NWL STATEMENT OF CASE

PR19 CMA REDETERMINATION

NORTHUMBRIAN WATER *living water* | ESSEX&SUFFOLK WATER *living water*

CONTENTS

1 EXECUTIVE SUMMARY 3

2 BACKGROUND TO NORTHUMBRIAN WATER 12

3 OFWAT'S STATUTORY DUTIES 31

4 WORKING TOWARDS THE CONSUMER OBJECTIVE 38

5 SETTING THE APPROPRIATE LEVEL OF CHALLENGE IN THE ROUND 54

6 SETTING THE RIGHT INCENTIVES 102

7 FURTHERING THE RESILIENCE OBJECTIVE 118

8 SETTING THE APPROPRIATE COST OF CAPITAL 146

9 TAKING ACCOUNT OF NEW INFORMATION 166

10 ENSURING THAT NWL CAN FINANCE ITS FUNCTIONS 177

11 CONCLUSIONS 205

Appendices

Appendix One: Glossary
Appendix Two: Index of Supporting Documents
Appendix Three: Index of Figures
Appendix Four: Index of Tables

FOREWORD FROM HEIDI MOTTRAM, CEO OF NORTHUMBRIAN WATER

As CEO of Northumbrian Water since 2010, I am proud to be part of a company that is truly committed to its vision and purpose of being the national leader in the provision of sustainable water and wastewater services for our customers.

Our customers naturally wish to see lower bills and in our business plan we offered the largest reduction in bills in the sector. However, along with all our stakeholders, our customers also demand sustainability and resilience in the delivery of our water and wastewater services. As a responsible business, they expect us to address challenges posed by climate change, which typically affects our regions in different ways, with flooding in the North East and water scarcity in Essex and Suffolk. In order to make those long-term commitments that our customers and stakeholders expect, we also need a reasonable financial return on our investments, so that we are economically viable and financially resilient long into the future.

As a regulated monopoly delivering services that are vital to public health, we recognise that we must continually challenge ourselves to deliver excellent service to our customers and demonstrate that we are a company that can be trusted and lives up to our accolade as the World's Most Ethical Water Company.[1]

Our performance over the last two regulatory periods shows that we are delivering against these aims. I am particularly proud that we have been recognised for our environmental performance,[2] our innovation,[3] being a great place to work[4] and being a leading utility.[5] Our strong track record of delivering high levels of service and excellent value for customers is based upon a culture of driving efficiencies and striving for outperformance. This has delivered value for our own customers but has also helped to shift the performance frontier for the industry as a whole, thereby driving down industry costs and improving service levels in other regions as well.

In keeping with this culture of improving standards, when we embarked upon the process of creating our business plan, it was always our strong intention to listen to customers, to set ourselves ambitious goals, to deliver excellent value for money and to embed resilience for the long term. This is what our customers told us was important to them.

Our customers already benefit from some of the lowest and most affordable bills in the sector, but our business plan[6] went further and offered customers a 15% reduction in bills - the largest of any water company.[7] In addition, we were the first company to make an ambitious commitment to eradicate water poverty by 2030, with concrete and innovative steps towards this goal in AMP7.[8]

For PR19, we have continued our close focus on customer engagement. Clearly understanding customer priorities and developing deeper relationships between ourselves and those who receive our services is key to meeting current service expectations, while also preparing for future challenges ahead. Our business plan fully reflects this ethos in practice.

We developed our business plan through a comprehensive process, involving thousands of hours of engagement with more than 400,000 customers and stakeholders, during which we listened closely to what we were being told and shaped our plan accordingly. Our approach and resulting proposals were subject to robust review and challenge from the independent Water Forums which pushed us to set out the best possible package for our customers. We are convinced that we have been very responsive to what has been asked of us.

In our business plan we have also committed to both improving and delivering above-average levels of service. In several areas of performance, our proposed service levels are at the industry frontier. Our enhancement programme is critical to

1 *NWL – Press Release – Northumbrian Water on cloud nine with World's Most Ethical Water company accolade, 25 February 2020, SOC271.*

2 *The Environment Agency's Annual Environmental Performance Report recognised that NWL scored a "green" rating against all six of its regulatory metrics in 2018, the only UK water company to achieve an all-green performance rating since 2015. The summary noted that "Only Northumbrian Water achieved the highest level of performance (industry leading) which we expect from all companies". Environment Agency's Annual Environmental Performance Report, Summary: environmental performance of the water and sewerage companies in 2018, 10 July 2019, SOC385.*

3 *NWL was recognised for Information Management Achievement at The Intelligent Asset Management (IAM) Global Awards December 2019 and received the BIM4Water Award for "Outstanding Achievement in Digital Delivery within the UK Water Industry" in May 2019. 2020 will see our fourth annual Innovation Festival – a groundbreaking initiative for a water company that brings together creators and innovators to tackle some of the biggest social and environmental issues facing the industry.*

4 *ChronicleLive – Here are the 50 Best Places to Work in the North East for 2019, 1 February 2020, SOC405.*

5 *Named "Utility of the Year". Utility Week – Utility Week Awards winner case study: Utility of the Year 2017, 2017, SOC348.*

6 *NES – Living Water: Our plan 2020 – 2025 and Beyond (September 2018), "**BP19 (ed.09.18)**", September 2018, SOC001.*

7 *Ofwat – Business Plans: What companies proposed and we have assessed, "**Ofwat PR19 Business Plans Comparison Table**", March 2018, SOC219.*

8 *NWG – Living Water – Northumbrian Water Group leads the way on affordability with commitment to eradicate water poverty by 2030, 2019, SOC265.*

increasing resilience in areas where this was strongly supported by our customers. Overall, 91% of our customers accepted the plan we put forward, one of the highest levels of acceptability across the sector.[9]

By combining sector-leading bill reductions, high levels of service, efficient operations and investment in resilience for the future, our plan for PR19 delivers a high-quality outcome for our customers and stakeholders and addresses the challenges that we face in our two operating areas as well as in the sector as a whole.

Seen in this context, we found ourselves, as a Board, surprised and very disappointed at the final determination delivered by Ofwat. After careful and detailed consideration, our Board unanimously agreed that it is in neither the short-term nor long-term interests of our customers and stakeholders.

The resultant final determination fails to achieve an acceptable level of balance between reducing bills, delivering better service and ensuring long-term resilience in the round. Not only does it result in an unprecedented 24%[10] reduction in bills, but it does not appropriately recognise the ongoing need to fund and make investment in essential services, particularly in the face of the increasing and obvious challenge of climate change.

Instead, Ofwat's complex web of interventions across the settlement's various components (including cost allowances, efficiencies, sharing factors; performance commitment targets and outcome delivery incentive rewards and penalties; WACC and other mechanisms), many of which were introduced late in the process, have compounded into an overall unacceptable level of risk for the delivery of our AMP7 programme and the financeability of our business. The fact that Ofwat has had to advance revenues, for the majority of companies, from future periods further illustrates that overall returns are not consistent with a financeable outcome.

When we reflected back on our commitment to deliver a well-balanced plan that listened to customers, drove higher standards, delivered excellent value for money and sector-leading bill reductions, gave a fair return to investors and crucially invested in resilience for the future, it is difficult not to be disappointed with the Ofwat final determination. After careful consideration, our Board has unanimously concluded that, in light of the serious consequences for our customers, we must seek this reference to the CMA.

9 *NES – Living Water: Our plan 2020 – 2025 and Beyond, "**BP19 (ed 08.19)**", August 2019, p. 31, SOC129.*

10 *In its FD19, Ofwat refers to a bill reduction of 25.6% (or 26% when rounded). This figure compares our average bill in 2019/20 to the forecast average bill in 2024/25. However, in reporting this overall figure, Ofwat has not correctly adjusted for the fact that our Northumbrian area includes water and wastewater services whereas the Essex & Sussex area includes water services only. When correct weighting is applied to the bill reductions in our areas, the combined bill reduction for NWL is 23.5% (or 24% when rounded). This figure compares directly with the 15% reduction we included in our BP19. For consistency, we therefore refer to the bill reduction in Ofwat's FD19 as 24% - rather than the 26% that Ofwat uses.*

1 EXECUTIVE SUMMARY

1.1 BACKGROUND TO THE SUBMISSION

1. On 16 December 2019, Ofwat published its Final Determination (**FD19**) for Northumbrian Water Limited (**NWL**).[11] FD19 set out Ofwat's decision with respect to our price controls for the period 2020-2025 (also referred to as **AMP7**) following the conclusion of the Price Review (**PR19**).

2. On 14 February 2020, NWL formally rejected FD19 and requested Ofwat to refer it to the Competition and Markets Authority (**CMA**) for redetermination[12] in accordance with the procedures under the Water Industry Act 1991 (**WIA**) and our Licence.[13] Ofwat referred our FD19 to the CMA on 19th March (**Notice of Reference**).[14]

3. This document is our Statement of Case (**SoC**) and sets out our position on the key issues that will be considered by the CMA.

1.2 WHY WE HAVE SOUGHT A REDETERMINATION

4. NWL is a large Water and Sewerage Company (**WaSC**) providing waste and wastewater services to 2.7 million customers in the North East of England, and water-only services to 1.9 million in Essex and Suffolk. We have a duty to our customers to provide water and wastewater services, and we take our obligations in providing such essential services extremely seriously. We manage a substantial and complex asset base. Accordingly, a failure in our asset base or the provision of our services could have significant impacts for our customers and the environment (both immediate and long-term).

5. We recognise that as a monopoly provider we are subject to regulation by Ofwat and we welcome an approach based on the principles of best regulatory practice: transparency, accountability, proportionality, consistency and appropriately targeted measures. We endorse objective, incentive-based regulation as the best way of improving these essential water and wastewater services for customers and enhancing public trust in the sector. It also best mimics the disciplines and behaviours of a competitive market.

6. As we take steps to continue our trajectory of ever-improving performance and efficiency against a backdrop of climate change impacts on the resilience of our essential services, it is more important than ever that our approach to AMP7 balances the needs of our current and future customers. Achieving the right balance, in accordance with the statutory duties placed on Ofwat, is crucial to ensuring that the right behaviour and investment is adequately incentivised and rewarded.

7. Our business plan for AMP7 (**BP19**) set out a stretching, ambitious and innovative set of proposals based on the priorities of our customers.[15] BP19 offered the largest bill reduction of any company in the water and wastewater sector[16] at 15% alongside improving and delivering above-average levels of service, as well as investment in resilience and sustainability.[17] Our Customer Challenge Group[18] (**CCG**), the Water Forums, subjected our overall approach, our customer engagement and our BP19 proposals to rigorous review and challenge.[19] Ultimately, 91% of our customers supported our overall proposals.[20]

8. In arriving at FD19, Ofwat must balance its primary statutory duties under the WIA to protect the interests of customers, secure the long-term resilience of water supply and wastewater systems, and ensure that companies carry out their functions and are able to finance them. Ofwat's FD19 fails to achieve the right balance in the round, in both the short and longer-term, with respect to the interests of our consumers, the efficiency of our costs, the

11 *Ofwat PR19 Final Determinations: Northumbrian Water Final Determination, "**FD19**", 16 December 2019, SOC183.*
12 *NWL letter to CMA: Final Determination for Northumbrian Water Limited, 14 February 2020, SOC268.*
13 *Water Industry Act 1991, "**WIA**", 28 September 2018, SOC313; Northumbrian – Water & Sewerage Undertaker – Appointment, June 2015, SOC244.*
14 *Ofwat – Reference of the PR19 Final Determinations: Notice of reference for Northumbrian Water, March 2020, SOC270.*
15 *BP19 (ed. 08.19), SOC129.*
16 *Ofwat PR19 Business Plans Comparison Table, SOC219.*
17 *This bill reduction is a weighted average of the bill reductions across our water and wastewater activities. Calculated separately our BP19 would deliver a 17% reduction for wastewater customers and 14% reduction for our water customers. These figures compare the average NWL bills water and wastewater in 2019/20 to the forecasted average bills at the end of AMP7 in 2024/25.*
18 *Plural or singular given the different areas = this is treated differently throughout.*
19 *Northumbrian Water And Essex & Suffolk Water Water Forums Report: A Report to Ofwat regarding NWL's business plan 2020-2025, "**Water Forums' Report**", September 2018, SOC009.*
20 *BP19 (ed. 08.19), SOC129, p.31.*

resilience of our operations, the level of returns and the financeability of our business. The same duties inform the CMA's task on the redetermination.

9. Ofwat has, however, failed to discharge its duties under the WIA appropriately. Rather than achieving an adequate balance in the final determination:

- the overall expenditure outcomes package is unbalanced with an undue focus on short-term bill reductions resulting in an inadequate overall revenue allowance, thus putting the delivery of service to customers at risk at the performance levels they expect and deserve as reflected through stretching performance commitments (**PCs**);
- it fails to allow sufficient revenue to support outcomes which our customers have indicated that they are prepared to pay for;
- investors cannot reasonably expect to earn a return that is commensurate with the cost of capital; and, hence
- we are going to find it progressively more difficult to attract the long-term investment needed to secure resilient and sustainable development and investment into the future.

10. NWL paid heed to Ofwat's early views in the final methodology for PR19 and set itself the challenge of delivering a business plan which was stretching in terms of PCs and Outcome Delivery Incentives (**ODIs**), efficiency targets, costs and enhancements, taking into account the early view cost of capital for the notional company. It listened to Ofwat's feedback throughout PR19 and adjusted its plan accordingly, accepting an even more stretching plan. Despite those adjustments, in FD19 Ofwat took the stretching targets that we set ourselves to achieve, while reducing the allowed returns and costs required to do so. The necessary investments and performance standards have not been funded which has led to an unbalanced settlement that our Board is unable to accept.

11. If the final determination were to be implemented without modification, it would have significant adverse consequences for our business, customers and stakeholders:

- the package in the round fails to allow an efficient level of Totex to enable us to fulfil our functions and deliver at the level of service our customers expect and deserve to see: Ofwat has set very stretching efficiency challenges, many of which go beyond regulatory precedent or what can be objectively justified by robust evidence. Ofwat's approaches in this regard are concerning in the first instance simply because of the poor precedent that they could create unchallenged. Whilst the cost challenges we face are likely to be smaller than some other appellants, they need to be considered in the context of our overall position as an efficient company and the level of stretch in the service package that we are seeking to deliver. Ofwat has set very stretching service improvement targets. For NWL that stretch needs to be seen against a level of regulatory challenge to revenues that is 126% greater at PR19 relative to prior past controls on average (i.e. the level of challenge Ofwat has applied as measured by the difference between the requested revenues of the company in its business plan versus the allowance at the FD indicates that Ofwat has been around 2.3x more challenging than the average challenge applied across the PR04, PR09 and PR14 controls).[21] If we were to move forward with the cost allowances provided in FD19 then we would expect to see deterioration in service and likely cost overruns particularly on our wastewater business;
- **our ability to finance the proper carrying out of its functions will be impaired**: the combination of unrealistically low cost allowances, challenging and stretching performance targets, asymmetrically and downwardly skewed ODIs and an unprecedented low cost of capital means that we cannot expect to earn a reasonable level of return in the base case or achieve a credit rating that is consistent with what is assumed in the cost of debt (**CoD**) allowance. Nor would we have sufficient headroom in ratios to be resilient to plausible downside scenarios including those prescribed by Ofwat. Overall, this would have a severe adverse impact on our ability to finance our functions at the allowed level of financing costs (both for equity and debt);
- **the concerns about financeability will not be addressed**: to address concerns about financeability arising from Ofwat's PR19 Draft Determination (**DD19**), Ofwat advanced more than £500m of future revenue for 12 companies in FD19 to solve the notional company credit metrics. Given that independent rating agencies view such revenue fast-tracking as credit neutral, Ofwat is failing to address the significant financeability impairment that its PR19 package has introduced for the sector as a whole, as evidenced by

21 *Economic Insight – Top-down analysis of the financeability of the notionally efficient firm: A follow on report for Anglian Water; Northumbrian Water and Yorkshire Water, 20 March 2020, SOC413, p.24.*

the multiple credit rating downgrades that have already occurred since FD19. [22] This short-term solution places significant pressure on future customers and is not sustainable in the long term. It leads to the scenario whereby a well-managed and efficient company, such as NWL, along with 80% of the industry, is facing a credit rating downgrade of one, or in some cases two notches, which may impact our ability to access capital markets, undermine delivery of our plan and incentivise risk-averse behaviours with negative consequences for the delivery of core customer objectives and company performance. Such an outcome is clearly inconsistent with the Consumer Objective, the Functions Duty, the Resilience Objective and the Financing Duty (see Section 3 below); and

- **we will specifically fail to deliver against the expectations of our customers in regard to satisfying the resilience objective**: Ofwat has reinterpreted this duty as encompassing operational, corporate and financial resilience, but the shortfall in the funding for our expenditure program jeopardises operational resilience and we would not be able to make investments that customers and the Water Forums have explicitly supported. Furthermore, the shortfall in our allowed return jeopardises financial resilience.

12. In contrast, while our BP19 still delivers very significant bill reductions together with a strong package of affordability measures for our most vulnerable customers, it would also:

- allow an efficient level of Totex that will enable us to finance our functions fairly as a provider of wholesale water and sewerage services, including delivering necessary resilience projects, while still ensuring that we are subject to a significant challenge to deliver operational and cost efficiencies;
- deliver an improved service to customers, and provide an unrivalled customer experience;
- achieve an outcome that better reflects the broader interests and priorities of our customers, achieving a substantial short-term reduction in bills without undermining inter-generational fairness;
- properly support sustainable development and investment in schemes designed to deliver resilience against the risks posed by climate change across both our regions, consistent with our purpose of delivering sustainable water and wastewater services for our customers both now and in the future; and
- supports long-term operational and financial resilience and ensures financeability.

13. Addressing the areas of concern that we highlight in FD19 would still enable us to offer some of the largest bill reductions across the sector aligned with very stretching service improvement levels, which we have almost entirely accepted and are not proposing to challenge. We are absolutely not, as Ofwat suggests, seeking higher prices for poorer performance.[23]

14. Taking the FD19 package in the round, therefore, the combined impact of Ofwat's interventions is to create an overall unacceptable level of risk for the delivery of our AMP7 programme and the financeability of our business. In order to ensure the right outcomes for our customers during AMP7 and beyond, a redetermination by the CMA is needed to address and correct all the areas of imbalance that are apparent in the current package.

1.3 AREAS OF FOCUS FOR THE CMA'S REDETERMINATION

15. The purpose of our SoC is to provide the CMA with the background and evidence that it requires to carry out its redetermination. We recognise that the CMA's discretion in a redetermination extends to all aspects of FD19, and not just areas where there is disagreement between Ofwat and NWL. We have, however, also heeded the CMA's direction that our SoC should be focused on key areas of concern relevant to NWL[24] and note the approach taken in the CMA's review of Bristol Water's PR14 price determination (**Bristol Water PR14 Decision**).[25]

22 *On 20 December 2019, Moody's Investors Service announced that it had placed on review for downgrade 12 UK-based regulated water companies and two high-yield holding companies. The rating actions followed publication by Ofwat of FD19. Moody's noted that FD19 includes a significant cut in allowed return which, in conjunction with challenging performance targets and gaps between allowed and requested expenditure, will weigh on credit quality. Moody's – Moody's reviews 12 UK water groups for downgrade, 20 December 2019, SOC400. S&P downgraded four of the companies that accepted FD19 and place those that referred it to the CMA on negative watch. Standard & Poor's downgrades four of the final determination acceptors, 1 March 2020, SOC411.*

23 *CMA Water Regulatory Appeals -1: Notes of a hearing with Ofwat, "**Ofwat Transcript 4.02.20**", 4 February 2020, SOC415, p.18; CMA-Ofwat slides: 2019 price review - teach in, 4 February 2020, SOC501, p.13.*

24 *Letter from the CMA to all Water Company Regulation Directors on Potential PR19 Water Reference(s), "**CMA Letter 6.11.19**", 6 November 2019, SOC395.*

25 *CMA – Final Determination – Bristol Water: A reference under section 12(3)(a) of the Water Industry Act 1991, "**Bristol Water PR14 CMA Decision**", 6 October 2015, SOC336. In its review of Bristol Water's PR14 determination, the CMA did not examine the retail price controls in detail as both Bristol Water and Ofwat had indicated that this was not necessary, and the control could be ring fenced from other issues (CMA Letter 6.11.19, SOC395, p. 4).*

16. Our SoC focuses on the areas of material difference between our approach in BP19 and Ofwat's FD19 that we would like to be prioritised as part of the CMA's redetermination for NWL. These are detailed in the sub-sections below.

17. In selecting these areas, we have taken on board the degree of focus requested by the CMA and considered the overall level of stretch, challenge and ambition built into our BP19 proposals and how that sits relative to Ofwat's FD19. As a result, we have focused on the elements of Ofwat's FD19 which move that challenge to a point where we do not consider it to be consistent with Ofwat's statutory duties.

18. There are other areas of difference between NWL and Ofwat but we do not consider these to be sufficiently material to be prioritised for this redetermination. As such, we have not made detailed representations on those other issues but we do provide an overview at SOC520.[26] We do, however, reserve the right to make such submissions in the event that the CMA opts to take a detailed look at areas outside those covered in this SoC. Moreover, we note that we have not considered all the points raised by Ofwat in their Notice of Reference and we will respond to these in full in later submissions. Nevertheless, this SoC will respond to the more material points Ofwat raises in that document.

1.3.1 Ofwat's FD19 fails to provide the efficient costs NWL needs to fulfil its functions

19. Allowing efficient costs is critical to balancing the need for efficiency and value for money against ensuring the ongoing delivery of the essential water and wastewater services and the delivery of the company's functions.

20. Ofwat has set a variety of efficiency challenges in FD19 which fail to reflect the reasonable cost pressures faced by NWL and the degree to which costs are outside management control, in particular, in respect of costs such as business rates, abstraction charges and costs to meet certain statutory obligations.[27] Ofwat has also introduced last minute changes of approach, wrongly denying the industry an opportunity to comment on those changes in good time and failing to take due account of the principles of best regulatory practice. These have included changing the starting point for frontier efficiency and extending the scope of the frontier shift challenge, each of which has had a significant negative impact on our allowance.

21. These issues are considered in Section 5.

1.3.2 Ofwat's FD19 introduces perverse incentives that will not promote the Consumer Objective

22. Ofwat has set asymmetric cost sharing rates in FD19. These have poor incentive properties that encourage companies to reduce costs rather than suggest what the efficient costs are. They also place substantial weight on Ofwat's models being 'right'. The impact of these rates is to introduce a negative skew into the package and drive a downside risk. Ofwat also introduce poorly calibrated aggregate ODI reward caps which fail in its stated objective and do not incentivise companies to meet the Consumer Objective. They will also weaken the incentives to reduce costs and improve service over time for the longer-term benefit of customers.

23. These issues are considered in greater detail in Section 6 below.

1.3.3 Ofwat has failed to meet its statutory duty to further the Resilience Objective

24. The Resilience Objective requires Ofwat to secure the long-term resilience of our water and sewerage systems in relation to environmental pressures, population growth and changes in consumer behaviour.[28] The intention is that, through the price control settlement, Ofwat will secure that undertakers are taking steps to meet that objective. In its approach to PR19, Ofwat has not adequately discharged this duty as part of a balanced settlement.

25. In particular, Ofwat has rejected or disallowed funding for two key resilience schemes: a scheme for sewer flooding risk reduction in the North East and the Abberton to Hanningfield transfer main designed to tackle potable

---

26 *NWL Scope of the SoC: Elements of FD19 that have not been addressed in the SoC, 2 April 2019, SOC520.*

27 *In particular, cost to meet the Traffic Management Act and costs to meet the wastewater Industrial Emissions Directive (IED) where applicable (see Section 9.4 for further details of the IED costs in particular).*

28 *WIA, S2DA(a), SOC313; Water Act 2014 Explanatory Notes, 14 May 2014, p. 25, SOC328.*

water demand issues in Essex and Suffolk. These schemes were identified through a robust assessment process to understand the resilience of our network and the risk of failure for customers, particularly arising out of adaptation to climate change. The schemes meet a clear need, represent the best of the available options, have been costed efficiently and were supported by our customers and the Water Forums. With continued flooding risk in the North and drought, water quality and other risks in the South anticipated in the coming years, it is clear that both schemes must be undertaken during AMP7 if we are adequately to address these resilience challenges in a timely way for the benefit of current and future customers.

26. At the same time, Ofwat's unplanned outage performance measure will not support resilience, may drive perverse incentives and is too immature for the benchmark PC levels and associated financial incentives that Ofwat has applied.

27. Taking those matters together, it is clear that Ofwat has not given sufficient weight to the Resilience Objective; and has misinterpreted the Consumer Objective, prioritising short-term bill reductions over the objectively demonstrated need for such schemes and the clear customer support and willingness to pay for them, contrary to its own stated priorities for PR19.

28. These issues are considered in greater detail in Section 7 below.

1.3.4 Ofwat has made errors in setting the allowed cost of capital, failing to allow a notional efficient company to earn an appropriate return

29. Setting an appropriate, evidence-based allowance for the Weighted Average Cost of Capital (**WACC**) in the price control is essential to retain and attract investment in the sector and to create financial resilience within the industry.

30. Ofwat has set the allowed WACC in PR19 at 1.96% in real, Retail Price Index (**RPI**) terms (this translates to 2.96% in real, Consumer Price Index including Owner Occupiers' Housing Costs (**CPIH**) terms or 2.92% wholesale WACC in CPIH terms).[29] This is approximately half the allowed WACC in PR14, which was 3.60% in real, RPI terms.[30] While some reduction from PR14 is supported by the evidence, such a substantial reduction is not justifiable and there is strong evidence that the financeability adjustments made by Ofwat to all companies' FDs demonstrate that the WACC has been set at an erroneously low level.

31. For the reasons developed later in the SoC and in the accompanying expert report,[31] an appropriate, evidence-based approach would support an overall range for the WACC of 2.49-2.75%.

32. These issues are considered in greater detail in Section 8 below.

1.3.5 Ofwat's approach to financeability is not sustainable and creates unacceptable levels of risk for NWL and the sector as a whole; the FD is unfinanceable

33. Ofwat's Financing Duty requires it to secure that companies can finance their functions, including by reference to securing reasonable returns on their investments. Ofwat's FD19 has not discharged this duty.

34. FD19 results in an unacceptable level of downside risk for the company and the sector. The combination of unrealistically low cost allowances, challenging and stretching performance targets and asymmetrically and downwardly skewed ODIs has materially increased risk exposure for NWL at PR19.

35. In this context there is insufficient financial headroom to adequately manage increased business risks or to provide the capacity needed to withstand significant but plausible downside scenarios. This is reflected in the projected credit rating for NWL over AMP7 under the notional capital structure, which is likely to deteriorate from Baa1 to Baa2.

36. Ofwat's own analysis identified a financeability constraint for NWL based on its notional capital structure. Ofwat's remedies to address these financeability challenges – specifically accelerating cashflows through adjustments to

29 *Ofwat PR19 Final Determinations: Allowed return on capital technical appendix, "**Ofwat FD19: Allowed Return on Capital**", 16 December 2019, p. 6, SOC187.*

30 *Ofwat Final Price Control Determination Notice: policy chapter A7 – risk and reward, December 2014, p. 3, SOC169.*

31 *KPMG - Estimating the cost of capital for PR19, March 2020, SOC416.*

pay-as-you-go (**PAYG**) rates – are not sustainable in the long term as there will come a point where simply shifting cash flows between AMPs to improve liquidity will no longer be feasible. This is reflected in the material deterioration in credit quality for NWL and the sector as demonstrated by Moody's Investors Services (**Moody's**) placing 80% of the industry on negative watch and S&P downgrading four companies.[32]

37. Not only has Ofwat chosen an approach which increases inter-generational unfairness, it has also failed to address the actual, underlying, financeability issues created by the FD19 package and in particular by the allowed return.

38. The CMA should reset the allowed return on a basis that is consistent with market evidence and rebalancing the package overall recognising that the Financing Duty provides a binding constraint on the regulator.

39. These issues are considered in greater detail in Section 9.9 below.

1.4 HOW WILL A REDETERMINATION IMPACT OUR CUSTOMERS

40. In taking the decision to seek a redetermination from the CMA, we recognise the importance of ensuring that customers still benefit from our original aims of lower bills alongside improving performance and resilience investment. As such, in identifying those areas where we would like the CMA to intervene in its redetermination, and in suggesting potential remedies, we have made sure that we have kept in mind what our requests in this redetermination would mean for our customers in real terms.

41. We consider that a redetermination which implemented all the remedies we seek in the SoC would still allow us to achieve a reduction in annual average customer bills equivalent to at least the 15% reduction proposed in BP19 (ed. 04.19). We believe that this significant reduction in bills – which should equate to an average of at least £51 per customer and is higher than has been achieved in many comparative competitive sectors of the economy – is consistent with maintaining the ability to finance our ongoing operations, invest in future resilience and maintain appropriate incentives to improve service further – all in the interests of our customers. By comparison, the 24% reduction in bills proposed by Ofwat in FD19 represents a level of bill reduction greater than any ever previously determined in the last 30 years in the water sector and indeed many comparable sectors where competition provides a strong spur. A reduction of this magnitude would fail to achieve these important statutory objectives and would not serve well the interests of current or future customers.

1.5 OTHER CONSIDERATIONS AND THE STRUCTURE OF THE SOC

1.5.1 Other considerations

42. We note that in Ofwat's Notice of Reference it has provided information to the CMA which is relevant to our case. Given the timescales, we have not chosen to explicitly respond to that information in our SoC and will include any comments on those submissions in our next response to the CMA. Similarly we are aware that the CMA published its Provisional Findings in the NATS redetermination on 24 March and that some aspects of that case may have a bearing on our redetermination. Again, we have not addressed the NATS Provisional Findings explicitly in our SoC but intend to respond to on 15 April as part of that process.

43. Finally, we note that the recent events regarding COVID-19 will have an impact on our business and customers over the coming months. There will inevitably be some areas in which this affects the submissions we have made here and the redetermination in general. At present, it is too early to understand what those impacts might be as it is a rapidly evolving issue but they may include, for example, challenges to deliver service levels and investment in line with isolation measures and an increase in levels of bad debt. We will make every effort to update the CMA on relevant issues as and when it is appropriate to do so.

32 *See footnote 17 above.*

1.5.2 The structure of the SoC

Table 1: Structure of the SoC

Section No.	Title	Description.
	Foreword	Introductory comments from our CEO.
1	Executive summary	a) Introduction to the SoC. b) Identification of the key areas of difference between NWL and Ofwat that NWL proposes be the focus of the CMA's redetermination. c) Overview of the structure of the SoC.
2	Background to NWL	d) Overview of NWL including: our history; operating areas; customer base; corporate structure; and our approach to governance. e) Details of our historical performance against key service metrics and the efficiency of our operation. f) Analysis of the impact our service performance has had on cost and service benchmarks over the past two control periods.
3	WIA Statutory Duties	g) Overview of the statutory duties that apply to Ofwat and the CMA in the setting of price controls. h) Considers the importance of achieving the right balance in the interpretation and application of each duty individually and as a whole.
4	Working towards the Consumer Objective	i) An explanation of how we see the Consumer Objective impacting on our approach to customer engagement in general, and how it impacted on the development and content of our BP19. j) Overview of the key features of our BP19, including how customers and stakeholders shaped our plan.
5	Setting the appropriate level of challenge in the round	k) Details the importance of achieving the right balance across the elements of a price control package. l) Identifies the errors in Ofwat's assessment of the allowed efficient costs for the wholesale price controls. m) Focus on the efficiency challenges that Ofwat has set and the cost sharing rates applied.
6	Setting the right incentives	n) Details our key concerns with Ofwat's FD19 and the incentive properties it introduces. o) Identifies the errors that Ofwat has made in setting those incentives, notably in relation to cost sharing factors, leakage targets and the setting of aggregate ODI reward caps. p) Focus on the incentive properties of the FD19.
7	Furthering the Resilience Objective	q) Our interpretation of the Resilience Objective and how it relates to our BP19 proposals. r) Explains why we consider that Ofwat has failed to meet its statutory duty to further the Resilience objective in FD19. s) Focus on: two enhancement investments disallowed in FD19 which are essential to meet real and material resilience challenges in our region and which were supported by our customers; and on Ofwat's FD19 PC for unplanned outages.
8	Setting the appropriate cost of capital	t) Our view of the appropriate framework for setting the allowed return on capital. u) Identifies the errors in the allowed cost of capital set by Ofwat in FD19. v) Sets out an alternative approach that better meets Ofwat's duty to ensure that the notional company can finance its functions.
9	Taking account of new information	w) Updates FD19 for new information in relation to: tax; Industrial Emissions Directive costs; business rates overstatement; abstraction charges; and grants and contributions (double counting).
10	Ensuring that NWL can finance its functions	x) Our view of the appropriate interpretation of the Financing Duty and the analysis that should be carried out. y) Identifies the errors in Ofwat's FD19 that result in a price control settlement which is not financeable over the longer-term. z) We also propose a series of alternative remedies that could address the financeability constraints.
11	Conclusions	aa) Sets out our conclusions from the SoC
Appendix 1	Glossary	Glossary of key terms, abbreviations and acronyms
Appendix 2	Index of supporting documents	List of all supporting documents
Appendix 3	Index of figures	
Appendix 4	Index of tables	

44. The SoC is supported by two key expert reports: the independent expert on Allowed Returns (**IER**);[33] and the Financeability Report.[34]

33 *KPMG – Estimating the cost of capital for PR19, March 2020, SOC416.*

34 *KPMG – Financeability of Northumbrian Water under the PR19 Final Determination, March 2020, SOC285.*

PART A:

BACKGROUND

2 BACKGROUND TO NORTHUMBRIAN WATER

- We provide water and wastewater services to 2.7 million people in the North East of England trading as Northumbrian Water. We also provide water-only services to 1.9 million people in the South East of England trading as Essex & Suffolk Water.
- Operating across two areas presents unique challenges, including aligning processes and resource allocation. For instance, the challenges posed by climate change manifest in different ways. While we have a supply surplus in the North East, our Essex & Suffolk supply area is located within some of the driest areas of the country. Both operating regions face increasing challenges from more variable weather and climate change. In Essex and Suffolk the key challenge relates to maintaining resilient supplies and in the North East the key challenge is increased storm intensity increasing the risk of flooding.
- Sustainability is at the core of our purpose in the provision of these services. This means that we seek to protect and enhance the environment in everything we do. Our ambition is to be the national leader in the provision of sustainable water and wastewater services.
- Our governance meets our obligations and is effective based on independent assessment.
- Within Ofwat's assessments into the quality of our information and reporting, we have been assessed as either '*targeted*' or '*self-assured'*. Only five companies in the sector have achieved '*self assured'* status in the 2015-18 period. Therefore, the quality of our information can be relied upon.
- We are efficient. We ranked in the upper quartile WaSCs under Ofwat's efficiency models and we have demonstrated some of the strongest cost efficiency across the sector in the current 2015-20 price control period. In part this efficiency is a reflection of our very strong focus on innovation and continuous improvement, which has also been recognised by Ofwat.
- We have also been high performers against the regulatory framework for the service levels that we provide to our customers. We were ranked 6th/17 companies in Ofwat's most recent service and performance report and on a three year average basis are an upper quartile performer on two of the five service metrics Ofwat considers. For customer service, another key metric they considered, we were the top performer on the Service Incentive Mechanism in 2016-17 and have consistently remained at around the upper quartile performance level across companies. For Ofwat's new customer measure of experience (**C-MeX**), the early pilot indicates that we are likely to sit within the top three companies. We have also been ranked in the Consumer Council for Water's (**CCWater**) most recent ranking of WaSC performance.
- We still have challenges ahead. We recognise that our performance on sewer flooding needs to improve and we have accepted Ofwat's challenging performance target in that area and are not seeking additional funding to deliver that target from our base costs.
- Tariffs vary across our two regions as a result of historical legacy investment requirements with bills in the North East being among the lowest in the sector and water bills in Essex and Suffolk being among the highest. Based on our BP19 and using historical and forecast data suggests that between 2012/13 and 2024/25 real incomes at a national level will be rising much faster than bills improving affordability. However, we have also made bold commitments to eradicate water poverty across our regions, were the first company to do so in our business plan and have a comprehensive strategy for delivering this commitment.

2.1 INTRODUCTION

45. In this Section we provide an overview of:

- who we are as a business (see Section 2.2);
- our operating areas (see Section 2.3);
- our customer base (see Section 2.4);
- our corporate structure and approach to governance (see Section 2.5); and
- our performance (see Section 2.6).

2.2 WHO WE ARE

46. NWL provides (i) water and wastewater services (as a WaSC) to 2.7 million people in the North East of England (trading as Northumbrian Water (**NW**)) and (ii) water-only services to 1.9 million people in the South East of England (trading as Essex & Suffolk Water (**ESW**)). The distinct character and customer priorities of each of these regions mean that we are working to meet different needs and have tailored strategies for each area.

47. Sustainability is at the core of our purpose in the provision of these services. This means that we seek to protect and enhance the environment in everything we do; focus on meeting our customers' needs, have a positive impact on the communities where we operate; and seek to make a reasonable financial return so we are economically viable long into the future.

48. Our ambition is to be the national leader in the provision of sustainable water and wastewater services. Our company values include being customer focused, creative, results driven, ethical and working as one team.[35] The sections below set out details of our operating areas, our corporate governance structure and our past record of high performance which has informed the creation of BP19.

2.3 OUR OPERATING AREAS

49. We employ just under 3,000 people and operate a substantial network of assets in our operating areas. Each day we supply on average 1,104 megalitres (1.1 billion litres) of water to the 2.1 million properties that we service. We have two distinct operating areas: Northumbrian Water provides both water and wastewater services to our operating areas in the North East, while ESW provides water services to our operating area in Essex and Suffolk.

Figure 1: Our two distinct operating areas

2.3.1 Operating across two regions

50. Operating across two different geographical areas presents unique challenges, including aligning processes and resource allocation. We engage with two separate and unique groups of stakeholders and with distinct and varied customer bases. In order to ensure that we are close to our customers' specific needs, we have established the Water Forums, including representatives from each region. Each of our regions experience different supply and demand characteristics, being areas with both the highest and lowest potential for rainfall and water supply.

35 *Northumbrian Water Limited Annual Report and Financial Statements for the year ended 31 March 2019, p. 14, SOC259.*

51. As a result of climate change our region has become increasingly prone to severe and intense storm rainfall. Overall, our areas of supply include six Water Resource Zones (**WRZs**). While we have a supply surplus in all our WRZs, our Essex and Suffolk supply areas are located within some of the driest areas of the country and, as such, face distinct challenges, including growing demand, uncertainty from climate change and a lack of new intrinsic water resource. This has reinforced our need for resilience planning and cross-sector collaboration, which has informed the particular focus of BP19.

2.3.1.1 North East – water services

52. We supply water and sewerage services to 2.7m customers in the North East. The vast majority are based in the major conurbations around Tyne, Wear and Teesside in the east of the region, based largely on or near to the coast. Our water supply system in this area is characterised by predominantly upland raw water reservoirs and corresponding Water Treatment Works (**WTW**) based in the west of the region.

53. Our water network comprises 29 impounding reservoirs, 28 water treatment works, 216 water pumping stations and 17,000km of water mains. The geography of our raw water resources enables us to take advantage of natural topology to enable treated water to be fed by gravity to the main population centres in the east. In particular, our operating area includes Kielder Reservoir, which is the largest artificial lake in the United Kingdom, and enables water to be transferred to the Wear, Derwent and Tees rivers. As a result, the Kielder WRZ is one of the most resilient zones in the country from a raw water perspective.

Figure 2: Northumbrian Water's North East operating area

2.3.1.2 North east - wastewater and sludge management services

54. We also provide wastewater services in the North East, where our sewerage system comprises 442 sewage treatment works, 29,923km sewers (including 13,510km of transferred network) and 1,147 sewage pumping stations. Through this network, sewage is collected from customers properties via the sewerage network and treated at our works before it is returned to the environment as either clean water or sludge, which can be recycled as fertiliser or used to generate energy.

55. The population distribution in the region dictates the design of our sewerage system, with major Sewage Treatment Works (**STW**) serving the main population centres in the east, and a large number of small STW serving a dispersed rural population in the west. Most sewerage systems are gravity fed and sewage needs to arrive for treatment in a reasonable time to avoid septicity. This explains the much larger number of sewage treatment works than water treatment works and the large number of very small rural works other than in the major population centres where large flows drive economies of scale.

56. The east of the region is prone to severe storms. The resulting surface water flows, when combined with the main population centres, present a challenge with regard to sewer flooding risk, one which we are seeking to better resolve through our sewage flooding schemes.

57. We were the first wastewater company in the UK to use 100% of the sludge remaining after sewage treatment to produce renewable power. The sludge is treated at two hubs at Howdon on Tyneside and Bran Sands on Teesside both of which generate biogas for input into the national gas grid. Designing our sludge treatment system in this way has enabled us to become the frontier company for bioresources efficiency.

58. At present, there are no alternative treatment facilities that are operated by third parties in our area of supply which would be capable of dealing with our bioresources volumes or offering a more efficient treatment option. We frequently serve some of our neighbouring WaSCs' plants and accommodate bioresources from third parties for treatment, where we have capacity available.

