be less than they are accustomed to.
- (64) Ofwat’s assertion that leakage activities will have a ‘beneficial’ impact on other PCs appears one-sided – given the potential for upside and downside knock-on impacts as described above.
- (65) With regards to the amount of consultation on the leakage proposals, the CMA has requested further information from the companies and has given Ofwat the opportunity to comment on that information through the RFI process. As such it is in the process of facilitating an effective consultation, and continues to provide appropriate opportunities for the submission, consideration and commenting on relevant evidence. Ofwat has not been impaired in its ability to make informed representation on the question of leakage.

4.5 ESSEX RESILIENCE SCHEME

- (66) Ofwat has not put forward any new arguments or evidence in its PFs Response to challenge the CMA’s provisional decision to fund this scheme. We have already covered the points raised in detail in our past submissions. We do not revisit that debate in this reply but do address Ofwat’s assertions about the adequacy of the evidence base, the need to invest now and whether an efficiency challenge is justified given the volume of Ofwat’s comments.⁶⁵
- (67) The CMA has reached a decision that, in the round, the residual risk to customers addressed by this scheme is material⁶⁶ and that there is “*sufficient evidence to support this proposal*”.⁶⁷ The CMA is capable of making that decision whilst still commenting about the limitations of the evidence base with respect to risk modelling and cost-benefit analysis, etc. The two positions are not inconsistent. In particular the CMA has recognised that “*a narrow*

⁶³ Ofwat Response RFI020, Question 11, p. 2.

⁶⁴ PFs, paras. 7.177-7.178.

⁶⁵ Ofwat PFs Response Costs and Outcomes, pp.36-40; Ofwat PFs Response Fundamental Errors, para. 1.60

⁶⁶ PFs, para. 5.251.

⁶⁷ PFs, para. 5.252.

*application of a specific assessment framework may miss wider implications” and that whilst risk modelling, for instance, might be helpful in designing a resilient system “this is not the only approach possible”:*⁶⁸ Ofwat’s focus on “*assessment of potential risk factors and the likelihood of these occurring*”⁶⁹ indicates that it has failed to acknowledge or appreciate the CMA’s exercise of regulatory judgment, based on the overall balancing of the legal duties.⁷⁰

- (68) The CMA has grounded its decision in consideration of what is right for consumers (e.g. avoiding double funding and balancing the benefits of minimising the risk of serious disruption to supplies against the cost).⁷¹ In contrast Ofwat appears unwilling to take our near misses seriously in the absence of “*recorded adverse impacts*”⁷² and focuses its objections on the impact to its process with regard to maintaining a “*high evidential bar*”⁷³ and encouraging companies to “*continue to present poor evidenced investment proposals in the future*”.⁷⁴ Given that Ofwat funded all but two of our resilience schemes in FD19 allowing £103.6m,⁷⁵ we consider that even if this were a genuine concern, it is certainly overstated in these circumstances.
- (69) Ofwat reiterates its mistaken belief that the Layer DAF scheme provides sufficient mitigation of the risks addressed by the Essex Resilience Scheme.⁷⁶ We note that the CMA has taken the impact of the Layer DAF investment into account as reducing some risk, but provisionally concludes that it has not seen convincing evidence that the Layer DAF funding mitigates the need for this resilience investment to address the residual risk.⁷⁷ Ofwat has not provided any new evidence or argumentation that would alter this analysis. Instead, we agree with the CMA’s assessment that the scheme seeks to “*mitigate against the impact of several low-probability events occurring simultaneously*”⁷⁸ and that the significance placed by Ofwat on the Layer DAF investment is misplaced.⁷⁹

4.5.1 Is an optioneering challenge justified?

- (70) Ofwat suggests that if the scheme is funded then in order to be consistent with other deep dives, the costs should be subject to “*an optioneering challenge (20%) and an efficiency challenge (10%)*”.⁸⁰ We do not consider this would be justified.
- (71) Ofwat’s PR19 methodology states that a 20% optioneering challenge is applied if a company has not provided “*a thorough options appraisal that demonstrates it chooses the best option for customers*” to protect against potentially sub-optimal solutions.⁸¹ It is not correct to suggest that we have not carried out an adequate options appraisal for this investment.
- (72) To place it into context, the need for this proposed resilience scheme arose very shortly after completion in 2014 of our £150m Abberton Reservoir enhancement scheme that added an additional 16,000 million litres of raw water storage (60% capacity increase) in our Essex region. Consideration of the underlying need to address supply demand imbalance in Essex began in 1993. Abberton was selected as the best site (from an original list of 260 locations) on grounds of cost and refill reliability. Given, however, that it impacted on three Special Protection Areas (SPAs) and two Special Areas of Conservation (SACs) under the Birds & Habitats Regulations it was incumbent on us to show that all alternatives have been considered and discounted. This meant that every possible demand management and new water resource option was evaluated, including esoteric options.⁸² In addition between 1997 and 2002 we promoted and built what is still the only wastewater recycling plant designed to produce raw water for treatment into potable water at Langford for transfer to Hanningfield

68 PFs, para. 5.248.

69 Ofwat PFs Response Costs and Outcomes, p. 36

70 PFs, para. 5.250.

71 PFs, paras. 5.249-5.251.

72 Ofwat PFs Response Costs and Outcomes, p. 39.

73 Ofwat PFs Response Costs and Outcomes, para. 2.13.

74 Ofwat PFs Response Costs and Outcomes, p.39

75 Reply, Table 2.

76 Ofwat PFs Response Costs and Outcomes, para. 2.42, p.38..

77 PFs, paras. 5.246-5.248.

78 PFs, para. 5.248.

79 The relationship between the Essex Resilience Scheme and the Layer DAF investment was considered in: NWL SoC, Section 7.6.3.1; NWL Reply (June 2020) para. 31 and Section 3.5.3.3.

80 Ofwat PFs Response Costs and Outcomes, p. 40; Ofwat PFs Response Fundamental Errors, para. 1.44(b).

81 SOC417 PR19 FD Securing Cost Efficiency Technical Appendix, p.54.

82 Post-Hearing Submission, Section 2.2 and Annex 2: Alternative Supply Options.

reservoir. Ofwat is fully aware of this background having allowed funding for the promotional studies and construction of these schemes at PR99, PR04 and PR09. This understanding of the water resource options in the region undoubtedly informed our assessment of the options to address this new resilience risk.

- (73) It is also worth noting that even if there were another new alternative source of water that could feed into the Hanningfield reservoir (which there is not) there would be no guarantee of obtaining an abstraction licence. It would be a perverse outcome to lock up licenced but unused water at Abberton, thereby depriving any other abstractor in such a dry area from using it, whilst simultaneously asking to abstract additional water above our overall raw water need. Equally given that new water resources cost on average between £1.5m to £2.5m per MI/d, the equivalent cost of the new source would be between £75m and £125m.
- (74) Given the nature of the resilience risk the only effective and cost-efficient mitigation is to secure the capacity at Hanningfield WTW by ensuring that Hanningfield reservoir is maintained at appropriate levels on a year-round basis. This makes full use of our existing assets and treatment capacity. The only other viable option is to increase the capacity of Layer WTW from the current 145MI/d to either the 165MI/d (phase 1)⁸³ or to 210MI/d if needed (phase 2) and provide additional treatment at other WTWs. This would require much more substantial investment and would be less cost effective. Whilst we note that the costs of the Layer WTW expansion have not been updated since 2006, if they had been, they would most likely have increased from the £58.8m estimate due to inflation and it is inconceivable that they would be lower than the cost of our proposed scheme.⁸⁴
- (75) We also note that other stakeholders have commented on the potential regional resilience benefits of this particular option, with the flexibility to move water around the region potentially opening up opportunities for future water resource trading.⁸⁵
- (76) To provide further assurance to the CMA we have submitted an external report from Aqua Consultants which provides external benchmarking and assurance of our proposed costs, as well as considering two alternative routes for the pipeline. This report concludes that “*an investment case with a TOTEX value of £20.35m is reasonable*”.⁸⁶

4.5.2 Is a cost efficiency challenge justified?

- (77) Ofwat’s PR19 methodology only applies an efficiency challenge to costs for deep dive schemes if there is “*insufficient evidence that the proposed costs are efficient*”.⁸⁷ Neither Ofwat nor the CMA has challenged the efficiency of our cost estimates, or the quality of the supporting evidence.⁸⁸ We note that the majority of the capital investment for this scheme is in the creation of the new pipeline. Given the extent of benchmarking evidence available for these type of costs, we are confident that our estimates are robust and efficient. To assist the CMA, however, we have outlined below relevant information with respect to the efficiency of our cost estimates.
- (78) Our original BP19 estimate (£20.16m capex, £240k opex)⁸⁹ was based on the cost of an 800mm diameter 20km long PE pipeline, mostly laid through grassland.⁹⁰ There are sections laid in the road and there are numerous road crossings. The BP19 scope did not include any pumping as it was envisaged that this could be provided through existing pumping arrangements on site at Abberton Reservoir.
- (79) The cost curve models used to price the works in this preferred option have been generated within our iMOD costing system by building up composite rates from framework rates being used in AMP 6. These were then plotted to generate a formula from the line of best fit.

⁸³ The Layer DAF approved enhancement scheme simply restores the ability of the WTW to maintain the current 145 MI/d capacity.

⁸⁴ SOC276 Essex Resilience Enhancement Business Case, March 2020, Section 6; Northumbrian Water Site Visit slides, slide 39.

⁸⁵ Reply, Section 3.5.3.6; Water Resources East CMA Submission, REP010, para. 15 and p.3.

⁸⁶ Appendix 2: Aqua Consultants – Cost Assurance Benchmarking Report Essex Resilience Scheme, November 2020 (Aqua Benchmarking Report: Essex).

⁸⁷ SOC417 PR19 FD Securing Cost Efficiency Technical Appendix, p.55.

⁸⁸ SOC276 Essex Resilience Enhancement Business Case, March 2020, Section 6.

⁸⁹ SOC517 Abberton Reservoir to Langford Estimation Detailed Report.

⁹⁰ Details of the high level scope are set out in SOC465 Abberton Reservoir to Langford

Framework rates were used, as there was limited asbuilt cost information for this work on such a large diameter of pipework. As detailed in our Enhancement Case:

“In January 2018, prior to the Business Plan submission we commissioned our framework partner to carry out technical and cost assurance assessments across our resilience and WINEP investment cases.⁹¹ The report found that our approach to costing the PR19 Enhancement Programme was in-line with the industry and cost estimates are mostly justified, with the internal cost assurance identifying that less robust estimates are confined to only 6% of costs.

Following the feedback from Ofwat in IAP, and before Draft Determination we commissioned a shadow price exercise for all costs produced in our enhancement projects. Our framework partners, across the enhancement projects were on average 15% higher than our estimates and in this particular project 5% higher. (NWL estimate excluding Project Oncosts £18.24m, framework partner £19.22m).

In addition, our cost consultant provided further cost assurance with estimates on average 7% lower than NWL costing and in this particular project 14% lower, but with a base date of 1Q2017. This is within the expected range for the stage of the project.⁹²

- (80) As the scheme is not yet funded, we have not progressed to detailed planning but we have continued to evolve our thinking on the optimal route for the pipeline.⁹³ Following Ofwat’s PFs Response we commissioned an independent engineering consultancy, Aqua Consultants to provide benchmarking and assurance of our cost estimates to provide further confidence to the CMA that those estimates are robust.⁹⁴ As noted above that report examined two alternative routes and concluded that our proposed cost estimates were efficient.
- (81) As such, we do not think it is legitimate to conclude that customers need to be protected against the selection of a potentially sub-optimal solution, or potential inefficiency in our costs. As such a challenge to our costs is not justified on either ground.