2.3.1.3 Essex & Suffolk – water services

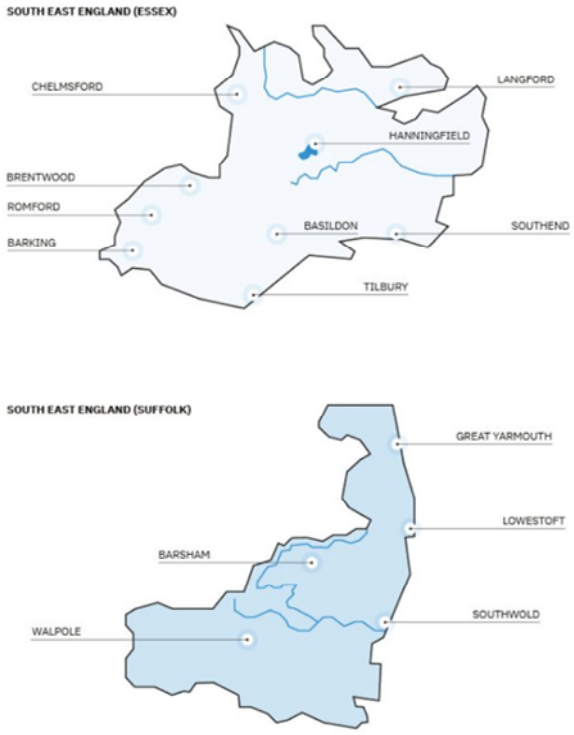
59. We provide water-only services in two geographically distinct areas in East Anglia, to approximately 1.65 million customers in Essex, and 0.27 million customers in Suffolk.

60. Water resources in the Essex area are primarily surface water-based including the rivers Chelmer, Blackwater, Stour and Roman, which support pumped storage reservoirs at Hanningfield and Abberton, and treatment works near Langford, Langham, Hanningfield and Layer. These are complemented by a small amount of groundwater, along with water transferred into the Essex supply area from two sources, namely the Chigwell raw water bulk supply from Thames Water Utilities (the **Chigwell Agreement**) and the Ely Ouse to Essex Transfer Scheme (**EOETS**) which is owned and operated by the Environment Agency (**EA**) and brings water from as far as the Denver in Norfolk.

61. The nature of the treated water supply network in Essex is integrated, with a high degree of flexibility for moving potable water around the zone to where it is required. However, in times of drought and high demand, there is limited scope to transfer surplus raw water to align with the availability of surplus treatment capacity. As part of BP19, we devised an enhancement case to address this, by improving the inter-connectivity between Abberton and Hanningfield reservoirs. Limited inter-connectivity between the water resource zones presents the main resilience risk in this area, which we are seeking to address through our proposed enhancement project.

62. Suffolk is a largely rural area, combined with the large coastal population centres of Lowestoft and Great Yarmouth. The geography and population distribution dictate three separate supply zones, fed by a combination of ground water (from boreholes) and surface water.

Figure 3: Essex & Suffolk's operating area



2.4 OUR CUSTOMER BASE

63. In addition to operating in geographic diversity, we also serve a complex and varied customer base across our operating areas. Many of our customers, across the cities, towns and rural areas that we serve, have some of the highest levels of deprivation and unemployment in the country.[36]

64. Our customer base in the North East is varied comprising largely rural communities in the sparsely populated west and north, and densely populated conurbations along the coast. Both rural and urban areas include communities with high levels of deprivation. There is a significant industrial customer base particularly on Teesside.

65. Our Essex customer base includes relatively affluent areas such as Chelmsford but also more economically disadvantaged communities such as Thurrock and Dagenham. We supply rural communities in mid and north Essex and well as densely populated London boroughs with very different social compositions. The industrial customer base has significantly reduced over time.

66. Our customer base in Suffolk comprises a largely rural and ageing population but also includes the deprived coastal towns of Lowestoft and Great Yarmouth. There is a very limited non household customer base in that area.

67. Many of these challenges are illustrated by Table 2 below which demonstrates how our customers fall into the different Acorn categories and how they compare to Great Britain as a whole (green denoting above average and red denoting below average versus the national proportion).

Table 2: Acorn Categories of NWL customers by region

CATERGORY	Great Britain	NE	Essex	Suffolk
1 Affluent Achievers	21.8%	16.50%	18.30%	21.50%
2 Rising Prosperity	10.2%	3.50%	8.30%	0.60%
3 Comfortable Communities	26.1%	20.60%	32.60%	34.80%
4 Financially Stretched	23.5%	32.20%	21.70%	24.50%
5 Urban Adversity	18.4%	26.20%	18.40%	17.20%

Source: Acorn Types, Groups & Categories on Profile – NWL, Essex & Suffolk.

68. We take great care to ensure that the diversity of our customer base is reflected not only in our approach to customer engagement, but also in the composition of our CCG, the Water Forums (see Section 4.3.5) thus ensuring that local issues are appropriately captured, prioritised and responded to in our plans. We discuss in section 2.6 our customer service performance and also our approach to affordability in section 2.6.6.

2.5 OUR CORPORATE STRUCTURE AND GOVERNANCE

69. This section provides an overview of our corporate structure and governance arrangements.

2.5.1 Corporate structure and ownership

70. NWL is a company registered in England and Wales. NWL also has three directly and indirectly owned financing subsidiaries: Northumbrian Water Finance plc, Reiver Holdings Limited and Reiver Finance Limited. NWL is a wholly-owned subsidiary of Northumbrian Water Group Limited (**NWGL**), a company registered in England and Wales, and is a member of Northumbrian Water Group (**NWG**).

71. The legal owners of NWGL (via intermediate holding companies) are CK Hutchison Holdings Limited (**CKHH**), CK Infrastructure Holdings Limited (**CKI**) and Li Ka Shing Foundation Limited (**LKSF**). CKHH and CKI are both listed on the Stock Exchange of Hong Kong Limited and LKSF is a charitable company, limited by guarantee. CKHH is our ultimate legal owner.

72. Our owners, CKI, are a major infrastructure company that aims to make the world a better place through a variety of infrastructure investments and developments in different parts of the world. The CKI group has diversified

36 *BP19 (ed. 09.18), SOC001, p. 80.*

investments in energy infrastructure, transportation infrastructure, water infrastructure, waste management, waste-to-energy, household infrastructure and infrastructure related businesses. Its investments and operations span Hong Kong, Mainland China, the United Kingdom, continental Europe, Australia, New Zealand and Canada. Listed on the Stock Exchange of Hong Kong in July 1996, CKI's market capitalisation was about HK$147 billion as of 31 December 2019.[37]

2.5.2 Structure of the Board

73. Our Board currently comprises eleven directors of whom three are Executive Directors. There are seven Non-Executive Directors (**NEDs**) (including the Chairman), four of whom are Independent Non-Executive Directors (**INEDs**) for the purpose of the Licence.[38] It is proposed to appoint an additional INED during 2020, making INEDs the largest single group on the Board.

74. We consider that the governance of NWL benefits significantly from having a single focussed owner with substantial global infrastructure and utilities expertise. This brings strength into the Board of NWL through the experience and expertise of the shareholder Directors.

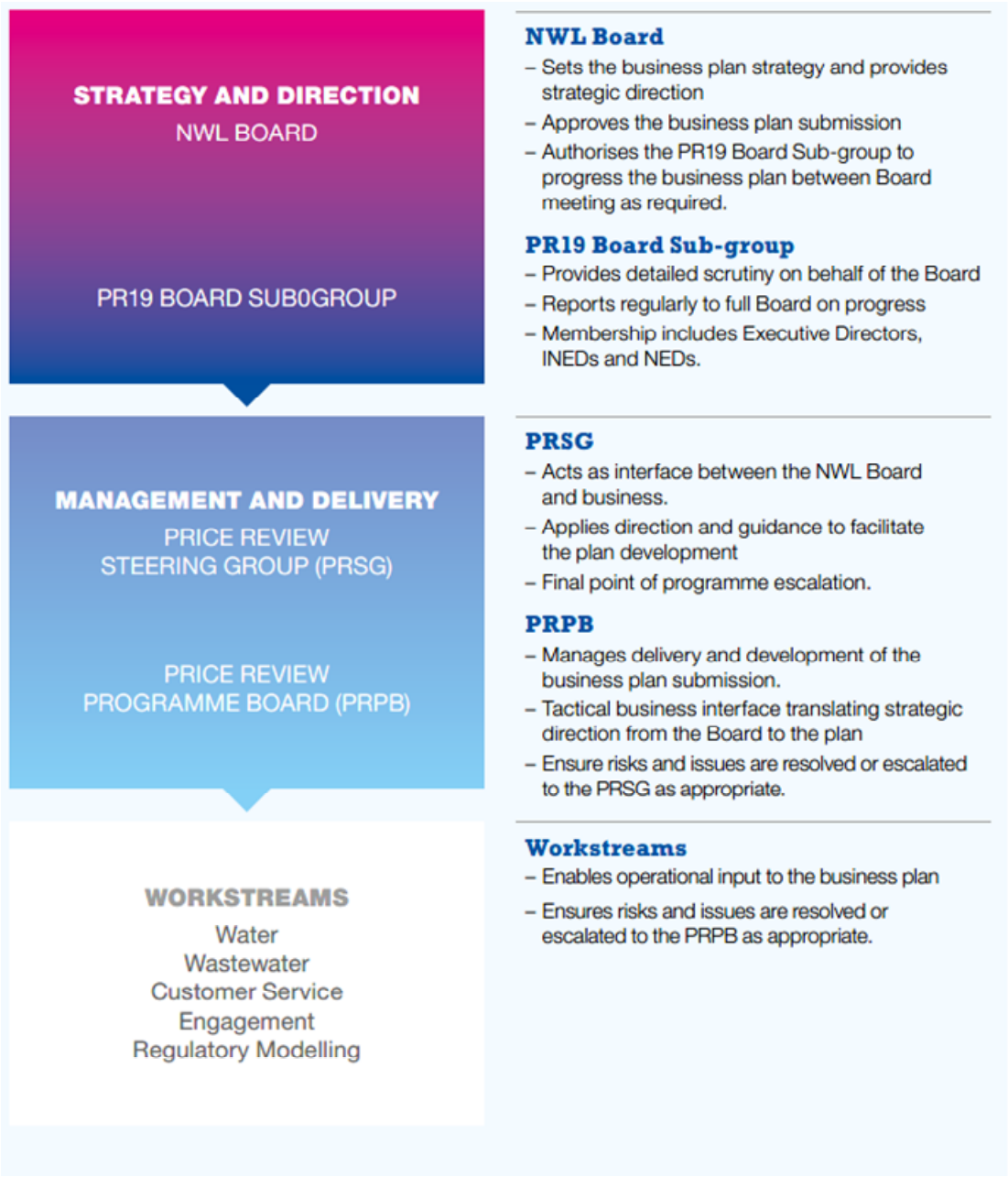
75. Our four existing INEDs are experienced, capable and independent-minded people who also bring a diverse range of talents to the Board, as well as a determination to champion customers' interests and maintain first-class governance. The existing INEDs will all progressively step down over the next two years and be replaced by new appointees, to ensure that the talent and knowledge on the Board is refreshed, in accordance with Ofwat's guidance.

76. The Board has three established committees: the Audit Committee (and its Risk and Compliance Sub-committee), the Remuneration Committee and the Nomination Committee. The Audit Committee is chaired by the Senior INED, and the Remuneration and Nomination Committees are chaired by the Chair. All three committees have a majority of INED members.

77. During the PR19 process, the Board created a PR19 Board Sub-group involving all four INEDs, the three Executive Directors and two NEDs. Figure 4 below sets out the governance structure for the PR19 process, which you will see includes scrutiny of our business plans. Our BP19 was signed off by the full Board. The Board also unanimously approved the decision to reject the Ofwat's FD to seek a CMA redetermination.

37 *CK Infrastructure Holdings Limited Web Bio, SOC283.*
38 *NWG - Living Water: NWL Board, 2020, SOC280.*

Figure 4: NWL PR19 Governance Structure



2.5.3 Governance

78. In line with Ofwat's board leadership, transparency and governance principles, we believe that excellence in corporate governance is a cornerstone of first-class customer service. We are, therefore, committed to operating within a framework in which strong governance, transparency and excellent corporate citizenship are of paramount importance.[39]

79. The effectiveness of our Board was recently assessed independently by Giovanna Michelon (Professor of Accounting at the University of Exeter Business School), a well-established academic in the field of corporate governance and social and environmental accounting and reporting:

"The Board is working in a solid way, possibly thanks to the long-term relationships it is founded upon, a high level of trust and the deep knowledge and expertise of the INeDs, healthy and challenging discussions, as well as the high quality work carried out by the Committees." Professor Michelon[40]

39 *An overview of our governance approach, and details of how it relates to the PR19 planning process in particular, is provided in BP19 (ed. 09.18), SOC001, Section 10.0 Governance and Assurance, p. 281.*
40 *Professor Giovanna Michelon, Northumbrian Water Limited Board Effectiveness Review, SOC284.*

2.5.4 Information quality

80. During 2015-20 Ofwat has used the Company Monitoring Framework (**CMF**) to assess the quality of our information. This is a comprehensive framework covering the full range of information that we provide to Ofwat including charging and financial information, performance data on outcomes and other information such as in relation to any casework.

81. Throughout the period we have maintained a position as a 'targeted' assurance company but were a 'self-assured' company in the 2017 assessment.[41] The CMF recognises the quality of the information we publish, our transparency and consistency.[42] This assessment reflected the emphasis we place on maintaining the trust and confidence of our customers. Only five companies were successful in achieving 'self-assured' status across the 2015-18 period.[43]

2.6 OUR PERFORMANCE

82. We are an ambitious and innovative company and devised a stretching business plan based on our proven past performance in terms of value for money and quality of service. This is further reflected in our approach to performance management, centred on our 'balanced scorecard', with company targets typically set more stringently than those set by the regulator. This is also reflected by third party assessments: for example, CCWater's latest ranking of performance in April 2020 lists NWL as the highest performing WaSC.[44] Finally, we are a strong supporter of incentive based regulation, primarily as it results in customers being the ultimate beneficiary of this high performance.

83. This section sets out:

- a summary of this high performance in relation to our efficiency, service levels and customer satisfaction (see Section 2.6.1);
- a summary of our approach to innovation – a key enabler of our performance (see Section 2.6.2);
- how this high performance benefits not only our customers, but water customers across the country as the result of our performance contributing to more stringent benchmarks (see Section 2.6.3);
- reflections on our service performance (see Section 2.6.4);
- Ofwat's assessment of our performance (see Section 2.6.5); and
- the affordability of our bills, to which our efficiency performance is a significant contributor (see Section 2.6.6).

2.6.1 Our efficiency

84. The primary industry benchmark for efficiency is the upper quartile position in Ofwat's efficiency models where we are ranked as one of the leading WaSCs.[45]

85. We are the frontier company for bioresources, being 21% more efficient than the upper quartile level. Moreover, we are at or near upper quartile level for water network plus and wastewater network plus. For water resources, we expect our projected efficiencies from 2017/18 to 2019/20 to bring us back to the upper quartile level, and for retail household, despite the very significant levels of deprivation in the North East of England and challenging London Boroughs that we serve.

86. Our targets for 2020-25 build on our proven track record of efficiency. This includes outperforming both the baseline set at PR14 and the industry average outperformance to date and delivering the highest level of wastewater Totex efficiency in the sector.[46] As set out below, this efficiency can be demonstrated using various methods of analysis.

41 *Ofwat – Company monitoring framework: 2018 assessment Individual company report – Northumbrian Water Limited, January 2019, SOC208.*
42 *Appendix 2.1 to BP19 (ed. 09.18): Company monitoring framework: 2017 assessment, 2017, SOC028.*
43 *Ofwat – Company monitoring framework: 2018 assessment Individual company report – Northumbrian Water Limited, January 2019, SOC208.*
44 *CCWater – Water Mark Assessment, April 2020, SOC522.*
45 *Ofwat's efficiency position in the FD presented in full in: Ofwat – PR19 final determinations: Securing cost efficiency technical appendix, "**Ofwat FD19: securing cost efficiency technical appendix**", 16 December 2019, SOC417.*
46 *Ofwat – Service delivery report, October 2019, SOC209, p.11.*

2.6.1.1 Cost efficiency based on Ofwat's cost models

87. As demonstrated in Table 3 below, when our efficiency performance is calculated by comparing modelled and actual expenditure, we are the joint third most efficient WaSC in the sector and have been in the upper quartile over the past eight years.

88. We outperformed our wholesale wastewater water expenditure by £42m over the period and our water expenditure was in line with Ofwat costs models for efficient expenditure. Our cost efficiency in wholesale wastewater has been in the upper quartile of companies over the past eight years.

Table 3: Wholesale Water and Wastewater efficiency performance (2014-2019)

	Water		Waste		
	Actual	Modelled	Actual	Modelled	Efficiency score
Wessex Water	493	490	876	959	0.94
Severn Trent	2,454	2,236	2,222	2,613	0.96
Yorkshire Water	1,302	1,395	1,683	1,634	0.99
Northumbrian Water	1,178	1,176	860	878	0.99
Anglian Water	1,375	1,299	2,062	2,035	0.99
South West Bournemouth Water	613	642	744	732	1.02
Southern Water	663	673	1,606	1,541	1.03
Thames Water	3,348	3,151	3,836	3,754	1.04
United Utilities	1,971	1,944	2,597	2,127	1.12
Dŵr Cymru	1,259	1,073	1,250	1,145	1.13

Source: NWL analysis based on the collective application of Ofwat's wholesale cost models from PR14 and a comparison of the modelled 'efficient' costs versus the actual expenditure of NWL. Companies are then ranked based on the distance between their modelled and actual costs with companies whose actual costs are the furthest below the modelled costs being ranked higher.

2.6.1.2 Current expenditure vs allowances

89. In PR14, we were the only company to submit Totex menu choices that were more stretching than those implied by either the business plan submission or the FD. Our menu choice effectively set a 6% stretching efficiency target for each wholesale service. Moreover, throughout the period, we have outperformed against that stretching target (for wastewater and retail household).

90. Our cumulative actual wholesale Totex is £1,717m versus an allowance of £1,888m, which equates to an outperformance of our allowance by 9% in our price control period between 2015 and 2020 (**AMP6**). As shown in Table 4 below, our cumulative performance over AMP6 is ranked fourth in the industry.

Table 4: Cumulative Totex variance from allowance

Company	Cumulative actual wholesale Totex (£m)	Cumulative wholesale Totex allowance (£m)	Cumulative performance 2015-19
South West Water	1,157	1,383	-16%
Wessex Water	1,283	1,426	-10%
Anglian Water	3,044	3,368	-10%
Northumbrian Water	1,717	1,888	-9%
Southern Water	1,999	2,165	-8%
South East Water	589	628	-6%
Severn Trent Water	4,225	4,439	-5%
Bristol Water	323	338	-4%
SES Water	171	178	-4%
Portsmouth Water	107	112	-4%
Hafren Dyfrdwy	86	88	-3%
Affinity Water	886	888	-0%
Yorkshire Water	2,749	2,750	-0%
South Staffs Water	311	310	0%

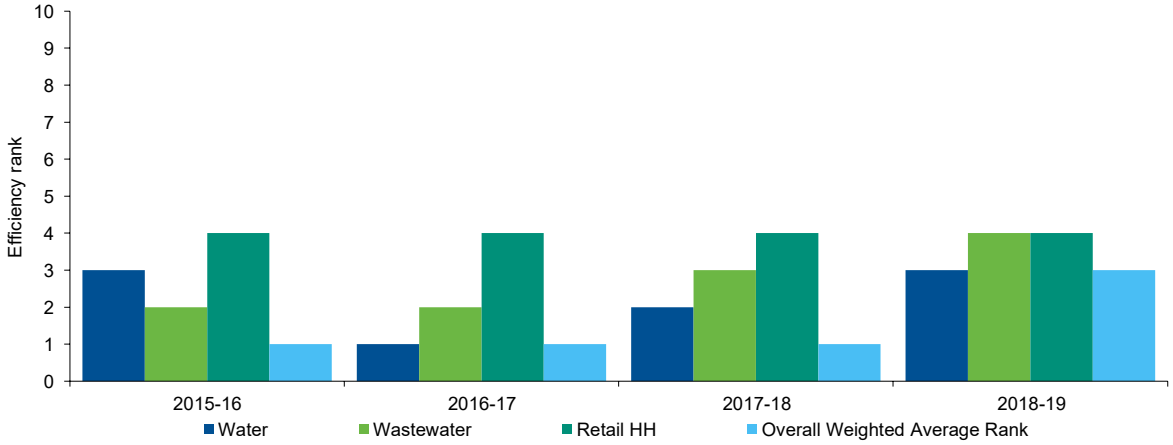
Company	Cumulative actual wholesale Totex (£m)	Cumulative wholesale Totex allowance (£m)	Cumulative performance 2015-19
Dŵr Cymru	2,148	2,060	4%
Thames Water	6,507	6,119	6%
United Utilities	4,593	4,280	7%

Source: Ofwat (2019) Service Delivery report 2018-19.

2.6.1.3 Analysis of unit costs

91. An alternative measure of efficiency can be derived from assessing unit costs. The chart below shows the annual efficiency ranking for NWL by service and overall using these benchmarks.

Figure 5: Our historical unit cost efficiency rankings by service and overall (2015-19)[47]



Source: NWL analysis of company Annual Performance Reports. Analysis takes total annual expenditure divided by a volume-based driver. Weighted rank based on overall scale of Totex.

92. Figure 5 above demonstrates that, on an overall unit cost basis, we have ranked consistently in the top two WaSCs across 2015-19. Our water and wastewater performance has fluctuated year-on-year, but we have consistently been among the top three companies (except for wastewater in 2018-19 where we were the fourth) and our retail performance has been between third and fifth across the sector.

93. We were disappointed to read in Ofwat's slides that were presented to the CMA that Ofwat has suggested that our performance has deteriorated in 2018-19.[48] We do not consider this to be the case. While we overspent relative to our allowance in 2018-19, this is entirely in line with the experience at a sector level and followed some very extreme weather with a very cold 'freeze' period followed by a rapid 'thaw' – 'the Beast from the East'. This was outside of management control. Ofwat's most recent service and delivery report bears this out,[49] indicating that expenditure had increased at a sector level in 2018-19.

2.6.2 We are an innovative company

94. Our company vision and values embed the building blocks of innovation in our organisational culture: creativity, getting results, ethical collaboration and a focus on delivering resilient, sustainable and affordable services for our customers and the environment. We review annually the behaviour of all of our people against these values through individual appraisals and we give senior and people managers' feedback from our annual employee engagement survey. We celebrate and develop our innovation culture with our partners and collaborators at our Innovation Festival events, which since 2017 have generated a pipeline of projects delivering improvements in performance and efficiency to customers.

47 *By taking companies' annual expenditure for the 2015-19 period and assessing that expenditure against a range of volume-based cost drivers, we can derive our efficiency ranking versus other WaSCs.*

48 *CMA-Ofwat slides: 2019 price review - teach in, 25 February 2020, SOC502.*

49 *Ofwat – Service delivery report, October 2019, SOC209, p.8.*

95. We have invested heavily in digital transformation of our customer and employee experience from customer care and billing, to field services and asset management. This has enabled innovation in data science,[50] artificial intelligence[51] and digital twins,[52] delivering on our ambition to be the most digital water company in the world. We also invest in enablers (such as our Amplify open innovation platform)[53] which welcome input from customers and third parties that speed up the process of turning ideas into value. These approaches and our commitment to continuous improvement has been externally recognised by the 2018 UK Excellence Awards, at which we were awarded Company of the Year.[54]

96. We utilise emerging science and technology to drive change in the sector, working in partnership with thought-leaders, academic researchers and inventors. Our 'BE:WISE' facility, for example, is one of only two in the world where researchers can test innovations in wastewater treatment technologies.[55] We have supported Newcastle University to develop the National Green Infrastructure Facility, to enable us to design and invest in more resilient and sustainable solutions for urban water management and flood risk reduction.[56]

97. In addition, we established the National Underground Asset Register (**NUAR**), which allows the all types of utility companies and local authorities to share geographical data, synthesising it into a map that can be viewed and manipulated. This makes it easier than ever for asset owners to share location information, avoiding utility strikes and disruption to services, and potentially saving lives.[57] The initiative is backed by The governments Geo Spatial Commission and is estimated to provide substantial benefits to the UK economy.

98. Our commitment to innovation has led us to push the frontier of the sector, with real benefits for customers. For example, we were the first company in the world to install a fibre-optic 'nervous system' in a live sewer network, groundbreaking technology that will enable us to better manage and operate our sewer systems.[58]

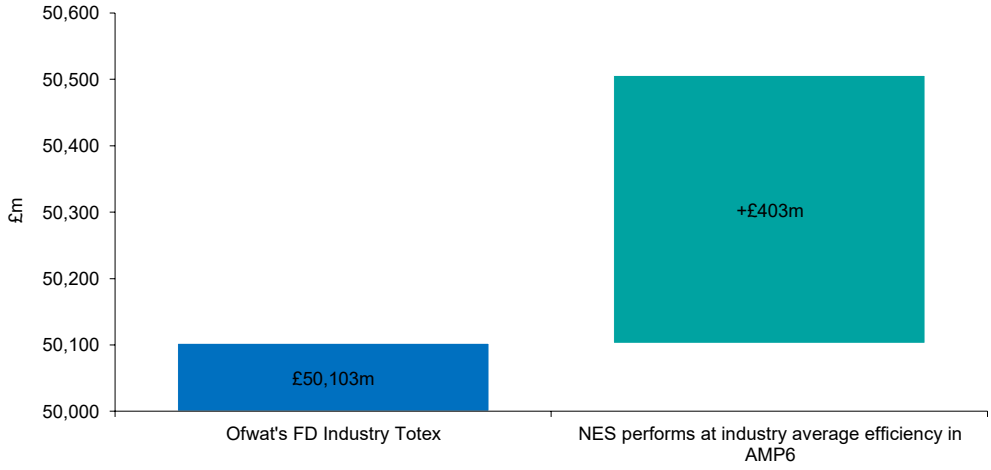
2.6.3 Our 2014-19 performance has driven additional benefits for customers

99. Because any outperformance on allocated costs is shared with customers at the end of each control period, similar benefits have been directly passed back to customers.[59] For example, during the 2015-20 period, our total wholesale Totex outperformance was £170m, of which £88m was passed back to customers and £92m was retained in the business.[60]

100. Further, in line with Ofwat policy, our high performance from previous AMPs has been carried forward as a benchmark for the entire sector. This results in an additional benefit for customers, by forcing other companies to improve performance. Figure 6 below compares the overall allowed total expenditure in the FD19 against a counterfactual scenario in which our expenditure in the 2015-19 period was in line with the average performance across the sector for each price control. This clearly shows that, if our level of performance had been in line with the sector average, the allowed costs in the FD19 would have been c.£403m higher. Therefore, all water customers in England and Wales, including our customers, have benefited by as much as £403m as a direct result of our efficiency activities in the 2015-19 period.

50 *Computing – Big Data Excellence Awards 2018, 2017 Winners, 17 May 2017, SOC339.*
51 *NWG – Living Water – Global award win for Northumbrian Water's intelligent approach, 4 December 2019, SOC266.*
52 *The Guardian – Newcastle's 'digital twin' to help city plan for disasters, 30 December 2018, SOC374.*
53 *WWT – Northumbrian Water launches global innovation platform, 4 December 2019, SOC394.*
54 *News Guardian – Award joy for Northumbrian Water, 08 April 2018, SOC355.*
55 *BP19 (ed. 09.18), SOC001, p. 10.*
56 *NWG – Living Water – Newcastle University, National Green Infrastructure Facility, undated, SOC279.*
57 *Map of underground pipes and cables designed to save lives and prevent major disruption, 25 April 2019, SOC381.*
58 *BP19 (ed. 09.18), SOC001, p. 142.*
59 *Note our cost sharing rates set at PR14 were 51.2%. Total outperformance passed back to customers at PR19 through Totex reconciliations was £88m compared to the company retained share of £92m.*
60 *Ofwat – Totex Menu NES FD model, 16 December 2019, SOC201, Calc tab, lines 174 & 175 and lines 197-203.*

Figure 6: Analysis of total allowed base costs at PR19 Final Determinations under Ofwat's cost assessment models versus alternative scenario for our cost performance during 2015-19



Source: Analysis uses Ofwat's PR19 cost assessment models (across all price controls) and adjusts our data inputs for years 2015-19 to reflect an average level of sector performance. The allowed aggregate Totex for AMP6 (2020-25) is then shown.

2.6.4 Our customer satisfaction and service level performance

101. Similar to our performance on efficiencies, we have also been high performers against the regulatory framework for services and a number of the PCs and ODIs set by Ofwat. We have hit upper quartile performance on core service metrics such as customer service, water supply interruptions and pollution incidents – the latter contributing to NWL being the only WaSC to achieve a 4-star rating in the environment agencies latest assessment of environmental performance.[61]

102. Our services have also proved to be resilient in the face of exceptional events. Ofwat's 'Out in the Cold' report into the March 2018 freeze thaw event (the Beast from the East), highlighted NWL as one of the better performers in the sector - with aspects of our response highlighted as best practice and the impact on customer supply minimised.[62] We also continue to meet our core asset health metrics and associated PCs and ODIs during the 2015-20 period[63].

2.6.4.1 Customer satisfaction

103. Figure 7 below shows our levels of customer satisfaction (as measured in Service Inventive Mechanism (**SIM**) scores) and tracks that score against the rest of the sector since the inception of the SIM in 2011.[64] It shows that our SIM score has consistently been above average across the sector and improved over time in line with or ahead of the sector average. In 2016-17, we received the second highest SIM score across the sector (tied with Wessex Water) and the highest score of all the WaSCs.[65] In 2017-19, we introduced a major change programme, including a new billing system to further drive improvement and efficiency in our retail operation. This transition period is likely to have had a short-term negative impact on our SIM performance.

61 Environment Agency's Annual Environmental Performance Report, Summary: environmental performance of the water and sewerage companies in 2018, 10 July 2019, SOC385.

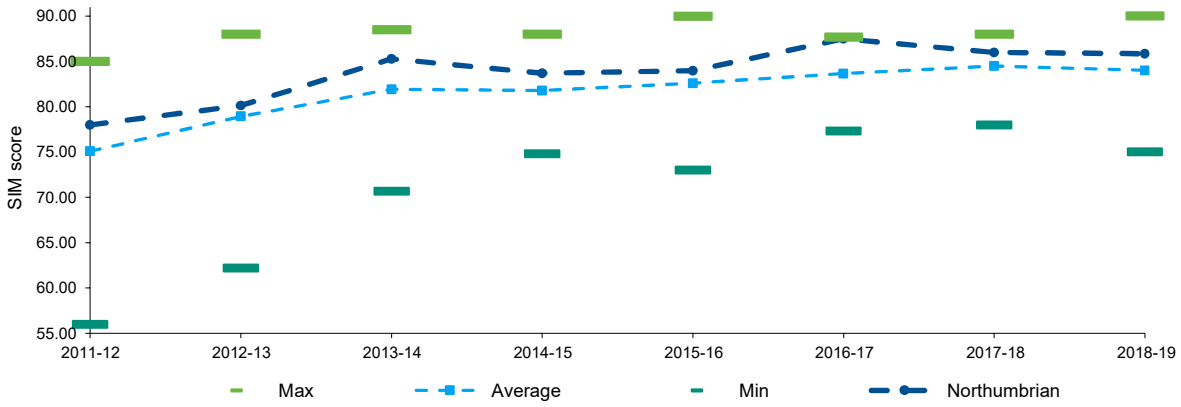
62 Ofwat – Out in the cold, water companies' response to the 'Beast from the East', 19 June 2018, SOC225, see references to 'better performing companies' p.6 and 'examples of good practise' p.23.

*63 In Ofwat's PR19 methodology they set out four new asset health metrics that are common to all companies, these were Unplaned Outages, Mains Bursts, Sewer collapses and Treatment works compliance (see Ofwat – Delivering Water 2020: Our methodology for the 2019 Price Review, 2017, Appendix 2: Delivering outcomes for customers, "**Appendix 2 to Ofwat PR19 Methodology: Delivering outcomes for customers**", SOC211, pp. 18-21). NWL has two of these similar PCs in its plan for the 2015-20 period, water mains bursts and sewer collapses in both cases NWL has met or exceeded its target levels in all four of the years from 2015-19.*

64 The SIM is a part quantitative and part qualitative measure of service quality and how customers feel about the services they receive. It was used as the measure of customer satisfaction in PR14.

65 Ofwat – SIM Survey 2016/17 Annual Report – prepared for Ofwat, prepared by BMG Research, SOC214, p. 8.

Figure 7: SIM scores 2011-19



Source: Ofwat SIM scores LINK.

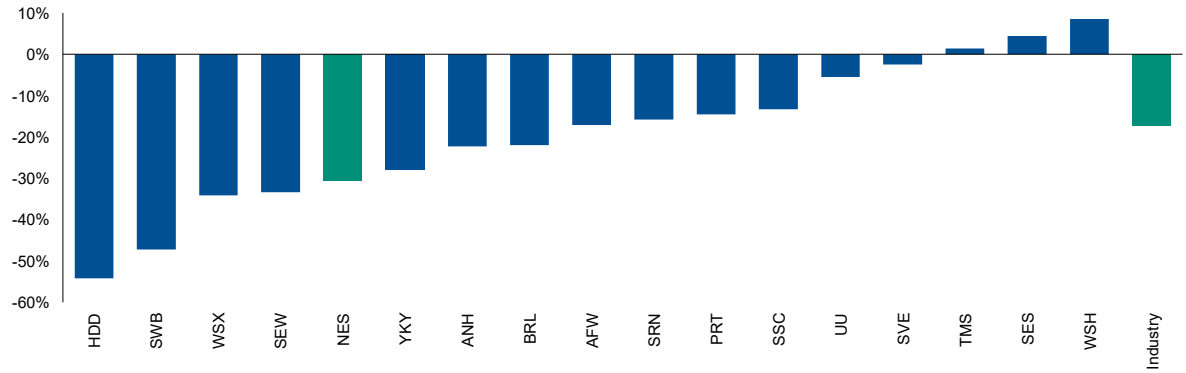
104. Despite this strong performance on SIM, and the fact that as a result we are in a net reward position for 2015-20 on this measure, Ofwat's performance assessment as summarised in its latest Service & Delivery report treats our SIM performance as a PC fail. We alerted Ofwat to this anomaly in writing in November 2019.

105. For the 2020-25 period, Ofwat has chosen to amend its customer service incentive mechanism and replace the SIM with a new metric C-MeX.[66] The new metric is only just starting but early reporting from the shadow year demonstrates that we are at or close to the top of the sector, scoring among the top three companies[67].

2.6.4.2 Water quality contacts

106. Customer contacts in relation to water quality is a key measure reported by the Drinking Water Inspectorate (**DWI**) in its protection of public health and water quality acceptability to customers. As shown in Figure 8 below, over AMP6, we were the fifth most improved company with the number of contacts from customers decreasing by 30% from 8,500 in 2012-13 to 5,900 in 2018-19.

Figure 8: Water quality contacts cumulative change over AMP6 (2015-16 to 2018-19)



Source: Ofwat, Service delivery report, October 2019. p20.

2.6.4.3 Water Supply Interruptions

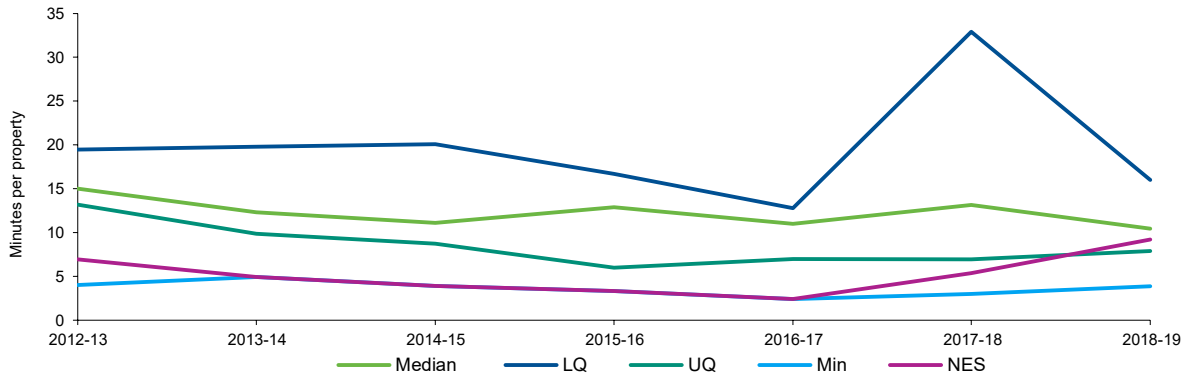
107. This PC measures the average number of minutes per property where supply interruptions were greater than three hours.

108. As shown in Figure 9 below, our performance has been lower (and therefore better) than the upper quartile of the sector for seven of the last eight years. In almost half of these years, we were the best-performing company in the sector.

66 *Ofwat – Delivering Water 2020: Our final methodology for the 2019 price review, "**Ofwat PR19 Methodology**", 13 December 2017, SOC424, p. 64; Appendix 3 to Ofwat PR19 Methodology: Customer measure of experience (**C-MeX**) and developer services measure of experience (**D-MeX**), 13 December 2017, SOC212, p. 4.*

67 *Alto consulting – C-MeX Pilot for PR19 (Redacted version), 31 January 2019, SOC430, p. 36.*

Figure 9: Supply interruptions (minutes per property)

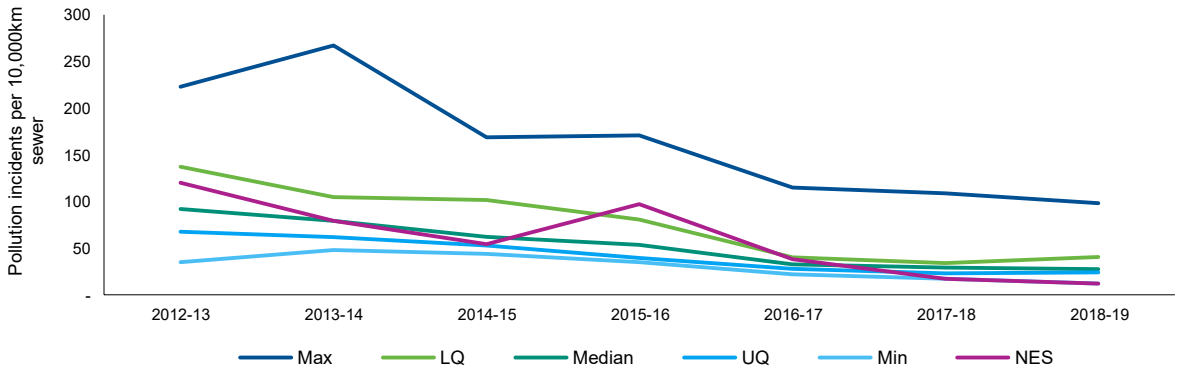


Source: NWL analysis of Service delivery report, October 2019, SOC209.

2.6.4.4 Pollution incidents per 10,000km of sewer

109. The Pollution incidents PC measures and categorises any pollution incidents on a scale of 1 to 3. As shown in Figure 10 below, our performance has improved significantly from 2012-13 to the best performing company in 2017-18 and 2018-19. Our most recently reported number of pollution incidents per 10,000km of sewer is 12 down from 17 in 2018-19 and 38 in 2017-18.

Figure 10: Pollution incidents per 10,000km sewer from 2012-13 to 2018-19



Source: NWL analysis of Service delivery report, October 2019, SOC209.

2.6.4.5 Quantifying our outperformance in terms of customer benefit

110. The outperformance set out above can be quantified in terms of the relative benefits to the customer. At PR19, Ofwat made an assessment of our performance over the period (including forecasts for 2019/20). In total, Ofwat determined that we had earned a net reward of £10.3 million as a Regulatory Capital Value (**RCV**) adjustment, and a net penalty of £0.1 million as a revenue adjustment. This equates to a total reward of £10.2 million. The net benefit of this is therefore £10.2m.[68]

111. In addition to the PCs, we were also a strong performer on the SIM. Between 2015 and 2019, we averaged the sixth highest performance in the sector[69] and were allowed a £11.2m reward to reflect this.

112. If it is assumed that customer benefits are approximately double the level of reward received (as per outcome delivery incentives with a 50% sharing factor), then this would imply that the net benefit to our customers was £5.6m from our strong SIM performance.

113. At PR19, for a series of performance measures, Ofwat set targets for companies based on the upper quartile of business plan forecasts. We proposed a stretching target for pollution events. This target contributed towards the industry upper quartile target.

68 *Ofwat's guidance on calibrating outcome delivery incentives was for companies to set reward rates at 50% of customers' willingness to pay. Therefore, the gross benefit to customers may be around twice the net reward earned by NWL. As customers pay for this reward, the net benefit to customers is £10.2m (i.e. 50% of the gross benefit).*

69 *Ofwat – Service delivery report, October 2019, SOC209, p11.*

114. Penalty rates have been used as a proxy for the value of companies delivering worse levels of performance than the targets set in the FD. Multiplying the penalty rates by the difference in the upper quartile target with/without our proposed target gives a total value of £10.4 million.

Table 5: Pollution events per 10,000km of sewer, our impact on the upper quartile target

Company	2020/21	2021/22	2022/23	2023/24	2024/25
Anglian Water	25	24	23	22	21
Hafren Dyfrdwy	138	137	117	117	116
Northumbrian Water	24	22	20	18	14
Southern Water	28	26	25	23	20
Severn Trent Water	26	25	24	23	22
South West Water	34	30	27	23	19
Thames Water	27	26	25	24	23
United Utilities	24	23	23	23	23
Dŵr Cymru	28	27	26	25	24
Wessex Water	21	20	19	18	17
Yorkshire Water	25	24	23	23	22
UQ with NWL	24.51	23.74	23.00	22.40	19.50
UQ without NWL	25.00	24.00	23.05	22.84	20.25
Delta	0.49	0.26	0.05	0.44	0.75

Source: NWL analysis using company business plan forecasts for PR19.

115. Overall, the net benefits in terms of service performance value that have been passed back to customers and the impact we have had on the benchmark for other companies is shown in Table 6 below. Overall, this suggests that we have delivered £26m of quantified benefit to customers over AMP6 and through the impact on the benchmarks for AMP7.

Table 6: Total net benefits to customers from our service performance

Area assessed	£m, 2019 prices
SIM in AMP6	5.8
PCs in AMP6	10.6
Pollution incidents impact on AMP7 targets	9.8
Total	**26.2**

Source: NWL analysis.