4.6 THE GROWTH UNIT RATE ADJUSTMENT AND THE DEVELOPER SERVICES REVENUE ADJUSTMENT

- (82) The Growth Unit Rate Adjustment (**GURA**) mechanism makes an adjustment to the allowed totex if the company specific ONS property growth forecast rate for 2020-25 is different from the average historical industry property growth rate. It calculates the difference in properties and multiplies by the industry historical growth unit cost. In both the Ofwat FD19 and the CMA PF models, the growth unit cost is calculated including both Sewage Treatment Works (**STW**) growth and sewer flooding costs.
- (83) The Developer Services Revenue Adjustment (**DSRA**) adjusts company revenues if the property growth rate for 2020-25 is different from the ONS property growth forecast. In FD19 the DSRA unit rate does not include either STW growth or sewer flooding costs.
- (84) The GURA and the DSRA make the same unit adjustment for growth variances (see Table 3). Therefore, they should take the same approach to calculating unit cost rates.

Table 3: Similarities between the Growth Unit Rate Adjustment and the DSRA

New Property Adjustment Mechanism:	GURA	DSRA ⁹⁵
Include new development & growth costs	Yes	Yes
Unit costs are applied to variations from company specific ONS new property forecasts for 2020-25	Yes	Yes
The unit cost is to reflect the marginal cost of supplying an extra property	Yes	Yes

Source: NWL analysis

⁹¹ SOC257 Mott Macdonald, Oct 2018, PR19 Enhancement Programme Business Case Assurance Summary Report.

⁹² SOC276 Essex Resilience Enhancement Business Case, March 2020, paras. 122-124.

⁹³ See, for example, the proposed route in SOC276 Essex Resilience Enhancement Business Case, March 2020, Section 7 Figure 15 and ERS001 Abberton to Hanningfield Raw Water Transfer Route.

⁹⁴ Appendix 2: Aqua Benchmarking Report: Essex.

⁹⁵ We note that the DSRA is technically based on revenue from developers, but, as developer revenue is set to recover new development costs, the two are equivalent.

- (85) The CMA has proposed that the DSRA unit rate should include both STW growth and and sewer flooding costs.⁹⁶ We agree that this approach would make the unit rates consistent with each other but consider the better approach would be to just use STW growth costs.

Table 4: Comparison of Regulatory approach to setting the unit rate for GURA & DSRA

Regulatory approach:	Ofwat PR19 FD	CMA PF	NWL view
GURA unit rate	Both STW growth and sewer flooding	Both STW growth and sewer flooding	STW growth only
DSRA unit rate	Neither of STW growth or Sewer Flooding	Both STW growth and sewer flooding	STW growth only
Consistency check?	No	Yes	Yes

Source: NWL analysis

- (86) We believe that sewer flooding does not vary with the number of new properties.⁹⁷ In this sense we agree with Ofwat that it is non-linear.⁹⁸ For that reason, we believe that sewer flooding costs should be excluded from both the GURA and the DSRA.
- (87) If the CMA confirms its provisional view that STW growth and sewer flooding costs should both be included in the DSRA, we agree with Ofwat that the expenditure should be excluded from cost sharing to avoid double counting of over/underspends.⁹⁹
- (88) Finally, we note that Ofwat suggests a separate growth mechanism for Anglian Water.¹⁰⁰ We cannot agree that singling out Anglian Water for this would be appropriate. Ofwat's own modelling suggests that we are the only Disputing Company that will not make a return should the company forecast growth materialise and our growth investment proposed in our business plan be made.¹⁰¹
- (89) We thus believe we have the strongest case of all four Disputing Companies for STW growth to be included in the DSRA. Our BP19 submission for the STW growth costs for Howdon was well evidenced and, whilst it was submitted at the time as an enhancement scheme, would itself justify the change to the DSRA.¹⁰²
- (90) We note that Anglian's PFs response suggests using an average rather than upper quartile measure for calculating the unit rate adjustment.¹⁰³ The CMA will be aware of our position that the growth adjustment should not be made as we do not see any underlying rationale for it. Notwithstanding that, if an adjustment were to be made we do not agree with the use of an average unit cost on the grounds of consistency of approach. First the base costs models have had an upper quartile efficiency challenge applied. It therefore would be appropriate and consistent to make any adjustments to that also on an upper quartile basis to ensure that the overall level of challenge is consistent. Second, with regards to WINEP costs where we identified similar concerns over the robustness of the approach, the CMA has maintained the use of an upper quartile challenge. We think the same approach should be used here but if the CMA were to switch the use of an average unit cost, it should also adopt an average challenge for WINEP costs.

⁹⁶ PFs, para.4.505

⁹⁷ NWL PFs Response, paras. 126-128.

⁹⁸ Ofwat PFs Response Costs and Outcomes, para. A2.22.

⁹⁹ Ofwat PFs Response Costs and Outcomes, para. A2.25

¹⁰⁰ Ofwat PFs Response Costs and Outcomes, para. A2.45.

¹⁰¹ Ofwat PFs Response Costs and Outcomes, Table A2.1.

¹⁰² SOC136 Appendix 3.3.4 to NWL Response (Howdon STW Resilience Enhancement).

¹⁰³ Anglian PFs Response, pp. 26-27, paras 148-152

ANNEX 1: NEW EVIDENCE ON THE COST OF CAPITAL AND FINANCEABILITY

1 COST OF CAPITAL AND FINANCEABILITY

1.1 THE RELEVANCE OF THE NERL PRECEDENT

(91) We are concerned that Ofwat appears to be suggesting that the CMA should be bound by its views on WACC in the NERL redetermination.¹⁰⁴ In fact, the contrary is the case. The CMA explicitly stated in that case that it had not taken account of any of the feedback on its PFs as it was not the right time to review WACC given NERL's specific circumstances in light of the extraordinary position experienced by the aviation sector as a result of Covid-19:

*“As explained earlier, given the ongoing uncertainties affecting the aviation sector, we have not refined our assessment in detail following our provisional findings, or made specific adjustments to take account of the impact of the COVID-19 pandemic, as this would not have allowed us to reach figures that accurately reflected the effects of the pandemic on determined costs. We also note that the majority of respondents to our COVID-19 consultation who expressed a view in this area also considered that **now is not the right time to review the cost of capital.**”¹⁰⁵ (emphasis added)*

*“Our final report therefore sets out the approach used to determine our provisional conclusions on the appropriate cost of capital for NERL. **We updated only the ‘vanilla’ Weighted Average Cost of Capital (WACC) estimate from our provisional findings to reflect additional clarification from CAA and NERL on the measure of embedded debt to be used within the cost of debt analysis.** We also calculated a pre-tax WACC to be used in setting charges, based on modelling used by CAA and NERL. **We have not updated the market data or made changes to the methodology that we applied in calculating the WACC based on the responses to our provisional findings or to our COVID-19 consultation. As a result, the approach in our final report does not reflect any assessment of the merits of the points raised in these responses.**”¹⁰⁶ (emphasis added)*

(92) As such, whilst the CMA did issue a final determination for NERL, it is telling that the substantive sections on WACC simply reconfirm the provisional conclusions. It is therefore wholly disingenuous for Ofwat to suggest that this should be treated as a binding precedent. In this redetermination the CMA has now updated the market data and made changes in the methodology to reflect the specific circumstances of the Disputing Companies and to take account of the wealth of new data and evidence from the main parties and third parties which has informed its decision making.

(93) Nor do we consider that the NERL decision and a water redetermination are completely comparable situations,¹⁰⁷ not least because the regulators duties are different in each sector:

- in the water sector the regulator’s duties are balanced and are to be given equal weight. The financing duty on Ofwat (and the CMA) is to “*secure that companies holding appointments ... as relevant undertakers are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of those functions*”;
- in contrast in the air traffic control sector the Civil Aviation Authority (**CAA**) has one primary duty to exercise its functions so as to “*maintain a high standard of safety in the provision of air traffic services*”.¹⁰⁸ In meeting that duty the CAA must “*secure that licence holders will not find it unduly difficult to finance activities authorised by their licences*”.¹⁰⁹

(94) A secondary duty to secure that it is not unduly difficult to finance activities is not the same as a balanced duty to secure reasonable returns on capital.

(95) Furthermore, NERL is not a direct comparator to the companies in the water sector. It has a different gearing and the nature of its debt is different. NERL is a single company without a

¹⁰⁴ Ofwat PFs Response Fundamental Errors, para. 1.12-1.15.

¹⁰⁵ CMA Final Report NATS (En Route) Plc/CAA Regulatory Appeal, 23 July 2020, para. 60.

¹⁰⁶ CMA Final Report NATS (En Route) Plc/CAA Regulatory Appeal, 23 July 2020, para. 61.

¹⁰⁷ Ofwat PFs Response Fundamental Errors, para. 1.12

¹⁰⁸ Transport Act 2000, s2(1).

¹⁰⁹ Transport Act 2000, s2(2)(c).

cohort of industry peers and thus setting the cost of debt in these circumstances is significantly simpler than looking across a cohort of 17 companies. The nature of the risks which are taken by NERL and those of the water company are very different, for example NERL take an element of volume risk which is not present in the water sector. The nature of its regulatory duties, its investment plans, the split between opex and capex and the ownership and nature of the investor base are all very different. Moreover, the levels of Regulatory Asset Base are materially different between the two sectors, meaning that WACC is much more significant in the water sector. This has been reflected in the thoughtful and robust approach that the CMA has taken in the water redeterminations to setting the allowed cost of capital. Thus, the arguments which Ofwat makes that the CMA is bound to follow the same approach that it did for NERL are significantly overstated.

- (96) Ofwat also suggests that the CMA's approach of "*systematically and deliberately aiming up, as a matter of policy, when making a choice from within the overall range of possible WACC values*"¹¹⁰ is categorically different from past examples of conservative ranges or point estimates. We do not consider this to be the case. The CMA has referenced precedent in this area in its PFs and has sought to be consistent: "*there has been a long history of regulatory decisions ... we note that the most common decision has been that some 'aiming up' has been merited in order to promote investment in the sector, and that there may be benefits to consistency including ensuring investor confidence in the sector*".¹¹¹
- (97) We concur with the CMA that there has not been a departure from past examples of conservative ranges or point estimates. The CMA has cited the relevant precedents and therefore for Ofwat to argue that this is a significant break with a previous continuity of approach is fallacious. We provide references to those previous decisions in Annex 3. The CMA goes on to expand on its rationale for considering a WACC above the mid-point in this determination, citing asymmetric risk. The CMA clearly sets out its assessment of risk inherent in the penalty only and asymmetric ODIs, which it analyses as meaning that an average performing company could face a potential loss of around 0.1% or 0.2% impact on RoRE with no potential for directly offsetting rewards.¹¹² This asymmetry is consistent with our own analysis shared with the CMA¹¹³ which suggests that the CMA's assessment is actually understated. The CMA states that where the expected return is below the allowed return this provides a justification for a small adjustment to the allowed WACC, given that the WACC is the main driver of expected financial ratios.¹¹⁴ We concur with the CMA that such an adjustment to the WACC to reflect the overall risk in the package is justified.
- (98) Furthermore, as we have set out in our PFs Response, in our view the range in respect of the various parameters is wider than the CMA has acknowledged in its PFs. If and to the extent that the CMA accept the evidence we have adduced as to the range, in practice it would not have aimed up at all, but would have been much closer to the mid-point view. It is clear that the CMA considered this question of aiming up in the NERL determination and made an explicit decision that aiming up would not be justified **solely** by reference to the need to ensure delivery of the capital programme.¹¹⁵ However, in this case the CMA is not looking solely at the need for investment.¹¹⁶ In its decision on aiming up it has also considered the asymmetry in the ODI/PC package and the wider resilience duties to bring forward future investments.

1.2 BETA

- (99) In its PFs, the CMA estimated beta using a variety of time windows and sampling frequencies, following which it provisionally adopted an asset beta range of 0.27 to 0.32.¹¹⁷

¹¹⁰ Ofwat PFs Response Fundamental Errors, para. 1.35.

¹¹¹ PFs, para. 9.668

¹¹² PFs, para. 10.72

¹¹³ NWL PF Response, para. 358

¹¹⁴ PFs para 9.671-3

¹¹⁵ PFs, para. 9.666.

¹¹⁶ PFs, para. 9.667.

¹¹⁷ PFs, para. 9.284

- (100) In its response to the CMA's PFs, Ofwat presents a new academic paper by Professors Wright and Mason (**W&M**), which includes the authors view on the conceptually correct approach to beta. At a high-level, W&M are consistent with their recommendations in the 2018 UKRN paper, being that betas should be estimated using the longest run of data available.¹¹⁸
- (101) W&M explain that there was insufficient time to undertake detailed empirical analysis, following their preferred approach.¹¹⁹ Instead the authors present charts of equity betas, which show a declining trend going back in time. The authors conclude on this basis that the CMA has overestimated the equity beta. They note that while there has been an 'upward drift' in gearing which would contribute to a falling trend in equity beta going back in time, this would not change their conclusion.¹²⁰
- (102) W&M's analysis, however, underestimates the impact of gearing on equity betas. Alongside our response to the CMA's Provisional Findings, we submitted an academic paper by Professor Gregory, Professor Harris and Dr Tharyan (**GHT-2**) which contains detailed empirical analysis, following the approach recommended by W&M. GHT-2 estimate asset betas using the longest run of data available and find asset betas of 0.36 (daily sampling frequency), 0.36 (weekly sampling frequency) and 0.28 (monthly sampling frequency, not Vasicek adjusted).¹²¹
- (103) Therefore, evidence in GHT-2 shows that once gearing is taken into account, i.e. data is presented consistently as de-gearred asset betas, there is no evidence to suggest that the CMA's asset beta estimates are overstated.¹²² Instead, the data supports numbers in line with or materially above the CMA's provisional asset beta range.
- (104) The long run approach, which Ofwat's academic advisers recommend, therefore supports asset betas in the range 0.28 - 0.36 which is within or materially above the CMA's range of 0.27 to 0.32.

1.3 RISK-FREE RATE

1.3.1 The CMA's approach is neither novel or irrational

- (105) Ofwat has suggested that the use of 'zero beta' assets (in this case AAA corporate bond yields) in setting RFR is a novel and irrational approach for the CMA to have followed.¹²³ The CMA (or CC) precedent methodology was to assess current yields on both Index-Linked and nominal Gilts alongside the realised returns on government bonds over the very long-run (which have been materially above spot yields for some time).^{124,125} A point estimate above the prevailing yields on government bonds was then selected, to allow for the possibility that rates might rise towards equilibrium levels during the remainder of the charge control.¹²⁶ This approach is sometimes referred to as the 'dragging anchor' or 'through the cycle' approach to the RFR.
- (106) Ofwat and other sector regulators have recently departed from this precedent by effectively setting the RFR based on current yields on ILGs, with no adjustment to reflect the long-run equilibrium data on RFR. This change was, in large part, a result of the Wright et al (2018) UKRN Paper, which said the RFR should be set based on the prevailing yield on ILGs.
- (107) The move to spot yields on ILGs has not been tested in full at the CMA.¹²⁷ The CMA received extensive evidence on why a move to sole reliance on spot ILGs results in an RFR which is inconsistent with the financial theory is not appropriate. The primary piece of evidence is the

¹¹⁸ W&M, paras. 5.1, 5.5 and 5.6.

¹¹⁹ W&M paras. 5.4 and 5.12.

¹²⁰ W&M, para. 5.10

¹²¹ PFREP003 Report on PFs Beta, p. 14.

¹²² PFREP003 Report on PFs Beta,

¹²³ Ofwat, 'Response to PFs, Risk and Return', para. 5.16

¹²⁴ See for example the summary of previous CMA/CC precedent in SOC416 KPMG's Report Estimating the cost of capital for PR19, A report for Northumbrian Water, paragraphs 4.5.4 to 4.5.10

¹²⁵ From the Dimson Marsh and Staunton Publication, which includes historical achieved returns across asset classes

¹²⁶ CC (2014) Northern Ireland Electricity Limited price determination, para. 13.128

¹²⁷ The CMA's redetermination for NERL was the first time this approach was tested at the CMA. For the reasons set out in Annex 1 Section 1.1 that decision was effectively provisional only.

zero beta CAPM model, which shows that the RFR cannot be set equal to the government borrowing rate but should instead be somewhere between yields on government bonds and highly rated corporate debt. On the basis of the zero beta CAPM evidence, the CMA has provisionally decided that RFR then should be estimated based on the current¹²⁸ ILG rate and AAA corporate bond yields.

- (108) Whilst use of the zero beta CAPM is a new methodology for regulatory purposes, the novel approach was Ofwat's (and other sector regulators following Wright et al 2018) move to set the RFR at current ILG yields. Rather than reverting to previous CMA/CC precedent (i.e. dragging anchor/through the cycle), the CMA has followed the approach of moving to current yields. However, it has recognised that strictly the current RFR has to be somewhere between the ILG and AAA yields, in order to be consistent with CAPM theory. Novelty in and of itself is not necessarily irrational as Ofwat suggests. It can be an inherent part of the regulatory process which allows for adjustment over time. The CMA reaching the conclusion that it should adjust the RFR to recognise the fact that no corporates can finance at the gilt rate is not irrational, it is correcting Ofwat's regulatory mechanism which does not adequately reflect the RFR for corporates in a world where ILGs are moving into negative territory and there has been no adjustment. In other words, the CMA is doing just what Ofwat argued it had the regulatory discretion to do in its statement of case.

1.3.2 Ofwat, W&M and EE's assertions about the marginal investor are incorrect

- (109) The CMA places weight on both index-linked gilts (as a proxy for the risk-free lending rate) and AAA bond yields (as a proxy for the risk-free borrowing rate) explaining in its PFs that the RFR in the CAPM should strictly be a rate that market participants can borrow and lend at.¹²⁹
- (110) Ofwat, W&M and EE submit that the identity of the marginal investor in water matters, when selecting the appropriate RFR benchmark.¹³⁰ This is because:
- net lenders will have a RFR closer to the yield on the lending RFR i.e. the yield on government bonds, which is based on the index-link gilt (ILG) yield in the CMA's PFs;¹³¹
 - net borrowers will have a RFR closer to the borrowing RFR i.e. the yield on AAA corporate bonds in the CMA's PFs;¹³² and
 - marginal investors in water are net lenders, hence the RFR should be closer to the ILG yield.¹³³
- (111) However, under the zero-beta CAPM, the marginal investor is an economy wide concept. What matters, therefore, is not the identity of the marginal investor in water companies but rather the marginal investor in the market portfolio. This is articulated by Brennan in his paper on Capital Market Equilibrium with Divergent Borrowing and Lending Rates (cited by W&M):
- "Thus the only difference in the market equilibrium condition introduced by divergence of borrowing and lending rates is that the intercept of the capital market line is shifted. This intercept represents the expected rate of return on a security with a return which has zero covariance with the return on a value-weighted market portfolio of all securities and may be referred to as the market's equivalent risk-free rate."*¹³⁴
- (112) Brennan goes on to note *"It is apparent...that this market equivalent risk-free rate of interest is a weighted average of the individual investor's equivalent risk free rates..... Thus the market equivalent risk-free rate is constrained to lie between the borrowing rate b and the lending rate l ".*¹³⁵

¹²⁸ Strictly a short 6 trailing average of current yields to mitigate the impact of short term volatility

¹²⁹ PFs, para. 9.75 – 9.94

¹³⁰ W&M paras. 3.10 and 3.11; Ofwat PFs Response Risk and Return, p78.

¹³¹ W&M, para. 3.6.

¹³² W&M, para. 3.7.

¹³³ W&M, paras. 3.10 and 3.11.

¹³⁴ Capital Market Equilibrium with Divergent Borrowing and Lending Rates, Brennan, M 1971, *Journal of Financial and Quantitative Analysis* (Brennan 1971) p. 1204

¹³⁵ Brennan 1971 p 1204.

- (113) It is clear throughout that Brennan is discussing investors in the market portfolio and *not* investors in individual stocks.
- (114) Putting aside which of the two benchmarks (ILGs or AAA bonds) to put weight on, an adjustment to the RFR estimate ‘today’ is required to ensure that the RFR estimate holds for the period of the price control. The CMA’s current approach does not make any allowance for the possibility that the RFR might deviate over the duration of the price control. To address this, the CMA could 1) adopt a market-driven approach which would involve applying a forward uplift as adopted by Ofwat and/or 2) place weight on equilibrium evidence such as the Bank of England R*.^{136 137}

1.4 TOTAL MARKET RETURN

- (115) In terms of new evidence on the TMR, we consider that there are two key new points in Ofwat’s PFs Response, which we address in turn below.
- (116) First, Ofwat cites Wright et al (2018) (often referred to as the UKRN paper) in support of using international historical ex post TMR data as a cross check.¹³⁸ We agree with the CMA that UK returns data should be the primary source for the ex post TMR data. Nevertheless, we consider the international TMR evidence below.
- (117) When analysing the international data, a key consideration is which equity markets are most comparable to the UK. In this regard, a common approach is to compare countries, which have a similar degree of investor protection offered by the legal system. La Porta et al (1998, 2000) note that investor protection is very different in Common Law countries and so we focus on countries with comparable Common Law systems to the UK.
- (118) Table 5 below provides TMR data for countries for which i) La Porta et al report as having comparable legal protections for shareholders to the UK and ii) Dimson, Marsh & Staunton (DMS)¹³⁹ provides long run TMR data. The data shows that, with the exception of Ireland, those countries with comparable legal protections for shareholders have ex post TMR figures in line with, or above, the UK figures.

Table 5 TMR data from countries with comparable legal shareholder protections

	Australia	Canada	Ireland	NZ	South Africa	US	UK
Geometric average	6.8%	5.7%	4.4%	6.4%	7.1%	6.5%	5.5%
Arithmetic average	8.3%	7.1%	6.9%	8.1%	9.2%	8.5%	7.3%

Source: Table 1 of DMS 2020

- (119) Therefore, the international TMR data is not inconsistent with the CMA’s provisional TMR range and point estimate. If anything, the balance of evidence from international comparators supports TMRs above the CMA’s range.
- (120) Notwithstanding this, use of international equity returns data is inconsistent with the CMA and Ofwat’s position on the RFR, where yields on US TIPS are disregarded.¹⁴⁰
- (121) Second, Ofwat submits that the CMA has made an error when applying the volatility bias uplift to ex ante estimates. Ofwat explains that the CMA’s estimate of 130bp, which is taken from Gregory (2011)¹⁴¹ cites a 2002 publication by DMS and is therefore outdated.¹⁴² In this regard, Ofwat is wrongly assuming that the 130bp uplift in the Gregory (2011) paper comes from DMS 2002. This is not where the uplift estimates in Gregory (2011) come from. The

¹³⁶ Ofwat, PR19 FD: Allowed return on capital technical appendix, page 38.