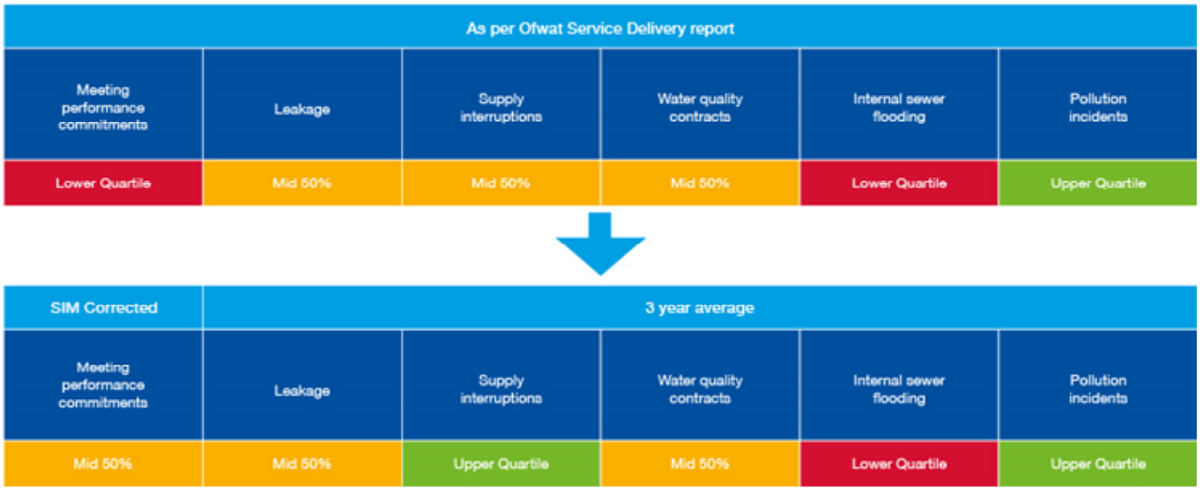
2.6.5 Ofwat's assessment of our performance

116. In Ofwat's latest Service Delivery report, published in November 2019, we were pleased to see NWL placed 6th out of 17 companies overall, as well as being the only company to be an upper quartile performer on both wholesale and retail cost performance.[70] We consider that if the treatment of our SIM performance is corrected (as per paragraph 104), our 'meeting PCs' assessment would improve to inter-quartile, potentially placing us in 5th best place overall.

117. The figures below illustrate our overall assessment as set out in Ofwat's latest report, and an alternative view if the SIM assessment is corrected, and a longer-term view taken on key service measures by taking a three year average.

70 *Ofwat – Service delivery report, October 2019, SOC209.*

Figure 11: Our service performance as measured in Ofwat's Service and Delivery report



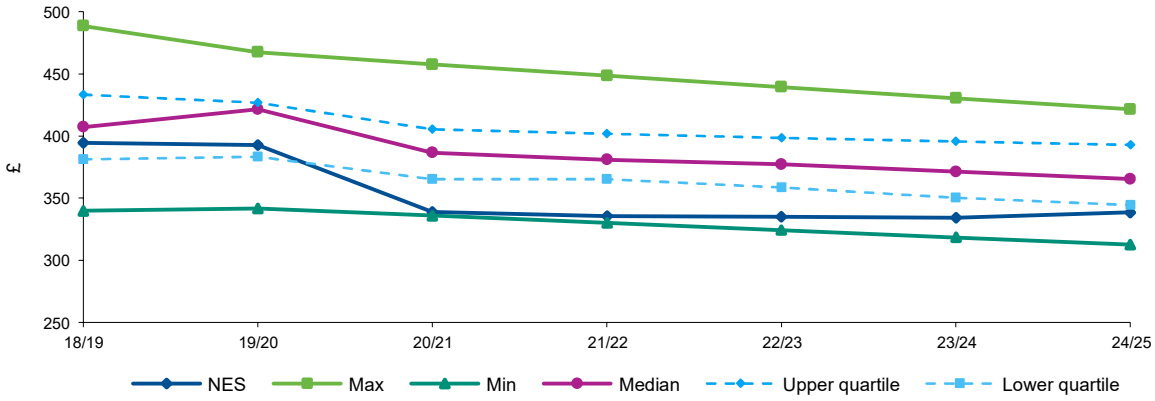
Source: Service delivery report, October 2019, SOC209; NWL calculations.

118. We are a strong supporter of the current focus on comparative performance and recognise that our sewer flooding performance needs to improve in this regard. In BP19 (ed 09.18), we have committed to reduce internal flooding incidents by 65%, targeting upper quartile.[71] Nevertheless, we have generally performed strongly against our PC targets for flooding in the 2015-20 period, set at PR14, where more focus was placed on companies demonstrating continuously improving performance on an individual basis. It is important to acknowledge that the comparative assessment regime will take time to become fully established, with the majority of companies having areas of stronger and weaker performance when assessed in this manner.

2.6.6 We drive affordability for all

119. Our average combined water and waste bills were just above the lower quartile at the end of AMP6 in our North East region (see Figure 12 below). We built on this track record by offering the largest bill reduction of any company in our BP19, enabled by our strong efficiency performance. If Ofwat had implemented FD19 then our bills would have fallen significantly from the end of AMP6 to the end of AMP7 by 14%. As shown in Figure 12 below, this reduction against the FD19 bill figures for other companies using Ofwat's assumptions. This shows that our bills would fall below the lower quartile for the AMP7 period.

Figure 12: Average combined water and waste bill (2017-18 price base)

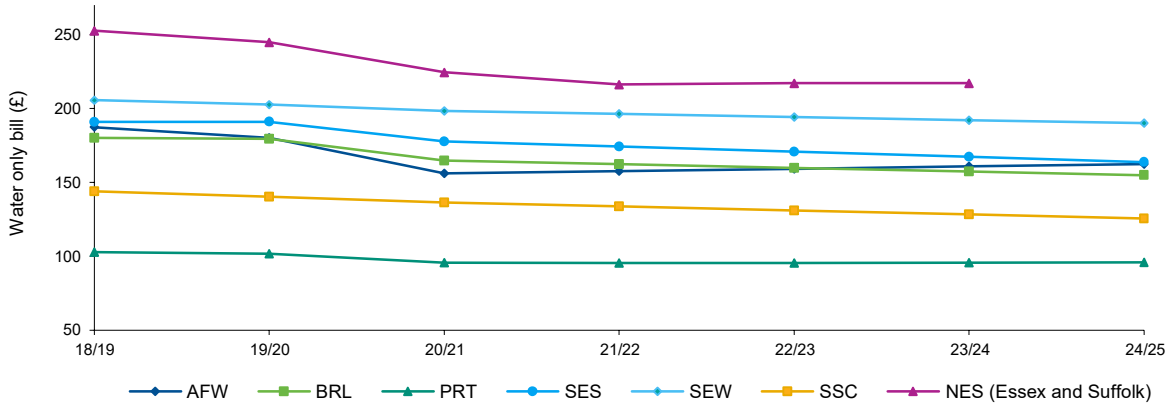


Source: NWL analysis based on historical bill data from Discover Water: Average annual water and sewerage charges across England and Wales households, "***Discover Water***", SOC521, AMP7 bills from Ofwat's FD19 published financial models and Northumbrian Water AMP7 bills from our modified FD19 financial model which includes our proposed remedies.

120. In our Essex & Suffolk region, we are the supplier of water services only and Figure 13 shows our average bills compared to other water only companies on the same basis as Figure 12 above, using the assumptions in this SoC for our bills during AMP7.

71 *BP19 (ed. 09.18), SOC001, p. 131.*

Figure 13: Average water bills (2017-18 price base) in Essex & Suffolk compared to water-only companies



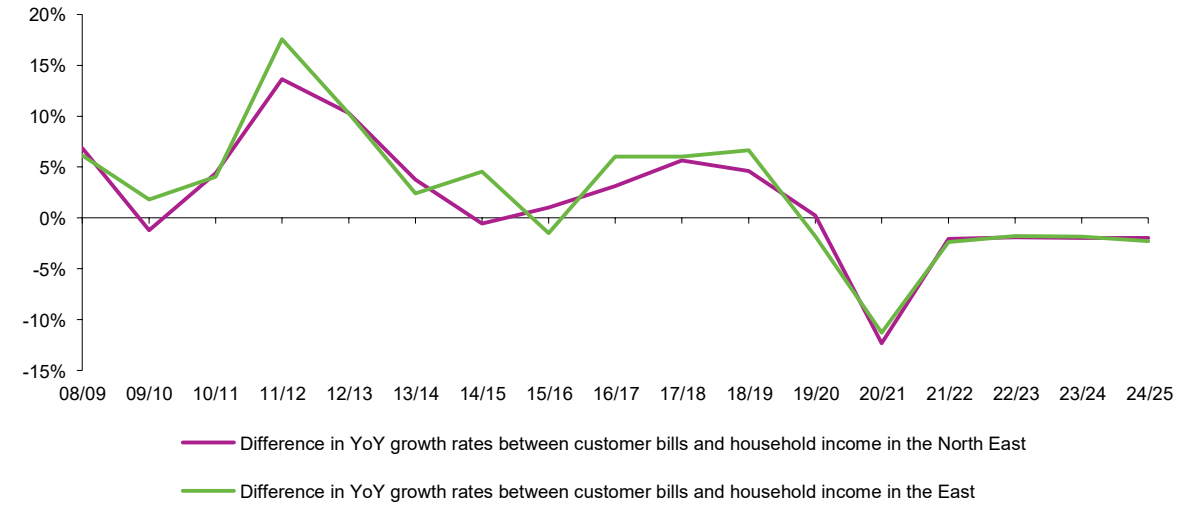
Source: NWL analysis based on historical bill data from Discover Water, SOC521, AMP7 bills from Ofwat's FD19 published financial models, and Northumbrian Water AMP7 bills from our modified FD19 financial model which includes our proposed remedies.

121. The average bills in our Essex & Suffolk region are higher than other water only companies but this is largely due to historical factors and the higher cost to serve in the South East. Essex & Suffolk Water had a relatively high RCV when it merged with Northumbrian Water and the consequential price differential has been maintained as the K-factors from Ofwat's price control determinations have generally been applied equally across our operating regions.

122. The economic conditions in our operating area mean that affordability is a key concern for us. Our approach is to ensure high quality service delivery but keep bills affordable. Our BP19 committed to significant improvements in the affordability of our services over the course of AMP7, with a steeper reduction than proposed by others.

123. As shown in Figure 14 below, growth in our customer bills are below forecast national income growth in AMP7 and bills are set to grow at a slower rate compared to national earnings in real terms across both our service areas. This means that our services will continue to become more affordable for all customers across PR19.

Figure 14: Difference in year-on-year real growth in customer bills and household income[72]



Source: Ofwat PR19 Financial Model, 16 December 2019, SOC200, OBR household earnings forecasts

124. In addition to bill reduction, we are also committed to a holistic view of how to better support our vulnerable customers and were the first company to commit to a bold ambition to eradicate water poverty in our BP19. Using a longer-term perspective through our Inclusive Strategy, we have established various initiatives such as the UK's first and only Water Poverty Unit, established through our strategic partnerships with StepChange and National Energy Action (**NEA**), to end water poverty and provide holistic support to our customers.[73]

[72] *As the regional earnings data only extend to the year 2017/18, we assume that household earnings in both regions grow at the same rate as household earnings at the national level from 2018/19 to 2024/25.*

[73] *BP19 (ed. 09.18), SOC001, p. 79.*

PART B:

OUR CASE

OVERVIEW OF PART B: OUR CASE

125. In Part B of our SoC we aim to set out in more detail the building blocks that must be taken into account in determining our total revenue allowance for AMP7. In particular we explain:

- our views on the interpretation and application of the WIA statutory duties that apply to Ofwat and the CMA in setting price controls (see Section 3);
- how we developed our BP19 with the views and priorities of our customers at its heart and what weight Ofwat placed on that evidence (see Section 4);
- how the cumulative impact of the efficiency challenges has resulted in a level of allowed Totex that, when viewed in the round against challenging and stretching performance targets is unrealistically low and creates risks of cost overruns and for the performance of our functions at a level acceptable to our customers (see Section 5);
- how FD19 sets the wrong incentives that do not promote the interests of customers and are symmetrically skewed (see Section 6);
- how Ofwat's rejection of two key resilience schemes is not justified by reference to the need, scope and cost efficiency tests, or results from an inappropriate assumption that these can be met from our base Totex allowance, and leads to an outcome that fails to deliver against both objective need and our customers' clear priorities and preferences (see Section 7);
- how setting the cost of capital at an unprecedented low level not only results in the level of returns failing to reflect the level of risk presented by the rest of the FD19 package, but also creates a sufficient degree of uncertainty about future regulatory approaches which will impact the ability of the sector to attract appropriate levels of future investment to the detriment of customers (see Section 8);
- the importance of taking account of the new and updated information available at the time of the CMA's redetermination (see Section 9);
- the implications of the FD19 allowance in relation to Totex, resilience investment and cost of capital for our financeability and how the mitigation measures utilised by Ofwat are short term, create inter-generational unfairness and fail to address the underlying issues (see Section 10); and
- some conclusions from our SoC (see Section 11).

3 OFWAT'S STATUTORY DUTIES

3.1 SUMMARY

- In assessing the redetermination for PR19, the CMA is subject to the same statutory duties as Ofwat was required to apply in making its disputed determination. These duties are set out in section 2 of the WIA.
- Ofwat (and, by extension, the CMA) is under a duty to balance the primary statutory duties (the Consumer Objective, Functions Duty, Financing Duty, and Resilience Objective), in order to arrive at a settlement which is balanced in the round. It must do so in accordance with the secondary Efficiency Duty and Sustainability Duty whilst having regard to the principles of best regulatory practice.
- Although Ofwat's FD19 claims to have adhered to these statutory duties, the reality is that the FD19 for NWL is fundamentally unbalanced and fails to secure a robust and durable settlement.
- By focusing unduly on short-term bill reductions, Ofwat's FD19 puts at risk the delivery of service to customers over the longer-term and results in a detriment to consumers (particularly future generations of consumers who may need to fund the necessary investments for a sustainable and reliable future water and wastewater supply).
- By disallowing or failing adequately to fund the investments needed to address climate change and other factors, which satisfy the tests for need, optioneering and cost efficiency and enjoy firm customer support, Ofwat has not adequately discharged its duty to further long-term resilience.
- Ofwat's failure to balance its duties in accordance with statutory requirements has left the industry and NWL struggling to maintain financeability. The sector will find it progressively more difficult to attract the long-term investment which is essential to provide resilient and sustainable development of infrastructure for the future.
- This Section provides an overview of the WIA statutory duties, which must inform the redetermination, and the ways in which Ofwat has failed to secure an appropriate balance between them. Subsequent Sections will develop more detailed submissions in relation to the individual statutory duties.

3.2 OFWAT'S STATUTORY DUTIES

126. In assessing the redetermination for PR19, the CMA is subject to the same statutory duties, set out in s.2 of the WIA, as those that applied to Ofwat in making its disputed determination.

127. The CMA considered the statutory framework in detail in the context of its Bristol Water PR14 Decision. The following key points emerge from that Decision:

- The CMA's jurisdiction in the context of a water redetermination is to determine any question or other matter referred to it by Ofwat *"in accordance with … the principles which apply … in relation to determinations … [by Ofwat]"*.[74] In practice, this means that the CMA will *"determine the reference in accordance with the same general statutory duties that Ofwat was required to apply when making the disputed determination"*.[75] Such a reference "*is a reference for the determination of a new price control … not an appeal on specific elements of Ofwat's decision*". The CMA therefore has the ability to consider any aspects of the referred price control.
- It follows that, unlike its role in relation to an appeal in the energy or telecoms sector, the CMA is free to determine the issues and areas that it takes into consideration. It is not confined to a review of purported errors. As such, the CMA's jurisdiction in setting our price controls for 2020-2025 is distinct, free-standing and exercised afresh.
- In deciding where to focus its efforts, the CMA has previously decided to "*adopt a proportionate approach*", and "*to scrutinise most closely the areas in the determination that would have the largest effect on customer prices and [the water company]*".[76]

74 *WIA, SOC313, S12(3)(b).*
75 *Bristol Water PR14 CMA Decision, SOC336, para. 2.15.*
76 *Bristol Water PR14 CMA Decision, SOC336, para. 18.*

- The CMA has also previously confirmed that as it is "*making a fresh determination*", it should, in principle, consider any further issues that have arisen since Ofwat made the disputed determination.[77]

128. We have sought to take account of this guidance in framing the SoC, by identifying those areas of PR19 in which we consider that Ofwat has failed to act in accordance with the statutory duties, with particularly significant consequences for our customers; and by drawing the CMA's attention to relevant new information to which the CMA is invited to have regard in arriving at its redetermination.

3.2.1 Primary duties must be balanced in the round

129. The primary duties on Ofwat under section 2(2A) of the WIA are to exercise and perform its powers and duties under the WIA in the manner which it considers is best calculated to:

- further the consumer objective (the **Consumer Objective**);
- secure that the functions of a water undertaker and of a sewerage undertaker are properly carried out as respects every area of England and Wales (the **Functions Duty**);
- secure that companies holding appointments under Chapter 1 of Part 2 of this Act as relevant undertakers are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of those functions (the **Financing Duty**);
- secure that the activities authorised by the licence of a licensed water supplier and any statutory functions imposed on it in consequence of the licence are properly carried out; and
- further the resilience objective (the **Resilience Objective**).

130. There is no hierarchy specified in s.2(2A) of the WIA between the duties there identified. Instead, it is necessary to consider the appropriate balance between these various duties when reaching a settlement in the round (rather than considering each duty on a standalone basis). The importance of reaching a balanced outcome was emphasised by the CMA in its Bristol Water PR14 Decision: "*we considered that we were required to apply each of the general duties in accordance with its statutory wording, taking the whole of section 2 into account, and not to apply individual duties (whether principal or secondary duties) in isolation*" and "*in our view, these various principal duties were intended to complement, not conflict with, each other, and the principal duties should each be given equal weight*." [78]

3.2.2 Secondary duties

131. Subject to the primary duties in s2(2A), as set out above, Ofwat (and, by extension, the CMA) must also act in accordance with the "*secondary duties*" contained in s.2(3) WIA, by exercising and performing its powers and duties under the WIA in a manner that it considers is best calculated to (i) promote economy and efficiency on the part of NWL in the carrying out of its functions (**Efficiency Duty**) and (ii) contribute to the achievement of sustainable development (**Sustainability Duty**).

3.2.3 Principles of best regulatory practice

132. In exercising its powers and performing its duties Ofwat is also obliged to have regard to these principles of best regulatory practice under s2(4) of the WIA "(*including the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed).*"

3.2.4 UK Government's Strategic Policy Statement

133. The Water Act 2014 created a new power for the Secretary of State to publish a single statement setting out strategic priorities and objectives for Ofwat to reflect in the way it regulates the water industry.[79] The UK

77 *Bristol Water PR14 CMA Decision, SOC336, para. 2.15.*
78 *Bristol Water PR14 CMA Decision, SOC336, para 3.4.*
79 *WIA, SOC313, S2(2A)(1).*

Government's Strategic Policy Statement (**SPS**) to Ofwat was published in September 2017.[80] The SPS acts as strategic guide for Ofwat's activities and complements Ofwat's existing duties, and Ofwat is required to 'act in accordance with' the document (where previously Ofwat had only been required to 'have regard to' similar guidance and publications).[81] In the SPS, the UK Government (**Defra**)[82] reaffirmed the importance of the following priorities:[83]

- **Securing long-term resilience**: Defra noted that customers expect resilient services, now and in the future, and required Ofwat to challenge the water sector to plan, invest and operate to meet the needs of current and future customers, in a way which offers best value for money over the long term.
- **Protecting customers**: Defra required Ofwat to challenge the water sector to go further to identify and meet the needs of customers who are struggling to afford their charges.
- **Making markets work**: Defra required Ofwat to promote markets to drive innovation and achieve efficiencies in a way that takes account of the need to further: (i) the long-term resilience of water and wastewater systems and services; and / or (ii) the protection of vulnerable customers.

3.3 FD19 IS INCONSISTENT WITH A BALANCED APPLICATION OF OFWAT'S STATUTORY DUTIES

134. We consider that Ofwat has failed to discharge its statutory duties by creating an unequal balance between the primary duties noted above. For the reasons explained in further detail below, Ofwat has erred in prioritisation of short-term customer bill reduction over the promotion of longer-term investment and Resilience Objectives.

3.3.1 Consumer Objective

135. The Consumer Objective requires Ofwat (and, by extension, the CMA) to exercise and perform its functions in a manner best calculated to: *"protect the interests of consumers, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the provision of water and sewerage services*."[84] For these purposes, the WIA specifically defines consumers to include "*both existing and future consumers*".[85] It is therefore clear that Ofwat must take into consideration the long-term interests of consumers and inter-generational equity.

136. With respect to protecting consumers, the SPS emphasises that Ofwat should challenge the water sector to go further to identify and meet the needs of customers who are struggling to afford their charges. Specifically, it notes that the sector needs to do more to address the needs of low income and vulnerable customers who are unable to afford their bills.[86] However, the SPS also notes that "*predictability of bills is important for many customers*" and enshrines the principle of inter-generational equity: "*every generation should pay their fair share of the costs of providing water and sewerage services. This will require the industry to demonstrate an excellent understanding of future investment needs, as described earlier, so that costs are not unduly deferred to future generations*".[87] The CMA has also previously acknowledged that inter-generational fairness is a feature of the Consumer Objective.[88]

137. As explained in Section 4 below, customer engagement was a key building block for Ofwat's PR19 methodology and we carried out extensive customer engagement alongside robust challenge and scrutiny from the independent Water Forums in developing our BP19. That engagement demonstrated that our customers were not singularly focused on short-term bill reductions. When asked directly whether they would prefer reductions in bills or more resilience to climatic change, they clearly told us they would prefer having flat bills and the security

80 *DEFRA – The government's strategic priorities and objectives for Ofwat, "**SPS**", September 2017, SOC349.*
81 *WIA, SOC313, S2DA(a); Water Act 2014 Explanatory Notes, 14 May 2014, SOC328, p.27.*
82 *Department for Environment, Food & Rural Affairs (**Defra**).*
83 *SPS, SOC349.*
84 *WIA, SOC313, S2(B). For these purposes, Ofwat must have regard to the interests of inter alia the following (though not to the exclusion of other customers): individuals who are disabled or chronically sick; individuals of pensionable age; individuals with low incomes; individuals residing in rural areas.*
85 *WIA, SOC313, S5A.*
86 *SPS, SOC349, paras. 30-33.*
87 *SPS, SOC349, para. 33.*
88 *Bristol Water PR14 CMA Decision, SOC336, para 11.14.*

of knowing that critical resilience had been enhanced on both the water and wastewater networks to deal with the changing weather patterns in both the north east and south east of England.

138. FD19 reflects an unduly narrow view of the Consumer Objective, with bill reduction prioritised at the expense of other customer concerns. Not only does Ofwat misdirect itself as to the nature of the Consumer Objective, its doing so also brought about a fundamental imbalance with respect to its other statutory duties:

- **Ofwat has focused unduly on unprecedented short-term bill reductions**: The statutory wording of the Consumer Objective does not suggest that the sole and overriding purpose of this duty is to lower customer bills. Ofwat has, however, made this the central and controlling focus of its determination. Ofwat claims that 3 million water customers regard their water bill as unaffordable, and that action is therefore required.[89] NWL recognised the imperative to lower customer bills and embraced the challenge by offering in our BP19 a 15% saving against current bill levels (based on Ofwat's initial indications with respect to the cost of capital), in conjunction with robust protection for the most vulnerable customers including an ambitious commitment to eradicate water poverty in its regions. FD19, however, requires a 24% reduction in bills. If applied, this would result in an unacceptable level of squeeze on our Totex and the other building blocks that drive overall revenue and customer bill levels. It would put at risk the delivery of satisfactory service levels to customers, to the detriment of consumers. It runs counter to the clear views expressed to us by our customers, that they would prefer flat bills over further reductions, particularly when this allows investments to address the very real challenges of sewer flooding arising from new climatic effects.
- **FD19's emphasis on short-term bill reductions ignores other, equally relevant, customer priorities**: FD19 disregards consumer preferences in a number of key areas. When asked by us directly whether they would prefer reductions in bills or more resilience to climatic change, our customers clearly told us they would want to have flat bills and the security of knowing that critical resilience had been enhanced on both the water and wastewater networks. Although Ofwat agrees that our proposals in respect of sewer flooding mitigation are robust and well evidenced, it has chosen not to fund these on the incorrect basis that they are already covered in the base costs.
- **FD19 risks promoting inter-generational unfairness**: Ofwat's interventions create significant challenges for inter-generational fairness by prioritising short-term bill reductions, thereby pushing problems into the future for subsequent generations to address. For instance, Ofwat has brought forward substantial revenues from future customers in order to address the short-term financeability challenge created by its setting the allowed return at too low a level.
- **Ofwat may have been unduly influenced by external and historical factors**: We note that Ofwat has highlighted criticisms of the water industry from the National Audit Office (**NAO**), Defra select committee, the National Infrastructure Commission (**NIC**) and the Citizens Advice Bureau (**CAB**) and refers to these as support for the balance having previously been skewed too far in favour of investors.[90] As we show in section 5, the hypothesis that there has been systematic outperformance in the water sector is incorrect removing any justification for increasing the challenge at PR19, let alone as materially as Ofwat has done so. Furthermore, Ofwat's statutory duties required it to consider the position prospectively, assessing in the round what settlement would be most appropriate for this Asset Management Period (**AMP**) cycle, having regard to the interests of current and future customers. Seeking a claw-back in respect of historic settlements should form no part of the current settlement. Such an approach would run counter to the Consumer Objective, the principles of best regulatory practice and the independence of Ofwat from Government.

3.3.2 Resilience Objective

139. The statutory wording of the Resilience Objective requires Ofwat (and, by extension, the CMA) to exercise and perform its functions in a manner best calculated to:

secure the long-term resilience of water undertakers' supply systems and sewerage undertakers' sewerage systems as regards environmental pressures, population growth and changes in consumer behaviour, and

secure that undertakers take steps for the purpose of enabling them to meet, in the long term, the need for the supply of water and the provision of sewerage services to consumers, including by promoting—

appropriate long-term planning and investment by relevant undertakers, and

89 *Ofwat Transcript 4.02.20, SOC415, p. 8.*
90 *Ofwat Transcript 4.02.20, SOC415, p. 9.*

the taking by them of a range of measures to manage water resources in sustainable ways, and

to increase efficiency in the use of water and reduce demand for water so as to reduce pressure on water resources.[91]

140. Defra had concluded in 2013 that "*[by] the 2080s, without significant action to reduce demand for water and to increase supplies, almost the whole UK population may be living in areas affected by a supply-demand deficit*".[92]

141. The Resilience Objective was introduced by the Water Act 2014, to address what Defra identified as aspects of the current system that "*institutionalise short-term thinking and make it difficult to adopt the innovative solutions required to deliver the more joined-up, resilient water resources system that we will require to meet these challenges*".[93]

142. It was clear at the time of its introduction that the intention was to "*move the horizon from the short-term view of the next five years to a sustainable long-term focus*"[94] thus providing "*long-term solutions (…) rather than moving from price review period to price review period*."[95] This was also confirmed by the Parliamentary Under Secretary of State when introducing the bill in the House of Lords, who noted that resilience "*protects both current and future consumers and will help to keep bills fair for the long term*".[96]

143. The purpose of the Resilience Objective is therefore to secure the long-term resilience of companies' water and sewerage systems as against environmental pressures, population growth and changes in consumer behaviour. The intention is that this should be reflected in companies' short and long term planning as well as in the price control set by Ofwat.

144. Resilience cannot be considered in isolation from the other primary duties, in particular the Consumer Objective. According to Defra, the Resilience Objective "*has a particular read-across to the duties focused on protecting the interests of current and future consumers, securing that the companies properly carry out and can finance their functions, promoting economy and efficiency; and contributing to sustainable development.*"[97]

145. As noted in Section 3.2.4 above, the promotion of resilience was identified in the SPS as a key priority, given that "*climate change, population growth and changes in consumer behaviour are putting increasing pressure on the water sector in England.*"[98] In the SPS the Government asserts that "*customers expect resilient water and wastewater services, now and in the future – but some regions are exposed to substantial risks from service failures, for example due to drought*".[99]

146. In this context, the SPS set the following objectives for Ofwat:

- Ofwat should further a reduction in the long-term risk to water supply resilience from drought and other factors, including through new supply solutions, demand management and increased water trading;
- Ofwat should challenge water companies to improve planning and investment to meet the wastewater needs of current and future customers;
- Ofwat should challenge water companies to make sure that they assess the resilience of their system and infrastructure against the full range of potential hazards and threats and take proportionate steps to improve resilience where required; and
- Ofwat should challenge companies to further the resilience of ecosystems that underpin water and wastewater systems, by encouraging the sustainable use of natural capital and by encouraging water companies to have appropriate regard to the wider costs and benefits to the economy, society and the environment.[100]

91 *WIA, SOC313, s2(2DA).*
92 *Defra – Updating the general duties with respect to the water industry to reflect the UK Government's resilience priorities, "**UK Government Water Industry Duties Paper**", April 2013, SOC319, paragraph 1.1.*
93 *UK Government Water Industry Duties Paper, SOC319, p.1.*
94 *Hansard - Volume 753 - Water Bill, 25 March 2014, SOC327, Baroness Northover, Hansard House of Lords.*
95 *Hansard - Volume 571 - Water Bill, 25 November 2013, SOC324, Dan Rogerson, Hansard House of Commons.*
96 *Hansard - Volume 751 - Water Bill, 27 January 2014, SOC325, Lord de Mauley, Hansard House of Lords.*
97 *UK Government Water Industry Duties Paper, SOC319, p.4.*
98 *SPS, SOC349, para. 8.*
99 *SPS, SOC349, p.1.*
100 *SPS, SOC349, paras. 11, 17,19 and 24.*

147. We consider that Ofwat has failed to enshrine these goals in FD19, and has generally afforded insufficient weight to the Resilience Objective:

- Ofwat's focus on short-term bill reductions and service improvements is achieved at the expense of long-term planning and investment: In PR19, Ofwat has emphasised that "*resilience should be at the core of how the sector plans to deliver its services to customers*"[101] underpinned by a consideration of resilience "*in the round*". This includes an expectation that companies need "*the right information, systems, processes, governance, capabilities and finances to make decisions about their operations, maintenance, and investment in the short and long term*".[102] In considering the appropriate balance of the overall package, however, Ofwat has failed properly to reconcile the need for bill reductions and efficiency with the necessity for additional investment to ensure resilience and the ongoing delivery of the essential services over the long-term.
- FD19 does not support resilience schemes that would address significant flooding, water scarcity, quality and other concerns for our current and future customers: Our BP19 was the product of extensive consumer research and supported a number of investments and enhancements to secure long-term resilience. Whilst Ofwat allowed some of our resilience schemes, it disallowed funding for two key resilience schemes: a scheme for sewer flooding risk reduction in the North East and the Abberton to Hanningfield transfer main designed to tackle potable water demand issues in Essex and Suffolk. In rejecting these schemes, Ofwat has failed to give adequate weight and consideration to the objective merits of the schemes as well as the clear support from customers (as expressed through robust and comprehensive engagement). The sewer flooding resilience schemes go further to address the climate change impacts than companies have sought to go in the past, are not part of the ongoing programme of work which has been carried out before by NWL to support properties impacted by sewer flooding and should therefore not be reflected or accounted for in the base case modelling as Ofwat suggests but should instead be separately funded. The Abberton to Hanningfield link scheme addresses a number of challenges in our Essex region and enhance a wide range of benefits to improve the resilience of our water network which would not arise or be accounted for as part of base costs.

148. Issues relating to the consideration of the Resilience Objective in the context of our BP19 and Ofwat's FD19 are set out in more detail in Section 7.

3.3.3 Financing Duty

149. The statutory wording of the Financing Duty requires Ofwat (and, by extension, the CMA) to exercise and perform its functions in a manner best calculated to secure that "*relevant undertakers are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of those functions*."[103]

150. We do not believe that Ofwat has appropriately discharged its Financing Duty through FD19.

151. In particular, we consider that Ofwat's failure to balance its duties with respect to the Financing Duty is evidenced by the following:

- Ofwat has failed to set an appropriate return on capital, in particular in respect of the various elements which go to make up the weighted average cost of capital;
- Ofwat's settlement in the round is not financeable, in the way in which financeability is understood by the industry and, notably, by independent rating agencies;
- Ofwat has failed to apply previous regulatory precedents on financeability;
- the notional efficient water and sewerage company is unlikely to be able to achieve in practice the assumed credit rating and therefore to raise debt at the rates assumed in FD19;
- Ofwat has tried to fix the financeability challenge by advancing revenues in a way which is not recognised by the credit rating agencies, increases inter-generational unfairness, and is not sustainable;
- critically there is simply insufficient financial headroom adequately to manage the increased business risks coming through from the incentive-based framework and provide capacity to withstand significant but plausible downside scenarios; and

101 Ofwat – Resilience in the round: Building resilience for the future #resilienceintheround, September 2017, SOC218, p. 2.
102 PR19 draft determinations: Overview of companies' draft determinations, "**Ofwat DD19**", July 2019, SOC228, p.9.
103 WIA, SOC313, S2A.

- FD19, considered in the round, significantly reduces financial resilience and creates a significant imbalance in the round between risk and return.

3.3.4 Functions Duty

152. The statutory wording of the Functions Duty requires that Ofwat (and, by extension, the CMA) exercise and perform its functions in a manner best calculated to secure that: "*the functions of a water undertaker and of a sewerage undertaker are properly carried out as respects every area of England and Wales*".[104]

153. It is an important part of Ofwat's (and, consequentially, the CMA's) role to ensure that we are able to discharge our functions as a water and sewerage undertaker. Price controls must therefore be sufficiently balanced to ensure that we can perform the full range of the duties and obligations under the WIA and the terms of our Licence. As such, the Functions Duty is closely linked to the Financing Duty. As will be further explained in Section 5, however, while setting a strong efficiency challenge for water companies may provide short-term benefits to customers through lower bills, it could also force companies to cut costs to such an extent as to result in a deterioration in service or, in extremis, to jeopardise the delivery of the essential water and wastewater service in the longer-term.[105]

154. The Functions Duty also makes clear that Ofwat (and, consequentially, the CMA) must ensure that we are able to discharge our functions in every area of England and Wales.[106] Regionality is therefore an important consideration. As will be explained further in Section 7, as a result of climate change and growth in urban creep in our North East region, we are expecting a material increase in sewer flooding risk; whereas our Essex and Suffolk supply areas are located within some of the driest areas of the country and face additional challenges due to scarcity. By disallowing our proposed investments to promote long-term resilience and mitigate the impact of climate change (on the basis that these should be funded through base costs), Ofwat has failed to account for the fact that the magnitude and nature of the risks associated with climate change will manifest differently on a regional basis.

104 WIA, SOC313, S2(2A)(b).
105 In particular, for sewer flooding schemes we will show, value and explain the impact of 7,400 additional property being hit by sewer flooding. In relation to the Abberton to Hanningfield link scheme.
106 WIA, SOC313, S2(2A)(b).

4 WORKING TOWARDS THE CONSUMER OBJECTIVE

4.1 SUMMARY

- Throughout the PR19 process, Ofwat has emphasised the importance of customer engagement as a key tenet of its PR19 methodology.
- We embraced this principle and our co-created BP19 met the concerns, needs and aspirations of our customers. BP19 was shaped by close engagement with around 400,000 customers, interaction with circa 500 stakeholder organisations and constructive challenge from the independent Water Forums. It achieved one of the highest levels of acceptability in the sector, with 91% of our customers accepting our plan as a whole.
- Despite our extensive efforts to use customer feedback to shape BP19, Ofwat has adopted a narrow and unbalanced interpretation of the Consumer Objective in FD19, which focuses unduly on short-term bill reductions at the expense of wider consumer preferences.
- We fully accept that customer bills should not be higher than they need to be and, in response to Ofwat's efficiency and affordability challenges, our BP19 offered significant bill reductions of 17% for our wastewater customers and 14% for our water customers (or an average of 15% across all our customers) whilst also enhancing protection for the most vulnerable customers.
- However, bill reductions must form part of a balanced settlement, and Ofwat has ignored evidence from our extensive customer engagement which clearly shows that our customers' preferences are more nuanced and multifaceted.
- Firstly, our customers told us that they do not want a reduction in bills at the expense of long-term resilience and the risk of increased bills for future generations. Conversely, Ofwat's interventions create inter-generational unfairness by prioritising short-term bill reductions for current customers and deferring major investments for other generations to address. Notwithstanding that inter-generational fairness is an integral part of the Consumer Objective.
- Secondly, our customers told us that they had a preference for stable and manageable bills over time, because many customers on low incomes cannot absorb unexpected price changes. This translated into a preference for flat bills rather than significant decreases in bills in one cycle only to be followed by a rise in following periods. That preference for stable bills is reflected in our BP19.
- Thirdly, our research showed that our customers support us investing in resilient networks and planning ahead for impacts, such as from climate change, regional population growth and major incidents, because we showed that the delivery of these schemes was still achievable with a significant reduction in our bills. Ofwat's FD19, however, has disallowed funding for resilience investments that our customers supported and were willing to pay for and focussed instead on reducing the bills through a much sharper reduction in the WACC.
- In this Section we set out our interpretation of the Consumer Objective, explain our approach to customer engagement during PR19, outline how our BP19 reflected our customers' priorities and provide an overview as to why Ofwat misinterpreted those preferences.

4.2 THE CONSUMER OBJECTIVE IS ABOUT MORE THAN BILL REDUCTION

155. Our BP19 was put together after careful consideration of our customers' priorities. In FD19, Ofwat has misinterpreted these priorities. This stems from a narrow interpretation of the Consumer Objective, giving undue weight to bill reduction at the expense of other customer concerns and thereby upsetting the balance of FD19.

156. Ofwat's decision has been made despite the extensive evidence that we have presented throughout the PR19 process to demonstrate the multifaceted nature of our customers' priorities. Not only is this in conflict with Ofwat's own PR19 methodology, which sought a consumer focus, it is also a fundamental misinterpretation of its statutory duty.

157. In previous water industry decisions, the CMA has emphasised that Ofwat's individual duties (whether principal or secondary) need to be applied "*in accordance with their statutory wording*".[107] The CMA also considers that the principal duties "*were intended to complement, not conflict with each other, and the principal duties should each be given equal weight*".[108]

158. In accordance with the WIA, Ofwat must uphold the Consumer Objective, described as to "*protect the interests of consumers, where appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the provision of water and sewerage services*".[109] Importantly, the Consumer Objective as described in statute does not include any reference to securing the lowest cost of consumer bills but rather defines 'consumer interests' much more widely.

159. Pursuant to section 2(5A), "*consumers*" includes "*both existing and future consumers*". In exercising its balanced duties Ofwat therefore needs to clearly take into account inter-generational equity. This inter-generational fairness is a feature of the duties which was acknowledged by the Competition Commission (**CC**) (as it then was) in its redetermination of Bristol Water's price control in 2010 (**Bristol Water PR09 Decision**). Indeed, the CC agreed that it would be reasonable to "*spread the costs of investment and that costs and benefits should balance in the longer-term for customers*".[110]

160. Recognition of inter-generational fairness is important, but there are numerous instances in Ofwat's FD19 where Ofwat has taken a short-term approach. For example, in seeking to correct for the insufficient allowance of returns, because Ofwat has set the cost of capital too low, it has increased PAYG revenues, at the expense of future consumers in order to make companies financeable. Rather than dealing with the fundamental in-period financeability issue Ofwat has sought to 'balance the books' by advancing revenue from future price controls into the current price control and thereby failed to give appropriate weight to an important aspect of the Consumer Objective.

161. Furthermore, Ofwat has failed to allow sustainable enhancement proposals which could be spread equitably across present and future consumers, such as the water transfer resilience scheme in Essex and the flood management schemes in the North East. This is despite strong consumer support and willingness to pay for these schemes (as set out in more detail at 4.4.1.3 below) and Ofwat's own direction that companies in PR19 should "*make sure their plans reflect the needs and requirements of future customers, as well as current ones, to avoid unduly deferring investment into the future and passing the bill onto future generations*".[111]

162. The statutory wording goes further and states pursuant to section 2(5A) that "the interests of consumers" means "*the interests of consumers in relation to (a) the supply of water by means of a water undertaker's supply system to premises either by water undertakers or by [water supply licensees] acting in their capacity as such; and (b) the provision of sewerage services [either by sewerage undertakers or by sewerage licensees acting in their capacity as such]*".[112] This explanation clearly extends Ofwat's duty to consider and safeguard more than simply the financial concerns of the today's customer, but to think about its priorities in the round in terms of service delivery.

163. We set out further below the customer engagement process that we developed, the resulting lessons we learned about our customers' priorities, how this influenced our BP19 and why we are concerned that these priorities have not been properly taken into account in FD19.

107 Bristol Water PR14 CMA Decision, SOC336, paragraph 3.4.
108 Ibid, paragraph 3.4.
109 WIA, SOC313, S2(2B).
*110 Bristol Water plc - A reference under section 12(3)(a) of the Water Industry Act 1991: Report, "**Bristol Water PR09 CMA Decision**", 4 August 2010, SOC296, para. 3.70.*
111 Ofwat PR19 methodology, SOC424, p. 28.
112 WIA, SOC313, Section 2(5A).

4.3 CUSTOMER ENGAGEMENT THROUGHOUT THE PR19 PROCESS

4.3.1 A co-created plan

164. We began our PR19 process from a strong position as a top quartile WaSC (see Section 2.6 above). We set out to co-create the plan in partnership with our customers that would push us to achieve even better performance and increase standards for the sector.