¹³⁷ NWL PF Response, para. 271 - 272

¹³⁸ Ofwat PFs Response Risk and Return, p. 75.

¹³⁹ Dimson, Marsh, Staunton, Credit Suisse Global Investment Returns Yearbook 2020 (DMS 2020)

¹⁴⁰ PFs para. 9.113

¹⁴¹ A. Gregory, Expected cost of equity and the expected risk premium in the UK, 2011.

¹⁴² Ofwat PFs Response Risk and Return, p. 74.

uplifts are calculated directly, from the data in Table 1 in Gregory (2011) using data up to 2009.

- (122) Depending on how the ex ante returns model is to be estimated (various alternative models are presented), the correct bias adjustments can be read from either Table 6 or Table 7 of the Gregory (2011) paper. The bias adjustments for dividend yield models range between (approximately) 1.3% and 1.7%, and so the CMA has used the smaller uplift in their discussion. Whilst we agree that these figures should ideally be updated, the latest evidence in the DMS 2020, shows comparable dividend yield and growth assumptions to those in Gregory (2011) and support a volatility uplift of 1.5%.¹⁴³

2 SELECTING A POINT ESTIMATE FOR THE COST OF EQUITY

2.1 THE RATIONALE FOR AIMING-UP

- (123) The CMA has provisionally selected a point estimate for the cost of equity halfway between the mid-point and top of its range.¹⁴⁴ This is because it considers that some aiming-up is appropriate to reflect the risk of estimation error in the cost of equity, and determination-specific factors such as asymmetry and financeability.¹⁴⁵
- (124) Ofwat submits that aiming-up is not required in water because the package is symmetric and the downside risk of getting the cost of equity wrong is not significant in the water sector.¹⁴⁶
- (125) Whilst we consider that the focus should be on getting the ranges correct and that the CMA's point estimate doesn't include an allowance for aiming-up, there is a body of academic evidence supporting the need to aim up where i) there is uncertainty in the WACC estimate and ii) asymmetry.
- (126) Aiming-up when there is asymmetry should not be contentious, because: 1) it is consistent with theory and regulatory precedent (e.g. the SONI appeal¹⁴⁷); and 2) the CAPM assumes symmetry. Ofwat doesn't appear to dispute this but rather disputes the CMA's conclusion that the package is asymmetric. We consider that the package is asymmetric by design and presented evidence supporting this in our PFs response.¹⁴⁸ On the assumption that the CMA retains asymmetry in the package, aiming-up to price this asymmetry should remain and the CMA's 10-20bp RORE downside should be a floor to the degree of aiming-up on the cost of equity.
- (127) Turning to the residual aiming-up, the concept of accounting for uncertainty in the cost of equity estimates should be uncontentious. The cost of equity is not known with certainty, and if it is under-estimated, either no investment, or less investment than is optimal, will occur because equity investors would not be able to reasonably expect to earn their expected returns ex ante. The need to aim-up due to uncertainty is supported even by Ofwat's own advisors Wright and Mason.¹⁴⁹
- (128) Submissions by Ofwat and Williamson suggest that there is little/no downside risk of getting the WACC wrong in the water sector.¹⁵⁰ This appears to rest on the premise that Ofwat can effectively force companies to invest if the WACC is too low.¹⁵¹ This is clearly incorrect as de minimis companies need to raise finance to invest, and can only do so if the allowed rate of return at least equals the true (but unobservable) WACC.

¹⁴³ Dimson Marsh and Staunton 2020 (DMS 2020).

¹⁴⁴ PFs, para 9.674(c)

¹⁴⁵ PFs, paras 9.671 and 9.674(c)

¹⁴⁶ Ofwat's PFs Response Risk and Return, pp. 23, 28-32.

¹⁴⁷ CMA (2017), 'SONI Limited v Northern Ireland Authority for Utility Regulation Final Determination', 10 November, para. 7.371, 7.376, 12.103, 12.113

¹⁴⁸ NWL PFs Response, para. 358.

¹⁴⁹ See for example, Appendix I of Wright et al 2018 (the UKRN Paper) and W&M para 7.1

¹⁵⁰ Ofwat PFs Response Risk and Return, para. 3.1 – 3.17

¹⁵¹ Aiming up on the WACC and prices – the welfare and incentive impacts for the water industry, Williamson, p. 7.

- (129) This observation simply takes us back to the CMA’s reasoning, namely that a primary reason for aiming-up is precisely because the true WACC is unobservable and will be estimated with error.¹⁵² A somewhat ‘floating’ paragraph in the Williamson paper is particularly revealing in this regard:

“Nevertheless, it is conceivable in principle that setting the WACC estimate too low could lead to a collapse in investment involving asymmetric welfare costs. However, in practice this seems most unlikely, given existing approaches to estimation of the WACC and aiming straight in setting price controls.”¹⁵³

- (130) Ofwat and Williamson’s arguments that aiming-up is not needed to account for uncertainty in the cost of equity estimate rest, therefore, on the assumption that regulators have estimated the cost of equity correctly, which is clearly circular, i.e. Aiming up is required because it is not certain that regulators would have estimated the cost of equity correctly.

2.2 PROBABILITY DISTRIBUTIONS WITHIN PARAMETER RANGES

- (131) Ofwat, Mason and Wright and EE argue that the weight of evidence is towards the lower end of the CMA’s ranges.¹⁵⁴ They argue that the CMA has therefore aimed up when setting the ranges themselves and that selecting a point estimate from these ranges at the 75th percentile, serves to ‘double count’ aiming up.¹⁵⁵

- (132) As per our response to the PFs and Sections 3.1 and 3.2 above, we take the opposite view (i.e. that the weight of evidence is at the upper end across the parameters and that there is little evidence for the lower end). The new evidence on beta from W&M and GHT -2 further supports this. As a result the CMA’s cost of equity estimate doesn’t rely on its approach to aiming-up.

- (133) However, on the assumption that the CMA’s ranges are correct, Ofwat and EE argue that there is a normal distribution, rather than uniform distribution for the CMA’s ranges. The result is that the 75th percentile is closer to the mid-point. We disagree with Ofwat and EE’s conclusions in this regard because:

- our reading of the CMA’s PFs, is that they intend to treat each of the estimators in the ranges, including the upper and lower end, as equally likely. For example, when discussing the beta evidence the CMA notes:

“On the basis of the data above, we provisionally use a low estimate of the unlevered beta of 0.27 and a high estimate of the unlevered beta of 0.32. Using this range would place weight on daily and weekly estimates of 2-year, 5-year and 10-year data, but less emphasis (due to the removal of outliers) on monthly data.”¹⁵⁶

- under the assumption that all data points within the range are equally likely, the correct probability distribution is uniform. Any other distribution assumption implies more weight on certain data points than others. For example, under EE’s proposals, the JKM estimator – Ofwat’s preferred estimator in the FD, which is at the lower end of the CMA’s range - is highly unlikely to represent the true TMR; and
- even if a normal distribution assumption did hold, EE has significantly underestimated the variance and therefore standard deviation around the mean. EE explicitly assumes any range estimate has a mean of the mid-point of the range, and a standard deviation of ¼ of the range.¹⁵⁷ This assumption is not justified. The true standard deviation is a function of the variance in the underlying estimators. This is likely to be much larger than ¼ of the range. For example, the 1-yr arithmetic real returns for the UK from DMS Table 71 has a mean of 7.3%, a standard deviation of 19.6% and a standard error of 1.8%. The 75th percentile of the arithmetic average would be 8.51%.¹⁵⁸ The error that EE makes is, in

¹⁵² PFs, para. 9.665

¹⁵³ Aiming up on the WACC and prices – the welfare and incentive impacts for the water industry, Williamson, p4

¹⁵⁴ Ofwat’s PFs Response Overview, pp. 4-5, 72.

¹⁵⁵ W&M para, 7.4

¹⁵⁶ PFs, para. 9.289.

¹⁵⁷ EE - Responses to the CMA’s PFs, Table 1-1.

¹⁵⁸ Assuming a normal distribution around a mean of 7.30%, with a standard deviation of 1.80%. The 75th percentile is 8.51%- calculated using the NORM.S.INV function in Microsoft Excel.

effect, to assume that each point estimate is known with certainty, and that these (incorrectly specified) “certain” parameters have a normal distribution. Both of these assumptions appear unjustified.

- (134) Finally, W&M submit that the distribution of the individual CAPM parameter estimates may be correlated with one another. They submit that the CMA’s (implicit) assumption that the distribution of the estimates are not correlated with one another may not hold. However, assuming a lack of correlation between different CAPM parameters seems reasonable. Unless we adopt a conditional CAPM (which is explicitly ruled out by the assumption of either a standard CAPM or a zero-beta CAPM), then the asset beta is uncorrelated with the risk-free rate. The only potentially contentious issue is whether the TMR and RFR are correlated. However, here we agree with Wright and Mason when they note that (implicitly) in the calculation the CMA combines low (high) estimates of the RFR with low (high) estimates of the TMR, when calculating the upper and lower cost of equity in Table 9-2. But it does not carry this through to its final calculations in Table 9-26, so the point made is rather spurious.¹⁵⁹

2.3 CONCLUSIONS ON COST OF EQUITY

- (135) Ofwat’s new evidence from W&M on beta, further supports our position in the PFs Response that the CMA’s point estimate doesn’t rely on aiming up. If anything, the CMA’s beta range aims down, with little support for the lower end and robust empirical evidence of asset betas supporting estimates above the upper end of the CMA’s range.
- (136) The primary challenge made by Ofwat on the RFR is that the marginal investors in water is a relevant consideration. The zero beta CAPM literature, however, refers to the marginal investor in the market portfolio as opposed to the marginal investor in the particular stock that is being priced.
- (137) The international TMR evidence, which Ofwat suggests is used to cross-check the CMA’s numbers is not a like for like comparison with the UK figures. Nevertheless, the evidence from appropriate comparators supports TMR’s above the CMA’s TMR estimate.
- (138) However, accepting the CMA’s ranges as given, we consider that aiming-up to reflect asymmetry should not be contentious and should act as a floor to the degree of aiming up. Further, the CMA’s approach to aiming-up to account for uncertainty in the cost of equity estimate is reasonable. The need to do so is grounded in the academic literature and regulatory precedent and the CMA evidently considers each estimate within its ranges as equally likely, hence a uniform distribution assumption is correct.

3 ESTIMATING THE COST OF DEBT

3.1 EVIDENCE ON THE INDEX-LED APPROACH TO THE COST OF DEBT

3.1.1 The exam question when using an index-led, notional approach

- (139) Ofwat’s PFs Response implicitly suggest that the cost of debt implied by the benchmark-led approach applied by the CMA in its PFs should be calibrated such that it is consistent with the actual cost of debt observed on companies’ balance sheets in the latest APRs.¹⁶⁰ However, the purpose of the benchmark-led approach is summarised by Ofwat nicely in its response to the Disputing Companies’ statements of case:

“we set our allowance for the cost of embedded debt by reference to a market benchmark. This was as we considered that using a trailing average of our benchmark index has the best incentive properties.”¹⁶¹

¹⁵⁹ W&M para. 7.12

¹⁶⁰ Ofwat PFs Response Risk and Return, para. 4.3

¹⁶¹ Ofwat Response Risk & Return (REP026), para. 3.95.