165. This commitment to customer engagement is in line with a key tenet of Ofwat's PR19 methodology, which states: "*Customer engagement is a vital element of PR19, because companies need to understand their customers' preferences to deliver the outcomes that matter to them over the long term. Customer engagement will provide essential evidence for company proposals in their business plans.*"[113] In particular, Ofwat expects that we engage with customers on topics such as affordability and longer-term issues/resilience, and to use innovative techniques in order to do so.

166. We had already seen the benefits of customer involvement at PR14. The sector learned from some of the issues from PR14 around customer engagement[114] and we were ready to respond to Ofwat and CCWater's challenge to bring about a step change in the quantity and quality of participation of customers in the plans for future water and wastewater services at PR19. In our engagements with customers, we tested the acceptability of our enhancement cases using a 10% bill reduction hypothetical scenario so that customers could clearly see what the potential trade-offs were between greater long-term resilience and reductions in today's bills.

167. Engagement with our customers is not something that is confined to price reviews or our submissions to Ofwat. To consider the best way to engage our customers in order to build a plan centred on customers' needs and priorities, we developed our engagement strategy in 2015. This was ahead of Ofwat publishing its guidance for PR19 customer engagement.[115] In the process, we used innovative and collaborative techniques to access customer feedback of higher quality and depth than ever before.[116]

168. The end result was a truly co-created plan that met the concerns, needs and aspirations of our customers. Our proposals were shaped by conversations, debate and scrutiny with around 400,000 of our customers and over 500 other stakeholder organisations impacted by our activities representing the third highest proportion of the customer base of any company.[117] Our efforts were reflected in our achieving one of the highest levels of acceptability in the sector, with 91% of our customers accepting our plan as a whole.[118] Moreover, while our BP19 focused on the next five years, it is set in a much longer-term context, and were aligned with our strategic direction statement and long term investment strategy.

169. Section 2 of our BP19 provides extensive detail on all aspects of how customers, our Water Forums and stakeholders have influenced our plan.[119] Such aspects of customer interaction are set out in greater detail below (see Section 4.3.5).

4.3.2 Customer engagement – business as usual

170. We have an ongoing programme of business as usual customer engagement. Whilst this is a process distinct from PR19 engagement, it naturally raised issues which fed into our initial customer engagement strategy at the beginning of the PR19 process. Our business as usual customer engagement consists of a programme of bespoke activity around key aspects of service, including operational service, inclusivity, charges and the future.

171. We determine an overall research programme at the beginning of each price review cycle but review it each year against emerging requirements. The research findings are primarily used to inform the policies and strategies

113 *Ofwat Consultation on PR19 Methodology, 11 July 2017, SOC217, p. 24.*

114 *"There are a number of methodological difficulties with WTP surveys, and there were some significant variations in the WTP results between regions. We should also question what the best approaches to gathering and using WTP information are. Furthermore, we should put greater emphasis on other sources of information on customer preferences that could be used to help inform our final determinations." Ofwat - Towards Water 2020 – Policy issues: customer engagement and outcomes, July 2015, SOC180.*

115 *NWL Management Team – Outcomes Customers Research and Engagement Proposal, "**NWL Customer Engagement Proposal**", 11 March 2016, SOC246.*

116 *This includes engagement via social media, Have Your Say forums, Innovation Festivals and the use of our innovative new customer feedback app, Flo. BP19 (ed. 09.18), SOC001, p. 16.*

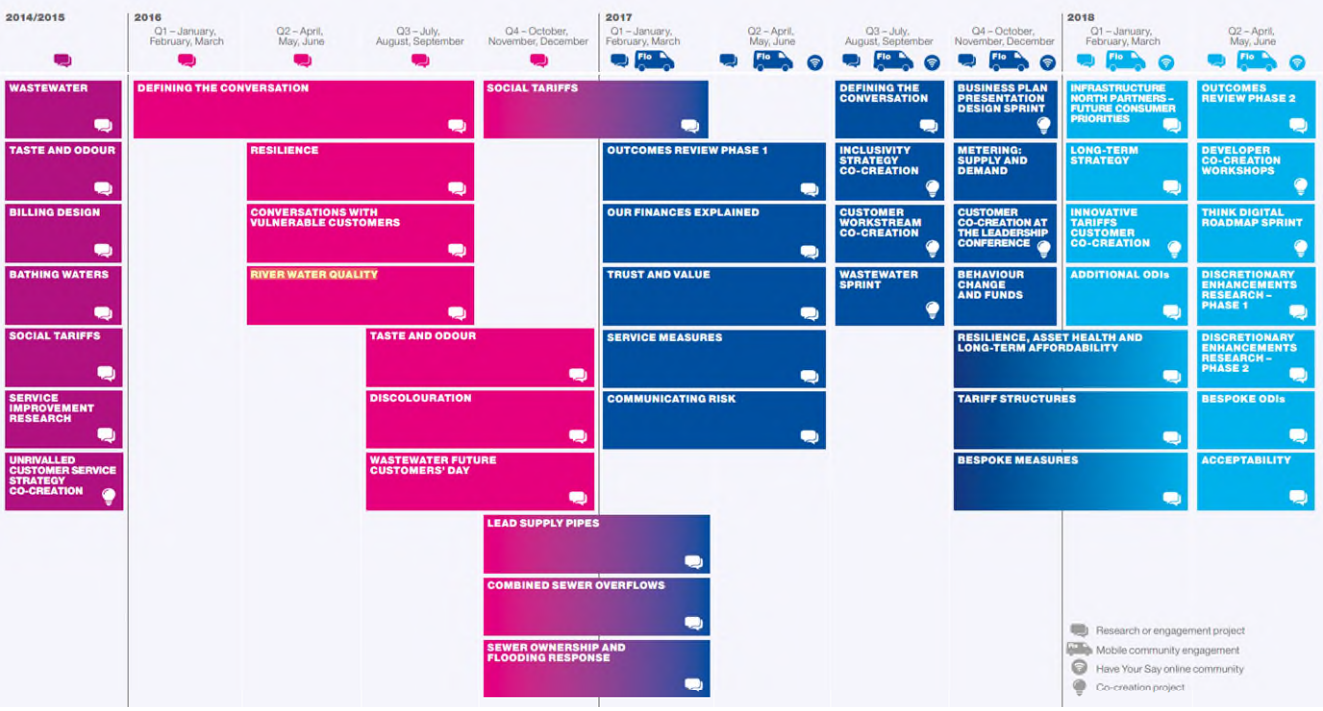
117 *Based on the number of customers engaged as reported in PR19 company business plans, NWL engaged c.24% of their customer base, second only to South West Water and Southern Water's estimates.*

118 *BP19 (ed. 09.18), Appendix 2.4, PR19 Acceptability Research, July 2018, SOC033; BP19 (ed 08.19), p. 31, SOC129.*

119 *BP19 (ed. 09.18), SOC001, Section 2, pp.15-48.*

that underpin our BP19. They are disseminated to all relevant teams within the business, as well as our Water Forums. Our policy and strategy engagement programme from 2015-2018 is summarised in Figure 15 below:[120]

Figure 15: NWL engagement programme 2015-18



172. We actively look beyond our own research and engagement findings for customer insights. This includes considering research and engagement reports published by other companies and organisations. We pay close attention to the work of CCWater, Ofwat and others in the sector. More widely, we also reviewed reports published by government bodies, the Office for National Statistics (**ONS**), the Institute of Customer Services (**ICS**), academic institutions, charities, market research agencies and others. We also track nongovernmental organisations' campaigns. Our approach has sought to capture both sector specific lessons but also looked beyond our own sector for leading practise.

173. We have also utilised technological innovation in order to obtain closer and more direct feedback from our customers. The 'Have Your Say' online discussion forum includes more than 500 members, around one-third of whom consider themselves to need additional help and support. Customers interact with us and with each other, sharing ideas and experiences and taking part in surveys and polls.

174. We also made sure that our engagement process accurately reflected the different needs of our complex customer base (which we set out in greater detail in Section 2.4 above). The Water Forums noted that we had made a very good start to understanding its very complex customer base, by engaging with and understanding the needs of key groups - including those in remote communities, future customers, and those who are vulnerable from a bill affordability point of view. The Water Forums also noted that we "*clearly wanted to understand*" the range of views our customers held and "*to listen to specific groups of customers*".

4.3.3 Lessons learned from PR14

175. We wanted to ensure that our approach to customer research would be leading, both within the water industry and compared with other sectors. We carried out an extensive review of our approach during 2015, which included:[121]

120 *The ways in which individual projects have shaped our plan are discussed in BP19 (ed. 09.18), SOC001, Section 3. The executive summaries from all of our individual projects can be found in Appendix 2.2 to BP19 (ed. 09.18), SOC031.*

121 *NWL Customer Engagement Proposal, SOC246.*

- a full audit to identify all the opportunities we have for engaging with customers;[122]
- a review of the latest industry guidance from Ofwat, CCWater, Market Research Society (**MRS**) and others;[123]
- peer review to identify best practice among other water and wastewater companies;
- discussions with experts with a deep understanding of customer engagement;
- exploring the best use of customer segmentation, again drawing on external expertise;
- discussions and desk research about how leading organisations engage their customers. This included companies from a range of industries such as Sky, Lego, Dell, Amazon, First Direct and John Lewis; and
- reviewing our proposed approach with expert members of our Water Forums.[124]

176. We used the findings from this review as the foundation of our customer engagement strategy, in which we established seven principles of great customer research. We shared our draft strategy with Ofwat ahead of the publication of its final guidance.[125] When Ofwat's guidance was published, we were pleased to see that its principles of good customer engagement aligned closely with ours (which are set out below):[126]

- **Principle 1**: Empower customers to co-create and shape services: over 22,000 customers attended strategic research and engagement events.[127] We tailored our approach to each project to make sure that we gather customers' uninformed views before we then talk to them in more detail about the subject. Once these customers have gained a deeper understanding of the matter, we can then seek their informed views.
- **Principle 2**: Led by our people: while we work with third-party research agencies to provide independent research sampling, design, fieldwork, interpretation and analysis, we engage directly with customers as much as possible, in order to develop a deep understanding of their concerns and to embed a customer focus, both within our business and beyond among other stakeholders.[128]
- **Principle 3**: Continuous and ongoing: we take our lead from customer insight as part of business as usual – beyond the price review process. Our operational and tracking data identifies trends which are used to develop improvements to our services.[129]
- **Principle 4**: Have a deep understanding of our customers: we went beyond traditional segmentation approaches to include behavioural and attitudinal qualities, such as environmental concern or recreational uses of water. We also undertook specific research to understand the diversity of needs from customers who may need additional support.[130]
- **Principle 5**: Be creative and innovative: we used imaginative and accessible techniques to engage with a wider range of customers and allow them to express themselves more easily.[131]
- **Principle 6**: Use multiple sources: we used a three-phase plan for how we would triangulate customer insights, representing different sources in proportionate ways.[132] This approach enabled our Water Forums to engage with our full body of customer research, in order to provide challenge and assurance on the decisions we took as a result.[133]
- **Principle 7**: Provide regular feedback to customers: we provided ways to show customers what had happened as a result of their engagement, and opportunities for them to continue their participation.[134]

122 *NWL Customer and Stakeholder Engagement Audit, May 2016, SOC249.*
123 *NWL Customer and Stakeholder Engagement Audit, May 2016, SOC249.*
124 *Water Forums' Report, SOC009, p. 30, 32. See p. 68 showing how members engaged in forming and approving the customer engagement strategy.*
125 *NWG – Living Water: Our Customer Research and Engagement Proposal 2016-19, 2015, SOC247. This was presented at a meeting with Georgina Mills at Ofwat on 15th March 2016.*
126 *Ofwat – Involving customers in price setting – Ofwat's customer engagement policy statement, 11 August 2011, SOC428; BP19 (ed. 09.18), SOC001, Figure 1, p. 18 for a comparison of our principles of customer engagement and Ofwat's.*
127 *BP19 (ed. 09.18), SOC001, p. 18.*
128 *BP19 (ed. 09.18), SOC001, p. 19.*
129 *BP19 (ed. 09.18), SOC001, p. 19.*
130 *BP19 (ed. 09.18), SOC001, p. 20.*
131 *BP19 (ed. 09.18), SOC001, p. 20.*
132 *BP19 (ed. 09.18), SOC001, Figure 2, p. 22.*
133 *BP19 (ed. 09.18), SOC001, p. 21.*
134 *BP19 (ed. 09.18), SOC001, p. 21.*

4.3.4 Key phases of customer research and engagement for BP19

177. Throughout the development of our plan, we ensured that we created innovative and customised engagement opportunities that motivated our customers to participate in the PR19 process.

178. We undertook a robust programme of customer research and engagement, in order to understand our customers' priorities for investment, as well as their appetite and ability to pay for the investments that we identified to meet those priorities. This programme included large-scale, statistically representative quantitative surveys with all customers on subjects that were suited to these methodologies. For subjects about which customers were not usually well informed, we organised deliberative events, often in partnership with stakeholders, in order to educate customers about the issues on which they would then be asked to give their opinions. We found this a great way for customers to provide us with crucial input on our plan and for them to give informed opinions on more complex or technical matters.

179. An important early milestone for our PR19 customer engagement activity began in 2016 with 'Defining the Conversation'. This customer engagement project aimed to understand the role our customers want to have in shaping different aspects of our services. Our customers told us that we should engage with them to understand their views on customer service, value for money and trust.

180. Our strategic approach to customer engagement involved the following three phases:

- In **phase one**, we mapped our existing intelligence against our current business outcomes, reviewed regulator guidance (including that from Ofwat on the common PCs) and identified new approaches that the company could take in BP19. We undertook initial customer research and co-created strategic themes around which the plan could be based. We also identified potential bespoke measures of success that we could aim to improve for customers.
- In **phase two**, we compared the strategic themes and our proposed set of measures against existing customer evidence to determine which areas required new or further customer research. We then undertook cost-benefit analysis and service valuation research with customers, asking them to state the level of service they would like to see in its financial context of the total bill impact on them personally. We triangulated all this evidence with comparative information and other sources, involving our Water Forums in the process.
- In **phase three**, we laid out our proposed performance levels, our measures of success, and our incentives and penalties package in customer-friendly brochures and undertook extensive customer engagement to test the acceptability of our proposed plan.

181. Please see Figure 16 below which outlines these phases of customer engagement.

Figure 16: NWL three phases of customer engagement for PR19

4.3.5 Role of the Water Forums

182. Throughout the PR19 process, we benefited greatly from the Water Forums' input. Over the period, members were involved in 24 workshops, 11 meetings, 33 engagements with the Board and other NWG team members, as well as site visits and numerous other conversations.[135] The Water Forums commented that we "*sought to engage with [them] at every opportunity*"[136] and they were "*left in no doubt that the customer voice comes through loud and clear in the proposals.*"[137]

183. In the early stages of the PR19 process, the Water Forums collaborated with us to develop a long-term strategy, so that BP19 was part of a bigger picture of improving our offering for customers, the natural environment in which we operate, and of creating a resilient service for the customers of today and future generations.

184. One of our fundamental priorities of the PR19 process was to ensure (in line with Ofwat's methodology) that evidence from customer engagement genuinely informed BP19. The Water Forums provided independent challenge throughout the process – both in relation to how engagement was carried out and in how the results were used.[138] We shared the results of our customer engagement with members, as well as our draft BP19 strategies. The Water Forums commented that we "*struck a good balance, in [the] engagement programme, between the level of detail and the cost of undertaking the activities involved.*"[139]

185. During the process, we welcomed the challenges that they made, which ultimately ensured customer views were more embedded in BP19. Notable input from the Water Forums included:

135 *Appendix 2.5 to BP19 (ed. 09.18), Our Plan 2020-2025 Essex and Suffolk Water and Northumbrian Water, September 2018, SOC034, p.2.*
136 *Water Forums' Report, SOC009, p. 4.*
137 *Water Forums' Report, SOC009, p. 20.*
138 *Water Forums' Report, SOC009, p. 27.*
139 *Water Forums' Report, SOC009, p. 34.*

- **Triangulation**: Providing challenge and expert input that reshaped our approach, making it more robust and representative of customer views. We applied a 'triangulation' approach to develop a deep and broad understanding of our customers' priorities, needs and expectations from multiple standpoints, in a systemic, detailed and balanced way.[140]
- **Affordability**: Challenging the company to put more focus on increasing take-up of support schemes and social tariffs, because awareness levels were low.
- **Metering**: They challenged the company to present metering in a neutral way, to make sure that the potential dis-benefits for some customers were not ignored.
- **Performance Commitments**: At an early stage in the process, Forum members saw that in some areas customer research showed a clear priority, yet there was no PC to reflect that priority. They therefore challenged us to include a bespoke measure – for example, response time to visible leaks and repeat sewer flooding. Later in the process, the Water Forums saw the complete set of 35 proposed PCs. They challenged us to introduce more 'stretch' in three areas where they felt that there was more we could achieve for customers.
- **ODIs**: The Water Forums challenged us to align our ODIs with customer expectations. For example, in the case of pollution performance, there is a tension. Customers support rewards for improving pollution performance, as did Ofwat. However, the EA did not. This was a matter for the two regulators to discuss outside of the CCG process.[141]

186. In addition to the formal Water Forums meetings, we also worked extensively with members outside of meetings to focus on areas that reflected their own expertise. These areas follow our business's strategic themes: customer, community, environment and economic impact (competitiveness). Two illustrative examples of this work are included below:

- **Affordability and Inclusivity Strategy**: Members provided valuable insights on how to make support for the vulnerable more consistent and holistic. As a result, we expanded this aspect to beyond the provision of financial support for customers who were already in arrears.[142] Their specific suggestions[143] in relation to making vulnerability support more holistic has directly led to our designing a long-term strategy and focusing on the eradication of water poverty.[144]
- **Our ambition for the environment**: The Water Forum Environment Network, a specialist sub-group, met three times between December 2017 and June 2018. We consulted this group in developing the environmental aspects of our plan. As a result of these discussions and collaboration with the Network, we developed an ambitious goal incorporating catchment management, natural capital and biodiversity, set a more stretching pollution target than originally proposed for 2025, and had the confidence to launch our Improving the Water Environment scheme to stakeholders at our Innovation Festival in July 2018. With their support and feedback, we produced a plan for the environment theme that meets our customers' expectations and will create a step change in our approach to the environment for 2020-25.

187. As a result of our extensive engagement with customers and the inclusion of that feedback in our proposals, the Water Forums fully supported our original BP19 plan. The Water Forums commended our BP19 both for the level of customer engagement we carried out, and the extent to which it reflected the outcomes of that engagement.[145] In particular, the Water Forums supported our commitment to continuous customer engagement, rather than confining such research to Periodic Reviews.[146] Throughout the PR19 process, the Water Forums have strongly supported our enhancement proposals, particularly considering the wastewater resilience case "*too important not to do this work*" arguing that "*not making an investment now could increase the cost of resilience in the future*" (see Section 7).[147] The Water Forums also supported the bill reductions we proposed in our original plan.[148]

140 *Appendix 2.1 to BP19 (ed. 09.18), NWL's Approach to Triangulation, September 2018, SOC030. We also took into account Ofwat's methodology: Delivering Water 2020 and ICF – Defining and applying 'triangulation' in the water sector - How Water companies can use different sources of customer evidence in business planning, 7 July 2017, SOC346.*

141 *Water Forums' Report, SOC009, p. 6.*

142 *Water Forums' Report, SOC009, p. 43.*

143 *These included: (i) Mapping our areas to identify where customers may need additional support; (ii) Defining what a water/wastewater specific vulnerability is; (iii) Conducting specific research with customers who need additional help and support, who had experienced service failures; and (iv) Segmenting and engaging with customers to improve take-up of WaterSure. BP19 (ed. 09.18), SOC001, p. 38.*

144 *Water Forums' Report, SOC009, p. 43.*

145 *Northumbrian Water and Essex & Suffolk Water: Water Forums' Supplementary Report, "**Water Forums' Supplementary Report**", 1 April 2019, SOC261, p. 1.*

146 *Water Forums' Supplementary Report, SOC261, p. 5.*

147 *Water Forums' Supplementary Report, SOC261, p. 11.*

144 *Water Forums' Supplementary Report, SOC261, p. 5.*

4.4 BP19 REFLECTED CUSTOMERS' KEY PRIORITIES

4.4.1 Key customer priorities for PR19 and beyond

188. Our extensive customer engagement and research allowed us to fully understand our customers' priorities. We synthesised these into six themes which structured our plan:

- Unrivalled customer experience;
- Affordable and inclusive services;
- Reliable and resilient services;
- Leading in innovation;
- Improving the environment; and
- Building successful economies in our regions.

189. These themes were tested with, and supported by, our customers in our Long Term Strategy research in May 2018, using five deliberative focus groups. At these sessions, to ensure that customers were able to make informed decisions, an NWG representative presented relevant contextual information for each ambition within the long-term strategy. An independent moderator facilitated each discussion and respondents were asked whether they supported each of the 14 ambitions in the long-term strategy.

190. In general, our ambitions within the long-term strategy plan were perceived positively. Most customers agreed with each of the 14 ambitions. Customers unanimously agreed with five of the proposed ambitions, and only two ambitions achieved less than 75% acceptance.[149]

191. The views of customers in each of these areas, and how they were reflected in BP19, are considered in sections 4.4.1.1 – 4.4.1.6 below.

4.4.1.1 Unrivalled customer experience

192. In BP19, we set out to match our customers' rising expectations, which have been shaped by the choices and immediacy that advances in technology have provided. We found through our research and conversations with customers that they trusted us to deliver the core aspects of water and wastewater services, and we chose to build on that by setting two ambitious goals: (i) to deliver world-class customer services; and (ii) to give every single customer the opportunity to have a strong voice and engage with us.[150] More detail on the outcomes of our engagement on customer experience is provided at pages 52-76 of BP19 (ed.09.18).[151]

4.4.1.2 Affordable and inclusive services

193. We recognised the pressure on household finances that many of our customers were facing. More than one in ten customers spend more than 5% of their income on water bills nationally;[152] and since 2010 the number of customers contacting National Debtline with worries about water bill arrears has increased by 10%.[153] In our regions, a relatively large proportion of our customers experience deprivation, unemployment and receive welfare benefits, and are struggling to make ends meet. 18% of our households (around 370,000 households) spend more than 3% of their disposable income on their water and sewerage services.[154]

194. In response to Ofwat's efficiency and affordability challenges in its Final Methodology, our plan already proposed the largest reduction in bills in the industry for all our customers, as well as significant improvements in resilience and the environment. By passing on the benefits of efficiency gains and lower returns to our customers, we were

149 *Northumbrian Water: Long term strategy research, June 2018, SOC256, pp. 2-3.*
150 *BP19 (ed. 09.18), SOC001, p. 54.*
151 *BP19 (ed. 09.18), SOC001.*
152 *Ofwat - Affordability and Debt Report, 2015, SOC182, p. 4.*
153 *Ofwat - Affordability and Debt Report, 2015, SOC182, p. 4.*
154 *BP19 (ed. 09.18), SOC001, p. 79.*

able to propose the highest voluntary bill reductions in the sector - 14% for water customers and 17% for wastewater customers by 2024/25.[155]

195. We were the first in the sector to propose to achieve zero water poverty by 2030, with concrete steps in AMP7 including the launch of a new social tariff accompanied by a holistic suite of support for vulnerable customers (including metering education, working with partners to offer free financial advice classes, and support for community volunteer groups).[156] Our water poverty mapping tool has won awards for how it targets customers most at risk of finding water bills unaffordable.[157]

196. More detail on customer feedback and priorities for affordable and inclusive services is provided at pages 77 - 90 of BP19 (ed.09.18).[158]

4.4.1.3 Resilient water and wastewater services now and for future generations

197. We manage a large, complex asset base where a failure could have significant impacts on our customers and the environment. A particular focus of BP19 was on resilience investments, to ensure that our business is able to cope with change and foreseeable shocks.[159]

198. We developed a clear framework for understanding resilience across our business. This framework enabled us to consider a wide range of factors that could impact on our resilience and risk.[160]

199. We undertook a number of appraisals across our water and wastewater operations to better understand our current resilience position and determine which interventions would support greater resilience in the context of the environmental, demographic and sustainability pressures faced by the sector and also the risks facing our business specifically.

200. In 2015, we carried out a benchmarking assessment of our operational resilience in relation to the UK energy and utility industry.[161] This assessment showed that we were generally operating 'above best practice level', although a number of areas for improvement were identified.[162] From this strong starting point, we devised an ambitious resilience package in our initial plan.

201. We also carried out in-depth technical analysis supported by modelling analysis, this work has helped to inform our understanding of system risks, intervention options, and the benefits of implementing these options.

202. Our approach was subject to both internal and third party assurance and gave us a better understanding of the areas of poor resilience and higher risk within our water and wastewater systems. Our overall resilience approach and framework were independently assured by Price Waterhouse Coopers (**PwC**) in July 2018.[163]

203. Through this appraisal process, we identified a wide group of risks that fed into a range of interventions that were set out in our BP19. Among these risks, we identified that while our water resources are generally secure, our ability to use these resources through our existing strategic transfer network is limited in some areas. We also identified that during a 1 in 50 year rainfall event, approximately 35% of our population in our North East operating area is at risk of flooding: something customers have consistently told us is one of the worst service failures they could face.

204. As set out below, we took extensive measures to engage customers on this topic, and their feedback shaped the final resilience investments we proposed in BP19. Summaries of all our engagement with stakeholders on our

155 *BP19 (ed. 09.18), SOC001, p. 5.*
156 *WWT - NWG commits to ending water poverty in its areas by 2030, 1 June 2018, SOC255.*
157 *Our unique neural network (**WEPM**) research was named as Data Project of the Year at the Water Industry Awards 2019. NWG – Living Water – Northumbrian Water Group leads the way on affordability with commitment to eradicate water poverty by 2030, 2019, SOC265.*
158 *BP19 (ed. 09.18), SOC001.*
159 *BP19 (ed. 09.18), SOC001, Section 3.3.*
160 *BP19 (ed. 09.18), SOC001, Section 3.3.*
161 *Appendix 3.4 to BP19 (ed. 09.18): PwC Resilience Framework Independent Assessment, September 2018, SOC039.*
162 *Appendix 3.4 of BP19 (ed. 09.18): PwC Resilience Framework Independent Assessment, September 2018, SOC039.*
163 *Appendix 3.4 of BP19 (ed. 09.18): PwC Resilience Framework Independent Assessment, September 2018, SOC039.*

resilience plans are included in our BP19 (ed. 09.18) under Appendix 2.2 Customer Engagement Summaries (see also Section 4.3 above).[164]

205. Our customers defined resilience as meaning a strong, reliable and affordable service that will stand the test of time, cope with change and bounce back from difficult situations.[165] Our research also found that our customers support our investing in resilient networks and planning ahead for impacts, such as from climate change, regional population growth and major incidents impacting the operation of our sites and networks.[166] They expect our systems to have connectivity and back-up.

206. Recognising that customers struggled to quantify risk, our Communicating Risk (2017) engagement helped us understand how best to present risk and probability to them. Through that project, our customers helped us design our engagement around Resilience, Asset Health and Long-term Affordability (2017) so that it would be understandable to them.

207. We explored inter-generational fairness in relation to asset health. Our customers confirmed their preference for stable and manageable bills over time, because many people on low incomes cannot absorb unexpected price changes.[167] This preference is reflected in the bill profile within our plan.

208. We also explored asset health in the context of how resilient customers thought our assets should be (such as the acceptable risk of asset failure). In particular, customers were strongly supportive of our resilience enhancement packages, which we tested through multiple rounds of customer engagement surveys. In particular: the Flood Risk Reduction enhancement scheme received very strong customer support (71%); the Abberton to Hanningfield transfer main project had 89% support from customers; and the Suffolk resilience scheme had 100% acceptance.[168]

209. Customers' views determined which enhancements for resilience we should include in our plan, for example, we reworked our sewer network resilience proposals in response to customer feedback which included the inclusion of new and bespoke sewer flooding PCs and ODIs.[169] These were then tested again with customers in our Discretionary Enhancements Acceptability Research (2018).[170]

210. We also engaged with customers and our Water Forums specifically on a series of additional resilience investments. We presented the schemes to customers within the context that they would reduce risk of service failure but were not essential to core service delivery over the next five years, and as such could not be delivered within base charges. Participants were told that in 2020 customers' bills would be reduced by 10% and that all of the schemes could be funded if they agreed to take a smaller reduction.

211. Our customers who participated in the research received a presentation on each scheme, which was delivered by one of our experts. They were then given the opportunity to ask any questions before voting on whether or not they accepted each scheme. We received high levels of acceptability for all of the schemes and overall packages of investment, with the exception of smart water meters. We reviewed the results of the engagement with the Water Forums, which welcomed the high levels of customer support for the schemes.[171]

212. At PR14, CCWater set a threshold of acceptability of 70%, a level we wished to maintain during PR19 as a benchmark of acceptance for these schemes. The enhanced resilience schemes we included in our original BP19 (ed.09.18) were presented to our customers and all have strong support from our customers, with acceptance scores of between 67% and 100%.[172]

213. In March 2018, 78 household customers took part in deliberative focus groups, which were presented with a range of water and wastewater packages, as well as proposed schemes for smart water metering and cyber

164 *Appendix 2.2 to BP19 (ed. 09.18): Customer Engagement Executive Summaries, SOC031.*
165 *NWG – Resilience Research Report, "**Resilience Research**", July 2016, SOC248, p. 2.*
166 *Resilience Research, SOC248.*
167 *NWL – Resilience, Asset Health and Long-term Affordability, March 2018, SOC253.*
168 *Northumbrian Water and Essex & Suffolk Water: Water Forums' Draft Determination Response, "**Water Forums' Draft Determination Response**", 29 August 2019, SOC263, p. 4.*
169 *Water Forums' Report, SOC009, p. 50.*
170 *Northumbrian Water Group: Discretionary Projects Research, April 2018, SOC254; Northumbrian Water Group: Discretionary Projects Research (Phase Two), May 2018, SOC433.*
171 *Water Forums' Report, SOC009, p. 60; Water Forums' Draft Determination Response, SOC263, pp. 2–3.*
172 *Appendices 2.2 and 3.2 of BP19 (ed. 09.18), SOC031 and SOC037, which set out examples of research and engagement that we undertook to develop and test customer support for our resilience enhancements.*

resilience. After each individual scheme was explained to customers, they voted on its acceptability, then voted on the acceptability of the package as a whole at the end of the session. Customers were made aware that, to deliver these schemes, they would have to return a proportion of the 10% bill reduction that NWL had committed to delivering to customers in 2019.

214. The water schemes achieved over 90% acceptability in both NW and ESW operating areas173, and cyber resilience more than 84%.[174] While customers accepted the wastewater package in the NW area, it was at a lower level (61% acceptability) with a proportion of customers saying they needed more information or were unsure. We, therefore, proceeded to undertake a second round of acceptability research to better explain the wastewater proposals and to fully understand customer priorities.

215. In April 2018, three deliberative events - two in the Northumbrian Water area (Durham and Newcastle) and one in the ESW area (Chelmsford) - were held with a total of 115 household customers. Following detailed information and discussion with NWL representatives to ensure customers felt comfortable to make an informed decision, customers voted on their acceptance of each scheme. Based on informed voting, NWL customers demonstrated 80% acceptance of the proposal for a smart wastewater network. The scheme was well received, with flood prevention and improvements to drainage seen as key benefits.

216. In our final acceptability testing, we specifically asked customers whether they supported a higher or lower bill profile within a range of investments that would increase the resilience of our network. Customers consistently chose to invest in our selected resilience schemes rather than take the full bill reduction offered. We believe that part of the reason for this strong customer support is that, even when the cost of the resilience schemes that customers supported was factored in, our BP19 still offered the largest bill reductions of any company in the sector.

217. More detail on customer priorities for reliable and resilience services is provided at pages 91 – 131 of BP19 (ed. 09.18).[175]

4.4.1.4 Leading in innovation

218. Innovation is part of our company's culture, and we see this as essential to continuing to meet rising customer expectations, in the context of technological advances and changing political and physical climates. Our customers also believe that innovation is essential: they expect the quality of the services that they receive to continually improve. While they do not have specific views about how we should innovate, they expect us to be forward-looking and to 'move with the times'.[176] Ultimately, our customers expect innovation to deliver more value for money and less waste. They also expect transparency from us on our progress with innovation.

219. More detail on our customers' feedback on innovation is provided at pages 132 – 145 of BP19 (ed.09.18).[177]

4.4.1.5 Improving the environment

220. As an ethical company, we want to manage our assets and operations to avoid negative environmental effects and to benefit the environment wherever possible. Our interaction with the water environment offers opportunities for us to go above and beyond our regulatory obligations. This objective was also found to be a significant priority for customers, along the following themes:

- improving river and coastal water quality: Customers are supportive of improvement and investment in river water quality, but want to see this investment shared fairly between us, our partners, customer and big businesses and key polluters.[178] Customers' expectations are that we meet or exceed our regulatory obligations in relation to bathing water;[179] and
- protection and improvement of the environment: Our customers tell us that they expect us to work in partnership with other organisations in order to protect the environment. The results of our customer engagement

173 Northumbrian Water Group: Discretionary Projects Research, April 2018, SOC254, p. 3.
174 Northumbrian Water Group: Discretionary Projects Research, April 2018, SOC254, p. 3.
175 BP19 (ed. 09.18), SOC001.
176 NWL – Outcomes Review, May 2017, SOC251.
177 BP19 (ed. 09.18), SOC001.
*178 NWL - River Water Quality Customer Research Report, "**River Water Report**", September 2016, SOC250, pp. 29-30.*
179 NWL - Service Measures Research Report, June 2017, SOC252, p. 40.

demonstrated that customer priorities go above and beyond the things we must do to meet our regulatory obligations.[180] This has informed our formulation of the concept of the 'wider environment' which covers our aim to lead by example in relation to environmental protection and standards.[181]

221. Further detail in relation to our customers' environmental priorities are at pages 148 – 170 of BP19 (ed.09.18).[182]

4.4.1.6 Building successful communities in our regions

222. Our ambitions are also aligned with delivering public value. We already see ourselves as a company that contributes significantly towards social and natural capital. Consistent with the views of customers we have set ourselves ambitious zero waste and zero carbon targets in our BP19. Our customers agree that we are an important part of the community, and want us to promote our great work locally (including school engagement activities, environmental projects and charity work).[183] This has led to our aim to be the most socially responsible water company.

223. More information on this objective is provided at pages 168 – 175 of BP19 (ed.09.18).[184]

4.4.2 Customer engagement post-BP19

224. Our customer engagement did not end with the submission of BP19. We were proud of our initial plan and continued to believe that it was fundamentally sound and driven by our customers' expectations, but also fully appreciated the iterative nature of the PR process. At every stage we therefore made a determined effort to fully consider Ofwat's feedback and seek customers' views on any proposed changes. We also remained focused on retaining a plan that was in customers' long-term interests and aligned with the views of the Water Forums (building on our collaborative customer engagement process initiated at BP19). This can be evidenced in the Water Forums' reports which accompanied our response to both Ofwat's Initial Assessment of Plans (**IAP19**)[185] and DD19.[186]

225. Following the feedback we received through the IAP19, we identified additional areas where we wanted to gather customers' views to help inform our response. Specifically, we wanted to engage with customers on:

- enhanced reward and penalty rates for ODIs where we were able to offer service levels that pushed forward the industry frontier;
- discoloured water definition and whether issues relating to water entering the home should be considered separately to those issues caused by in-home plumbing fixtures and fittings;
- the relative inconvenience of short water supply interruptions (one to three hours) compared to those greater than three hours;
- external sewer flooding and whether a reward should be available if we exceed our PC;
- void properties and if we should introduce a 50/50 sharing mechanism with customers; and
- future (2025-30) bill profiles.

226. We repeated part of the approach that we used for our Acceptability engagement and held six deliberative workshops with 167 customers throughout our operating areas. This approach allowed us to explain technical issues to our customers and hold meaningful conversations to understand their views and the reasons for them. The findings from this engagement were incorporated into our response to Ofwat's IAP19, and the full report from Explain Market Research can be found in an Appendix to our IAP19 Response.[187] In FD19, Ofwat considered

180 *River Water Report, SOC250, p. 75.*
181 *BP19 (ed. 09.18), SOC001, p. 161.*
182 *BP19 (ed. 09.18), SOC001.*
183 *NWG – Our Unrivalled Customer Experience Strategy 2016 – 2020, 2015, SOC013.*
184 *BP19 (ed. 09.18), SOC001.*
185 *"We are pleased that the Company continued its commitment to customer engagement, despite the challenging timescales of the resubmission. A total of 167 customers took part in six deliberative events across the two geographical areas…We support this pragmatic approach." Water Forums' Supplementary Report, SOC261, p. 4.*
186 *"Our experience of NWL's engagement activity was that when their customers have the opportunity of understanding the issues through a well-designed and thorough engagement process, they understand the issues and want to re-invest some of the efficiency savings in a more resilient network that will stand up to the challenges that climate change will bring." Water Forums' Draft Determination Response, SOC263, p.5.*
187 *Appendix 2.4 to BP19 (ed. 09.18): PR19 Acceptability Research, SOC033. This document is also appended to BP19 (ed. 04.19) and BP19 (ed. 08.19).*

that this further evidence had no statistical certainty and dismissed it. We do not agree with Ofwat's outright dismissal of this further research. While we accept that the final iteration was based on a small sample, the research must be seen in the context of the much larger exercise in customer engagement which preceded it. Moreover, Ofwat should have paid due regard to the fact that it represented an in-depth piece of research, which was well-calibrated to the detailed questions that needed answering at this stage of PR19.

227. While we were open to the feedback provided by Ofwat, we did not accept all changes suggested by it where it went against customer preferences. Instead, we resubmitted certain enhancement cost proposals that had been questioned by Ofwat (a position we maintained in our response to DD19),[188] as we felt these proposals were in our customers' long-term interests and the Water Forums made strong representations to keep them.[189]

228. We responded to Ofwat's feedback by better articulating and strengthening the evidence base of our original proposals. For example, we provided additional climate data for our proposed £86m flood risk reduction scheme. Ofwat described this research in FD19 as "*external […] forward-looking analysis and using hydraulic modelling to demonstrate the anticipated impact*".[190] We also submitted additional evidence in relation to other resilience enhancement proposals.[191]

229. Given the very high customer support for enhancement costs proposed in the initial BP19 (ed.09.18),[192] and the three rounds of customer engagement we undertook on our enhancement proposals, we thought it was important to involve them in the decision about which enhancement costs to retain. This is in line with Ofwat's expectation that companies "*own the relationship with customers, and actively involve those customers in the development of the business*".[193]

230. In particular, our evolving position on the package of resilience enhancements was made with real input from the Water Forums. This focus on customers' resilience priorities aligns with Ofwat's expectation that "*customer views should be at [the] heart*"[194] of longer-term issues, and that business plans "*reflect the needs and requirements of future customers, as well as current ones*".[195]

231. The Water Forums continued to fully support our resilience enhancement costs, stating that "*NWL's customers expect the company to build future resilience into its water and sewerage networks and demonstrated high levels of willingness to pay for this resilience through their bill.*"[196] They also stressed that this area is of particular importance to customers, in which they seek a higher level of performance.[197]

232. Therefore, in our DD19 response, we restated our case for those enhancement costs which were supported by the Water Forums. In particular, the Water Forums supported our belief that the reduction of our proposed resilience enhancement costs (such as the £86m Flood Risk Reduction enhancement scheme, the Howdon Sewage Treatment Works and Drainage and Wastewater Management Plan) would be contrary to customer priorities, stating that customers "*wanted to see some of the cost savings reinvested in enhancement projects that will improve resilience, rather than a bill reduction beyond that which they gave support for*".[198]

233. They also raised their concern that "*short-term bill reductions could lead to higher risk exposure, more unplanned costs and hence longer-term bill increases*".[199] Additionally, our joint concern that Ofwat's decision to disallow these investments was inconsistent with its statutory resilience duty also contributed to our decision to restate the case for these investments.

234. At the DD stage, we welcomed the fact that Ofwat accepted some of our enhancement costs proposals. It also took on board challenges we made at IAP19 stage, such as amending its approach to operating expenditure in

188 NWL - Draft Determination: Company Representation, "**NWL Response to Ofwat DD19**", August 2019, SOC130, pp. 14-24.
189 Water Forums' Draft Determination Response, SOC263.
190 FD19, SOC183, p. 39.
191 NWL Response to Ofwat DD19, SOC130, pp. 16 – 23.
192 Water Forums' Draft Determination Response, SOC263, p. 4.
193 Ofwat Consultation on PR19 Methodology, 11 July 2017, SOC217, page 7.
194 Ofwat's customer engagement policy statement and expectations for PR19, 25 May 2016, SOC216, p. 20.
195 Ofwat PR19 methodology, SOC424, p. 28.
196 Water Forums' Draft Determination Response, SOC263, p. 2.
197 Water Forums' Draft Determination Response, SOC263, p. 4.
198 Water Forums' Draft Determination Response, SOC263, p. 2.
199 Water Forums' Draft Determination Response, SOC263, p. 2.

enhancement.[200] For certain other enhancement costs, we responded to Ofwat's additional challenge and further closed the cost gap between our proposal and that of DD19. We, therefore, incorporated an additional £92m reduction in planned Totex, which reduced the gap between our and Ofwat's view of efficient costs from £296m at DD19 to £204m at FD19.[201]

4.5 OFWAT HAS MISINTERPRETED OUR CUSTOMERS' PREFERENCES

235. Despite our extensive efforts to use customer feedback to shape our plans (as set out above), in our view, Ofwat has not put enough weight on our customer evidence and preferences and has thus not created the right balance between the Consumer Objective, the Resilience Objective and the Financeability Duty. In this regard, we would highlight two key examples.