(140) The core objective of the benchmark-led approach is to derive an independent benchmark for efficient debt costs for the notionally financed firm. Indeed, Ofwat consulted with the industry on the appropriate benchmark considering factors such as: (1) degree of circularity where indices were excluded if they contained too many utility bonds; (2) rating; and (3) tenor/maturity. The CMA has also recognised that the benchmark-led approach should be the primary approach for setting the cost of debt allowance given its incentive properties.¹⁶²

3.1.2 Evidence from the 2019/20 Annual Performance Reports

(141) Ofwat has carried out a high-level review of the cost of debt set out in the 2019/20 Annual Performance Reports (APRs), which indicates that the average cost of debt across the sector is 4.50%,¹⁶³ 31bps lower than the CMA's point estimate for embedded debt (4.81%) in the PFs.

(142) The cost of debt for WaSCs and WoCs based on the 2019/20 APRs, however, are not good approximations of and are likely to under-state the sector-average cost of embedded debt across AMP 7:

- the cost of debt implied by the APRs includes a number of instruments which Ofwat under its balance sheet approach considers could distort the observed cost of debt including callable debt, overdrafts, liquidity facilities and revolving credit facilities. The use of credit facilities or other temporary financing arrangements which are not representative of projected embedded debt costs across AMP 7 can materially under-state embedded debt costs. For example we note that Anglian Water's 2019/20 APR reflects a draw down on its credit facility to improve liquidity on a temporary basis and manage the cashflow impacts of Covid-19. The inclusion of this instrument understates the projected cost of debt across AMP7 by c.38 bps. Inclusion of short-term credit facilities are likely to materially under-state financing costs;
- short term instruments: 1) reduce the observed costs of debt (relative to the long-term financing in line with iBoxx benchmarks) given the upwards sloping yield curve, and 2) increase refinancing risk, which is not reflected in the costs reported in the APRs. As a result, where companies have issued shorter dated debt, this would understate the cost of long-term financing and we would expect this to introduce a wedge between the cost of debt implied by the benchmark and reported costs. The analysis of the outperformance wedge suggests that this is likely to be equivalent to at least 25bps.¹⁶⁴ We agree with the CMA that it would not be appropriate to adjust for these costs.
- the cost of debt in 2019/20 is at a point in time and does not capture how embedded debts across the sector are projected to evolve across AMP 7. This is likely to materially distort efficient financing costs on average across the AMP. The APR is also based on a full year equivalent interest cost and the principal balance as at 31 March (based on RAG 4.08) which can distort the underlying cost of debt as it does not accurately reflect average observed costs within a given financial year or take into account projected refinancing across AMP 7;
- the cost of debt for floating rate debt in the APRs does not take into account forward rate adjustments for LIBOR across AMP7. This is likely to be equivalent to 10bps as of October 2020. We also consider that floating rate debt would need to be adjusted to capture potential volatility and risk associated with floating rate debt, which is not priced in the reported cost of debt for 2019/20 in the APRs. An estimate of actual costs needs to take into account entirety of financing decisions made by companies as well as risk exposure embedded in current positions; and
- the APR is based on coupon rather than yield at issue and as a result would not reflect the effective borrowing rate (or market rate) for the bonds that were not issued at par. As the CMA noted in its Final Determination for Bristol Water (PR14) "*we consider the yield*

¹⁶² PFs, para. 9.340 – 9.345

¹⁶³ Ofwat PFs Response: Risk and Return, para. 4.7

¹⁶⁴ Based on the sample of bonds considered by Ofwat in its analysis of the outperformance wedge.

approach remains the most appropriate method to use... the coupon rate does not reflect the true costs of the debt when bonds are sold at a premium/discount".¹⁶⁵ Ofwat recognised this principle under its balance sheet approach.¹⁶⁶ Overall, reliance on the coupon rate is therefore likely to misrepresent actual debt costs.

- (143) As a result the comparison of the CMA's cost of embedded debt allowance and reported costs from the APRs is misleading and cannot be relied upon as a cross check or for calibration of the allowance for embedded debt costs as the APRs are prepared on a basis which is not technically correct.
- (144) Moreover, Ofwat's suggestion that the APR data can be relied upon appears to be opportunistic, as the reported data is clearly prepared – consistent with Ofwat's Regulatory Accounting Guidance – on a basis that is not consistent with the balance sheet cross check it applied in the past and used to calibrate its cost of embedded debt allowance. We welcome however that Ofwat appears to consider that the relevant benchmark for the cross-check is the all-in economic cost *including swaps*.
- (145) A more correct cross-check for the CMA's notional benchmark-led approach is the balance sheet cross-check including swaps. This is prepared on a very different basis to the APRs and contains a number of adjustments and implies an all-in economic cost of debt of 4.95%, 14bps higher than the CMA's allowance.
- (146) More generally to determine whether the allowance is right it is important to take into account an appropriate definition and specification of the history of financing for the notional company across the 20Y investment horizon. Where actual companies have chosen ex ante to adopt different maturity profiles and take out different combinations of fixed, floating, index linked and hedging instruments to mitigate financial risk it is not appropriate to "goal seek" the cost of debt implied by the benchmark approach to an ex post estimate of actual outturn costs.

3.1.3 The application of the outperformance wedge

- (147) Ofwat's latest submission on the outperformance wedge accepts that if: i) there is no systematic outperformance once rating and tenor are controlled for; and ii) the iBoxx A/BBB reflects the investment horizon of the notional company, then an outperformance wedge should not be applied:

*"If it were true that credit rating and tenor are the only factors determining yield - and if KPMG were correct that there is no outperformance of water bonds with respect to the iBoxx A and BBB indices once credit rating and tenor is controlled for - we would understand the logic of the CMA's position. Because the CMA has constrained the tenor of notional debt issuance (20years) to close to the iBoxx A/BBB historical average of 19.4 years, because its targeted credit rating of Baa1 is close to the iBoxx A/BBB credit rating of Baa1, these statements being true would signal little prospect of notional company outperformance."*¹⁶⁷

- (148) Ofwat, however, continues to disagree with the application of an outperformance wedge because it disputes: i) the KPMG analysis referred to by the CMA that finds no evidence of a material halo effect; and ii) now considers the iBoxx A/BBB to understate the rating of the notional company.

3.1.3.1 Ofwat analysis supports the finding that there is no halo effect

- (149) The CMA has provisionally found that there is no halo effect (i.e. no systematic difference in yield between water bonds and the iBoxx A/BBB when compared on a like for like basis). This was based, in part, on KPMG analysis which controlled for rating and tenor and involved:
- modelling the relevant iBoxx yield curve i.e. A or BBB, at the time of issuance, for every water bond in the sample;

¹⁶⁵ SOC336 Bristol Water PR14 CMA Decision, Appendix 10.1 para. 18 - 19

¹⁶⁶ SOC229 Ofwat DD: Cost of Capital Technical Appendix, p. 74.

¹⁶⁷ Ofwat PFs Response Risk and Return, p. 62.

- comparing the yield on the water bond with the point on the modelled yield curve, which matched the tenor at issuance of the bond being analysed; and
 - taking an average of the difference between all bonds in the sample and the appropriate point on the modelled iBoxx curves.¹⁶⁸
- (150) KPMG found no material evidence of a halo effect, with an average difference of +4bps across the full sample. KPMG’s methodology, described above, benefits from the informational value of using all of the bonds in the sample concurrently.
- (151) As a cross check on the aforementioned finding of there being no halo effect, KPMG carried out a simple analysis which bucketed the bonds in the sample into ‘tenor buckets’ and compared the yield on the water bonds with the yield on the relevant (i.e. comparable rating) iBoxx index. KPMG found that short tenor bonds outperformed the iBoxx significantly, bonds with comparable tenors were in line with the iBoxx and bonds with long tenors underperformed the iBoxx.¹⁶⁹ This finding was consistent with the conclusion from the modelling exercise, using the full data set and the intuitive expectation of an upward sloping yield curve. The finding also suggested that tenor was a key driver of the simple average difference in yield between the sample of water bonds and the iBoxx – because bonds with shorter tenors materially outperformed the iBoxx.
- (152) Ofwat has not replicated or explicitly challenged the detailed halo effect analysis described at paragraph (149). However, Ofwat has undertaken its own analysis of the simple average spread to the iBoxx by tenor bucket. Ofwat submits that the weighted average spread over the relevant iBoxx index (i.e. the iBoxx index of comparable credit rating) is negative at tenors that are significantly higher than the weighted average tenor of the relevant iBoxx constituents. It concludes that there is therefore no consistent relationship between longer tenor and the level of discount to the relevant iBoxx and suggests that KPMG’s findings are the results of its sample selection criteria.¹⁷⁰
- (153) Ofwat’s underlying analysis is summarised in Table 6 below and compared against KPMG’s findings. It should be noted that Ofwat’s sample of bonds is constructed using different sampling criteria to KPMG, such as the inclusion of callable bonds. In addition, Ofwat calculates an average spread that is weighted by issuance amount, whereas KPMG computes a simple average. We therefore present Ofwat’s results after both including and excluding those bonds within its sample that it deems to be ‘callable’.

Table 6: A comparison of average spreads by tenor bucket estimated by KPMG and Ofwat

	Averaging method	Up to -15 years	-15 to -5 years	-5 to +5 years	+5 to +15 years	+15 to +50 years
KPMG	Simple	-1.17% [3]	-0.36% [29]	-0.01% [20]	-0.02% [11]	+0.19% [3]
Ofwat (non-callable)	Simple	-	-0.51% [18]	-0.01% [16]	-0.02% [9]	+0.19% [3]
Ofwat (non-callable)	Weighted	-	-0.46% [18]	-0.08% [16]	-0.02% [9]	+0.09% [3]
Ofwat base case (inc. callable)	Weighted	-	-0.41% [30]	-0.06% [21]	-0.11% [12]	-0.15% [5]

Source: Ofwat R&R PFs Response Risk and Return, Table 4.3, page 64; KPMG (2020), ‘Analysis of Ofwat’s PFs Response on the Cost of Capital, Table 2 (Report prepared for Anglian Water)

Notes: Sample sizes are shown in square brackets. KPMG favours the use of a simple average when computing spreads, rather than weighting by issuance amount. This is because a bond should be priced accurately by investors to reflect its risk, regardless of how much financing is being raised by a company. Therefore, there is no informational advantage to bonds issued with large issuance amounts and as such, all bonds should attract equivalent weight in the estimation.