236. Firstly, while customers inevitably want reasonable bills, they also prefer stable bills, as this makes it easier for them to budget. Crucially, they do not want a reduction in bills at the expense of long-term issues and the risk of increased bills for future generations.[202] In fact, customers (through the Water Forums) strongly represented at the DD stage that Ofwat's emphasis "*has moved too far towards bill reduction*".[203] They also raised concern that the level of bill reduction as set by Ofwat could force us to try to "*deliver the impossible from a cost perspective*" increasing the risk of a "'*squeeze' on generic financial maintenance activity*".[204]

237. Secondly, in contrast to Ofwat's apparent priorities, our customers would prefer a bill drop to be balanced with investments for future generations (particularly in relation to resilience). We tested each individual resilience enhancement scheme with customer focus groups, ensuring through "*a great deal of effort*" that the explanations provided on the proposed schemes were "*clear, understood and a very important element to gaining acceptability*".[205] As set out in Section 4.4.1.3 above, customers fully agreed that there was a need for resilience enhancements and were willing to forgo some proportion of a bill reduction in order to fund such investment.[206] As a result, the Water Forums were "*fully assured that the enhanced resilience schemes…meet customers' expectations and priorities and reflect their appetite for risk*." For example, the flood risk enhancement scheme received high customer support (with 71% acceptability). The Water Forums have consistently noted that this scheme, namely "*a suitably funded enhancement, which is not part of 15 base costs, is what customers want.*"[207] In addition, the Abberton to Hanningfield scheme received 89% acceptance from our customers, reflecting its importance to the long-term resilience of the ESW region.[208]

238. Despite the extensive engagement that was carried out by us during the PR19 process, and the very clear messages that we received from customers about their priorities as a result, these priorities do not appear to have been reflected in Ofwat's FD19, particularly in relation to the resilience enhancement which were heavily supported by our customers. This contrasts with Ofwat's methodology and statements throughout the PR19 process, which emphasised that customer engagement and priorities should be at the core of the business' plans. For example, Ofwat advised that it was expecting a "*step change in customer engagement at PR19*" and that "*customer engagement will be central to our assessment of company business plans*", yet it appears to have overwritten or ignored our efforts to rise to this challenge and make our customers' views the central anchor of our proposals.[209]

239. This approach is difficult to reconcile with Ofwat's recognition of our customer engagement approach as "*High quality*".[210] Nor does Ofwat appear to have taken due account of the Water Forums' praise that our customer engagement provided a better basis for "*developing a customer-focused business plan than ever before*".[211]

200 *NWL Response to Ofwat DD19, SOC130, p. 3.*
201 *NWL Response to Ofwat DD19, SOC130, p. 2.*
202 *Water Forums' Draft Determination Response, SOC263, p. 3.*
203 *Water Forums' Draft Determination Response, SOC263, p. 2.*
204 *Water Forums' Draft Determination Response, SOC263, p. 3.*
205 *Water Forums' Draft Determination Response, SOC263, p. 59.*
206 *The resilience enhancement schemes are evidenced by Northumbrian Water Group: Discretionary Projects Research, April 2018, SOC254; Northumbrian Water Group: Discretionary Projects Research (Phase Two), May 2018, SOC433.*
207 *Water Forums' Draft Determination Response, SOC263, p. 4.*
208 *Water Forums' Draft Determination Response, SOC263, p. 4.*
209 *Ofwat Consultation on PR19 Methodology, SOC217, p. 25.*
210 *Ofwat – PR19 initial assessment of plans: Overview of Northumbrian Water company categorisation, "**IAP19**", 31 January 2019, SOC207, p. 4.*
211 *Water Forums' Report, SOC009, p. 4.*

240. At the same time, Ofwat did not undertake any of its own customer research, a gap which it has clearly now identified in its most recent strategy statement.[212] The result of this is that Ofwat has, in FD19, seen fit to overwrite consumer engagement evidence without being able to rely on any evidence of its own.

241. Ofwat has suggested that customer support on its own cannot be enough evidence for it to support different aspects of the business plan.[213] While it seems intuitively reasonable for Ofwat to seek a range of evidence to support its decisions as an independent regulator, the reality of the PR19 process has been that Ofwat has placed much greater emphasis on all other forms of evidence, including benchmarking evidence across company submissions. This has delivered a result where it has been difficult to identify where in the settlement customer evidence has directly influenced FD19.

242. In previous water sector price controls, benchmarking has always played a central role.[214] This makes sense where comparative evidence and data can bring most to bear. For example, the benchmarking of efficient costs and the allowed returns are key building blocks in the revenue controls. However, we consider that customer engagement evidence can and should form a central part of the basis for decisions around the structure of the service package that customers of individual companies receive and for enhancement investments tailored to local circumstances and requirements, which can reasonably be demonstrated to be needed and efficient.

243. Indeed, the CMA's past decision-making practice supports the notion that reasonable weight should be placed on the customer engagement evidence, specifically by using such evidence to inform the service targets that Bristol Water had to achieve for its customers. In particular, the CMA, when adjusting a deadband, considered that "*if the aim of the ODIs is to provide an incentive to deliver outcomes which customers value in a cost-efficient manner, then Bristol Water's customers' willingness to pay should be a relevant concern*".[215]

244. We do not believe that Ofwat has taken proper consideration of customer views in this price review and this has wider implications for the sector, future price controls and company behaviour. In line with Ofwat's supposed intentions as outlined in its methodology, in the last decade, the sector has truly achieved a "*step change*" in customer engagement, increasing both the quantity of customer interactions, and the quality of feedback received.[216]

245. This can be demonstrated by Ofwat's own rising expectations – from its praise of customer engagement in PR14 (in which 250,000 customers were engaged)[217] to the use and reference of conversations with over 1.5 million customers in PR19.[218] Ofwat's FD19 risks reversing such a change, because it sends a message to companies that it, as a regulator, does not sufficiently care about evidence of customer priorities, instead disproportionately focusing on bill reduction. This appears to be in conflict with the great efforts that Ofwat has taken in the last decade to drive this change in consumer engagement by water companies. In particular, in assessing the success of customer engagement in PR14, Ofwat set itself specific targets for the PR19 process around "*empowering customer voices*" and "*promoting greater visibility about long-term planning*", neither of which appears to have been borne out in FD19.[219]

246. Independent economic regulators, including Ofwat, set price controls to mimic the disciplines of a competitive market. Ofwat's statutory duty to protect customers specifically includes references to "*wherever appropriate by promoting competition*". However, Ofwat's framework and approach has put too little weight on the very thing that would be given greatest weight in a competitive market (customer choice), and it is our position that we would like the CMA to consider whether the balance in the final determination is correct.

212 *In Ofwat's most recent strategy, it has promised to "listen to customers more directly to better test our policies and guide where and when we hold companies to account". Time to act, together: Ofwat's strategy, "**Ofwat's Strategy**", October 2019, SOC231, p. 12.*

213 *See, for example, Ofwat's decision on our proposed resilience enhancement projects, in which Ofwat stated "We note the comments set out by the customer challenge group…[W]e consider that we have set incentives to protect customers from the risk of poor service and inefficiency." See Ofwat FD19, SOC183, p. 12.*

214 *Ofwat - Water Sector Overview, March 2020, SOC242.*

215 *Bristol Water PR14 CMA Decision, SOC336, paras. 9.58 – 9.65.*

216 *Ofwat - Reflections on the price review – learning from PR14, "**Ofwat PR14 Reflections**", July 2015, SOC181, p. 18.*

217 *Ofwat PR14 Reflections, SOC181, p. 17.*

218 *Ofwat FD19, SOC185, p.3.*

219 *Ofwat PR14 Reflections, SOC181, p. 16.*

5 SETTING THE APPROPRIATE LEVEL OF CHALLENGE IN THE ROUND

5.1 SUMMARY

- The WIA statutory duties must be considered when setting price control expenditure allowances, service level targets and appropriate remuneration of the risk involved. These duties need to be balanced in order to deliver a package that furthers the Consumer Objective by providing the services and quality that customers want at an efficient cost whilst still ensuring that the company can finance its functions and achieve an appropriate return in accordance with the Financing Duty.
- The FD19 package has failed to appropriately balance these duties and, as a result, Ofwat has set a level of challenge which is too demanding when viewed in the round. In particular, the level of cost challenge is neither appropriate nor reasonable in comparison to other determinations, benchmarks and reflecting the quality of the data and tools Ofwat has used. This is of particular concern in the context of the 'step change' in service performance required by the PCs and ODIs that Ofwat has requested. This results in a package which is undeliverable and exposes customers to an unacceptable risk of service levels not being met in line with their priorities.
- Whilst NWL used the base cost models developed by Ofwat, we think that the post modelling adjustments are inappropriate and set a cost allowance that is not achievable if we are to maintain service levels. In FD19 this manifests in the scale and scope of the efficiency challenge applied to our Totex allowance, and in a downward adjustment for 'growth' which is not required and underfunds the activity we must undertake such as investments to reduce sewer flooding risk to properties that are newly at risk.
- These issues need to be remedied to ensure that the price control provides the necessary Totex allowances to enable us to deliver our customers' requirements and promote the right incentives for long term cost reduction and service improvement.
- This Section provides an overview of the features of a price control and how they interact, outlines Ofwat's approach to setting cost allowances and then details the various areas where Ofwat's decisions on efficiency challenges have resulted in an inadequate Totex allowance in light of performance requirements for AMP7.

5.1.1 Structure of this section

247. We consider that price controls should allow an appropriate level of Totex to enable us to properly finance our functions as a provider of wholesale water and sewerage services, whilst still ensuring that we are subject to a significant challenge to deliver operational and cost efficiencies. Such an outcome represents an appropriate balancing of the WIA statutory duties on Ofwat and one for consideration by the CMA in its redetermination.

248. Ofwat's FD19 does not achieve the right balance in respect of our cost allowance and the application of its efficiency challenges. The purpose of this Section is to set out the appropriate approach and balance to be applied when setting cost allowances, as well as detailing the specific areas where we consider Ofwat's FD19 is inconsistent with that approach. These are areas that we would suggest the CMA should focus on its redetermination.

249. In particular, we set out the following areas where we consider that the CMA should focus in terms of the redetermination including:

- our view of the features of a price control cost allowance that balance the duties appropriately and provide the right incentives for regulated companies in the interests of consumers. We also set out how Ofwat's FD19 results in an unreasonable package in the round driven by Ofwat's incorrect hypothesis that the sector has consistently outperformed in the past and an equally unjustified corresponding response that a 'step change' is needed (see Section 5.2);
- Ofwat's base cost modelling approach in FD19. Whilst we are not currently proposing that the base cost models need to be revisited by the CMA in the redetermination we do have significant concerns about the adjustments

applied to the modelled costs post-estimation (see Section 5.3). If the CMA does revisit the models, either at your own instigation or as suggested by any other party, we would have additional comments which we would make on the existing models;

- the impact of the changed approach to setting the upper quartile (**UQ**) catch-up efficiency challenge on efficient cost recovery (see Section 5.4);
- the inconsistency of the approach to setting Real Price Effects (**RPEs**) across input costs and the failure to account for energy and chemicals costs (see Section 5.5);
- the failure to allow efficient growth expenditure by virtue of an approach that is not robust (see Section 5.6);
- the failure to allow efficient costs to deliver the statutorily required Water Industry National Environment Programme (**WINEP**) schemes (see Section 5.7);
- the impact of the approach to funding costs such as business rates and abstraction charges that are variable and outside management control (see Section 5.8); and
- our conclusions on the issues raised in this Section (see Section 5.9).

5.2 FEATURES OF A PRICE CONTROL COST ALLOWANCE

5.2.1 Price controls should reflect a balance between the WIA statutory obligations

250. As set out in Section 3 in reaching its price control settlement Ofwat must ensure that it has met and appropriately balanced its statutory duties.

251. A balanced final determination should discharge these duties. In particular, with respect to the cost and ODI/PC package design, it should:

- **fund efficiently incurred costs**: the price control allowance should provide each company with the funding to cover the efficient costs required to carry out its functions and to deliver the services required by its customers. Without sufficient funding these services might not be delivered in the manner that best meets the Consumer Objective. Customers' priorities might not be delivered if there is insufficient funding to do so. Moreover, insufficient funding could also impact on the ability for a company to earn reasonable returns if the base returns required for financing are eroded by overspends against regulatory funding allowances;
- **reflect customer priorities for performance levels and set funding to support appropriate targets**: the price control should set a package that furthers the Consumer Objective in key performance areas. This should be calibrated so that the improvements required are consistent with the regulatory funding to deliver them. Where significant improvements in performance metrics are required by legislation or wanted by customers then the corresponding expenditure necessary to deliver these should be provided. This helps ensure that the improvements can be delivered without jeopardising the company's ability to finance its activities;
- **contain efficiency incentives that promote cost reduction and innovation**: price controls are repeated cycles where efficiencies revealed in one regulatory period can be fully passed on to customers in future periods to help further the Consumer Objective. Efficiency incentives should be set in a way that appropriately incentivises management teams to secure these efficiencies for customers in future periods. In addition, they should also be set in a way that furthers the Consumer Objective by promoting the efficient delivery of the services that customers want and need. These should also take account of the Financing Duty and not place strains on the ability of a company to finance itself that are reflected in the overall design of the package; and
- **be transparent in its evolution with sufficient opportunity for consultation and engagement**: in line with best regulatory practice we would also expect the development of the package to be transparent and relatively predictable during the process. In particular, we would not expect significant changes in approach between draft and final determinations on key issues that had not been consulted upon. This would make the regulatory process unpredictable and would fail to give the companies a sufficient opportunity to representations or to be consulted on issues which would affect the final determination.

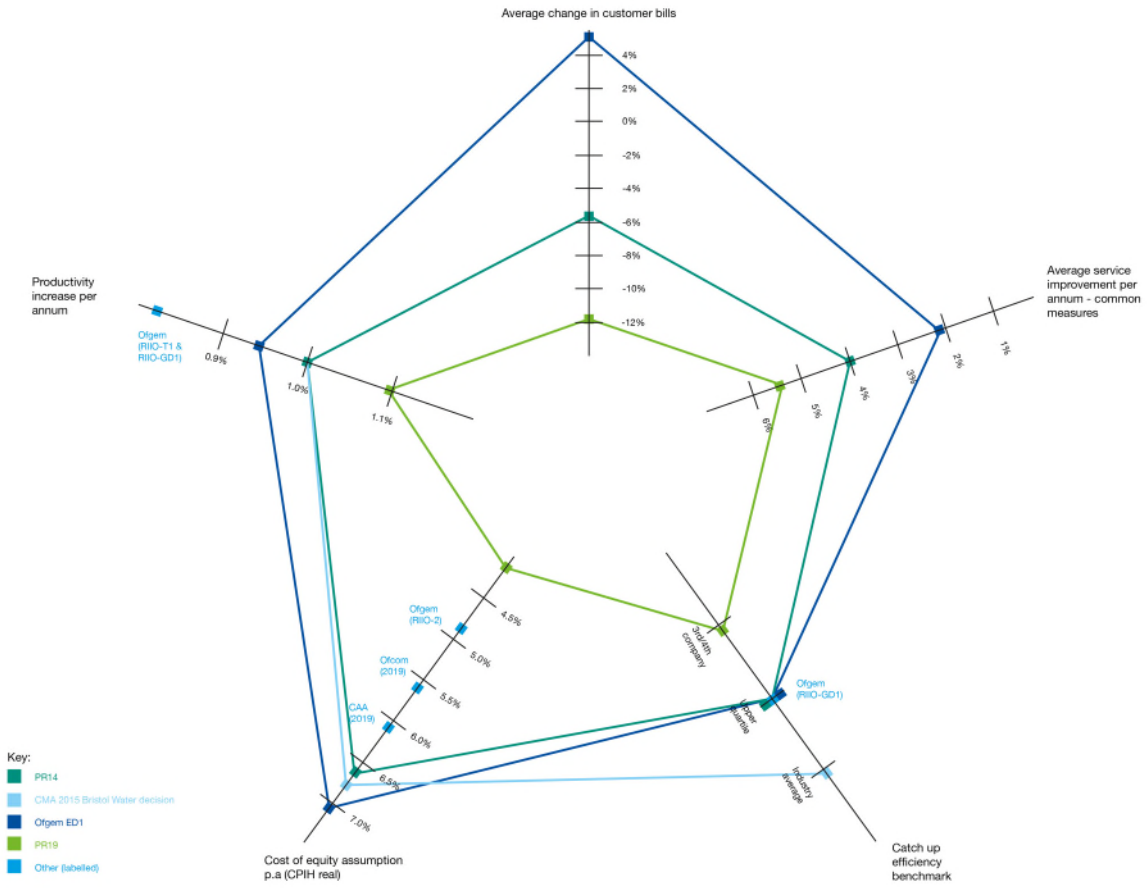
252. We are asking the CMA to carry out a redetermination because the current evidence leads us to the conclusion that FD19 does not appropriately balance Ofwat's statutory duties. As a result, it does not deliver an appropriate package in the round as discussed below.

5.2.2 The FD19 results in an unreasonable package in the round

253. As discussed above, delivering a reasonable price control package must achieve balance in its design and application: balance between the statutory duties; and balance between the interests of customers, companies and their investors. This means that the different elements of the price control must be calibrated to ensure that the package as a whole is appropriate. For example, if customers support a price control that sets demanding improvements in service levels, the other aspects of the price control must facilitate that by awarding a sufficient cost allowance to deliver those improvements efficiently and reflecting the risks in the finance parameters.

254. Ofwat's FD19 applies stretch and challenge across many of its elements without any of the requisite calibration that is needed to ensure that there is an adequate balance between the various elements of the price control. This results in an overall package that is unbalanced and, in our view, undeliverable. As demonstrated in Figure 17 below, PR19 represents the most challenging price control in recent history in terms of service improvements, productivity improvements, efficiency catch up improvements, and cost of equity allowance (**A-CoE**).

Figure 17: In the round assessment of the PR19 package



Source: NWL analysis based on Ofwat, Ofgem, CMA and CAA documents

255. In each of the dimensions considered in Figure 17, FD19 represents the most challenging settlement when compared to previous water price controls and controls in other sectors because:

- the rate of service improvements for comparator measures (supply interruptions, internal sewer flooding, and pollutions) required are significant at 5.45% per annum in PR19[220] compared with 4.07% at PR14[221] and rates of around 2.2% in RIIO-ED1;[222]
- Ofwat has chosen a rate of efficiency improvement at 1.1% that exceeds what is observed in comparator sectors in the productivity dataset and previous price control precedent;

220 *Ofwat PR19 Final Determinations company specific outcomes performance commitment appendices for all companies, 16 December 2019. Links and page numbers found in supporting spreadsheet for figure above.*

221 *Ofwat PR14 Final Determination company specific appendices for all companies, December 2014. Links and page numbers found in supporting spreadsheet for figure above.*

222 *Ofgem Strategy Decision for the RIIO-ED1 price control, 4 March 2013, SOC318, p. 79; Ofgem RIIO-ED1 Final determinations for the slow track electricity distribution companies, 28 November 2014, SOC331, pp. 14-15; Ofgem RIIO-ED1 Fast track decision letter, 28 February 2014, SOC326, p. 15.*

- the efficiency benchmark has been set at a level more demanding than the upper quartile (at the 3rd company in wastewater and the 4th company in water) which goes beyond decisions made in previous CMA appeals which typically have selected the average (see Section 5.4 for further details);
- the average reduction in customer bills across companies is significantly higher than PR14 and RIIO-ED2; and
- the A-CoE is the lowest that we are aware of for privatised utility networks in Great Britain.

256. The imbalance that arises from the combination of Ofwat's FD19 interventions results in a price control that does not work for customers, the company, its investors and wider stakeholders, either during AMP7 or in the longer-term. Nor does it achieve the right balance across the statutory duties.

5.2.3 The step change implied by PR19 is not justified

257. The scale of Ofwat's interventions across the board suggests that Ofwat considers that a significant improvement in operational performance and cost efficiency is required from previous price controls. Indeed, this desire for a "*step change*" appears regularly in Ofwat's narrative and its latest strategy is also focused on 'transforming' the sector's performance.[223] This approach appears to reflect:

- Ofwat's belief that historical outperformance against price control settlements across the sector means that PR19 should be significantly more challenging in order to remove any outperformance going forward.[224]
- An inference that productivity improvement has slowed down in the sector since privatisation and so a 'step change' is appropriate to put the sector back on track.[225]

258. Finally, we recognise that some regulated businesses have exhibited systematic outperformance against historical price control allowances, particularly some energy network companies, and Ofwat highlights this in its own publications[226]. Obviously Ofwat is not regulating energy network companies through PR19 and we highlight the differences here to avoid the risk of sweeping judgements across network utilities which would not be appropriate.

5.2.3.1 Ofwat's hypothesis that there has been systematic outperformance in the water sector is wrong

259. For the first of these issues, Economic Insight (**EI**) analysed evidence on outperformance in the water sector and found no evidence of 'substantial, systematic and persistent historical outperformance' in the sector.[227] EI found that over the 2006-2019 period, the industry on average had marginally outperformed the average vanilla WACC by 0.1 percentage points.[228] Broken down by price control, the industry on average performed in line with real vanilla WACC at PR04, marginally outperformed by 0.2 percentage points in PR09 and outperformed by 0.4 percentage points in PR14 (see Figure 18). They also found an even split of companies who had, on average, out or underperformed regulatory determinations and the identities of companies that out or underperformed changed across the price control periods, which suggests that there is no systematic and persistent outperformance across the sector.[229]

260. This analysis does not support the level of challenge proposed by Ofwat in PR19 and the efficient firm is likely not financeable.

223 *Ofwat's Forward Programme 2020-2021 – Draft for Consultation, 9 January 2020, SOC240, p. 2.*

224 *Ofwat PR19 Methodology, SOC424, p. 138; Ofwat, PR19 draft determinations: Overview of companies' draft determinations, July 2019, SOC228; CMA Water Regulatory Appeals -1: Notes of a hearing with Ofwat, "**Ofwat Transcript 11.02.20**", 11 February 2020, SOC406, p. 40.*

225 *Ofwat PR19 Final Determinations: Overview of Companies' final determinations, 16 December 2019, SOC185, pp. 12-13.*

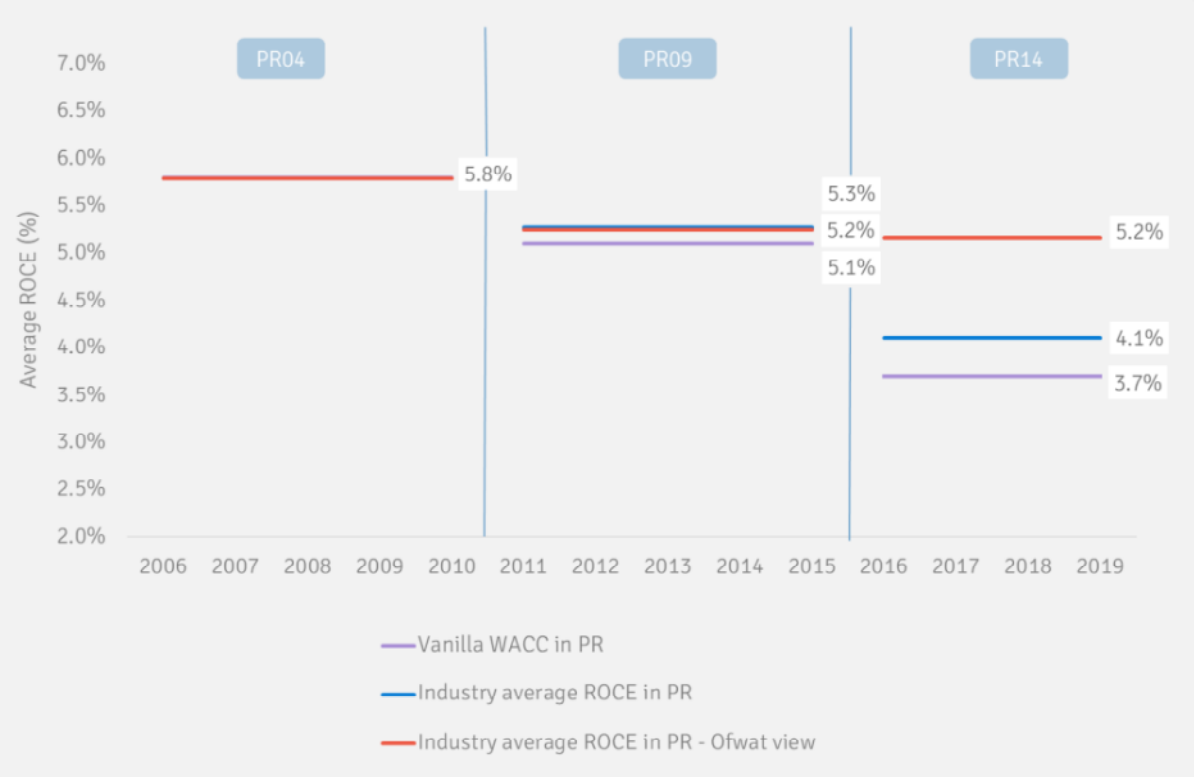
226 *Ofwat - Reference of the FD19: Cross-cutting issues, March 2020, SOC243, pp. 7-13.*

227 *Economic Insight – Top-down analysis of the financeability of the notionally efficient firm: A follow on report for Anglian Water; Northumbrian Water and Yorkshire Water, "**Economic Insight 2020**", 20 March 2020, SOC413, p.6.*

228 *This is calculated based on Economic Insight 2020, SOC413, pg. 7 which states that 'Over the time period as a whole, we found outturn ROCE for the industry to be 5.1%, compared to an average regulatory allowed WACC of 5.0%.'*

229 *Economic Insight 2020, SOC413, pg. 7.*

Figure 18: Industry average ROCE performance against the real vanilla WACC in each price review period



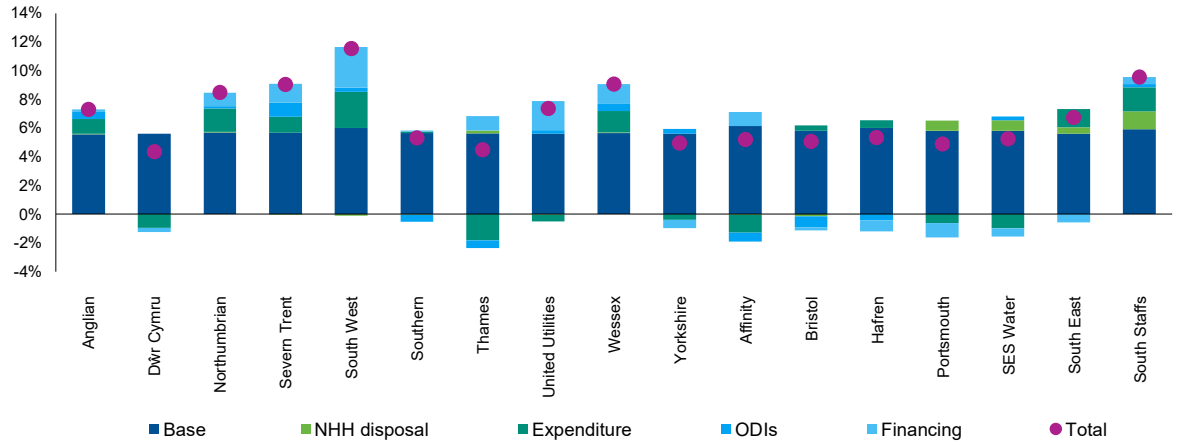
Source: Economic Insight 2020, SOC413, (p.13)

261. The overall level of sector returns versus the regulatory settlement was also considered as part of an independent report for Defra.[230] This report did not conclude that there had been systematic and consistent outperformance by companies of the price control. Instead, the report concluded that: "*critical aspects of economic regulation in the sector have been no more generous to companies than the frameworks applied to other UK network industries and that, to the extent that returns have been higher than earned by international comparators, it is not clear that this has been to the overall detriment of customers.*"[231]

262. That report also assessed the return on regulatory equity for the 2015-17 period which shows that an equal number of companies have underperformed the settlement as have outperformed it.[232] This is consistent with Ofwat's latest published information from its report[233] as represented in Figure 19 below. In this figure the 'Total' represents the total Return on Regulated Equity (**RoRE**) that each company has earned over the 2015-19 period. Where this total is below the 'Base' return this indicates that the company has failed to earn its base allowed return. This clearly demonstrates that more companies (nine) failed to earn their base return and eight companies' outperforming their base return. In this context we note that PR14 itself represented a more challenging price control framework than previous settlements, with, for example an upper quartile catch-up challenge applied, benchmarking of some service metrics across companies and a significant reduction to the allowed WACC. [234]

*230 Vivid Economics - Fair rate of return for the regulated water industry in England and Wales: Report prepared for Defra, "**Vivid18**", SOC373, 2018.*
231 Vivid18, SOC373, p. 35.
232 Vivid18, SOC373, p. 19.
233 Ofwat - Monitoring Financial Resilience, 9 January 2020, SOC239.
234 Ofwat - Setting Price Controls for 2015-20: Overview, SOC168, December 2014.

Figure 19: Average annual Return on Regulatory Equity (%, 2015-19)



Source: Ofwat - Financial Monitoring Report 2018-19 Charts and Underlying Data, 13 January 2020, SOC403.

263. These results indicate that the PR14 price control was well calibrated in setting an appropriately challenging package. They absolutely do not support an approach whereby Ofwat is justified in setting a stronger challenge at PR19.

5.2.3.2 Ofwat's argument that there is a 'productivity gap' in the sector is incorrect

264. The second argument Ofwat uses to justify its 'step change' approach is that the level of productivity in the sector has fallen since privatisation and that there is therefore scope for improvement. Effectively Ofwat's narrative suggests that the sector's productivity has slowed relative to the rest of the economy and so there should be scope to 'catch-up' with other sectors.

265. "*There appears to be scope for water companies to improve on-going efficiency. The Frontier Economics study for Water UK shows that in the period immediately after privatisation productivity growth was 3.5% to 4.5% per year, but has shown little change since 2011.*"[235]

266. Our first concern with this hypothesis relates to what would normally be expected from sector productivity over time in a mature sector like water, which was privatised some 30 years ago and has been subject to independent economic regulation over that period. Economic theory would support the view that after the paradigm shift of privatisation the level of productivity improvement in the sector would initially be expected to be high before a gradual reduction over time[236]. Ofwat's assertions ignore this evidence and instead argue incorrectly that the sector productivity rates have slowed and now need to catch-up with previous levels.

267. Whilst productivity improvement in the water sector has slowed this is only to be accepted following the significant structural changes post-privatisation. This point is not recognised by Ofwat but is apparent in a wide range of other literature and analyses. Indeed, the same Frontier Economics report comments that:

268. "*This [analysis] appears to suggest that productivity growth was driven both by investment to increase drinking water quality standards and to meet more stringent environmental regulations to reduce the impact of waste water discharges on the aquatic environment. Also, the 'privatisation' effect (and/or the impact of adopting a high powered incentive regulation system) prompted companies to become more efficient reducing their inputs, particularly opex….However from 2006 on, the growth in outputs shrunk significantly (so that productivity growth remained positive but slowed). From 2012 onwards input usage increases significantly outweighed modest increases in output, to deliver a falling productivity growth trend overall.*" [237]

269. This trend of decreasing gains following a structural or ownership change is also referenced in the reports of Ofwat's own advisors. For example in the KPMG and aqua consultants' report, they examine a range of 'examples

235 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p.41.*

236 *There are a number of studies that would support this view that productivity improvement in regulated utilities. Indeed this experience is observed in the water sector in a number of detailed academic studies including: Saal and Parker – Productivity and Price Performance in the Privatised Water and Sewerage Companies of England and Wales, 2001, SOC286; Botasso & Conti – Price-cap regulation and the ratchet effect: a generalized index approach, 2009, SOC289; Maziotis, Molinos-Senante & Sala Garrido – Assessing the Impact of Quality of Service on the Productivity of the Water Industry: A Malmquist-Luenberger Approach for England and Wales, 2017, SOC342; Saal, Parker, & Weyman-Jones – Determining the Contribution of Technical Change, Efficiency Change, and Scale Change to Productivity Growth in the Privatised English and Dŵr Cymru and Sewerage Industry: 1985-2000, 2007, SOC288.*

237 *Frontier Economics - Productivity Improvement in the Water and Sewerage Industry in England Since Privatisation, December 2017, SOC351, p.23.*

of reported performance improvements associated with structural or regulatory changes'[238]. In summarising the findings from that analysis the authors note:

270. "*The evidence is also mixed on the longevity of the impact of the documented performance, and, potentially, associated efficiency gains, over time. Some examples exhibit diminishing gains over the next five year period (e.g. Scottish Water, Openreach separation) while others show increasing gains (e.g. privatisation of electricity distribution and new gas distribution networks). Overall, however, diminishing efficiency benefits appear to be common in subsequent periods.*" [239]

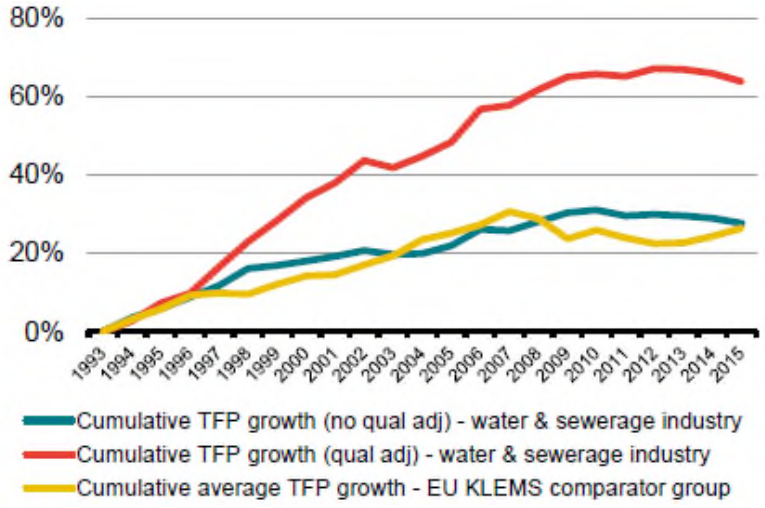
271. The same study also concludes that diminishing returns would also be prevalent from the outcomes and Totex mechanisms, largely based on the experience of the energy distribution network price controls, between the second control period and the first which is the focus of the report.

272. If the water sector can be shown to be materially underperforming relative to the levels of productivity improvement in other, comparable sectors across the UK economy then we would accept that there should be scope for productivity improvement in the sector and there could be justification for Ofwat's 'step change' approach. If that were to be the case then the sector would, reasonably have a case to answer. In fact this comparison is one of the core objectives of the Frontier economics study. However, that study actually fundamentally finds the opposite to be true levels of productivity in the water sector are comparable or higher (once they have been adjusted for quality) than other comparator sectors.

273. "*Quality adjusted cumulative TFP growth in the water and sewerage sector is materially larger than amongst the comparator group, while a highly conservative comparison on a quality unadjusted basis illustrates similar cumulative TFP growth in water and sewerage compared to the comparator group.*" [240]

274. Figure 20 below compared Total Factor Productivity (**TFP**) growth in the water and sewerage industry with cumulative average growth in the comparator sectors from the EU KLEMS database and if drawn from the Frontier Economics report.

Figure 20: Cumulative TFP growth in the Water and Sewerage Industry and the EU KLEMS comparator group



Source: Copied from Frontier Economics, 2017, PRODUCTIVITY IMPROVEMENT IN THE WATER AND SEWERAGE INDUSTRY IN ENGLAND SINCE PRIVATISATION, SOC351, p.33 figure 21. Analysis undertaken by Frontier Economics using EU KLEMS data.

275. Ofwat's justification that there remains scope for productivity improvement in the sector or that the sector has fallen behind the rest of the economy fundamentally misrepresents the Frontier economics report and is unjustified.

276. All of these points were made clear to Ofwat ahead of its FD. In the FD's Ofwat chose to highlight evidence from a report from Europe Economics[241] which it said provided evidence that other comparable sectors of the economy

238 KPMG and aqua consultants – Innovation and efficiency gains from the Totex and outcomes framework, 2018, SOC354, p.17.
239 KPMG and aqua consultants – Innovation and efficiency gains from the Totex and outcomes framework, 2018, SOC354, p.18.
240 Frontier Economics – Productivity Improvement in the Water and Sewerage Industry in England Since Privatisation, 2017, SOC351, p.33.
*241 Europe Economics – Real Price Effects and Frontier Shift – Final Assessment and Response to Company Representations, "**EE19**", 7 December 2019, SOC396.*

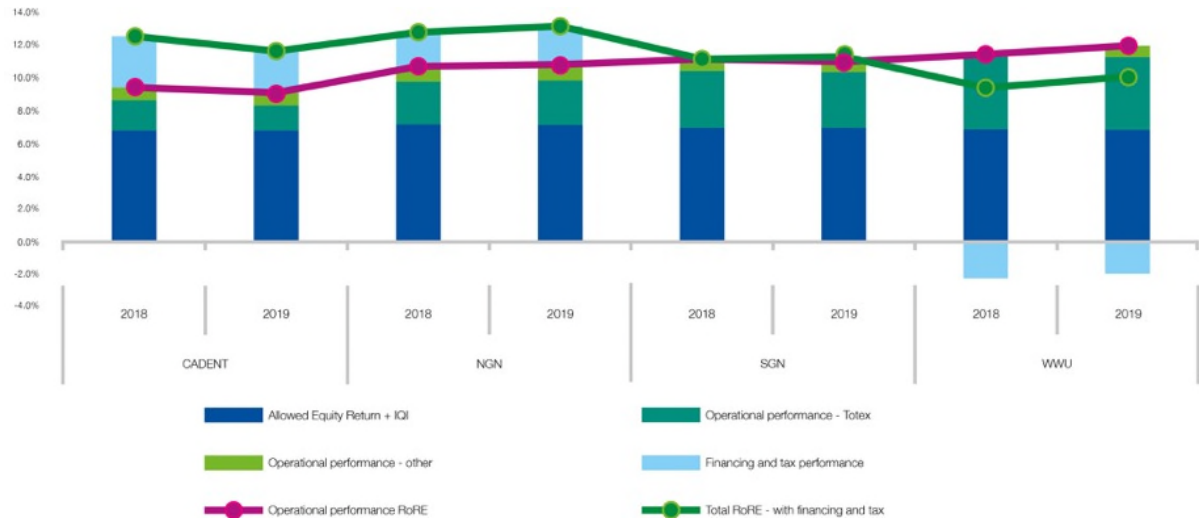
had continued to grow faster than the general economy, thereby providing evidence of the productivity gap that they say exists[242]. That analysis was reviewed and commented upon by First Economics[243] who highlight that:

- The Europe Economics report cannot be relied upon on the basis that the consultants apply two 'filters' to the data to conclude that there is scope for productivity improvement. Firstly, they filter the comparator sectors and then the timeframes selected to conclude that these other sectors have significantly improved.
- Furthermore, the same study highlights the fact that in the general economy a 'productivity puzzle' has been evident since the Global Financial Crisis (**GFC**) with productivity rates flatlining. The study explains that modern network businesses will typically outsource all of their capital expenditure and around a third of their operating expenditure and are therefore unlikely to be immune to these wider productivity trends. Instead of providing justification for a stronger efficiency challenge, this evidence in fact suggests that there is likely to be less scope for companies to outperform. Ofwat's stance that the slowdown in economy-wide productivity growth is of no real relevance to the water industry relied on an inappropriately selective filtering of the data. "*I do not think that this was a satisfactory way of addressing one of the big economic issues of the day and I do not think that other parties should attempt in future to side-step the questions that there are around recent/current rates of productivity growth in the way that Europe Economics and Ofwat did last year.*"[244]

5.2.3.3 Some other network industries have seen systematic outperformance but this is not a basis for applying a more challenging approach to the water sector

277. Ofwat's messaging in support of a 'step change' increase in regulatory stringency may have developed partly in response to concerns over observed outperformance by network companies in other sectors. It is certainly the case that in the energy sector, regulated networks in electricity transmission and gas distribution have indeed outperformed the regulatory return assumptions across the board (see Figure 21 and Figure 22 below). This has given weight to arguments in the energy sector for stricter regulatory controls. However, the circumstances of outperformance in the RIIO settlement are caused by a set of different circumstances, such as the decision by the Office of Gas and Electricity Markets (**Ofgem**) to have an eight-year price control in RIIO-1, which resulted in more cautious forecasting and thus greater outperformance than if a shorter settlement period had been used. Ofgem is now seeking to recalibrate the time periods for the next settlement period to readjust the price controls to remove that risk.

Figure 21: RoRE based on Notional Gearing - RIIO-GD1 period



Source: Ofgem - RIIO-GD1: Network Performance Summary 2018-19, 2019, SOC503, p.12.

242 Ofwat - Reference of the FD19: Cross-cutting issues, March 2020, SOC243.

243 John Earwaker – A review of Ofwat's PR19 Approach to estimating frontier shift, 20 February 2020, SOC410.

244 John Earwaker – A review of Ofwat's PR19 Approach to estimating frontier shift, 20 February 2020, SOC410, p.7.

Figure 22: RoRE based on Notional Gearing - RIIO-ET1 period

Source: Ofgem - RIIO-ET1: Network Performance Summary 2018-19, 2019, SOC503, p.14.

278. However, the water sector has differed fundamentally from energy in terms of company performance against regulatory settlements. In contrast to Ofwat's narrative discussed above, our assessment of the evidence does not support the proposition that there is systematic outperformance across the sector, or that there is justifiable evidence for such a significant step change in performance targets and cost efficiency.

279. Based on this level of performance during PR14, a step change of the scale proposed by FD19 is likely to result in companies struggling to earn their base returns, which would be inconsistent with the obligations under the Financing Duty to secure that companies can finance their functions.

5.2.3.4 NWL is already an efficient company with strong service performance – the step change is even more unjustified

280. As we highlight in section 2.6.1 NWL is the joint third most efficient sewerage company in the sector and have been in the upper quartile for cost efficiency over the past 9 years. We also show in section 2.6.4 that we are a strong performer on many service metrics.

281. Where companies are already operating at an efficient level further gains are more challenging to obtain, this is the basis for regulators generally setting stronger levels of 'catch-up' efficiency and more modest 'frontier shift' improvements. Furthermore, in seeking to improve service performance levels at or beyond the frontier level of performance, the marginal costs of improvement will often generally be higher[245]. In both cases this implies that finding further gains at the frontier is much more challenging. Our relative position shows that there is clearly no case to suggest there is a need for a step change for our company specifically in AMP7.

282. Moreover, we are concerned about Ofwat adopting an approach that seeks to 'correct' for assumed systematic outperformance in the past. Each price control is a discrete exercise and should be based on the best available evidence of the day. As we have shown, there is insufficient evidence to suggest that systematic outperformance exists in the water sector but regardless it would not be appropriate for the regulator to seek to 'claw back' any previous gains, this is not the role of an independent regulator and is more rightly the role of Parliament.

[245] *NERA – Assessing Ofwat's funding and incentive targets for leakage reduction, 22 March 2019, SOC378, fig 3.4.*

5.3 OFWAT'S APPROACH TO SETTING COST ALLOWANCES FOR PR19

5.3.1 The overall Totex framework

283. Ofwat's PR19 approach continues to employ a Totex approach. This means that operating expenditure (**Opex**) and capital expenditure (**Capex**) are incentivised and remunerated in the same way to try and eliminate any bias towards capital solutions. This better aligns the incentives of the water companies with the interests of customers and promotes efficiency within the sector.

284. To assess Totex, Ofwat uses the following building blocks:

- Base costs: Base costs are routine, year on year costs for the normal running of the business:
  - Modelled base costs: Ofwat uses econometric models to assess efficient base costs (set at the 3rd and 4th most efficient companies in wastewater and water respectively) to which a frontier shift efficiency challenge is applied to reflect future expected productivity improvements; and
  - Unmodelled base costs: These costs are less controllable by the companies (e.g. abstraction charges and business rates) and Ofwat therefore uses a more bespoke approach to apply any efficiency challenge;
- Enhancement expenditure: Enhancement expenditure is investment to improve capacity or quality of service. It is typically more lumpy than base costs and reflects company specific factors and requirements. Ofwat applies a bespoke efficiency challenge to these costs based on benchmarking of historical and business plan data, and shallow and deep dives into specific areas; and
- Adjustments: Company specific adjustments are made to reflect unique company circumstances where claims are well justified.

285. We are broadly supportive of this framework to assess efficient cost allowances. The approach at PR19 improves on PR14 by making adjustments that allow the framework to better capture the key drivers of costs. In particular, the PR19 approach moves away from Totex econometric models to the separate consideration of base costs and enhancement costs. These expenditure types have different drivers which means models that only include base costs perform better than the Totex models used at PR14.

286. The approach which Ofwat has used for base costs also reflects some of the CMA's past findings and concerns about the PR14 models.[246] The PR19 models have been simplified to ensure that the key drivers are modelled effectively. As part of this simplification the models no longer use the 'translog' specification which resulted in some counterintuitive results.

5.3.2 Assessment of base costs models

287. The PR19 approach to setting robust cost forecasts relies heavily on the use of econometric techniques. On the whole, these techniques work well in identifying expenditure requirements where there are a number of comparators undertaking the same activities and good quality data capturing the key cost drivers of each activity.

288. We consider the following criteria provide an appropriate basis against which to assess the robustness of the PR19 approach to base costs:

- **Engineering and economic rationale** - do the drivers align with engineering and economic understanding of the activity, that is do they identify the expected main cost drivers? Are the drivers exogenous and outside of management control, and are they measured consistently over time and across companies?
- **Confidence in the estimated coefficients** – are the coefficients the "*right*" sign and of a plausible magnitude to ensure there is a sensible and intuitive relationship between the driver and base costs?
- **Model statistical robustness** - Are the coefficients statistically significant to ensure that there is a statistical underpinning behind any estimated relationships? Does the model pass standard diagnostic tests? What is the model's R-squared, and does it sufficiently explain cost differences between companies?

246 *Bristol Water PR14 CMA Decision, SOC 336, pp. 69-74.*

289. These criteria have a large degree of overlap with the assessment criteria developed by Ofwat.[247] Whilst we accept there is a degree of judgement in model selection for cost assessment, it could be argued that Ofwat's approach to the base models strikes a reasonable balance in meeting the criteria set out above.

290. We assess in Table 7 and Table 8 below our views of the wholesale water and wholesale wastewater models developed by Ofwat against these criteria.

Table 7: Wholesale water models

	WRP1	WRP2	TWD1	WW1	WW2
Engineering and economic rationale	The models align with engineering and economic understanding of the activities and represent expected key cost drivers.				
Confidence in the estimated coefficients	The estimated coefficients appear appropriate and represent the expected relationships in terms of sign and are reasonable in terms of their magnitudes.				
Model statistical robustness	All coefficients are statistically significant. The models have good explanatory power (R-squared) and do not fail against standard diagnostic tests.	Two variables are not statistically significant but the model meets other criteria.	All coefficients are statistically significant. The models have good explanatory power (R-squared) and do not fail against standard diagnostic tests.		

Source: Northumbrian Water analysis based on Ofwat's FD19 econometric models

Table 8: Wholesale wastewater models

	SWC1	SWC2	SWT1	SWT2	BR1	BR2	BRP1	BRP2
Engineering and economic rationale	The models align with engineering and economic understanding of the activities and represent expected key cost drivers.							
Confidence in the estimated coefficients	The estimated coefficients appear appropriate and represent the expected relationships in terms of sign and are plausible in terms of their magnitudes.							
Model statistical robustness	All coefficients are statistically significant. The models have good explanatory power (R-squared) and do not fail against standard diagnostic tests.	One variable is not statistically significant but the model meets other criteria.	All coefficients are statistically significant. The models have good explanatory power (R-squared) and do not fail against standard diagnostic tests.					

Source: Northumbrian Water analysis based on Ofwat's FD19 econometric models

291. Based on our assessment we are supportive of Ofwat's base costs models and we do not currently see any rationale for the CMA to revisit the models in its redetermination of our price control. Ofwat has followed an extensive process in its development, there is a strong rationale behind the estimated models in terms of engineering and economics, and the models have robust statistical performance. In the interests of focussing the CMA's redetermination on areas of difference between ourselves and Ofwat, we do not currently consider that there is any need for the CMA to spend time and resources on the design of these models as part of the CMA's redetermination of our price control. Should you choose to do so, we would welcome the opportunity to make some additional commentary.

292. We do, however, have some significant concerns over how these models were used (including the allocation of certain costs to base or enhancement (see Section 7) and some of Ofwat's post modelling adjustments (e.g. the catch-up efficiency challenge and the adjustment for 'growth'). These are discussed along with our other areas

247 *Ofwat - Cost assessment for PR19: a consultation on econometric cost modelling, March 2018, SOC220.*

of concern in the remainder of this Section. We present the items affecting Totex allowances first (in the order that Ofwat makes the adjustments) followed by other issues.

5.4 OFWAT'S FD19 EFFICIENCY BENCHMARK IS TOO DEMANDING AND DOES NOT ALLOW EFFICIENT COST RECOVERY

5.4.1 Overview of the issue

293. Ofwat has developed a series of econometric models which it has used to estimate efficient costs for different activities. These models seek to identify and use cost drivers to explain differences in costs between companies. However, these models do not explain all of those differences. The residual or unexplained differences in costs comprise two main components:

bb) differences in efficiency which companies can reduce or eliminate over time, that is higher cost companies can catch up to the more efficient performers in the sector; and

model misspecification and data errors, e.g. omitted cost drivers and differences in cost allocation for the reporting of data.

294. In forming its assessment of efficient costs and, in doing so, distinguishing between factors a) and b) above Ofwat has set its efficiency benchmarks at the 3rd lowest cost company in wholesale triangulated wastewater model and the 4th lowest cost company in wholesale triangulated water model.

295. Noting our comments above on securing a reasonable balance in the settlement in the round, we consider that Ofwat's approach to where it sets the efficiency benchmarks presents a significant risk that these benchmarks are unacceptably demanding and are not supported by actual differences in efficiency between companies, and therefore inconsistent with its obligations to balance the statutory duties.

296. In the following sections we set out:

- Ofwat's approach to estimating catch-up efficiency (see Section 5.4.2);
- our recommended approach to identifying the appropriate efficiency benchmark (see Section 5.4.3); and
- our suggestions as to how the CMA should approach the redetermination to ensure an appropriate balance (see Section 5.4.4).

5.4.2 Ofwat's approach to estimating catch-up efficiency

297. Ofwat has applied downward adjustments to the cost allowances produced by its models as it considers there is additional scope for efficiency gains, beyond that which is already estimated through its models. The regulator has applied a catch-up efficiency component, which provides a challenge to low performing companies (as determined by Ofwat's models), to improve cost efficiency to a higher performing benchmark.

298. In DD19 Ofwat applied an **UQ** efficiency target to its estimate of base costs (**Botex**) and a number of enhancement categories. It calculated separate UQ efficiency benchmarks for water and wastewater using its suite of wholesale econometric models, which themselves are calibrated using a historical sample of company data over the period 2011/12 to 2018/19.[248]

299. Ofwat then calculated the UQ benchmark by dividing the actual Botex costs incurred by companies over a five year period by the Botex predicted by its models over the same historical period (2013/14 to 2017/18). The resulting ratios, or "*efficiency score*", for each company were then ranked. Ofwat calculated the UQ benchmark as being equal to the 25th percentile of the ranked efficiency scores.[249]

248 *Ofwat DD19: Securing cost efficiency technical appendix, SOC432, pp. 26-27; Ofwat Final Determination Cost Assessment Models WW2 FD and WWW2 FD: Calculation of catch-up efficiency challenge, 16 December 2019, SOC195 and SOC196.*

249 *Ibid.*

300. As part of FD19 Ofwat made some changes to its data and modelling, such as the inclusion of an additional year of data in its historical dataset (2018/19) used to calibrate the models. Applying a UQ benchmark to these updated models resulted in an increase in the number of companies (12) which, at FD19, had business plan costs lower than the amount allowed by Ofwat compared to the same assessment at DD19 (six companies).[250] As there are now smaller unexplained differences in costs among companies, the correct approach would be to set a smaller catch-up challenge as the level of catch-up that is possible is limited. Instead, Ofwat incorrectly interpreted that its historical approach to identifying UQ no longer provided a sufficiently strong challenge to company business plans and has therefore changed its approach to a more demanding catch-up challenge.[251] Ofwat decided, therefore, to set its FD19 benchmark based on the third ranked company in wastewater and the fourth ranked company in water. The efficiency scores, revised benchmarks, and UQ, calculated by Ofwat at FD19 are shown in Table 9 below. In both cases, the revised benchmark is commensurate with companies performing better than the 25th percentile level of efficiency score.

Table 9: Ofwat's wholesale Botex efficiency scores

Company	Wholesale water	Company	Wholesale wastewater
PRT	0.79	SVT	0.85
YKY	0.93	WSX	0.91
SSC	0.94	NES	0.98
SWB	0.95	ANH	1.01
DVW	0.96	SWB	1.02
SEW	0.98	TMS	1.02
SRN	0.98	YKY	1.03
NES	1.00	SRN	1.04
WSX	1.01	WSH	1.09
NWT	1.01	NWT	1.22
AFW	1.03		
ANH	1.06		
TMS	1.06		
SVT	1.10		
BRL	1.13		
SES	1.14		
WSH	1.17		
Fourth ranked	95.4%	Third ranked	98.0%
UQ	96.1%	UQ	98.8%

Source: Ofwat Final Determination Cost Assessment Models WW2 FD and WWW2 FD: Calculation of catch-up efficiency challenge, 16 December 2019, SOC195 and SOC196.

301. Ofwat then multiplies its benchmark efficiency target with its initial Botex costs allowances for AMP7, which are themselves derived using econometric models. This results in an efficiency benchmark of £1,301m across the sector for wholesale Botex (water and wastewater combined) and £74m for NWL as shown in Table 10.

Table 10: Catch-up benchmark (based on 3rd/4th most efficient company) impact for NES and the industry

£m		Northumbrian Water	Industry total
Wholesale water Botex plus	Modelled cost (pre-catch-up/frontier shift)	1,223	20,325
	Further catch-up benchmark	56	934
Wholesale wastewater Botex plus	Modelled cost (pre-catch-up/frontier shift)	893	18,016
	Further catch-up benchmark	18	367

250 Ofwat Final Determination Cost Assessment Model WW2 FD: Calculation of catch-up efficiency challenge, 16 December 2019, SOC195.
251 FD19, SOC183, p. 31.

£m		Northumbrian Water	Industry total
Total	Further catch-up benchmark	74	1,301
	Further catch-up benchmark (%)	3.52%	3.39%

Source: Northumbrian Water's analysis based on Ofwat Final Determination Cost Assessment Models WW4 FD and WWW4 FD, 16 December 2019, SOC192 and SOC193.

302. Ofwat made the following argument in the FD19 document to justify the change from an upper-quartile benchmarking approach to a 4th or 3rd most efficient company approach: "*Following changes to our data and modelling approach since draft determinations (e.g. the removal of non-section 185 diversions costs and the inclusion of the 2018-19 data), the stringency of the historical upper quartile as a catch up efficiency challenge has reduced. Out of 17 water companies, 12 companies now forecast modelled base costs for the period 2020-25 that are lower (i.e. more efficient) than the projected efficient costs under the historical upper quartile. This compares to only six out of 17 at the slow track draft determinations. The historical upper quartile does not appear to deliver a strong challenge for the sector at final determinations.*"[252]

303. Whilst we agree with Ofwat's observation, this is a result of companies reducing their requested costs in August 2019 representations to draft determinations. In this process, companies have made large concessions since IAP19 due to Ofwat's refusal of accepting their requests. Therefore, by applying a more stringent challenge on companies' August 2019 representations Ofwat risks imposing a challenge that is unachievable.

5.4.3 Our preferred approach to identifying the appropriate benchmark challenge

304. We would welcome the CMA revisiting the approach taken by Ofwat at FD19. We do not consider that the move from UQ to the new benchmarks is either theoretically sound or supported by any evidence. Instead, we would encourage the CMA in its redetermination to revert to UQ, which already presents a sufficiently stretching benchmark challenge. We set out the basis for that approach in the following sections:

- the appropriate framework for the selection of an efficiency benchmark (see Section 5.4.3.1);
- Ofwat has used companies which operate in unique circumstances to set the benchmark (see Section 5.4.3.2);
- the rationale for the change in benchmark from DD19 to FD19 is not robust (see Section 5.4.3.3);
- the choice of benchmark risks setting an efficiency challenge that is disproportionate and cost targets that are not achievable (see Section 5.4.3.4); and
- regulatory precedent does not support a challenge that is more demanding than UQ (see Section 5.4.3.5).

5.4.3.1 The appropriate framework for the selection of an efficiency benchmark

305. As noted above the aim of the efficiency benchmark is to reflect the extent of the efficiency difference between companies that higher cost companies can be challenged to achieve. There are a number of factors that can influence the choice of benchmark that achieves that aim:

- **Comparability of companies**: The more similar the operating areas are of the companies then the more comparable are their costs as fewer adjustments need to be made for different cost drivers;
- **Data quality**: Consistent data over time and across time improves the robustness of the estimated models and means that less of the residual or unexplained differences in costs is likely to be associated with data errors;
- **Statistical robustness of the models**: models with strong statistical performance (statistically significant cost drivers and good performance against diagnostic tests) are more indicative of well specified models that can better identify differences in efficiency;
- **Economic and engineering rationale behind the models**: models with a strong economic and engineering underpinning are again more likely to be well specified and able to identify efficiency differences; and
- **Dispersion in efficiency scores**: models with large differences in efficiency scores are more likely to be due to model misspecification issues (e.g. missing cost drivers). It is unlikely that there would be very large differences in efficiency where companies have access to the same technology and are incentivised to improve efficiency over time.

252 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p.31.

306. For models with good performance against these factors a more demanding efficiency benchmark could be set (e.g. at the upper quartile). Relatively poorly performing models should have a less demanding benchmark (e.g. set at the average level of cost performance) to reflect uncertainties around whether they are really indicating efficiency differences. This helps ensure that the benchmark sets a level of efficiency catch-up that is achievable in practice.[253]

307. A good sense check is the implied level of catch-up that is predicted for an average company relative to the frontier company. That is, what does the approach implicitly assume is the proportion of the difference in unexplained costs that is attributable to efficiency. If too high a proportion of the difference is ascribed to efficiency then this is indicative of too demanding a benchmark having been set.

308. Looking at Ofwat's approach in the context of these factors, we consider that there are issues with the comparability of the companies used in the data set; the rationale for the change from DD19 to FD19 is not robust; and the choice of benchmark risks setting an efficiency challenge that is disproportionate. These are all areas that we would suggest that the CMA reviews carefully.

309. We would request that the CMA considers the overall sense check of what is implied by the choice of benchmark. Ofwat's approach means that the benchmark risks being set at a level that cannot reliably be ascribed to differences in efficiency and therefore the challenge would not be achievable in practice by a notionally efficient company and therefore should not provide the benchmark in the final determination.

5.4.3.2 Ofwat has used companies which operate in unique circumstances to set the benchmark

310. For PR19 Ofwat has included companies with different characteristics in its calculation of the UQ benchmark for its wholesale models. This creates an unrealistic view of efficiency levels achievable by all companies. In particular, large and complex WaSCs should not be compared to smaller WoCs due to fundamental structural differences in their cost base.

311. Smaller companies may be able to reduce costs to levels which are unachievable by larger companies. This is because each smaller company operates in unique circumstances which are generally not representative of the average area serviced by a larger company. Larger service areas contain more diversity in natural and social conditions, which can increase the baseline level of costs faced by that company.[254]

312. To address this issue Ofwat excluded Haffren Dwfry, Wessex Water, Bristol Water, Portsmouth Water, Sutton and East Surrey, and South Staffs and Cambridge from its calculation of the benchmark at PR09 and stated that a benchmark company "*must represent a reasonable proportion of the industry*".[255] Ofwat used a threshold of 3% of the industry Totex to exclude smaller companies from benchmarking calculations. This has not happened in PR19, although one of the principles of regulation is transparency and proportionality.

313. Table 11 below shows the changes in wholesale water efficiency challenge and cost allowance for NWL and the sector as a whole if small companies are excluded from UQ benchmark calculations. The analysis applies the same definition of small companies as used by Ofwat at PR09 (i.e. companies with less than 3% of the industry Totex). Removing these inappropriate comparators changes the efficiency challenge from 5% to 2%. If the CMA in its redetermination were to exclude small companies, our allowance would as a result increase by £36m (and the industry allowance would increase by £523m).

Table 11: Cost allowances from excluding small companies

	Our modelled base cost allowance (post-efficiency challenge), £m	Industry's modelled base cost allowance (post-efficiency challenge), £m	Efficiency challenge
Full sample	1,123	16,604	5%
Exclude small WoCs	1,159	17,128	2%
Difference	36	523	

Source: Northumbrian Water's analysis based on Ofwat Final Determination Cost Assessment Models WW2 FD and WW4 FD, 16 December 2019, SOC195 and SOC194.

253 Deloitte - Econometric benchmarking in the UK postal sector: Final report, "**Deloitte Econometric Benchmarking Report**", 24 May 2016, SOC340, p. 12.
254 Thames Water Response to Ofwat DD19, August 2019, SOC391, p. 11.
255 Ofwat – Relative efficiency assessments 2006-07 – supporting information, SOC173, p. 14.

314. Removing these companies helps to ensure that observed differences between companies are efficiency related rather than due to anomalies associated with companies which are not comparable to companies like NWL. This further demonstrates the concerns which we raised above that we have with the regulator setting an efficiency benchmark that is more demanding than the upper quartile when the allowances are being influenced by small companies that are not typical of the larger companies to which the efficiency benchmark is effectively being applied. We would therefore ask the CMA to look at this issue in its redetermination of our price control.

5.4.3.3 The rationale for the change in benchmark from DD19 to FD19 is not robust

315. The entire framework for efficiency analysis using econometric models is predicated on the assumption that the level of unexplained differences in costs is related to the level of catch-up that is possible and should therefore be used to inform expenditure allowances. Therefore, a smaller dispersion of observed unexplained cost differences between companies would be expected to correspond to smaller efficiency differences being present and therefore a smaller catch-up challenge to be applied.

316. However, Ofwat took a different approach. When it observed smaller differences in unexplained costs between companies, it used this as an indication that it should strengthen the level of efficiency challenge. It justified this change in approach by comparing the implied rates of catch-up at FD19 to those arising at DD19.

317. This change seems to suggest that Ofwat was targeting a level of efficiency catch-up consistent with its views of historical levels rather than selecting a level of catch-up which would be consistent with the results of its efficiency analysis. We consider that a more appropriate interpretation of Ofwat's modelling results showing smaller unexplained differences in costs would be to assume that there are smaller differences in efficiency between companies and therefore a smaller catch-up challenge should be applied. We do not, therefore, consider the rationale for the choice of a benchmark more demanding than the upper quartile to be robust and we would ask the CMA to focus on this area in its redetermination.

5.4.3.4 The choice of benchmark risks setting an efficiency challenge that is disproportionate and cost targets that are not achievable

318. The use of a UQ benchmark implies that roughly half of the difference between the average company and the cost 'frontier' (the lowest cost company) can be ascribed to the inefficiency and can therefore be subject to catch-up. This is because there are an equal number of companies between the median and the UQ as there are between the UQ and the frontier. Based on our understanding of the sector an UQ adjustment strikes a reasonable balance between setting a tough efficiency challenge and ensuring that the cost targets are achievable. In choosing a benchmark more demanding than UQ, there must be confidence that the evidence supports ascribing a greater proportion of the difference to inefficiency. We do not consider that the evidence supports such a conclusion for the reasons set out below.

319. First, the range of efficiency score implied by the modelling results strongly suggests the presence of significant cost drivers which are not included in the models. It does not seem plausible that there could be cost differences of ~50% in a sector where companies have equal access to the same technologies and are subject to similar levels of cost incentivisation. Table 12 below sets out the range of efficiency scores in the different botex models.

Table 12: Range of efficiency scores in Ofwat's Botex models

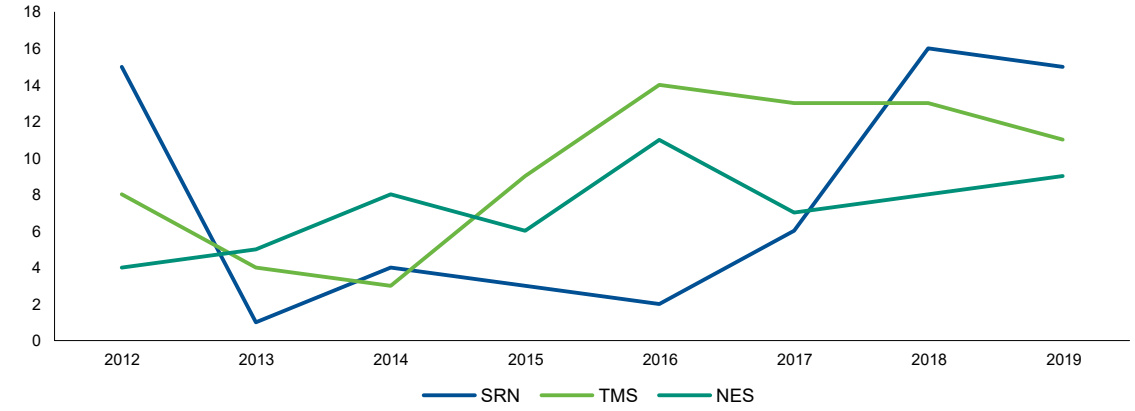
	Highest	Lowest	Range
WRP	1.37	0.58	0.79
TWD	1.25	0.80	0.45
Wholesale Water (**WW**)	1.19	0.81	0.38
Water (triangulated)	**1.17**	**0.79**	**0.39**
SWC	1.15	0.83	0.33
SWT	1.46	0.85	0.61
BR	1.42	0.68	0.74
BRP	1.26	0.85	0.41
Wastewater (triangulated)	**1.22**	**0.85**	**0.37**

Source: Northumbrian Water analysis of Ofwat's FD19 feeder models

320. The presence of omitted cost drivers is consistent with our understanding of the sector where complex business activities cannot fully be simplified into the identification of a small number of cost drivers. It is also consistent with Ofwat's approach to cost adjustment claims whereby cost differences between companies can be captured through post modelling adjustments. As these adjustments are made post modelling, Ofwat itself is acknowledging that there are further drivers of cost differences between companies that are non-efficiency related which are not captured by the models. However, these considerations do not point towards adopting a more demanding benchmark than the UQ.

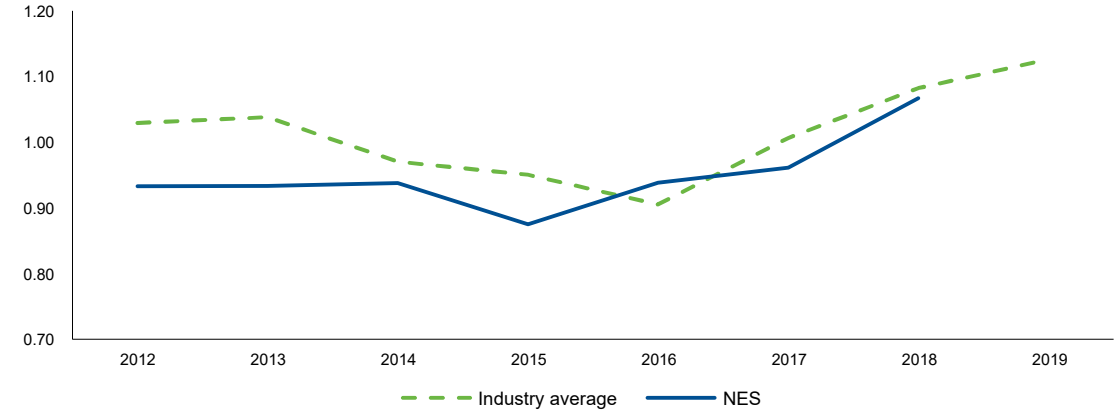
321. Second, the efficiency rankings and efficiency scores of companies over time display significant variation. Figure 23 and Figure 24 below demonstrate the evolution of the rankings and scores.

Figure 23: Efficiency rankings for selected companies in water



Source: Northumbrian Water analysis of FD19 feeder models

Figure 24: Efficiency scores in water for Northumbrian Water and the industry average



Source: Northumbrian Water analysis of FD19 feeder models

322. Figure 23 and Figure 24 above show that the trends in the ranking and scores appear unstable. This range of results is not intuitive as one would expect any changes in efficiency to be more gradual over time, (e.g. companies would not be expected to jump from number 15 to number 1 in the rankings as Southern Water did between 2012 and 2013). This again is indicative of there being significant omitted drivers from the models which would explain movements in these rankings. It would therefore not be proportionate to adopt an efficiency challenge more demanding than the UQ.

323. Based on the consideration above we do not consider a catch-up assumption more challenging than UQ to be justified. It is disproportionate and creates the risk that the target levels of cost will not be achievable. For context the UQ vs the FD19 approach has the following implications for the catch-up estimate as shown in Table 13 below.

Table 13: Impact of strengthened catch-up assumptions on required cost reduction

	Water	Wastewater
NWL UQ cost reduction required	4.0%	-0.1%
NWL FD cost reduction required	4.8%	0%

	Water	Wastewater
Industry UQ cost reduction required	5.4%	4.5%
Industry FD cost reduction required	6.1%	4.6%

Source: Northumbrian Water's analysis based on Ofwat Final Determination Cost Assessment Models WW2 FD and WWW2 FD, 16 December 2019, SOC195 and SOC196.

324. Table 13 shows that a much more significant catch-up is required under the FD19 assumption of the 4th most efficient company for water and 3rd most efficient company for wastewater than the UQ benchmark. In water, we need to reduce costs by an additional 0.8% to achieve the FD19 challenge which amounts to c.£9m. In wastewater, we are more efficient than the UQ benchmark and should be rewarded for setting a more challenging benchmark for other companies in the sector.

325. Ofwat's FD19 assumes much greater rates of efficiency improvements than other sectors. There are two components to its overall challenge:

- a catch-up challenge of c.4% on water[256] and c.2% on wastewater[257]; and
- a frontier shift challenge of 1.1%[258] p.a. for ongoing productivity improvements on top of the catch-up

326. The combined impact of these two adjustments is much bigger than other comparator sectors in the Europe Economics report for Ofwat.[259] They forecast TFP improvement between 0.6%-0.9% p.a. on a gross output basis. These TFP estimates for other sectors include both catch up and frontier shift improvements in those sectors. Whilst the frontier shift challenge of 1.1% on its own represents a challenge that is potentially achievable, the totality of the catch-up and frontier shift challenge is unacceptable. Overall the combined efficiency challenge is far in excess of the improvements assessed by Europe Economics for the comparator sectors in its report.

5.4.3.5 Regulatory precedent does not support a challenge more demanding than UQ

327. Other regulators and the CMA have faced the same challenge as Ofwat in setting an appropriate efficiency challenge. As set out in Table 14 below, Ofwat, Ofgem and the CMA have not previously chosen more demanding benchmarks than UQ.

Table 14: Approach to efficiency benchmarking in different price controls

Price control	Relative Benchmarking approach and justification
Water: PR09[260]	Ofwat used the median point of the cost distribution to set the efficiency benchmark for wholesale models
Water: PR14[261]	Ofwat used the upper quartile of the cost distribution to set the efficiency benchmark for wholesale models
Bristol PR09 appeal[262]	The CC used the median point of the cost distribution to set the efficiency benchmark for wholesale models
Bristol PR14 appeal[263]	The CMA used an industry-average efficiency benchmark to set the efficiency benchmark for wholesale models
Electricity distribution: DPCR5[264]	Ofgem's approach to benchmarking varied between upper quartile and median for different categories of network costs, to reflect differing levels of certainty on costs.
Electricity distribution: RIIO-ED1[265]	Ofgem benchmarked efficient level of Totex for each DNO using the upper quartile of the cost distribution.
Gas distribution: GDPCR1[266]	Ofgem benchmarked Opex costs at the upper quartile level, with an uplift applied to mitigate the increased stringency introduced by the disaggregated approached.

256 *Ofwat Final Determination Cost Assessment Model WW2 FD Calculation of catch-up efficiency challenge, SOC195, 16 December 2019.*
257 *Ofwat Final Determination Cost Assessment Model WWW2 FD Calculation of catch-up efficiency challenge, SOC196, 16 December 2019.*
258 *FD19, SOC183, p.9.*
259 *EE19, SOC396, Table 3.13 on p. 77.*
260 *Ofwat - Future water and sewerage charges 2010-15: Final Determinations, "**FD09**", 2009, SOC295, p. 110.*
261 *Ofwat - Setting price controls for 2015-20 - Final price control determination notice: policy chapter A3 – wholesale water and wastewater costs and revenues, December 2014, SOC170, p. 4.*
262 *Bristol Water PR09 CMA Decision, SOC296, p. 41 (Capex) and p. 58 (Opex).*
263 *Bristol Water PR14 CMA Decision, SOC336, p.123.*
264 *Ofgem - Electricity Distribution Price Control Review Final Proposals - Allowed revenue - Cost assessment, "**Ofgem Allowed Revenue Cost Assessment**", 7 December 2009, SOC294, p.4.*
265 *RIIO-ED1: Final determinations for the slow-track electricity distribution companies, "**RIIO-ED1:FD**", 28 November 2014, SOC331, p. 24.*
266 *Gas Distribution Price Control Review Final Proposals Document, "**GDPCR Final Proposals**", 3 December 2007, SOC292, p. 11.*

Gas distribution: RIIO-GD1[267]	Ofgem used the upper quartile of the cost distribution to set the benchmark

Source: Regulatory documents, referenced in footnotes

328. These decisions reflect the uncertainty inherent in any modelling approach, with part of the difference in modelled costs relating to factors other than relative network efficiency. Greater variability in modelling results suggests a less demanding benchmark approach is required, which accounts for the CMA's decision to apply an industry average in its review of PR14 as applied in the Bristol Water PR14 Decision.[268]

329. In the Bristol Water PR14 Decision, the CMA also stated that it:

"had concerns that, to apply the upper quartile (or another benchmark besides the industry average) properly, it would be appropriate to: (a) make adjustments for known company-specific special cost factors for all 18 water companies before calculating the relative efficiency scores and upper quartile efficiency adjustment; and (b) produce estimated levels of expenditure for each of the 18 water companies from each of our seven preferred models. This would involve a further round of analysis for all companies to identify adjustments that should be applied to the benchmarking analysis sample period, drawing on Ofwat's allowances for forward-looking special cost factors for the five years from 1 April 2015. We did not consider this analysis to be proportionate."[269]

330. Ofwat has not made this pre-modelling adjustment at PR19 and therefore it would be inappropriate to increase the efficiency challenge.

331. In support of its decision to set a tougher efficiency challenge, Ofwat has cited some regulatory precedents but has not considered its relevance to this sector or explored the extent to which such precedents are relevant to be applied in different circumstances. Ofwat referenced that:

"Other regulators have also previously set more stretching benchmarks than the upper quartile. Most recently, the Northern Ireland Utility Regulator used the fourth placed company (out of fifteen companies) to set the efficiency benchmark in the price control determination for NIE [Northern Ireland Electricity] Networks for the period 2017-2024 (RP6). Postcomm, Ofcom and Monitor have previously employed an upper decile benchmark in their regulation of Royal Mail delivery offices, British Telecom and acute health care providers respectively".[270]

332. The fact that a different regulator with different statutory duties may have applied a more stretching benchmark to a different industry with a different industry make up is not a legitimate basis for setting a tougher challenge in this price control in this sector. In a report prepared for Ofcom, Deloitte suggested that:

"The choice of the appropriate benchmark is typically determined on the basis of estimation uncertainty. For instance, Ofgem and Ofwat have previously used the upper quartile benchmark, recognising the estimation uncertainty stemming from the small number of comparators and estimation sample. Within the postal sector, Postcomm previously employed the upper decile benchmark in its analysis of Royal Mail DOs, an approach consistent with that used by Ofcom (2008) in relation to relative efficiency at British Telecom".[271]

333. The points made by Deloitte have not been considered anywhere in Ofwat's FD19.

334. In addition, there is no evidence that Ofwat's models have better predictive power at FD19 than at DD19 stage to warrant a tougher challenge. Furthermore, Ofwat has not taken into consideration that the modelling approaches were different in some of the regulatory precedents it referred to. For example, Ofcom used a stochastic frontier analysis to model efficient costs, which separates technical efficiency from white noise, whereas Ofwat's random effects models do not. Therefore, it is inappropriate to compare Ofcom's efficiency challenge to Ofwat's and could lead to erroneous and unbalanced results.

335. Given the issues with Ofwat's models results we do not see any reason to support a departure from the UQ benchmark that was used by Ofwat at DD19, particularly given that the companies have not been given sufficient opportunity to comment on or make representations in respect of this new post modelling adjustment.

267 *Ofgem RIIO-GD1: Final Proposals – Overview, "**RIIO-GD1**", 17 December 2012, SOC316, p. 24.*
268 *Bristol Water PR14 CMA Decision, SOC336, p. 118.*
269 *CMAPR14, SOC006, pg.118.*
270 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 32.*
271 *Deloitte Econometric Benchmarking Report, SOC340, p. 12.*

5.4.4 Issues for the CMA to consider in the redetermination

336. For the reasons set out above, we would ask the CMA to consider whether the use of the 3rd and 4th lowest cost companies as the efficiency benchmarks is supported by the evidence. We would suggest that it not only is not supported by the evidence but it is contrary to precedent regulatory practice and also risks setting cost allowances that are not achievable for companies. In particular, the evidence does not support assuming that such a large proportion of the differences in costs can be attributable to efficiency, i.e. at a level beyond the upper quartile which already assumes that half of the gap between the average company and the frontier can be caught up.

337. We consider that an appropriate and proportionate approach for the CMA's redetermination would be to revert to UQ for the purpose of setting the catch-up efficiency assumption. If the CMA were to do so this would increase Northumbrian Water's Totex allowance by £17m and be more proportionate in the settlement in the round.

5.5 OFWAT'S APPROACH TO SETTING REAL PRICE EFFECTS IS INCONSISTENT ACROSS INPUT COSTS AND DOES NOT ACCOUNT FOR ENERGY COSTS AND CHEMICALS COSTS

5.5.1 Overview of the issue

338. This section addresses Ofwat's approach to setting RPEs in FD19. RPEs adjust regulatory allowances to account for an input cost which varies at a significantly different rate than CPIH inflation. This is to ensure that the final revenue allowances set for water companies accurately cover the costs faced by the companies, consistent with Ofwat's statutory duties.

339. Ofwat has not included an RPE for energy prices in FD19 despite energy accounting for 9% of company Totex and passing the RPE assessment criteria defined by Ofwat's advisors, Europe Economics.[272] As the CMA will be aware there are clear errors in this approach because of clear historical evidence of electricity prices increasing in real terms, the forecast price increase in real terms over PR19, and the limited scope for management to reduce these costs.

340. We consider that energy costs should be included as an RPE, to ensure NWL recovers its efficiently incurred costs. Such an approach would be consistent with both Ofwat's stated assessment criteria and with its underlying statutory duties.

341. In addition, Ofwat did not include an RPE adjustment for chemicals costs because it has relied on analysis by Europe Economics that used a non-representative price index for the chemicals that we rely upon to deliver our water and wastewater services to our customers. The chemicals that we purchase have been increasing in price in excess of CPIH inflation and we can see no reason why this trend would stop during the AMP7 period. Therefore an RPE adjustment is required to ensure that we are funded for our expected efficient costs.

342. In the following sections we set out:

- Ofwat's approach to setting RPEs in FD19 (see Section 5.5.2);
- Our preferred approach to RPEs for energy (see Section 5.5.3);
- Our preferred approach to RPEs for chemicals (see section 5.5.4) and
- Our requested remedy from the CMA (see Section 5.5.5).

5.5.2 Ofwat's approach to setting RPEs in FD19

343. Regulatory price controls adjust the allowed revenue for each regulated company to account for inflation in the price of inputs to the companies' business plans. However, the rate of increase in input prices varies across different components of the cost base. This leads to 'differential inflation' (i.e. input prices changing at a different rate to general inflation), otherwise known as RPEs.

272 EE19, SOC396, p. 87.

344. Capturing these effects in the price control is important to ensure that allowances accurately cover the costs faced by companies, balancing the need for companies to provide services to customers with an appropriate level of risk for investors. RPE adjustments are therefore included in the price control to modify companies' allowances in line with expected real price changes.

345. In PR19, only labour costs are accounted for using an RPE (as per FD19). Ofwat incorporates labour costs by estimating the proportion of the cost base arising from that particular input (38.6% for labour at FD19) and applying an uplift to the allowance based on this proportion of the wedge between labour costs and the CPIH.[273]

346. In order to assess inputs for eligibility for an RPE in PR19, Ofwat commissioned advisory firm Europe Economics to examine the available evidence. Europe Economics' methodology assessed the suitability of inputs for an RPE based on three criteria:

- the existence of a wedge between the input price and CPIH over time. This was considered for both historical values and forecasts, and both the size and volatility of the wedge was considered;
- the extent to which the CPIH index captures the input price. This was assessed by comparing the share of the input cost in Totex to the share of the input cost in the CPIH basket; and
- the extent to which management can control the cost of the input. Europe Economics considered whether management could control the price of the input, control price volatility, or reduce the volume of the input they use.[274]

347. In the past, Ofwat has adopted a straight forward methodology when calculating these RPE overlays. They typically worked line by line through each of the main input types that a company utilises and made a projection of the nominal rate of input price increase. They would then deduct the input price projections from a forecast of Consumer Price Index (**CPI**). Finally, they would calculate a company-wide real input price inflation forecast. At PR19 however, Ofwat decided to adopt a novel and complicated approach that refers to Europe Economics' assessment criteria as described above.[275]

348. There are several issues with Europe Economics' assessment criteria, as set out in the report written by John Earwaker. Firstly, whether or not changes in input prices are volatile is irrelevant as long as it can be established that input prices increase faster or slower than CPIH and can be expected to have a material impact on expenditure. Regulators still need to make an allowance for input price changes that are predictable. Secondly, Europe Economics' criteria on management control is not appropriate. It would be difficult to envisage how identifiable input price increases or reductions could not impact a water company's expenditure over a five-year period.[276]

349. On behalf of Ofwat, Europe Economics concluded in favour of a potential allowance for both labour and energy, depending on whether Ofwat places reliance on Office of Budgetary Responsibility (**OBR**) forecasts for labour, the Department for Business Energy and Industrial Strategy's (**BEIS**) forecasts for energy and takes into account pre-2010 price data for energy.[277] Energy prices were found to have had a significant historical wedge over CPIH over various time periods, a forecast real terms increase over the price control of 0.7% per annum, and to contain a material element of costs which are outside the control of company management.[278]

350. Notwithstanding the advice of its own consultant, Ofwat concluded that energy costs should not be accounted for in PR19. Ofwat's primary stated reasons for this are:

- mixed evidence of a historical wedge between energy prices and CPIH;
- the fact that energy costs are partially within management control; and
- there is uncertainty regarding future forecasts of energy prices.[279]

273 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 187.*
274 *EE19, SOC396, pp. 19-23.*
275 *A Review of Ofwat's PR19 FD Approach to Estimating Frontier Shift, February 2020, SOC410, p. 9.*
276 *FE Report, SOC054, pg10-11*
277 *EE19, SOC396, pp. 40, 36, 39.*
278 *EE19, SOC396, p. 36, 39.*
279 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, pp. 196-197.*

351. Ofwat also concluded not to include an RPE for chemicals costs based on the same Europe Economics report. Europe Economics did not recommend an RPE for these costs as it did not consider there to be significant likelihood that the value of the wedge between the input price and CPIH will differ substantially from zero over the period of the price control[280]. This was based on an assessment of the ONS "Chemicals and Chemical Products" Producer Price Inflation (**PPI**) which showed a strong correlation with the CPIH index and therefore no wedge to be reflected in an RPE. Europe Economics did recognise that chemicals passed the other two assessment criteria of CPIH not adequately capturing chemicals costs and water companies having little management control over chemicals costs[281]

352. Despite arguments that the chemicals price index used in the Europe Economics analysis did not adequately capture the changes in cost of the chemicals that water companies are most reliant on, Ofwat rejected company representations and did not include an RPE for chemicals costs. Ofwat rejected this argument based on the fact that an alternative index was not suggested in the representation. Ofwat also concluded that the World Bank commodities price index also considered by Europe Economics implied a negative real price effect. Ofwat caveated its analysis by acknowledging that the World Bank index only captures a small number of specific chemicals.[282]

5.5.3 Our preferred approach to Energy RPEs

353. We consider that in line with Europe Economics' assessment, energy costs do have several clear features which justify an RPE. We set out the basis for that approach in the following sections:

- historical precedent for setting RPEs for energy in price controls (see Section 5.5.3.1);
- Ofwat's approach does not allow for the recovery of efficient costs (see Section 5.5.3.2);
- Energy prices are a material component of Totex (see Section 5.5.3.3); and
- Ofwat overestimates the ability for management teams to achieve efficiencies across their full energy cost base (see Section 5.5.3.4).