- (154) The following is evident from Table 6:
- under the Ofwat and KPMG approaches there is no evidence of a material halo effect because the simple average spread to the iBoxx for bonds in the -5 to +5 buckets is close

¹⁶⁸ SOC416 KPMG -Estimating the cost of capital for PR19, para. 5.5.3 - 5.5.7

¹⁶⁹ SOC416 KPMG -Estimating the cost of capital for PR19, Figure 7

¹⁷⁰ Ofwat R&R PFs Response Risk and Return, para.4.32

to zero and indeed significantly smaller than the 25bp wedge applied to embedded debt by Ofwat. In this regard, we consider that the EE position, which claims that credit and tenor are not the key drivers of yield is inconsistent with the KPMG and Ofwat analysis;¹⁷¹

- the sample size for the +15 to +50 years bucket is small. There are at least four times as many bonds with tenors at issue within 5 years, or between 15 years and 5 years shorter than the relevant iBoxx tenor, as there are with tenors in excess of 15 years greater than it. Therefore, the statistical accuracy in the very long-term tenor range is likely to be relatively diminished when compared to the other results. Moreover, KPMG has reviewed the characteristics of the two additional bonds in the very long-term tenor bucket in Ofwat's analysis. KPMG finds that the yield curve was inverted at the time of the bond issuance. This yield inversion contributes significantly to the divergence between the yields on the two additional bonds and the relevant iBoxx, which should not be interpreted as water-specific outperformance. This highlights the importance of the full modelling exercise conducted in the KPMG cost of capital reports, which captures the yield curve dynamics at the time of bond issuance; and
- the question of whether or not callable bonds should be included in the analysis is unimportant for the determination of the presence of a halo effect. Ultimately, KPMG's and Ofwat's estimates, under both sampling approaches, are consistent with the finding that there is no statistical evidence to support the existence of a Halo Effect. Nevertheless, we note that the iBoxx includes some callable bonds and excludes others.¹⁷² In this regard, the KPMG approach of excluding callable bonds in the full sample analysis is likely to be prudent because callable bonds ordinarily have a higher yield, due to the call option resting with the issuer. The water bond sample excluding callable is therefore if anything likely to bias the findings in favour of finding a halo effect.¹⁷³

(155) In summary, Ofwat's concern with the KPMG analysis appears to be centered on Ofwat's finding that there is outperformance for very long dated bonds (i.e. the right hand column in Table 6 above). However, this is evidently an artefact of the small sample size for the very long dated bonds and the simple 'tenor bucketing' approach not capturing the yield curve dynamics at the time of bond issuance.

3.1.3.2 Contrary to Ofwat's conclusion, the average spread to the iBoxx does not equal the spread at the average tenor

(156) Ofwat finds a weighted average spread over the iBoxx A/BBB for its full sample of bonds of 39bps. Ofwat also finds that the weighted average tenor is 21.9 years, which is comparable to remaining maturity of the iBoxx. On this basis, Ofwat asserts that there is no relationship between tenor and the level of discount to the iBoxx.¹⁷⁴

(157) Ofwat's conclusion regarding the weighted average spread for its sample overall, is incorrect. The expected spread at the average tenor (approximately zero in this case) is not equal to the average spread from the sample. This is due primarily to two effects.

- the distribution of tenors is not symmetric (the median tenor at issue is ~[15] years). Hence, it is entirely possible for the average tenor of the sample to be similar to the remaining maturity of the iBoxx constituents and yet find that tenor is a significant driver of the outperformance wedge; and
- there is a wide range of tenors in the sample. The concavity of the typical yield curve means that bonds with shorter tenors outperform the iBoxx by more than those with longer tenors underperform the benchmark, which is evident from Table 6 above.

¹⁷¹ In principle, we agree that if there is a material difference between the debt beta of water bonds and the average bond in the A/BBB, then a halo effect (i.e. outperformance after accounting for tenor and credit-rating) could be expected. However, KPMG's empirical analysis covering 20 years of listed debt issuances in the water sector does not support the existence of a material halo effect in practice. Rather than a material difference in systematic risk, we suspect that the difference between indices presented by Ofwat is more likely due to index construction.

¹⁷² Markit iBoxx GBP Benchmark Index Guide, July 2020, p.6

¹⁷³ We also note Ofwat's decision to exclude callable debt from its balance sheet approach because "the option to repay principal early assigns a material amount of reinvestment risk to the bondholder, potentially distorting the pure interest cost of borrowing which we aim to capture in our analysis" SOC229 Ofwat DD: Cost of Capital Technical Appendix, Table 4.4

¹⁷⁴ Ofwat R&R PFs Response Risk and Return, para. 4.31

(158) In summary, contrary to Ofwat’s conclusion, the average spread for the sample does not equal the spread at the average tenor. Ofwat’s conclusion fails to consider the distribution of tenors within the sample and the functional form of the yield curve.

3.1.3.3 A 50:50 weight of the iBoxx A/BBB is appropriate for the notional company

(159) Finally, Ofwat considers that even if it is accepted that there is no halo effect (i.e. no outperformance after accounting for tenor and credit-rating) metrics used in past price reviews covering the period 2000-2015 imply that the notional company had a higher rating than the CMA’s Baa1 target. Ofwat also considers that there are important features of financing in the water sector that are not captured by iBoxx A/BBB indices, such as floating rate debt.¹⁷⁵

(160) In this regard, we note that:

- Ofwat and the CMA are clearly targeting a credit rating of Baa1. A 50:50 mix of the A/BBB is in fact mid-way between A3 and Baa1. This is because bonds rated A1, A2 and A3 are included in the A index and bonds rating Baa1, Baa2 and Baa3 are included in the BBB index. Therefore, assuming that on average (over the 20-year period covered by the iBoxx analysis) there is an even distribution of bonds in the indices, a 50:50 average will approximate mid-way between A3 and Baa1. It follows that, if anything, the 50:50 A/BBB mix overestimates the target rating of the notional company;
- it is not clear from Ofwat’s evidence on credit-metric guidance in past price reviews¹⁷⁶ that Ofwat has targeted a credit rating above A3/Baa1 in the past; and
- KPMG’s analysis and conclusions regarding the outperformance wedge should be expected to hold for floating rate debt. This is because, the presence of markets for derivative instruments such as interest rate swaps implies that ex ante, there should be no material difference in value to an investor between floating-rate and equivalent fixed-rate debt that is issued by water companies. Furthermore, the notional company does not assume floating rate debt.

3.1.4 Weighting the trailing average based on historical RCV growth

(161) Ofwat argues that the CMA’s assumption that each year of the 20-year trailing average should be weighted equally is not realistic for a sector which has and continues to experience significant RCV growth and thus demand for new debt. Ofwat has presented new analysis suggesting that the CMA’s adoption of a 20Y trailing average in its PFs should be weighted based on actual RCV growth across the sector, rather than the equal weighting for each year assumed by the CMA.¹⁷⁷

(162) This approach is not appropriate for estimating the cost of debt for the notionally financed company. Companies should be incentivised to incur efficient costs based on what is controllable by the company (i.e. securing an efficient cost of debt against market rates prevailing at the time of issuance). Establishing a link between sector wide RCV growth, which companies cannot control, and remuneration of embedded debt exposes companies to significant risks of a mismatch between their (efficient) costs and regulatory allowances in the future.

(163) It is not clear why weighting the trailing average of the index based on sector wide RCV growth is appropriate. It appears that this is an ex post attempt by Ofwat to derive a cost of debt that is consistent with its pre-conceived view as opposed to a robust and principles-based methodology for estimating the cost of debt.

(164) Ofwat’s modelling on an RCV-weighted trailing average period is flawed and unlikely to represent a good proxy for notional company debt issuance:

¹⁷⁵ Ofwat R&R PFs Response Risk and Return, para. 4.13

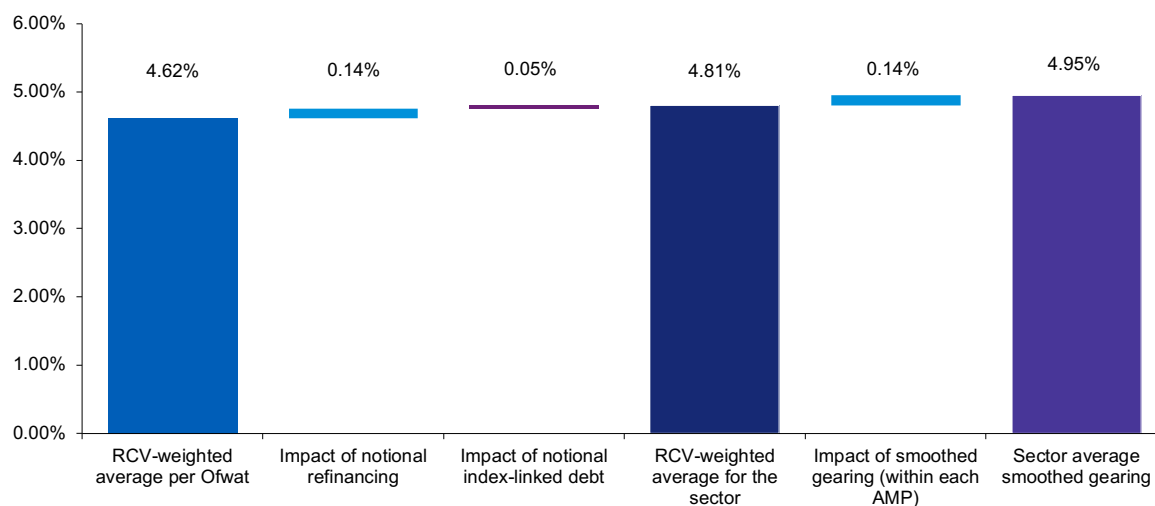
¹⁷⁶ Ofwat PFs Response Risk and Return, Table 4.5.

¹⁷⁷ Ofwat R&R PFs Response Risk and Return, para. 4.24 – 4.25

- this analysis is based on the unrealistic and unjustified assumption that the notional company carried out no refinancing of embedded debt between 2000 and 2010. It is not clear why Ofwat does not assume continuous re-financing of the RCV across the last twenty years, consistent with the assumption underpinning the iBoxx benchmark (that companies will issue debt each year to refinance existing debt and finance RCV growth) as well as the debt issued by the sector. As a result, Ofwat materially under-estimates debt issuance for the notional company when market rates were higher pre-financial crisis. As illustrated in the figure below, the impact of this (i.e. assuming notional refinancing in each year) is 14bps;
- Ofwat’s analysis assumes that all debt issued is fixed rate. However, in the last two price controls, the notional structure has included index-linked debt. All else equal, the accretion on this index linked debt reduces the new debt requirement for AMPs 5 and 6, the impact of which is 5bps; and
- Ofwat assumes that changes in notional gearing assumed in previous price controls should be directly reflected in the modelling. However, assumed changes in notional gearing (which has typically ex post been adjusted to reflect trends in actual company structures) should not be applied ex post to adjust the weighting of the trailing average, as this approach introduces a disconnect between past debt issuance and assigns disproportionate weight to individual years. If a gradual evolution of gearing was assumed across each AMP, this would imply a 14bps increase in the cost of debt as illustrated in the figure below.

(165) Figure 2 below shows the RCV-weighted cost of debt for the sector after correcting these modelling assumptions. It increases from the 4.62% calculated by Ofwat to 4.95% on an equally weighted basis.