5.5.3.1 Historical precedent on setting RPEs for energy in regulatory decisions

354. As detailed in Table 15 below RPEs have been included to account for various predicted real cost increases in previous price controls. In both the Bristol Water PR09 and PR14 Decisions, the CC/CMA recognised the need for some type of mechanism to account for energy costs to be included in the regulatory settlement (see Table 15 below). Specific RPEs for energy are less common in the electricity and gas sector, reflecting the fact that energy network companies consume significantly less electricity than water companies and are therefore less exposed to changes in its price. This is due to the energy intensive nature of transporting water around a network, making allowances for energy costs a more important issue in the water sector.

Table 15: Use of RPEs in past price controls

Price control	Recognition of RPE for energy
Water: PR14	Ofwat did not include any RPEs[283] An implicit allowance was made in the econometric models.
Water: PR09	11 companies received a specific increase in costs for energy in recognition of the fact energy prices were increasing and companies were already procuring effectively.[284]
Bristol PR14 appeal	CMA assumed RPE factors of RPI + 0.6% for a range of categories.[285]
Bristol PR09 appeal	The CMA included an uplift for power costs for Bristol Water at prices above the current electricity prices.[286]
CC NIE RP5	The CC concluded in favour of including RPE factors that reflected the increased costs of distributing electricity and electrical equipment[287]

280 *EE19, SOC396, p. 42.*
281 *BP19 (ed. 09.18), SOC001, p. 192-193.*
282 *BP19 (ed. 09.18), SOC001, p. 198-199.*
283 *Ofwat Setting Price Controls for 2015-20: Draft price control determination notice: technical appendix A3 – wholesale water and wastewater, "**Ofwat DD14: technical appendix A3**", August 2014, SOC172, p. 93.*
284 *Future water and sewerage charges 2010-15: Final Determinations, SOC295, p. 100.*
285 *Bristol Water PR14 CMA Decision, SOC336, p. 148.*
286 *Bristol Water PR09 CMA Decision, SOC296, p. 59.*
287 *Competition Commission decision, Northern Ireland Electricity Ltd RP5, 2014, Appendix 11.1, "**CCRP5**", SOC307, p. 5.*

Price control	Recognition of RPE for energy
Electricity: PC15	The NI regulator concluded in favour of including power costs in its RPE288

Source: Various price control decisions as referenced

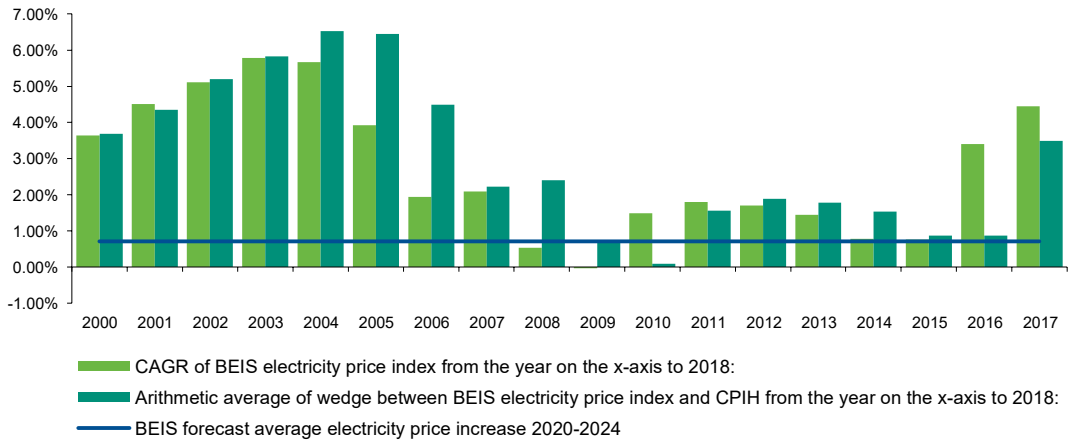
5.5.3.2 Ofwat's approach does not allow recovery of efficient costs

355. Evidence of historical costs and forecasts presented by BEIS suggest there is a material difference between energy costs and CPIH across a range of time periods.[289] We consider electricity prices in this analysis as a proxy for overall energy costs, given that a significant proportion of our energy purchases are electricity.[290]

356. Ofwat states that there is mixed evidence of a historical wedge, contingent on the period of analysis chosen.[291] However, observed historical prices presented by the BEIS industrial energy price index for electricity[292] display consistently positive Compound Annual Growth Rates (**CAGR**) relative to CPIH for historical intervals between various past years and 2018 (see Figure 25 below).

357. Using price changes observed in time intervals closing in 2018 ensures the most relevant data for making determinations about future price effects is used. Taking an arbitrary historical period can misrepresent the likelihood of future changes. This is because the most up to date figures incorporate the effect of recent policy decisions, changes in the UK generation mix and global commodity prices which impact electricity costs. Figures from further in the past will not reflect these fundamentals, meaning they have less bearing on future costs. Taking the most recent years data (2018) as the end point of any interval to be analysed means that figures from further in the past have to be taken in the context of more long term observed price changes, reducing the potential impact of historic volatility.

Figure 25: BEIS data – industrial electricity price index



[293]Source: BEIS fuel price indices, 2019, Table 3.3.1, SOC375.

358. This data shows that, with the exception of 2009, industrial electricity prices have grown in real terms over the period between any previous year and the most recent price level in 2018. Using an arithmetic average of year on year changes, a less desirable approach due to the effect of compounding sequential percentage increases, also supports this conclusion (as demonstrated by Figure 25 above). For example, the CAGR between 2000-2018 was 3.64% and arithmetic average 3.68%, as shown in the left most bars. The next bars to the right show the changes between 2001-2018, and so on.

359. Ofwat's 'mixed evidence' for a historical wedge is drawn from the Europe Economics report, which compares changes in the same BEIS industrial electricity price index to changes in CPIH on a quarterly basis from 2006Q1 to 2018Q1.[294] However, this evidence is 'mixed' only to the extent that one single time period mentioned by

*288 UREGNI Water & Sewerage Services Price Control 2015-2021 Final determination "**UREGNI4**", SOC053, p. 77.*
289 Defra – Fuel price indices for the industrial sector, 19 December 2019, SOC398, Table 3.3.1.
290 For instance, Economics Insight report highlights that 99.1% of our energy costs in 2016/17 were electricity costs. Appendix 7.1 to BP19 (ed. 09.18), SOC053, Figure 12 on p. 25.
291 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 196.
292 Defra – Fuel price indices for the industrial sector, SOC398, 19 December 2019, Table 3.3.1.
293 Defra – Fuel price indices for the industrial sector, SOC398, 19 December 2019, Table 3.3.1.
294 EE19, SOC396, p. 34.

Europe Economics does not reveal a statistically significant wedge (2010-2018), whereas all other time periods mentioned do provide supporting evidence of a wedge between electricity prices and CPIH.

360. For instance, Europe Economics find evidence of a significant positive wedge of 5.2% over the full time period considered (2006-2018).[295] This includes large volatility in prices and associated positive wedges pre-2010. Excluding this volatility, Europe Economics does not find a statistically significant wedge from 2010-2018. However, analysing figures from 2011 and 2012 onwards, Europe Economics does then find evidence of a statistically significant wedge.[296] We also note the increasing growth and a large wedge in the most recent years' data, with a 4.25% wedge between the industrial electricity price index and CPIH between 2017 and 2018.[297]

361. Europe Economics therefore recommended that Ofwat's decision on an energy RPE should depend on the weight placed on pre-2010 data (as shown in Figure 25 above), when considering evidence of a historical wedge. In any event, even when only the data post-2010 is considered, Figure 25 still shows positive real growth in electricity prices which would still justify the inclusion of an RPE adjustment. We therefore do not agree with this reasoning and would request that the CMA considers this point further during the redetermination.

362. BEIS also forecasts a real terms price increase in electricity costs over AMP7.[298] However, Ofwat also chooses not to account for BEIS' forecasts of future real increases in electricity prices throughout PR19, citing volatility and previous forecasting errors. In doing so, Ofwat is implicitly assuming that energy prices will vary in line with CPIH over AMP7. Given the historical changes in electricity prices observed, it seems unlikely that allowances made under this assumption will be cost reflective over the price control period. We would expect this trend to continue if the policy costs associated with (i) the further decarbonisation of electricity generation and (ii) the additional costs associated with net zero of decarbonising heat and transport which together are both likely to increase costs significantly over AMP7.

363. BEIS' price forecasts predict a real terms price increase of 0.7% on average for energy from 2020-2025.[299] Whilst we recognise that BEIS' forecasts have been wrong in the past, a 0.7% average real terms increase as the reference case actually appears conservative when compared to the observed changes in electricity prices over recent years (see Figure 25 above). BEIS forecasts also represent the most robust price predictions available in the sector and are likely to have continued to improve with each iteration of the energy and emissions projections dataset. We consider that it is hard to justify using a lower implicit estimate of energy prices increases over AMP7 (**CPIH**) in this context without an adequate justification.

5.5.3.3 Energy prices are a material component of Totex

364. Another reason Ofwat proffers for excluding energy costs as an RPE is that the potential wedge for energy over the PR19 period is much smaller than for labour costs. However, adding the forecast real terms price increase into the PR19 financial models does have a material impact on our total allowance, as shown in Table 16 below. Note that the PR19 impact does not vary proportionally to the average percentage increase in prices. This is due to the mechanics of the price control model and the fact that arithmetic averages mask some inter-annual variability.

Table 16: Impact of forecast real terms price increase on the PR19 financial models and allowance for NWL

BEIS Forecast scenario[300]	Arithmetic average of annual % increase in electricity prices (2020-2025)	Impact on PR19 final allowance for Northumbrian water
Reference Scenario	1.38%	£6.5m
High fossil fuel prices	1.79%	£11.4m
Low fossil fuel prices	0.55%	£1.3m
High economic growth	1.24%	£6m
Low economic growth	1.3%	£6.4m

Source: BEIS fuel price forecasts, 2018, Annex M, SOC371; Ofwat FD19 Feeder model 4 Ofwat Final Determination Cost Assessment Models WWW4 FD and WW4 FD, SOC193 and SOC192.

295 EE19, SOC396, p. 35.
296 EE19, SOC396, p. 35.
297 Defra – Fuel price indices for the industrial sector, 19 December 2019, SOC398, Table 3.3.1; Office for National Statistics – CPIH data, 2019.
*298 Defra – BEIS 2018 Updated Energy & Emissions Projections: Annex M – Growth assumptions and prices, "**BEIS Fuel Price Forecasts – Annex M**", 2018, SOC371.*
299 BEIS Fuel Price Forecasts – Annex M, SOC371.
300 BEIS Fuel Price Forecasts – Annex M, SOC371.

365. The analysis in Table 16 is based on the fact that energy costs account for 6% of our Totex under PR19.[301] This is a significant cost component which should be captured in the price control on a cost reflective basis. Our energy costs are also lower than the industry average of 9% of Totex. Our energy costs form a lower proportion of our Totex because of our larger annual income from energy generation from bioresources. Energy costs are calculated on a net basis, meaning the sale of energy reduces our cost.

366. Ofwat uses the fact that water companies can choose to sell energy as an argument against allowing an RPE for energy.[302] However, this cannot be justified as a rationale given the fact that the figures for expenditure on energy are already calculated on a net basis. For example, Europe Economics uses the industry average proportion of Totex for energy costs of 9% for its analysis. However, if the revenue arising from surplus electricity generation by water companies is taken out of the energy share in Totex, this figure increases to 9.4%.[303]

367. Despite 6% already being a significant component of Totex, it is important to also consider the trend in future prices and water company expenditure on energy in the context of the Net Zero target.[304] The current state of relative policy uncertainty surrounding the Net Zero target suggests the potential for future energy costs to vary more than previously forecast. It is also highly likely that energy costs will tend to vary towards the upside, given the large scale investment in new energy infrastructure required.

368. The costs of investing in renewable energy have previously been added onto energy costs faced by the end consumer. If this approach is pursued by policy-makers under new and additional policy measures to support the Net Zero target, then this will increase our costs to a greater extent than already forecast by BEIS. This is also acknowledged in the recent strategic review of charges from the Water Industry Commission Scotland (**WICS**)[305]. In the document, WICS recognise that in order to achieve net zero emission by 2040, annual charges in the sector will have to increase by 1-2% above CPI.

5.5.3.4 Ofwat overestimates the ability for management teams to achieve efficiencies across their full energy cost base

369. Ofwat seeks to justify its exclusion of an energy cost RPE on the basis that management teams in water companies can take some actions to influence their energy costs. However, we consider that these are already reflected in the productivity assumptions whereby prudent management action will reduce energy requirements over time. Ofwat cites a range of mechanisms for management to reduce energy costs in its FD19.[306] However, these approaches have limited potential in reality to reduce energy costs quickly and on a continuous basis, particularly when viewed in comparison with Ofwat's efficiency challenge as applied across other cost components in PR19.

370. It is also important to recognise that management teams have had the regulatory incentive to minimise their energy costs for many years. Scope for viable reductions in energy consumption which don't require significant or complex capital investments, or negotiating lower energy prices with suppliers, are likely to have already been exploited by water companies throughout the previous price controls. NWL has already made significant efficiencies savings in our net energy usage through sale of electricity from bioresources (see above). There are limited opportunities for further savings to be made. The frontier shift efficiency improvement already includes efficiency improvement to address this. Underlying changes in costs still need to be addressed.

371. Ofwat cites agreeing fixed tariffs with energy suppliers and accessing payment arrangements as one approach management teams could use to control costs.[307] However, although this could control price variations on a short-term basis, any benefit arising from avoiding the risk of price increases will be priced into the tariff offered by the energy supplier. Ofwat and Europe Economics accept the fact that the water companies are effective price takers in the energy supply market and they also recognise that these contracts will generally only be available for 1-2 years, rather than the whole price control period.[308] This would expose water companies to an increase in costs midway through the price control period.

301 Data Tables for BP19 (ed. 04.19), March 2019, SOC099, App6 table.
302 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 197.
303 EE19, SOC396, p. 38.
304 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 197.
305 Water Industry Commission Scotland, Strategic Review of Charges 2021-27 Final decision paper, SOC051, p.2.
306 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 196.
307 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 196.
308 BP19 (ed. 09.18), SOC001, p. 196.

372. At NWL we manage our exposure to electricity price changes through our Electricity Risk Management Strategy. This sets out guidelines for managing price volatility and budgetary risk in our electricity procurement and is how we ensure that any opportunity to minimize our electricity costs have been fully exploited.

373. Another potential approach for management teams to reduce energy prices suggested by Ofwat is taking actions to adapt the timings of their energy consumption.[309] According to Ofwat, water companies can theoretically reduce costs by consuming energy at times when electricity prices are lower, or by taking advantage of regulatory mechanisms such as the 'triad' calculation of transmission network charges. We consider that while this may allow companies to reduce their energy costs on the margin, the scope for ongoing efficiency is in fact limited. This is the case for two reasons:

- moving electricity consumption out of peak times can be economically rewarded for the contribution to reduced stress on the electricity networks during peak periods. We have already implemented and will continue to update systems used to respond to network costs across our business (triad, red zone and capacity market avoidance). We have also provided demand side response (**DSR**) services at both water and wastewater sites, in order to generate revenue by providing services to the electricity networks. However, the networks are a fixed cost shared between electricity consumers and a large and growing number of consumers are already taking approaches to reduce their usage during peak periods. This reduces our scope to achieve savings in energy bills and revenues for providing DSR services have continued to reduce. This point is also recognised by Europe Economics;[310] and
- adjusting consumption relies on asset managers or equipment operators having flexible control over when their equipment consumes electricity. For the water companies, as large electricity consumers with operations over a significant geographical area, installing the infrastructure to monitor and adjust electricity consumption can itself be a large capital investment. Furthermore, the provision of water as an essential service means that even with correct infrastructure in place, companies do not have full freedom to adjust their electricity consumption, particularly if they are to continue to meet the high levels of service customers require.

374. Ofwat also refers to large, capital heavy investment projects as ways to reduce net electricity demand.[311] This includes energy efficiency improvements and developing actual energy generation assets to directly supply operations. NWL has already taken significant action on this front where only 6% of our Totex costs are for energy compared to an industry average of 9% due to our own electricity generation. We therefore have much more limited opportunities in this area than other companies and any further action will require significant investments with lead times of several years. We therefore do not think we can avoid the cost pressures imposed on us by changes in the energy price through these means.

375. Energy efficiency is also unlikely to be able to reduce electricity costs significantly for water companies. Energy efficiency typically refers to improving the thermal performance of building stock. However, as mentioned above, consumption of natural gas (the fuel most commonly used for heating buildings) is <1% of our energy costs. The vast majority of our energy costs actually come from the consumption of electricity by equipment which is integral to our typical business function (e.g. pumps or filtration devices). The energy efficiency of this equipment is limited by its manufactured design and is more difficult or impossible to improve, particularly in short timescales or on an ongoing basis.

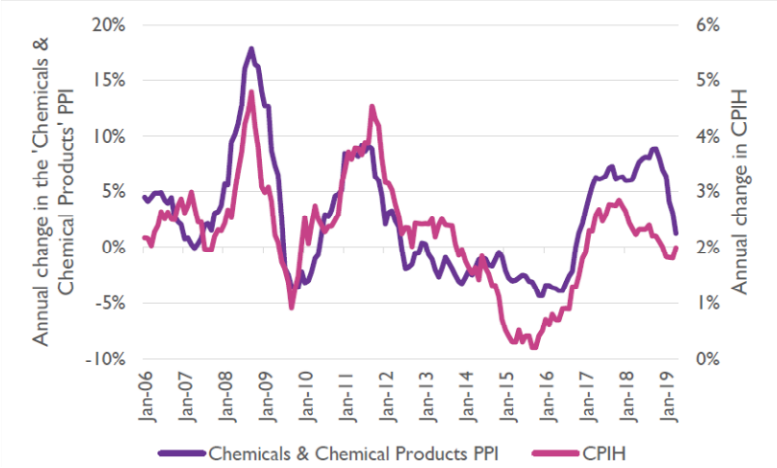
5.5.4 Our preferred approach to RPEs for chemicals

376. We would also request that the CMA revisits Ofwat's decision not to provide an RPE adjustment for chemicals costs. An RPE should be included to allow the recovery of efficient costs for our key chemical inputs.

377. Ofwat's decision is heavily based on Europe Economics analysis of the ONS PPI data series on Chemicals and Chemical Products. Figure 26 below shows the relationship between this price index and CPIH inflation.

309 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 196.*
310 *EE19, SOC396, p. 38.*
311 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 196.*

Figure 26: Growth rates of Chemicals and Chemical Products PPI and CPIH



Source: EE19, p. 42, SOC396.

378. This chart appears to show a strong correlation between the inflation of the price of chemicals and CPIH inflation but the index chosen is not representative of the basket of chemical products that NWL must purchase to operate its business. For NWL, most of our chemical expenditure is focused on the following chemicals – aluminium and ferric sulphate, phosphoric acid, lime and polyelectrolyte. The ONS PPI index on the other hand includes a wide array of chemicals, most of which have little relevance to the chemicals purchased by NWL.

379. This is demonstrated in the extract of the NACE II[312] classification of chemicals and chemical products shown in Figure 27 below. We would propose that it would be more appropriate to assess an index created based on our actual chemicals mix rather than to use the inappropriate ONS PPI index.

Figure 27: Detailed Structure of NACE Rev. 2 (Chemicals and chemical products)

20			Manufacture of chemicals and chemical products	
	20.1		Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms	
		20.11	Manufacture of industrial gases	2011*
		20.12	Manufacture of dyes and pigments	2011*
		20.13	Manufacture of other inorganic basic chemicals	2011*
		20.14	Manufacture of other organic basic chemicals	2011*
		20.15	Manufacture of fertilisers and nitrogen compounds	2012
		20.16	Manufacture of plastics in primary forms	2013*
		20.17	Manufacture of synthetic rubber in primary forms	2013*
	20.2		Manufacture of pesticides and other agrochemical products	
		20.20	Manufacture of pesticides and other agrochemical products	2021
	20.3		Manufacture of paints, varnishes and similar coatings, printing ink and mastics	
		20.30	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	2022
	20.4		Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	
		20.41	Manufacture of soap and detergents, cleaning and polishing preparations	2023*
		20.42	Manufacture of perfumes and toilet preparations	2023*

Source: Eurostat, NACE Rev. 2: Statistical classification of economic activities in the European Community", 2008, SOC505, p.65.

380. In addition, the ONS PPI index that Ofwat bases its analysis on is only representative of locally produced chemicals, whereas most of the key chemicals used by our company are imported, such as sulphates and phosphoric acid. Most of these procurement decisions are not within our control. For example, the source of the main raw material required for ferric sulphate in the UK closed its business after a major fire which has led us to procure this chemical as a manufactured product rather than a by-product. By importing chemicals, our business is exposed to exchange rate fluctuations as well as overseas demand fluctuations, which are not accounted for in the ONS PPI index.

381. We have analysed our own procurement data to assess the actual cost pressure that we have faced on the key chemicals that we purchase. Table 17 below shows the top 5 chemicals purchased by NWL to run its business.

312 *European Classification of Economic Activity Revision 2 (**NACE II**).*

These 5 chemicals account for 63% of our total spend on chemicals and therefore we consider that the trends in their prices are representative of the chemicals that we purchase.

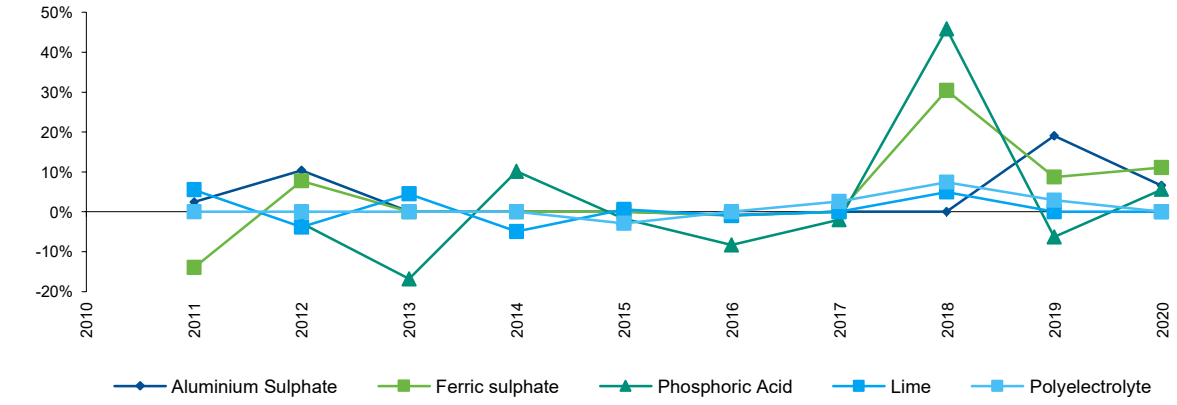
Table 17: Top 5 chemicals purchased by NWL

Chemical	% of total chemical spend (2014-2019)
Aluminium sulphate	8%
Ferric sulphate	20%
Phosphoric acid	8%
Lime	5%
Polyelectrolyte	22%
Top 5 chemicals	63%

Source: NWL analysis of its procurement data.

382. In total our expenditure on chemicals represents c.4% of our Totex expenditure in PR14. All our chemicals are imported except for lime. In this sense, only the prices of one out of the five main chemicals can be reasonably compared to the ONS PPI index. For our top 5 chemicals the year on year price changes have been volatile, particularly in more recent years. This is shown in Figure 28 below. The price spikes in aluminium sulphate and ferric sulphate are mainly driven by the sterling weakening and increased demand for fertilisers, where sulphate and phosphoric acid are key ingredients. These factors are beyond our management's control.

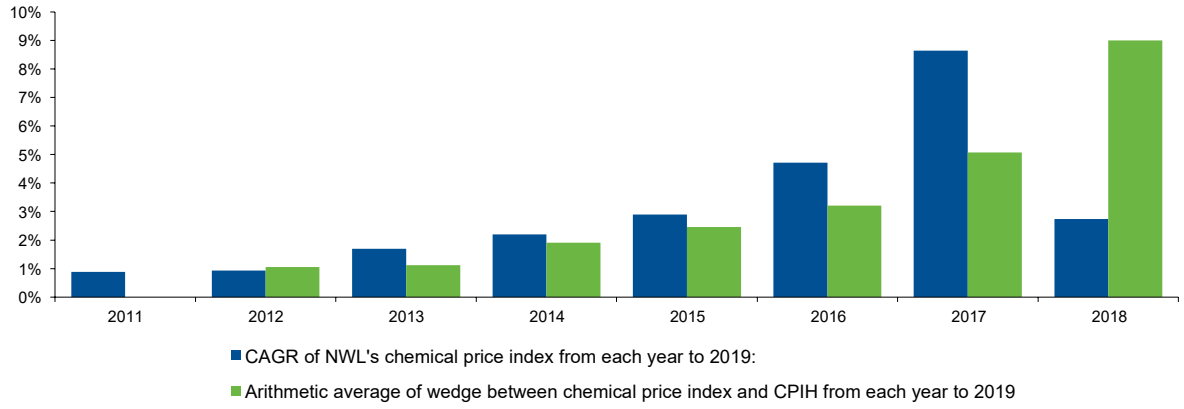
Figure 28: Annual price changes (nominal) for our top 5 chemicals (2010-2020)



Source: NWL analysis of its procurement data.

383. From these price changes for our top 5 chemicals we constructed a real price index covering all 5 chemicals. We have analysed the average growth rates in the prices for this compound price index over a range of time spans which all end in 2019 as we consider the more recent data to more applicable to future potential price changes. The different average annual growth rates (calculated on both an arithmetic and a compound annual basis) are set out in Figure 29 below.

Figure 29: Average real growth rates in the price of our top 5 chemicals



Source: NWL analysis of its procurement data.

384. This chart shows that, regardless of which time period is considered, there is a positive wedge between CPIH and the prices we have paid for our top 5 chemicals. For example, the compound annual growth rate in our chemical price index from 2016 to 2019 is 4.71% and it is 8.63% from 2017 to 2019. The arithmetic average of the wedge between our chemical price index and CPIH is 3.21% between 2016 and 2019 and 9% between 2018 and 2019. The average growth rates are higher when considering more recent data and lower for the longer-term data. However, based on the current supply chain situation, we consider that the price trends including the more recent years are likely to be more representative of the situation in the AMP7 period.

385. EI also gathered evidence on underlying cost pressures for Northumbrian Water and developed forecasts of price changes which are specific to our business inputs. EI achieved this for chemicals by creating a historical index capturing the underlying inflation for each specific chemical used by our business. EI then developed econometric forecasts to forecast changes in the prices of these chemicals over PR19, predicting a 3.46% average nominal annual growth in chemicals costs over PR19 for our company.[313] Assuming 2% CPI inflation, this represents a CPIH wedge of 1.46%.

386. This wedge of 1.46% is consistent with our more recent analysis of our actual spend over the medium term. We therefore think that the analysis behind our BP19 remains robust and should be used to underpin an RPE adjustment for chemicals based on an assumed wedge of 1.46%.

5.5.5 Considerations for the CMA

387. Overall, we would request that the CMA reconsiders Ofwat's approaches to the energy and chemicals RPEs, which we consider to be flawed, as identified in this section.

388. Ofwat has failed to reflect the fundamentals of energy costs in FD19, despite energy costs having several clear features which justify an RPE:

- historical electricity costs have consistently increased more than CPIH with a range of different time horizons stretching back from the most recent data. Prices have also recently increased their rate of growth;
- the best available forecasts predict a continued real terms increase in energy prices, with a material implication for NWL if not included in the CMA's redetermination;
- cost pressures from electricity costs (99.1% of energy costs for NWL) cannot be fully avoided by prudent management. There are limitations to each approach cited by Ofwat, particularly given the timescales involved and we already have a low share of energy costs compared to the industry average making further mitigating action more difficult leaving NWL exposed to the forecast price increases; and
- Net Zero represents a significant source of uncertainty on future energy costs in the sector. Making progress towards the target at the company or economy wide level is likely to leave us further exposed to an increase in energy costs.

389. Similarly, we would request the CMA to reconsider in its redetermination rectifying Ofwat's failure to provide an RPE for chemicals costs by:

- basing its analysis on a price index that is not representative of the chemicals required by NWL and the cost pressures on these items; and
- not properly considering analysis in our BP19 on the RPE cost pressures that we can likely expect in this area. This analysis combined with additional analysis in this section provides strong evidence for a wedge between chemicals price increases and CPIH inflation.

390. Therefore, we would ask the CMA to consider in its redetermination allowing us to recover our efficient costs in these two areas. We propose that energy and chemicals are incorporated as an RPE adjustment in the CMA's redetermination. The RPE for energy should be set with reference to the BEIS industrial electricity price index and we suggest the RPE for chemicals should be set at 1.46% as proposed in our BP19 and supported by historical analysis of our spend on key chemicals.

391. The impact of these adjustments to Northumbrian Water's Totex allowance is around £6.5m for energy and around £6m for chemicals over AMP7.

313 *Appendix 7.1 to BP19 (ed. 09.18), Economic Insight – PR19 Wholesale Real Price Effects Analysis and Evidence, February 2018, SOC053, p. 42.*

5.6 OFWAT'S APPROACH TO SETTING ALLOWANCES FOR GROWTH IS NOT ROBUST AND FAILS TO ALLOW EFFICIENT GROWTH EXPENDITURE

5.6.1 Overview of the issue

392. This section addresses Ofwat's approach to estimating our growth enhancement allowances. Growth enhancement expenditure relates to costs driven by population growth, which arise from expanding and upgrading the network due to new properties being connected (see Section 5.6.2 below).

393. At FD19 Ofwat made a downward adjustment of around £26m to our base cost allowance. Ofwat has claimed that the base cost econometric models overfund companies that project lower growth forecasts than the historic average for the sector. However, we consider that this ex-post modelling adjustment is inappropriate given the existing base cost models are robust and have good statistical performance, which implies that the allowances are already efficient.

394. In the following sections we set out:

- Ofwat's approach to estimating our growth enhancement allowance (see Section 5.6.3);
- our preferred approach to dealing with the impact of growth (see Section 5.6.4); and
- our requested remedy from the CMA (see Section 5.6.5).

5.6.2 The role of growth expenditure

395. As noted above growth expenditure covers the capital expenditure relating to expanding and upgrading the network due to population growth. This includes expenditure for building new or upgrading existing local distribution assets to provide water service to new customers, expanding the sewer network to serve new customers and expanding sewage treatment works to meet or offset higher demands from new and existing customers.

396. Ofwat has also argued that the costs related to reducing flooding risk to properties can be attributed to the growing population whereas it is our view that these increased costs are due to climate change.[314] The enhancement expenditure that Ofwat considers to be related to population growth are summarised in Table 18 and Table 19.

Table 18: Wholesale water activities related to population growth

Activity	Description
New developments	Expenditure for local distribution assets to provide a water service to new customers.
New connections element of new developments	Expenditure on local network assets associated with new developments in water services.

Source: Ofwat FD19: securing cost efficiency technical appendix, SOC417, Table 2 of p.15.

Table 19: Wholesale wastewater activities related to population growth

Activity	Description
New development and growth	Expenditure for the provision of new development and growth in sewerage services.
Growth at sewage treatment works	Expenditure to meet or offset changes in demand from new and existing customers at sewage treatment works.
Reduce flooding risk for properties	Expenditure for enhancing the sewerage system to reduce the risk to properties and external areas of flooding from sewers.
Transferred private sewers and pumping stations	Expenditure on assets falling within the scope of the statutory transfer of private sewers and lateral drains.

Source: Ofwat's FD19.[315]

314 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 15.*
315 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, Table 3 of p. 15.*

5.6.3 Ofwat's approach to setting growth allowances

397. Ofwat revised its approach to assessing growth expenditure at the IAP, DD and FD stage of the PR19 process. At the IAP19 stage, Ofwat assessed growth expenditure for water using a self-contained bottom-up unit cost model based on an average of historical and forecast industry unit costs. For wastewater, Ofwat used two self-contained econometric models, one based on historical data and the other based on forecast data.

398. At the DD stage, Ofwat no longer assessed growth enhancement costs using separate enhancement models and instead included growth enhancement expenditure in its base cost econometric models (**Botex plus**).

399. Furthermore, Ofwat has taken different approaches to including growth expenditure in the water and wastewater models. In the water base expenditure models, growth is modelled unsmoothed (i.e. annual expenditure values are used in the model). In the wastewater base expenditure models, Ofwat takes the average growth expenditure over the historical period (2011-12 to 2018-19) and replaces the unsmoothed value with this period average for the purpose of estimating its econometric models. Ofwat has done this because growth expenditure is more lumpy in sewerage models than in water.

400. Ofwat considers that including growth expenditure in modelled costs is appropriate because "*growth related expenditure is routine – companies have incurred it in the past and will incur it in the future, and it can be explained by similar cost drivers to base costs.*"[316] These drivers refer to the scale drivers within the model – namely number of connected properties and length of mains within the water model, and sewer length in the wastewater model.

401. At FD19 Ofwat stated that the scale drivers in the base cost models may nonetheless not adequately account for growth expenditure.[317] However, instead of incorporating appropriate growth-related drivers into the model, Ofwat made an unprecedented ex-post modelling adjustment to base cost allowances depending on whether the company operates in an area with a relatively high or low forecast of population growth. These ex-post modelling adjustments were not consulted on nor were the companies given any opportunity to comment on the proposals.

402. Specifically, it made upward adjustments for companies with high expected growth in 2020-25, and downward adjustments for companies with low expected growth in 2020-25 relative to the historical sector average. For companies that are exposed to downward adjustments, Ofwat reduces the adjustment by fifty percent.

403. Table 20 reports the size of the adjustments applied to each company. This table shows that a total of c.£26m was removed from our water and wastewater base allowance.

Table 20: FD19 Unit cost adjustment for growth

Company	Wholesale water adjustment (£m)	Wholesale wastewater adjustment (£m)
Anglian Water	11.5	29.06
Dŵr Cymru	-5.14	-11.17
Hafren Dyfrdwy	-0.7	-0.03
Northumbrian Water	-5.03	-21.39
Severn Trent Water	-6.93	-12.7
South West Water	-0.19	-0.24
Southern Water	5.57	25.42
Thames Water	27.7	81.07
United Utilities	-16.83	-37.68
Wessex Water	1.89	9.97
Yorkshire Water	-10.69	-24
Affinity Water	9.29	
Bristol Water	3.6	
Portsmouth Water	-0.4	
South East Water	7.05	
South Staffs Water	-2.39	

316 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 20.*
317 *Ibid.*

Company	Wholesale water adjustment (£m)	Wholesale wastewater adjustment (£m)
SES Water	1.66	

Source: Ofwat's FD19.[318]

5.6.4 Our preferred approach to setting allowances for growth

404. We consider that the ex-post modelling adjustment to account for differences in forecasts of high and low growth is inappropriate and therefore should be reversed. Our rationale is set out in the following sections:

- the use of an ex-post adjustment undermines the use of econometric models; and
- Ofwat's base models accurately forecast our anticipated growth.

5.6.4.1 Ofwat's ex-post modelling adjustment undermines the use of econometric models in the first place

405. Ofwat's approach of applying an arbitrary adjustment to base costs undermines the use of econometric models in predicting efficient allowances. Ofwat uses econometric models as a top-down approach to arrive at the efficient cost for the sector. This approach is considered to be a robust way of benchmarking companies in the sector and avoids the cost allocation issue amongst companies. Making an arbitrary ex-post adjustment to the modelled allowance defeats the purpose of these models and Ofwat risks setting an allowance that is unachievable by companies that have been penalised with a downward adjustment. Therefore, the best approach in this scenario is to remove the post-modelling adjustment as there is no evidence that the model currently overfunds companies with slower growth.

5.6.4.2 Ofwat's base models accurately forecast our anticipated growth

406. Given that Ofwat's preferred approach is to use econometric models in its cost assessment process, an approach without any ex-post modelling adjustment is appropriate. In addition, Ofwat's econometric models[319] are robust and appear to be a good predictor of Northumbrian Water's allowance in AMP7 as described below.

407. Overall, Ofwat's base cost models appear to be fit-for-purpose and pass Ofwat's model selection criteria on the following grounds:

- **Engineering and economic rationale:** To a large extent, the scale variables in each model – number of connected properties, length of mains, sewer length are reasonable proxies for growth experienced by companies historically. Where future growth is expected to be in line with what is observed historically the model will capture this and the forecasts of relevant cost drivers will therefore fund efficient growth. In addition, the models also produce coefficient estimates with the correct signs and reasonable magnitudes which imply that the models produce intuitive results;
- **Confidence in the estimated coefficients:** Ofwat's models also appear to perform well from a statistical standpoint. For instance, most of the coefficient estimates are statistically significant, which imply that there is high confidence that the coefficients capture the impact of the cost drivers on the dependent variable (i.e. base costs) well; and
- **Model statistical robustness:** One of the main criteria for model robustness is how well the models fit the underlying data which can be measured using the R-squared value of each model. As shown in Table 7 and Table 8 in Section 5.3.2, Ofwat's wholesale models appear to perform well on this basis. Its water models have R-squared values that range between 0.92 and 0.98, which effectively mean the models explain over 90% of the variation in the data. Similarly, the R-squared values for wastewater models are high, ranging from 0.79 to 0.93. In addition, the models pass the Ramsey Regression Equation Specification Error Test (**RESET**). The RESET tests whether or not a linear regression model is misspecified or if there are missing variables that have not been accounted for in the model. Table 21 below shows that all of Ofwat's models pass this test (p-values below 0.05 suggest that the models may be misspecified or that there are omitted variables from the model) which therefore suggest that the models are correctly specified.

318 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 21.*
319 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, Table A2.1 on p. 162 and Table A2.2 on p. 163.*

Table 21: Ramsey's RESET results for Ofwat's models

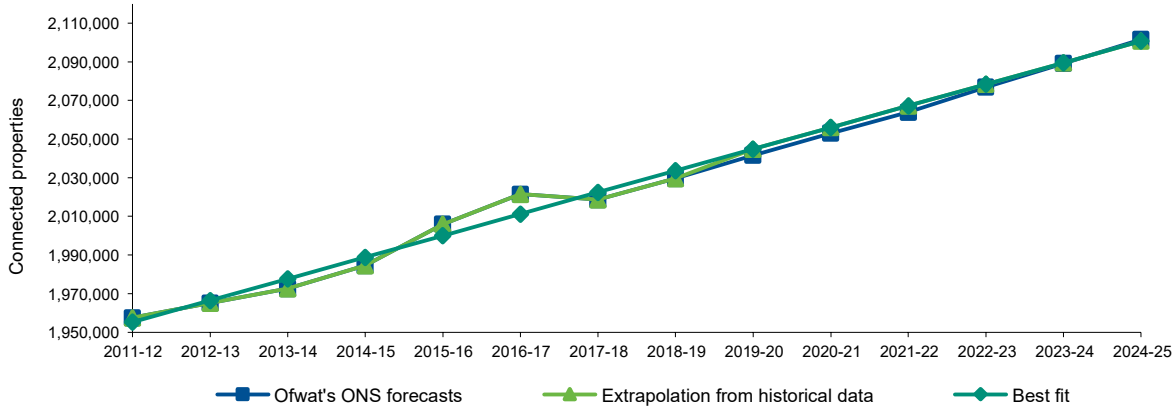
Water		Wastewater	
Model	RESET p-value	Model	RESET p-value
WRP1	0.542	SWC1	0.152
WRP2	0.159	SWC2	0.185
TWD	0.124	SWT1	0.461
WW1	0.229	SWT2	0.442
WW2	0.148	BR1	0.668
		BR2	0.166
		BRP1	0.198
		BRP2	0.311

Source: Northumbrian Water's analysis based on Ofwat's cost assessment models.

408. Growth in the number of connected properties in our operating areas is not forecast to be below historical levels. Figure 30 below shows that both Ofwat's forecast of our number of connected properties in AMP7 and an extrapolation from historical data suggest that growth rates in AMP7 remain relatively consistent with historical growth rates over the modelled period (i.e. 2011-12 to 2018-19).

409. Since the modelled coefficients represent the historic average spend per additional property connected, it is reasonable to assume that our average spend will remain relatively unchanged as we forecast similar growth trajectory as the past. Scale driver forecasts are increasing in line with our historical levels so the model would be expected to fund efficient expenditure for growth. Therefore, an ex-post adjustment to the modelled allowance is not required for NWL.

Figure 30: Northumbrian Water's historical and forecast number of connected properties to the water network



Source: Northumbrian Water's analysis based on Ofwat Final Determination Cost Assessment Model WW2 FD Calculation of Forecasts of Cost Drivers, 16 December 2019, SOC506.