Figure 2: RCV-weighted cost of debt variants (equally weighted)



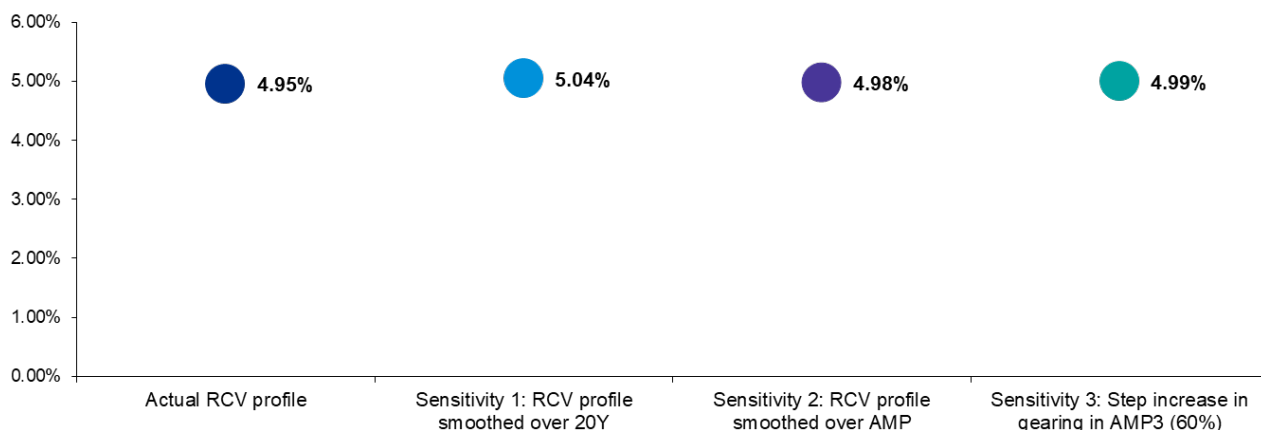
Source: KPMG (2020), ‘Analysis of Ofwat’s PFs Response on the Cost of Capital, Figure 2 (Report prepared for Anglian Water)

Notes: When modelling the impact of smoothed gearing rather than assuming a step change in notional gearing at the beginning of the AMP, the analysis models a gradual change over the five years of the previous AMP. For example, analysis assumes that the notional company would start off AMP3 at 50% gearing and finish it at 55%.

(166) The cost of debt implied by the RCV-weighted approach – adjusted to correct the errors identified in Ofwat’s modelling as above – indicates a cost of embedded debt of 4.95%. However, we consider that the cost of debt implied remains sensitive to a number of factors including the profile of RCV growth assumed over time and when the notional company is assumed to have achieved the current notional gearing assumed of 60%. It is reasonable for different individual companies to have different investment profiles than the sector average and should not be penalised for the factors they cannot control by the regulatory policy.

- (167) Assuming a smooth RCV growth profile over time (as opposed to the sector average) could increase the cost of debt implied by the iBoxx by 9bps or depending on the smoothing profile assumed increase this by 4bps, whilst assuming a stable notional capital structure over time (i.e. a step change for notional company gearing assumed to 60% from 2000) could increase the cost of debt by 3bps.

Figure 3 RCV-weighted cost of debt (equally weighted) for the sector under sensitivities



Source: KPMG (2020), 'Analysis of Ofwat's PFs Response on the Cost of Capital, Figure 3 (Report prepared for Anglian Water)

- (168) The sensitivity of the cost of debt implied by the RCV-weighted approach to assumptions around refinancing, the evolution of index-linked debt, gearing and RCV profile suggests that assigning an equal weight to each year of the trailing average period is likely to be simpler and would better reflect actual water company issuance.

3.1.5 Evidence on timing of water company debt issuance

- (169) Ofwat considers that KPMG's analysis of the issuance of sector's debt by period is likely to over-state the proportion of sector debt issued prior to 2006 as it does not include instruments such as bank debt.¹⁷⁸
- (170) KPMG's analysis of the timing of debt issuance across the sector is based on listed public debt for the following reasons:
- water companies have predominantly issued investment grade bonds in line with the target rating and capital structure assumed for the notional company; and
 - this is the most complete and robust publicly available dataset for outstanding water company debt issuances. This approach is also consistent with Ofwat's approach to the calibration of the index throughout PR19 (for example in its DDs) which was based on the same dataset.
- (171) We consider the evidence derived from public debt to represent the most robust basis for analysis of the timing of issuance of water company debt and the calibration of the trailing average period:
- we do not have a dataset which includes all outstanding private debt issuance across the sector. However, we understand that the majority of private debt issued by water companies is EIB debt as well as instruments issued in the US Private Placement market, and that this debt can be issued at tenors of up to 50Y¹⁷⁹;
 - Ofwat's advisers PwC found that approximately 1% of total debt is financed via bank debt (WoCs make greater use of this financing, with approximately 9% of their balance sheet debt sourced from banks).¹⁸⁰ This suggests that it is unlikely that including bank debt in

¹⁷⁸ Ofwat R&R PFs Response Risk and Return, para. 4.18

¹⁷⁹ EIB (2016), *The Need for Long-Term Investments in the Water Sector*

¹⁸⁰ PwC (2014), *Company specific adjustments to the WACC, - A report prepared for Ofwat.* https://www.ofwat.gov.uk/wp-content/uploads/2015/10/rpt_com1408pwcuplift.pdf

the analysis would have a material impact on the calibration of the cost of debt allowance; and

- it is important to recognise that the analysis of public debt does not include the impact of inflation accretion on index-linked debt. Given that the majority of index-linked public debt was issued pre-2011 this exclusion likely understates the coverage that a 20Y trailing average period would provide.

3.1.6 Review of Ofwat's analysis of non-operational financing

(172) Ofwat argues that a proportion of debt issued prior to 2006 relates to non-operational financing and should not be taken into account; as a result the 25% weighting assigned to this period by the CMA is disproportionate.¹⁸¹

(173) As recognised by the CMA, actual financial structures across the water sector are complex. There have been a number of financial restructurings across the sector in the past where some portions of equity capital have been replaced by or swapped for debt capital. Such capital replacements do not change the total capital invested in the business, but impact on financing structures and composition of capital invested in the RCV. However, there are a number of flaws in Ofwat analysis:

- Ofwat's analysis does consider the impact of the financing decisions on companies' cost of debt against plausible counterfactual scenarios. In realistic counterfactual scenarios it is likely that a similar proportion of debt would have been issued in AMP3 and AMP4 by the notional company. For example, there are companies which exhibit gearing similar to the current notional level which still have significant proportion of pre-2006 public debt outstanding.

Table 7 Proportion of pre-2006 debt outstanding

Company	Proportion of pre-2006 debt	Gearing at March 2020
Wessex	35%	66.24%
Northumbrian	34%	67.15%
Severn Trent	26%	64.89%

Source: KPMG (2020), 'Analysis of Ofwat's PFs Response on the Cost of Capital, Table 3 (Report prepared for Anglian Water)

- Ofwat's analysis is incomplete as it only identifies non-operational financing where companies' financing decisions resulted in year-on-year gearing increases of at least 5%. As a result, it does not consider cases where increases in gearing was more incremental or where capital replacement was achieved via alternative mechanisms. All else equal this is likely to materially over-simplify how companies' capital structures have evolved and under-state adjustments required for AMPs 5 and 6, in which a number of companies have gradually increased gearing levels when market rates are low; and
- Ofwat's approach excludes debt raised via intercompany loans but does not adjust subsequent debt issuance to exclude refinancing at lower rates of the non-operational financing identified. This means that Ofwat's analysis likely overstates the impact of any changes to capital structure on companies' AMP 7 portfolios and any impact on the calibration of the trailing average period.

(174) As a result, we do not consider that any adjustments for non-operational finance are required in the calibration of the trailing average period.

3.2 UNREASONABLE EVIDENCE IN THE WRIGHT & MASON PAPER

(175) The W&M paper does not appropriately address the role of the embedded cost of debt allowance, which is central to the W&M conclusions that Ofwat has in fact set the WACC too high. This is because W&M consider that there should be no allowance for embedded debt

¹⁸¹ Ofwat R&R PFs Response Risk and Return, para. 4.19

i.e. a zero-year trailing average and that the cost of debt should simply equal the cost of new debt.

- (176) W&M suggest that unregulated companies do not receive ‘insurance from their customers’ of pricing in the costs of embedded debt. They consider that whilst embedded debt allowance reduces risks, cost of debt and possibly cost of equity and WACC for regulated companies, ultimately it passes risks to the customer.
- (177) The regulator should set the allowances that approximate efficient market outcomes and conditions that would be acceptable to investors to finance similar assets. At the same time, customers should not pay inefficient costs that would not have resulted in a competitive setting at the time of investment.
- (178) Financing of other infrastructure assets typically depends on the long-term stability of revenue to match debt profiles (for example long-term PPAs, CfDs) and investors generally are unwilling and unable to take on material market risk of any significant deviations between revenues and costs of financing over time.
- (179) This is because of: (1) the asset heavy nature of the industry implying significant capital employed; (2) long term asset lives and hence investment horizons; and (3) limited flexibility when investing in fixed assets.
- (180) This means that the regulator cannot set prices purely on current market rates because infrastructure investors need to recover their costs of financing long terms assets.
- (181) W&M themselves cite reasons why such a mechanism would not make economic sense, including: (1) immediate financeability issues across the sector; (2) increased beta risk, default risk and therefore paradoxically higher WACC; and (3) more volatile bills.
- (182) W&M do not develop their own estimates of the different WACC parameters, but instead present different variants of WACC using Ofwat and CMA inputs assuming no allowance for embedded debt. It is not clear that this is sufficiently robust and justified to be taken into account when calibrating the allowance.
- (183) Finally, we note that W&M find a ‘paradox’ in their WACC estimates, being that debt is more expensive than equity. Rather than W&M’s analysis demonstrating that there is currently a paradox in terms of the relative cost of debt and equity – it appears more likely that the assumed cost of equity is too low. In this regard, we note that the low end and point estimates of W&M’s all equity WACC would be materially higher, if the debt beta implied by W&M’s assumed CoND is used in the cost of equity calculation.¹⁸²

3.3 CONCLUSIONS ON THE COST OF DEBT

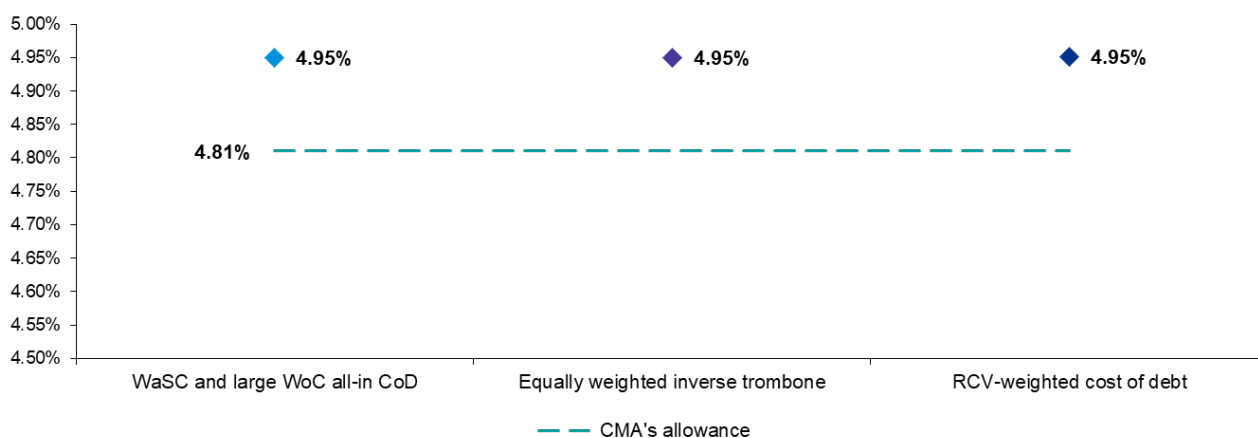
- (184) Ofwat’s analysis of the benchmark-led approach continues to confuse the balance sheet cross check, which is used to estimate the actual cost of debt across the industry, with the benchmark-led notional approach. The balance sheet cross-check and benchmark-led notional approach are separate exercises and should be treated as such – otherwise the benchmark-led approach collapses into setting the cost of debt based on the actual cost of debt for the sector, and the approach is no longer benchmark-led.
- (185) Ofwat’s use of APR evidence to show that the CMA’s embedded cost of debt allowance is too high is selective and misleading as APR data is not comparable to the regulatory allowance for embedded debt. Ofwat’s own balance sheet cross-check evidences this (both the figures themselves including swaps and Ofwat’s own acceptance that adjustments to reported numbers are required).
- (186) Ofwat’s challenges to the analysis of the outperformance wedge evidence are unfounded and rely on a small sample of long-dated bonds. We consider that Ofwat’s analysis ultimately

¹⁸² For the CAPM-WACC, the debt beta used to derive the cost of equity should be consistent with the implied debt beta in the cost of debt. For example, W&M’s CoND in their CMA point estimate scenario in Table 4 would imply a debt beta (on the assumption that the CAPM is used to price debt) of $c.0.17 ((6.95\%+0.96\%)*0.17)-0.96$ –0.37%. Applying this debt beta to the cost of equity would in turn materially increase the asset beta and therefore cost of equity.

supports the conclusions in the KPMG analysis, referred to by the CMA, which finds no outperformance when rating and tenor are controlled for

- (187) Ofwat’s RCV-weighted trailing average assumes the notional firm was not refinancing any debt pre-2010 and assumes no index linked debt for the notional company. When these assumptions are relaxed, the weighting approach does not materially differ to the simple average. Moreover, using sector wide actual RCV growth links the notional cost of debt too closely to actual data across the companies, creating arbitrary winners and losers that cannot be predicted ex ante and based on factors which cannot be controlled by the notional company.
- (188) Overall Ofwat has misrepresented the CMA’s PFs as over-funding the cost of embedded debt across the sector. The properly calibrated balance sheet cross check implies a cost of debt of 4.95% (14bps higher than the PF allowance for embedded debt costs) and is consistent with: (1) the equally weighted inverse trombone (4.95%); and (2) the range implied by the adjusted RCV-weighted approach (at least 4.95%).

Figure 4 Cost of debt implied by different approaches



Source: KPMG (2020), 'Analysis of Ofwat’s PFs Response on the Cost of Capital, Figure 1 (Report prepared for Anglian Water)

ANNEX 2: MAPPING OF OTHER ARGUMENTS ON WACC

Ofwat point in PFs Response	Where addressed
Cost of equity parameters	
Placing weight on AAA bonds when setting the RFR is unprecedented in regulatory decisions in the UK. <i>Ofwat PFs Response, Risk and Return, p.2</i>	Whilst true, the unprecedented move is in fact the move to current yields, which until now has not been fully tested at the CMA. <i>See for example SOC416 KPMG Estimating the cost of capital for PR19, paras. 4.5.4 to 4.5.10</i>
No weight should be placed on AAA bonds because investors don't need to borrow at the government rate, they can just short government bonds. <i>Ofwat PFs Response Risk and Return, p.80</i>	See NWL PFs Response, paras. 260-261.
No weight should be placed on AAA bonds when setting the RFR because there are significant distortions in the data sets. <i>Ofwat PFs Response Risk and Return, p.78</i>	See NWL PFs Response, paras. 260-261
CMA's TMR estimate from the historical ex post approach is too high because the most reliable approach is to deflate using CED/CPI and apply the JKM estimator. <i>See for example Ofwat PFs Response Risk and Return, p.2, 8, 74</i>	Detailed evidence and analysis has been submitted to the CMA on the appropriate inflation series and averaging techniques for the TMR, including the WACC roundtables. <i>See for example SOC416 KPMG Estimating the cost of capital for PR19 paras. 4.2.8 to 4.2.31 and 4.3.7 to 4.3.16.</i>
CMA should place sole weight on 20-year holding periods for TMR, rather than 10 and 20. <i>Ofwat PFs Response Risk and Return, p.74</i>	Including non-overlapping returns makes this point irrelevant. Non-overlapping returns are important because they are free of distributional assumptions or assumptions involving serial correlation. <i>NWL PFs Response, paras. 275</i>
Forward looking evidence is a useful cross check that doesn't appear to have influenced the CMA's choice of TMR. <i>Ofwat PFs Response Risk and Return, p.76</i>	We do not consider that weight should be placed on forward looking evidence. <i>See for example, NWL PFs Response, paras. 285</i>
The CMA's asset beta estimate is too high and its debt beta estimate too low because the CMA has followed an inconsistent approach to the removal of outliers. <i>Ofwat PFs Response Risk and Return, p.9</i>	NWL and its advisers follow a different approach to asset beta than both Ofwat and the CMA, which requires fewer estimation methodologies than the CMA and therefore less judgment with respect to removal of outliers. Updated, detailed analysis and argumentation is included in <i>PFREP003 Report on PFs Beta</i> Debt beta has a very small impact on the CMA's WACC given the comparability of notional gearing to the gearing of the listed comparators. <i>See SOC416 KPMG Estimating the cost of capital for PR19, Table 7.</i>
Index-led approach to embedded debt	
The cut-off date for embedded debt should be March for final determinations. <i>Ofwat PFs Response Risk and Return, p.66</i>	NWL agrees with Ofwat on this point. <i>See for example, NWL PFs Response, para. 304</i>
Top-down sense checks	
MARS, market transactions and share price movements following Ofwat's FD demonstrate that there is a healthy appetite to invest. <i>Ofwat PFs Response Overview, Page 4, Ofwat PFs Response Risk and Return, p.14, 30, 72</i>	The reliability of the MARS evidence and conclusions which can be drawn have been addressed by NWL previously. <i>See for example, NWL Reply (June 2020), Annex 1: MARS Analysis, p. 141.</i>

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ANNEX 3: NOVEL ASPECTS OF FD19

	Ofwat FD19	CMA NATS (2020)	CMA Bristol Water (2015)	Ofwat PR14	CMA NIE (2014)
Risk free rate: Averaging period / use of outlier data	Use of September data, 1-month averaging period	Spot rates cross-checked with 3-month and 6-month trailing average ⁱ	Significant premium to spot rates (1.25% determination vs 0% spot) reflecting CMA NIE ⁱ	Spot rates used (no trailing average applied) ⁱⁱⁱ	Significant premium to spot rates (1.0%-1.5% range vs 0% spot) ^{iv}
TMR: Placing weight on forward-looking models	Weight placed on forward-looking models	No weight placed on forward-looking models ^v	Reference to NIE precedent ^{vi}	Weight placed on forward-looking models ^{vii}	Forward-looking approaches used only as a cross-check on estimates based on historic data ^{viii}
TMR: Use of JKM estimator	Focus on JKM estimator and whole-period geometric averages adjusting for different holding periods and serial correlation	Use of a broad range of estimators, including Blume and the MSE variant of JKM ^x	Not included, as not yet available	Not included, as not yet available	Not included, as not yet available
TMR: Inflation series	Exclusive reliance on Bank of England's Millennium Dataset CPI series	Use of both RPI and the CPI series, placing "somewhat greater weight" on the latter (former used as a cross-check) ^x	Exclusive use of RPI series	Exclusive use of RPI series	Exclusive use of RPI series
Cost of embedded debt: Outperformance wedge	25 bps deduction from iboxx index	Based on yield at issuance of NERL actual embedded debt	Implicit deduction from midpoint of iboxx index (due to inclusion of WASC bonds in range) ^{xi}	Implicit 5 bps deduction from midpoint of iboxx index ^{xii}	Based on yield at issuance on NIE's actual cost of embedded debt ^{xiii}
Aiming up ¹⁸³	No explicit range provided; however, subsequent comments oppose aiming up	Point estimate set at midpoint of the range ^{xiv}	Point estimate set at midpoint of the range ^{xv}	Point estimate close to top of range ^{184xvi}	Point estimate chosen at the top of the range ^{xvii}
GSM	Penalty applied to companies above a certain gearing threshold	No penalty applied based on actual gearing	No penalty applied based on actual gearing	No penalty applied based on actual gearing	No penalty applied based on actual gearing
Catch-up costs	Use of 3rd/4th ranked company as benchmark	N/A - no top-down benchmarks applied	Industry-average efficiency benchmark ^{xviii}	Upper quartile used as benchmark ^{xix}	5th ranked company (out of 15) used as benchmark ^{xx}
Frontier shift scope	Applied to some uncontrollable costs (e.g. business rates and abstraction)	Did not apply to uncontrollable costs	Did not apply to uncontrollable costs	Did not apply to uncontrollable costs	Did not apply to uncontrollable costs
ODIs: Basis	Comparative using forecast level data for some ODIs	Individual company targets	Individual company targets	Individual company targets	Individual company targets
ODIs: Cost recovery	No additional funding beyond base costs	N/A - no comparable ODI mechanism in place	Additional funding based on unit cost modelling	Additional funding based on unit cost modelling	N/A - no comparable ODI mechanism in place

Areas where Ofwat's FD19 differs from precedent
Areas where Ofwat's FD19 is not directly comparable
Areas where Ofwat's FD19 is consistent with precedent

¹⁸³ For a more complete list of regulatory precedent which supports the use of aiming up, see Figure 3 in Oxera: 'Aiming high in setting the WACC: framework or guesswork', 2015: <https://www.oxera.com/agenda/aiming-high-in-setting-the-wacc-framework-or-guesswork/>

¹⁸⁴ Based on risk-reward guidance. Ofwat subsequently reduced the point estimate in the FD. However, this was not a move within the range, but rather reflected a reduction in the forecast new debt cost.

- ⁱ CMA Final Report NATS (En Route) Plc/CAA Regulatory Appeal, 23 July 2020, para. 13.265
- ⁱⁱ SOC336 Bristol Water PR14 CMA Decision para. 10.172.
- ⁱⁱⁱ SOC336 Bristol Water PR14 CMA Decision para. 10.166
- ^{iv} CC (2014) Northern Ireland Electricity Limited price determination para. 13.129.
- ^v CMA Final Report NATS (En Route) Plc/CAA Regulatory Appeal, 23 July 2020 para. 13.241
- ^{vi} SOC336 Bristol Water PR14 CMA Decision para. 10.185-10.186.
- ^{vii} SOC336 Bristol Water PR14 CMA Decision Figure 10.3.
- ^{viii} CC (2014) Northern Ireland Electricity Limited price determination para. 13.137
- ^{ix} CMA Final Report NATS (En Route) Plc/CAA Regulatory Appeal, 23 July 2020 Table 13-14
- ^x CMA Final Report NATS (En Route) Plc/CAA Regulatory Appeal, 23 July 2020 para. 13.198
- ^{xi} SOC336 Bristol Water PR14 CMA Decision para. 10.55
- ^{xii} SOC336 Bristol Water PR14 CMA Decision paras. 10.32, 10.33.
- ^{xiii} CC (2014) Northern Ireland Electricity Limited price determination para. 13.58
- ^{xiv} CMA Final Report NATS (En Route) Plc/CAA Regulatory Appeal, 23 July 2020 para. 13.299
- ^{xv} SOC336 Bristol Water PR14 CMA para. 10.197
- ^{xvi} Ofwat PR14: Setting price controls for 2015-20 - Risk and Reward Guidance, Table 8 https://www.ofwat.gov.uk/wp-content/uploads/2015/11/gud_tec20140127riskreward.pdf
- ^{xvii} CC (2014) Northern Ireland Electricity Limited price determination para. 13.189
- ^{xviii} SOC336 Bristol Water PR14 CMA Decision para.4.245
- ^{xix} SOC336 Bristol Water PR14 CMA Decision para.4.206
- ^{xx} CC (2014) Northern Ireland Electricity Limited price determination para. 8.140