410. Finally, the downward adjustment effectively adds an additional efficiency challenge beyond the current 4th and 3rd most efficient company efficiency challenge for water and wastewater base costs, which is not achievable and is not appropriate. Furthermore, given our strong performance historically in the wastewater sector, it should be awarded with higher allowance for making the effort to drive the efficiency benchmark rather than penalised with an arbitrary downward adjustment on base costs.

5.6.5 Proposed Remedy

411. Overall, our assessment of Ofwat's models suggests that they are fit-for-purpose and can adequately fund efficient growth in our operating areas. Therefore, an ex-post modelling adjustment to base costs is not required and should not have been applied for companies that experience slower growth. We request that the CMA reconsiders the application of the ex-post modelling adjustment and removes it from our settlement.

5.7 OFWAT HAS FAILED TO ALLOW EFFICIENT COSTS TO DELIVER THE WINEP SCHEMES

5.7.1 Overview of the issue

412. This section relates to Ofwat's approach to determining the cost allowances for works we are required to carry out pursuant to the WINEP.[320] In particular, we have concerns with what we consider to be the flaws in Ofwat's approach of applying a programme wide, forward looking efficiency challenge and in therefore double-counting the scope for future efficiency given WINEP expenditure is enhancement expenditure with allowances determined by reference to forecast costs which already include efficiency measures.

413. WINEP represents a set of actions agreed between NWL and the EA which we must deliver during AMP7 in order to meet our statutory environmental obligations. In doing so we aim to, amongst other environmental benefits:

- contribute to meeting Water Framework Directive (**WFD**) 'Good' status in our rivers by 2027; and
- prevent deterioration in status, together with other international regulatory drivers including the Urban Waste Water Treatment (**UWWT**) and Habitats Directives.[321]

414. In the following sections we set out:

- Ofwat's approach to determining WINEP cost allowances (see Section 5.7.2);
- our preferred approach to determining the WINEP cost allowances (see Section 5.7.3); and
- our requested remedy from the CMA (see Section 5.7.3).

5.7.2 Ofwat's approach to determining WINEP cost allowances

415. WINEP related expenditure is treated by Ofwat as enhancement spend rather than base expenditure. Ofwat acknowledges that enhancement costs are different from base costs when it comes to assessing an efficient level of costs and it therefore adopts a different approach:

"Unlike base costs, which are routine costs, enhancement costs are more irregular in nature, and could have many possible solutions to requirements, which are sometimes new. As a result, there is less opportunity to compare the cost of required enhancement solutions between companies. Due to this, our approach is different between the two."[322]

416. Ofwat's preferred method of assessment for enhancement costs is benchmarking analysis using comparative statistical modelling across companies. It notes, however, that some enhancement investment areas do not lend themselves to this type of analysis. In those cases, Ofwat undertakes either a 'shallow dive' or 'deep dive' analysis.[323] The three methods are summarised below:

- **Benchmarking analysis:** This is used for enhancement activities where most companies incur costs and where Ofwat identifies appropriate cost drivers. This involves Ofwat developing econometric or unit cost models based on forward-looking data from companies' business plans, except for the 'first-time sewage' model where some weight is placed on historical data;
- **Shallow dive:** Where costs have a low materiality (less than 0.5% of the company's water or wastewater wholesale Totex, and at Ofwat's discretion for investments close to this threshold) Ofwat carries out a shallow dive assessment, which is a lighter-touch investigation of the specific costs claimed; and
- **Deep dive:** Where costs have a higher materiality (more than 0.5% of relevant Totex, as described above) Ofwat carries out a deep dive assessment, which is a more detailed review of the evidence. It follows the same process

320 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 48.*
321 *Appendix 3.2 to BP19 (ed. 04.19): Enhancement Business Cases, SOC080, p. 5.*
322 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 53.*
323 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 49.*

used to assess cost adjustment claims. Where Ofwat considers a compelling case is presented, it will allow the expenditure in full.[324]

417. For WINEP, Ofwat implements a programme wide approach to determining cost allowances. This is because there are interactions between many of the different categories of cost and this approach takes into account any cost allocation differences in companies' proposals.[325]

418. Ofwat did not apply a company specific efficiency benchmark for WINEP costs.[326] Instead, having determined an efficient cost allowance, Ofwat then applied an additional, industry-wide efficiency challenge of 9.6% to its modelled costs. That is made up of an on-going catch-up element of 6.94% (the proportion by which the UQ company's requested costs are lower than Ofwat's modelled costs) as well as an expectation that companies will make a step-change in efficiency in the coming regulatory period of 2.6%.[327]

419. The result of Ofwat's approach is to further reduce our modelled cost allowance by £36 million, as illustrated in Table 22 below.

Table 22: FD19 cost allowance for Northumbrian Water's WINEP investment

BP19 (ed.08.19) (£m)	Ofwat Modelled Costs (£m)	Cost allowance after efficiency challenge (£m)
173.9	152.5	137.9

Source: Northumbrian Water's analysis based on Ofwat Final Determination Cost Assessment Model - Capex Enhancement Allowances Aggregator Feeder Model, 16 December 2019, SOC194.

5.7.3 Our preferred approach to determining WINEP cost allowances

420. We request that the CMA reconsider that Ofwat's approach which we consider is wrong in principle because:

- the application of a programme wide efficiency challenge is not appropriate; and
- the application of a frontier shift challenge on these costs is not appropriate.

5.7.3.1 A programme-wide catch-up efficiency challenge is not appropriate

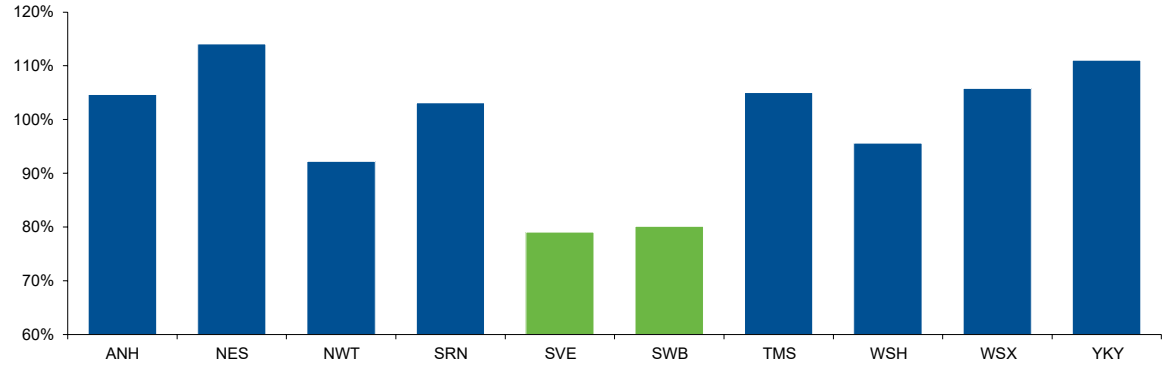
421. Ofwat has not provided any explanation for why it has decided to treat WINEP differently to other areas of enhancement expenditure and we do not consider there is any valid basis for this approach.

422. Ofwat's assessment approach for some WINEP enhancement categories does not involve benchmarking comparators. For instance, Ofwat conducts a deep dive assessment on certain costs based on need and optioneering that are specific to each company. In cases where costs are assessed in this way, it does not make intuitive sense to apply a further catch-up challenge to determine the allowance because there is no common efficient cost frontier.

423. In addition, the UQ benchmark for the WINEP programme is driven by two companies: Severn Trent and Southwest Bournemouth. This is highlighted in Figure 31, which shows that for Severn Trent and Southwest Bournemouth Ofwat's modelled allowance is significantly higher than what the companies have requested in their business plans. Therefore, the upper-quartile catch up challenge is highly sensitive to the inclusion of these two companies, as shown in Table 23 below.

324 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 37 (Table 8) and p. 38.
325 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 53.
326 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 53.
327 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 87.

Figure 31: Company requests/Ofwat's modelled allowance for WINEP in-the-round



Source: Northumbrian Water's analysis based on Ofwat Final Determination Cost Assessment Model - Capex Enhancement Allowances Aggregator Feeder Model, 16 December 2019, SOC194.

Table 23: Upper-quartile catch up challenge sensitivity

Company	Requested / Allowance - Full Sample	Requested / Allowance - excl. SVE	Requested / Allowance - excl. SVE and SWB
ANH	105%	105%	105%
NES	114%	114%	114%
NWT	92%	92%	92%
SRN	103%	103%	103%
SVE	79%		
SWB	80%	80%	
TMS	105%	105%	105%
WSH	96%	96%	96%
WSX	106%	106%	106%
YKY	111%	111%	111%
UQ Catch-up Challenge	6.9%	4.4%	-1.3%

Source: Northumbrian Water's analysis based on Ofwat Final Determination Cost Assessment Model - Capex Enhancement Allowances Aggregator Feeder Model, 16 December 2019, SOC194.

424. The overall modelled costs for Severn Trent and South West Bournemouth are heavily driven by Ofwat's model for Phosphorus Removal (**P-Removal**). P-Removal enhancement Totex expenditure accounts for more than half of the industry Totex for WINEP (c. £2.5bn out of c. £4.7bn).[328] For P-removal, Ofwat used a top-down approach to benchmark costs, which involves taking an average of two linear regression models that include a cross-sectional sample of 10 data points (each data point representing a company's Totex request over the 2020-25 period). The overall modelled costs for Severn Trent and South West Bournemouth are heavily driven by Ofwat's model for P-Removal. P-Removal enhancement Totex expenditure accounts for more than half of the industry Totex for WINEP (c. £2.5bn out of c. £4.7bn).[329] For P-removal, Ofwat used a top-down approach to benchmark costs, which involves taking an average of two linear regression models that include a cross-sectional sample of 10 data points (each data point representing a company's Totex request over the 2020-25 period).

425. Table 24 below shows that Ofwat's models estimated significantly more costs for Severn Trent and South West Bournemouth than their business plan assumptions. This has the effect of skewing the overall WINEP efficiency assessment. Assuming the companies' proposed costs rather than Ofwat's modelled costs would have the effect of taking the two companies much more into line with average (100%) than being significantly more efficient than the sector overall for WINEP costs.

328 *This is based on Ofwat Final Determination Cost Assessment Model – Capex Enhancement Allowances Aggregator Feeder Model, 16 December 2019, SOC194.*

329 *Ibid.*

Table 24: P-removal model for Severn Trent and South West Bournemouth

Company	Company's proposed costs	Ofwat's modelled costs	Modelled costs / Requested costs	Overall WINEP efficiency score (Ofwat)	Overall WINEP efficiency score (with requested costs for P-removal)
Severn Trent	£248.1m	£349.3m	141%	79%	99%
South West Bournemouth	£27.5m	£55.4m	201%	80%	95%

Source: Northumbrian Water's analysis based on Ofwat Final Determination Cost Assessment Model - Capex Enhancement Allowances Aggregator Feeder Model, 16 December 2019, SOC194.

426. Whilst there are merits to using regression analysis to benchmark costs, using regression models in this context is severely limited given the small sample size of 10 data points. With two independent variables and one constant term in the model, there is not enough variation in the model to disentangle the effects of each driver on Totex. For example, the first P-removal model has the number of WTW subject to new or tightened consent and population equivalent served by these works as separate cost drivers. With only 10 data points, it is difficult to justify that the model can confidently predict how much of the increase in Totex is driven by the size of the WTW as opposed to the number of WTW subject to new or tightened consent.

427. In addition, the constant terms in Ofwat's regression analysis are not statistically significant. From a statistician's standpoint, even if the coefficient estimates of the drivers are statistically significant (as is the case in Ofwat's models), the sample size is too small to give econometricians the confidence that the model is making the appropriate predictions.

428. For enhancement cases, Ofwat uses companies' proposed costs in their business plans to benchmark costs in the sector. Whilst companies are better at predicting what their own costs are over AMP7, they are not as reliable as historical costs. Given that the Totex cost sharing rates are asymmetric and are not incentive compatible, companies are likely to propose costs that are lower than the allowance to reduce their downside risks (see Section 5.9 below). Therefore, by applying a further catch-up challenge to the modelled costs based on companies' forecast data Ofwat may set an unachievable allowance for companies.

429. Due to the simplistic nature of the models, they do not include the necessary drivers that capture key differences across companies, in particular they do not account for the site-specific requirements. Firstly, the models do not capture whether the investment required by a given company is an upgrade to their works through simple refurbishments, or a more fundamental re-building. Without including the appropriate drivers, the regression models will unfairly compensate some companies but penalise others.

430. In addition, the models produce a wide range of possible values as implied by the confidence intervals of the model coefficients. Table 25 demonstrates our allowance based on the central estimates, lower and upper bound coefficient estimates of Ofwat's models.

Table 25: Range of NWLs modelled Totex for P-removal activities implied by Ofwat's models

	Model 1 Allowance (£m)	Model 2 Allowance (£m)
Central Estimate	69	67
Upper bound implied by 95% confidence interval	326	562
Lower bound implied by 95% confidence interval	-23	45
Range	349	517

Source: Northumbrian Water's analysis based on Ofwat FD Cost Assessment Model Nutrients (Phosphorus removal) enhancement feeder model, 16 December 2019, SOC197.

431. Table 25 shows that Model 1 models predicts our allowance for P-removal activities to be as low as - £23m and as high as £326m. This implies a range of c.£350m in Model 1 and c.£520m in Model 2. With such a wide range of possible allowances, it is difficult to identify the value that constitutes efficient cost.

432. Given the weaknesses of these models, Ofwat risks setting a challenge that is not achievable by any company in the sector by applying an additional efficiency challenge. Since companies have the mandate to carry out these enhancement activities, underfunding companies in this area puts customers at risk as companies may be financially constrained in delivering their priorities and the finance duty could also be at risk.

433. In addition, Ofwat has not been consistent in its approach towards setting the allowance for P-removal activities. For all companies except Yorkshire Water, Ofwat bases its analysis on two econometric models, and places equal weight on each. These models capture the impact of scale drivers and treatment complexity on Totex. However, Ofwat sets out a different approach for Yorkshire Water. In addition to the two models it uses for other companies in the sector, it also includes the predictions from a third model and places equal weight across the three models.

434. Ofwat adopts a different approach for Yorkshire Water due to a representation it made. Yorkshire Water argues that Ofwat's "*cost benchmarking of the p-removal programme does not sufficiently account for the legislative drivers: the WFD and Urban Wastewater Treatment Directive (**UWWTD**). WFD sets out to achieve good ecological status for rivers by 2027. This directive leads to schemes with Improvement or No Deterioration drivers. Schemes with a no deterioration driver are mandatory and the promotion of improvement schemes is dependent on a cost-benefit test. UWWTD drivers phosphorus reduction where a works breaches a capacity threshold due to growth (mandatory) or discharges to sensitive waters (mandatory or uncertain if the waters are awaiting this designation). An important distinction is that the UWWTD stipulates tertiary treatment. The consent a sewage treatment works must achieve is typically more stringent under a WFD – improvement driver.*"[330]

435. In particular, companies whose programme is driven more by WFD no deterioration appear to be more efficient than others. Ofwat then runs further analysis using a third econometric model that evaluates how a company's costs vary with the proportion of its programme with a primary driver of WFD no deterioration. The analysis reveals that overall companies whose programme was driven more by WFD no deterioration drivers may appear to be more efficient than those that are not.[331]

436. On this basis, Ofwat includes the predicted outcome of this third model in the calculations of Yorkshire Water's allowance.[332] Ofwat does not make a symmetrical adjustment to the allowances for other companies for this factor as it is not fully confident in the quality of the model.[333]

437. We disagree with Ofwat for only making the adjustment for Yorkshire Water and not for other companies that have a similar programme. Whilst Ofwat's third model is subject to the same criticisms as the other two models such as small sample size issues and large confidence intervals, it is not worse than the other two models. A summary is provided in Table 26 below.

Table 26: Summary of performance of Ofwat's econometric models for companies P-removal programme

Economic rationale	Coefficients are of the correct signs and magnitude seems reasonable	Coefficients are of the correct signs and magnitude seems reasonable
Statistical significance	Slope coefficient estimates are statistically significant but the constant term in one of the two models is not.	Slope coefficient estimates and constant term are statistically significant.
Goodness-of-fit	92%-94%	87%
Model robustness	Model suffers from small sample size issues (10 observations)	Model suffers from small sample size issues (10 observations)

Source: Northumbrian Water's analysis based on Ofwat FD Cost Assessment Model Nutrients (Phosphorus removal) enhancement feeder model, 16 December 2019, SOC197.

438. For instance, the statistical performance of the model is as good as the performance of the other two models – statistically significant coefficient estimates and high R-squared values. Furthermore, if Ofwat makes the adjustment for Yorkshire Water on the basis that programmes that are driven by a small proportion of WFD no deterioration drivers are deemed as less efficient, it should apply the same approach to companies that have a small proportion of WFD no deterioration drivers.

439. Table 27 below shows that for all companies apart from United Utilities and Anglian Water, only a small proportion of their programmes is driven by WFD no deterioration drivers for all the other companies. This implies that Southern Water, Wessex Water, Thames Water, Southwest Bournemouth, Severn Trent Water, Northumbrian Water, Dŵr Cymru and Yorkshire Water are deemed as less efficient because Ofwat's models have not accounted for legislative drivers.

330 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 100.
331 Ibid.
332 Ofwat FD Cost Assessment Model Nutrients (Phosphorus removal) enhancement feeder model, 16 December 2019, SOC197.
333 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 100.

Table 27: Proportion of programmes driven by WFD no deterioration drivers

Company	Proportion of programmes driven by WFD no deterioration drivers
NWT	54%
ANH	51%
SRN	4%
WSX	4%
TMS	3%
SWB	1%
SVT	1%
NES	1%
WSH	0%
YKY	0%

Source: Northumbrian Water's analysis based on Ofwat FD Cost Assessment Model Nutrients (Phosphorus removal) enhancement feeder model, 16 December 2019, SOC197.

440. Therefore, our recommendation is that the CMA triangulates the predicted costs from the third model along with the other two models for companies that have small proportion of their programmes driven by WFD no deterioration drivers (less than 5%).

441. For our company, this increases our allowance for the phosphorus removal programme from £68m to £78m.

442. Therefore, our company is seeking an additional £10m.

5.7.3.2 The application of a frontier shift challenge on WINEP costs is inappropriate

443. As explained in Section 5.5 above 'frontier shift' refers to a shift in the efficiency frontier for the sector from: on-going efficiency improvements in the economy that the water sector should be able to emulate; and one-off efficiency improvements from water companies making greater use of the Totex and outcomes framework at PR19.[334]

444. In FD19 Ofwat claims that it "*should apply the frontier shift (and real price effects) to elements of enhancement costs which are more common across companies including the WINEP and metering costs. This is because the potential gains from productivity improvements are likely to be more significant for large, relatively homogenous programmes of work that are more common across companies*."[335] In our BP19 (ed.08.19), we already included a 1.0% p.a. adjustment to enhancement cases and therefore Ofwat's approach is double-count this challenge.[336]

445. Ofwat makes the following argument against double-counting the scope for productivity improvements: "*We have reviewed company forecasts of frontier shift on enhancement costs. In general, we found that frontier shift assumptions on enhancement expenditure tend to be limited and are often offset by real price effect adjustments (where these are explicit). We therefore consider there is a case to apply frontier shift (and real price effect) adjustments to specific areas of enhancement costs which are more common and/or are part of large programme of work*."[337]

446. However, this is true only if companies that form the efficiency benchmark (i.e. UQ) in the WINEP enhancement models have not included a productivity challenge in their cost forecasts. Otherwise, applying a frontier shift challenge on modelled costs would imply that Ofwat is double counting the scope for productivity improvements. As shown in Figure 31 above, the UQ is primarily driven by Severn Trent and Southwest Bournemouth. These companies have already included a frontier shift assumption in their cost base.

447. In particular, Severn Trent stated "*We also tested our plan against updated econometric benchmarks including a challenging set of catch-up (UQ) and frontier shift (1% per annum) assumptions. Where we found our costs to be*

334 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 166.*
335 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 180.*
336 *BP19 (ed. 08.19), SOC129, p. 242.*
337 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 180.*

consistently and materially greater than top down econometric benchmarks, we applied further top down efficiency challenges."[338]

448. Similarly, Southwest Bournemouth mentioned "*As part of our forecasting of efficient costs we have further extended the efficiency challenge by overlaying a general ongoing efficiency challenge (or frontier shift) of 1.0% p.a. to capture both known technological developments."*[339]

449. The frontier shift assumptions applied by these two companies are similar to Ofwat's challenge of 1.1% per annum. Therefore, Ofwat applying this as a further adjustment is accounting for future productivity improvements twice.

5.7.4 CMA considerations

450. Given that Ofwat's models are not robust and are not fit for purpose, there are no reasonable grounds for applying a further catch-up challenge to the modelled allowance. In addition, applying a frontier shift challenge on costs that already include a frontier shift assumption would imply double counting the scope for productivity improvements.

451. We therefore request that in its redetermination the CMA removes the UQ challenge and frontier shift (and RPE adjustments) challenge from modelled costs for WINEP. The implications for our allowance are shown in Table 28 below.

Table 28: Northumbrian Water's WINEP allowance after removing the UQ and frontier shift challenges

	Our WINEP (wastewater) allowance (£m)	Change from FD allowance (£m)
FD	137.85	
Remove UQ	148.44	10.59
Remove UQ and Frontier shift (net RPE)	152.46	14.61

Source: Northumbrian Water analysis.[340]

452. If and to the extent that the CMA did this, our Totex allowance will increase by around £15m. In addition, our Totex allowance will increase by a further £10m if the CMA also applies an adjustment to our P-removal allowance as discussed in 5.7.3.1.

5.8 THE FUNDING FOR ABSTRACTION CHARGES AND BUSINESS RATES DOES NOT REFLECT THE DEGREE OF MANAGEMENT CONTROL AND VARIABILITY

5.8.1 Overview of the issue

453. Abstraction charges and business rates allowances are not set via Ofwat's econometric models, as the water companies have a lower degree of control over them than other costs. Instead Ofwat sets allowances for these costs using alternative approaches. Reflecting that limited degree of control both of these cost areas have special cost sharing arrangements: 75% of any difference between the allowances and actual charges will be passed through to customers, with the company exposed to 25% of any over or underspends.

454. This section sets out why these funding arrangements are not appropriate for these cost items. They do not represent a source of potential inefficiency which should be mitigated through a cost sharing incentive. Beyond staying engaged with the relevant authorities, we do not have control over the level of these costs, which may increase during AMP7. By including a 25% sharing rate for these costs, Ofwat is subjecting us to a downside risk that we have no ability to manage, with no associated reward or adjustment to cover the costs elsewhere.

338 *Severn Trent Water – A8: Securing cost efficiency and enhancement spend, 3 September 2018, SOC363, p. 5.*
339 *South West Water and Bournemouth Water – Elements of the Plan: Securing Cost Efficiency, September 2018, SOC369, p. 33.*
340 *Ofwat Final Determination Cost Assessment Model – Capex Enhancement Allowances Aggregator Feeder Model, 16 December 2019, SOC194.*

455. Given the lack of control we have over these costs and their inherent unpredictability over PR19, an alternative cost pass through mechanism is more appropriate. Should this recommendation not be accepted by the CMA, then it is also important that the frontier shift efficiency factor is not applied to these costs.

456. In this Section, we discuss:

- Ofwat's approach to abstraction charges and business rates (see Section 5.8.2);
- our preferred approach to funding abstraction charges and business rates (see Section 5.8.3); and
- our proposed remedy (see Section 5.8.4).

5.8.2 Ofwat's approach to abstraction charges and business rates

457. Abstraction charges are excluded from Ofwat's econometric modelling, given that companies have limited control over them as a cost. There also exist significant differences between companies and regions which limits sector wide comparison. Abstraction charges are included as unmodelled costs in the Totex allowances, based on forecast charges for the PR19 period. However, the EA's anticipated consultation on the calculation of abstraction charges renders these forecasts uncertain (see Section 9.6).

458. In recognition of these factors Ofwat included a 'reconciliation mechanism' at the end of AMP7. This mechanism will share any expenditure over or under the FD19 cost allowances between the company and our customers.[341] We will be able to reclaim 75% of the abstraction costs incurred in excess of Totex allowances, and customers can reclaim 75% of any reduction below Totex allowances.

459. In addition, Ofwat explained that at PR24 companies could claim to have been put at 'material disadvantage' by this change.[342] Ofwat's approach is to consider these claims for additional adjustments on a case by case basis.

460. Ofwat includes a similar 75% sharing mechanism for business rates. Business rates are also unmodelled costs and have been included in Totex based on a forecast of expected rates incurred. This forecast does not take into account the revaluations of business rates due in 2021 and 2024 (see section 5.10.2 below). Ofwat has therefore included the sharing mechanism to recognise the limited control that water companies have over this revaluation process.

461. Given the strong potential for these charges to increase over the PR19 period (see Section 5.8.3.2), Ofwat's inclusion of abstraction charges and business rates in Totex with a sharing mechanism is likely to result in a funding shortfall. As discussed above in Section 5.8.3.1 above this is inefficient because it is placing a risk on the company that we cannot control, instead of passing through cost based charges directly to consumers.

5.8.3 Our preferred approach to funding abstraction charges and business rates

462. As stated above, we consider that rather than applying a cost sharing mechanism, these costs should be subject to full cost pass through. We set out our rationale for this approach in the following sections:

- the principles of efficient risk sharing in regulation;
- the potential variability in these charges over AMP7; and
- regulatory precedent.

5.8.3.1 Principles of efficient risk sharing in regulation

463. Cost sharing mechanisms exist to promote innovation and best practice in companies delivering services to customers. They also act as a risk sharing mechanism between customers and the companies. Companies are incentivised to actively find new approaches for reducing costs because of the scope to receive a fixed proportion of the reduction achieved. Simultaneously, customers benefit through the reduction in bills arising from their share in the efficiency saving. This approach is desirable and is a key concept in price control regulation.

341 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 41.
342 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 41.

464. However, for this concept to work in practice, regulated companies must have control over the costs covered by the sharing mechanism. Control to reduce costs can take various forms for company management, including:

- engaging with suppliers to reduce the cost of inputs to the production process;
- deploying more efficient working practices or investing in new technology which increase the value of output achieved from the same volume of inputs; and
- substituting inputs for others to achieve a more cost efficient input mix.

465. In the absence of any control over costs there is no opportunity to achieve reductions from efficiency, or to mitigate the impact of increasing costs. Instead, a sharing approach simply creates the potential for windfall gains and losses.

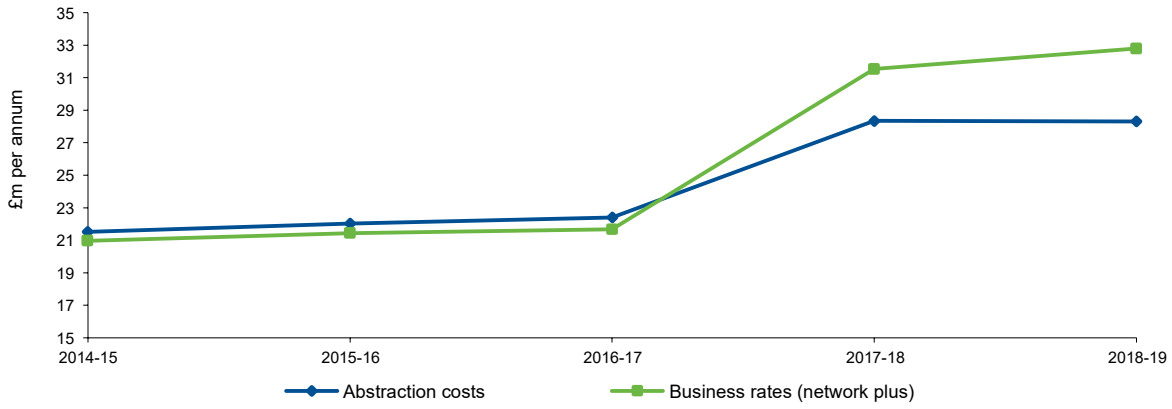
466. Companies must be resilient to potential losses and will need to take steps to be financially prepared for a potential windfall loss. Prudent management would involve setting aside capital to cover this. This has costs associated with it which should be reflected in the price control. Put simply, companies are being asked to take on additional risk without compensation.

467. Since we are not able to control the risk associated with a change in abstraction charges or business rates, or to drive any reductions in these costs through efficiency or productivity improvements, placing the risk with our management through such an incentive is an inefficient approach. The correct approach is a direct pass through mechanism to customers. Given that we cannot outperform or find efficiencies in these costs, business rates and abstraction charges are equivalent to a fixed, cost based charge, which should be passed through to consumers via the price control.

5.8.3.2 The potential variability in these charges over AMP7

468. Abstraction charges and business rates are outside of the control of management and vary to reflect changes in public policy decisions. For example, the most recent revaluation in business rates was in 2017. Abstraction charges also significantly increased for our business in the same year (see below Figure 32).

Figure 32: Our abstraction charges and business rates (2015/16 – 2018/19)



Source: Ofwat PR19 Wholesale water feeder model 1. [343]

469. Whilst a cost sharing mechanism has a symmetrical upside/downside potential for a company in theory, the reality is that these uncontrollable costs are likely to increase during AMP7.

470. The EA will undertake a review of its calculation of abstraction charges during AMP7.[344] This consultation may result in increased abstraction charges across the sector, given the continued increase in demand for water and the fact many licences were granted under a regulatory regime which has previously internalised a smaller proportion of the sector's environmental impacts into the charging costs.[345]

471. We also face an exceptional situation with respect to abstraction charges meaning we are significantly more exposed than other companies to Ofwat's PR19 approach to cost sharing (see Figure 33 below). This is because

343 Ofwat Wholesale Water Model 1 Master Data, 16 December 2019, SOC438.

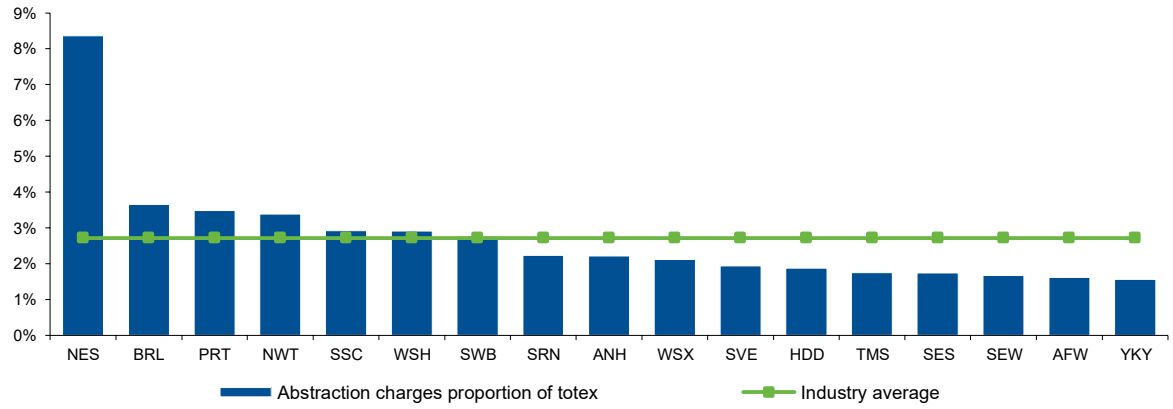
*344 Environment Agency charge proposals: Kielder Reservoir and transfer scheme consultation, "**Environment Agency charge proposals: Kielder Reservoir**", 28 January 2020, SOC404.*

345 Environment Agency and Ofwat report – The case for change – reforming water abstraction management in England, 5 December 2011, SOC301.

of our agreement with the EA with respect to the Kielder Transfer Scheme (**KTS**), a regional water grid which forms part of our non-appointed business. Under the KTS agreement, the EA pays us operating costs for the KTS for our management of the asset. This has in turn increased the EA's costs due to the revised business rates that we now recover under this agreement (the KTS accounts for c.80% of the EA's cost in the North East). The EA is then recovering these costs through abstraction charges levied on our business, resulting in significantly higher abstraction charges for us. This issue is expanded upon in 9.6.3.

472. The EA also published a consultation on abstraction charges relating to the KTS on 28th January 2020.[346] The consultation explains that the EA proposes to increase abstraction costs for permits abstracting from the KTS prior to the more wide-ranging review mentioned above. This review is therefore likely to increase our abstraction charges further over the course of AMP7; if the EA's proposals are adopted unaltered our abstraction charges during the first year of AMP7 will be c. £33m higher than the FD19 allowance.[347] This could leave us exposed to a windfall loss of £8.25m in that year under Ofwat's current approach.

Figure 33: Water companies' abstraction charges as a proportion of Totex



Source: Ofwat Wholesale Water Model 1 Master Data, 16 December 2019, SOC438.

473. Business rates may also increase during the PR19 control period. The next revaluation of property has been brought forward from 2022 to 2021. Business rates are set by the Valuations Office Agency (**VOA**) but their determinations are strongly influenced by central government policy. For this reason, the establishment of a new government and succeeding new cabinet appointments could increase the likelihood of further review or change throughout PR19. Ofwat explains the 75% sharing factor as providing an incentive for companies to engage with the EA or the VOA during the rate setting process.[348] This is a small opportunity to influence proceedings and mainly focused around ensuring that there are not any errors or misunderstandings in the derivation of charges. This does not justify a 75% sharing factor for the reasons outlined below.

474. Although there is some scope to engage and respond to the methodology, the main policy is set externally and cannot be influenced. As discussed above, these costs remain fundamentally different to other market-based input costs incentivised under a sharing factor.

475. There are also existing incentives to engage proactively with the agencies determining these costs. These incentives are sufficient to cover the extent to which engagement is required to ensure that rates are set accurately for our business. These incentives are:

- business rates are levied on the RCV, for which there is already an incentive through Totex to spend and invest efficiently;
- for both charges, we have a clear interest to serve our customers well and keep their bills as low as possible. The range of regulatory mechanisms designed to keep us accountable to customers and deliver good service only enhance this;
- for both charges, our bills are regularly compared with other companies. This gives us a reputational incentive to keep bills low; and

346 Environment Agency charge proposals: Kielder Reservoir, SOC404.
347 Figure taken from Section 8.5.3.
348 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 41, p. 43.

- for both charges, minimizing our exposure to avoids negative cash flow which benefits our business by giving us more flexibility to invest in our assets as and when required.

476. Ofwat has implicitly accepted the large risk associated with abstraction charges by including the potential for companies to make claims to cover losses during the PR24 determination, which will be assessed on a 'case by case' basis. However, this is a suboptimal approach by the regulator. It does not create a predictable, stable and transparent regulatory environment for the water companies to operate. These costs should be covered in a consistent way during PR19, rather than through a period of uncertainty out to the PR24 determinations.

5.8.3.3 Regulatory precedent in other sectors

477. Regulatory approaches in sectors other than water has generally been to allow a 100% pass through of business rates, as shown in Table 29 below.

Table 29: Regulatory precedent concerning cost pass throughs

Price control	Approach to cost pass through
Energy sector	
Ofgem RIIO-GD1	An uncertainty mechanism was included to pass through costs for business rates. Other pass through costs were licence fees, pension deficit costs and other sector specific charges.[349]
Ofgem RIIO-T1	An uncertainty mechanism was included to pass through costs for business rates, licence fees and other sector specific charges.[350]
Ofgem RIIO-ED1	An uncertainty mechanism was included to pass through costs for business rates, Ofgem licence fees and Smart DCC fixed costs.[351]
Transport sector	
Office of Rail Regulation (**ORR**) – CP5	An uncertainty mechanism was included to pass through business rates (with the requirement that Network Rail can satisfy the regulator it negotiated them efficiently). Licence fees and other industry levies were also included as pass through.[352]
ORR – HS1 PR19	An uncertainty mechanism was included to pass through business rates, insurance and electricity network service costs.[353]
Civil Aviation Authority (**CAA**) – Q6 Heathrow	Business rates had cost pass through with an 80% sharing mechanism.[354]

Source: Various regulatory precedents as referenced

5.8.4 CMA considerations

478. We propose that the CMA should consider making business rates and abstraction charges a 100% pass through item in the PR19 control in line with regulatory precedent. As part of this we suggest that reconciliation is carried out within the AMP7 period with a 2-year lag to ensure visibility of future charges for customers and to ensure that a large adjustment is not stored up for the end of the regulatory period.

479. As an alternative, an uncertainty mechanism could be included in PR19 to review our allowance following the results of any review processes to abstraction charges and business rates.

480. If the CMA were to conclude that these costs be funded through our Totex allowance, then it is also important that the 1.1% frontier shift efficiency challenge is not applied to these costs.

481. If the CMA were to conclude that we must absorb the uncontrollable risk of a windfall loss arising from a significant increase in these costs under a sharing mechanism, then we must also be compensated for this. This should be done either through an adjustment to WACC or through a capital buffer to manage any deviations.

349 RIIO-GD1: Final Proposals – Finance and uncertainty supporting document, 17 December 2012, SOC304, p. 73.
*350 RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas, "**RIIO-ET1**", 17 December 2012, SOC315, p. 14.*
351. RIIO-ED1, SOC012, p.51.
352 Office of Rail Regulation – Periodic Review 2013: Final determination of Network Rail's outputs and funding for 2014-19, October 2013, SOC321, p. 177.
353 Office of Rail Regulation – 2019 periodic review of HS1 Ltd (PR19): Final determination – decision document, 7 January 2020, SOC402, p. 22.
354 Civil Aviation Authority – Economic regulation at Heathrow from April 2014: Final Proposals, 2013, SOC323, pp. 30-31.

5.9 CONCLUSIONS

5.9.1 Our key concerns with the cost allowances in the FD

482. Overall, the current Totex allowance in Ofwat's FD19 is significantly below what is required to provide a reliable and efficient service to our customers. By not providing sufficient Totex there is a risk that we cannot deliver the service levels customers want and need, or are unable to invest in our asset base to maintain the resilience of the essential services we provide. Either scenario would result in a detriment to customers. In this section we have highlighted a number of serious concerns with Ofwat's approach to cost assessment:

- Ofwat's approach to PR19 has failed to allow efficient costs and does not represent a reasonable package in the round: We have compared PR19 to other recent water and utility price controls, including the CMA's Bristol Water PR14 Decision and demonstrate that in each of the dimensions considered (productivity frontier shift, performance improvement, the benchmarked level of efficiency and the 'cost of equity' (**CoE**), PR19 represents the most challenging and unbalanced settlement compared to other price controls;
- The step change implied by PR19 is not justified: The FD demonstrates that Ofwat considers that a significant 'step change' improvement in operational performance and cost efficiency is required from previous price controls. The PR14 settlement set allowances based on an assessment of efficient costs and projected stretching operational targets. We have assessed the relative performance of companies over the last three control periods and the evidence does not support a need for a further 'step change' for the current period, evidence shows that on average the sector has underperformed against the PR14 settlement.
- Ofwat's catch-up efficiency challenge does not allow efficient cost recovery: Ofwat has arbitrarily changed its methodology partway through the process to set the efficient level in the modelling at the 3rd/4th company position, rather than at the upper quartile position. This choice breaks with Ofwat's stated methodology for the price control, as well as regulatory precedent. The modelling also includes non-comparable smaller WoCs, which unfairly distort the comparison of companies. The impact of this challenge methodology will reduce Totex by £17m across the five years of the next AMP. We ask the CMA to return the efficient benchmark to the upper quartile position in the redetermination.
- Ofwat's approach to setting Real Price Effects is inconsistent across input costs and does not account for energy costs: Ofwat has not included an RPE for energy prices in FD19 despite energy accounting for 9% of company Totex. This is an error in Ofwat's approach because of the clear historical evidence of: (1) electricity prices increasing in real terms; (2) forecasted price increase in real terms over PR19; and (3) the limited scope for management to reduce these costs. The impact of not including RPEs for energy cost will reduce Totex by c.£10m across the five years of the next AMP. We ask the CMA to incorporate energy costs as an RPE adjustment (in the same way as labour costs) in the redetermination.
- Ofwat's approach to setting allowances for growth expenditure is not robust and fails to allow efficient growth expenditure: Ofwat applies an ex-post adjustment for growth because it assumes that the current base cost models overcompensate companies that forecast slower growth than the historic sector average and undercompensates companies that forecast higher growth. This adjustment is arbitrary and distorts the econometric model, which, without the adjustment approximately reflects our long-term growth trend. We ask the CMA to remove the ex-post adjustment;
- Ofwat has failed to allow efficient costs to deliver the WINEP schemes: WINEP costs are benchmarked across companies, and then a productivity frontier shift is applied. However, we provide evidence that companies that set the benchmark level have already projected a productivity challenge in their costs which are used in the benchmarking. This means that the frontier shift applied to our costs are a double-counting for productivity. The impact of this methodology will reduce Totex by £15m across the five years of the next AMP. We ask the CMA to remove this unreasonable double counting. We also recommend that the CMA triangulates the predicted costs from the third model the Ofwat used only for Yorkshire along with the other two models for companies that have small proportion of their programmes driven by WFD no deterioration drivers (less than 5%). For our company, this increases our allowance for the phosphorus removal programme from £68m to £78m, a £10m impact.
- The funding for business rates and abstraction charges does not reflect the degree of management control and variability: Water companies have very little scope to determine both abstraction costs and business rates. Therefore, a sharing mechanism that does not result in a 100% cost pass through (or uncertainty mechanism correction at the end of the AMP) on such a non-controllable cost item is unreasonable.

483. In the preceding sections, we have identified key areas where Ofwat's approach to setting cost allowances in FD19 has been inappropriate. In each area, we have proposed a remedy and Table 30 below summarises the impact of these remedies on our allowance.

Table 30: Total impact on Northumbrian Water's Total Expenditure (Totex) allowance

	Totex impact (£m)	
Area	**Water**	**Wastewater**
Moving the upper-quartile efficiency benchmark challenge to the 4th (water) or 3rd (wastewater) most efficient company	8.5	7.3
Removal of frontier shift on unmodelled costs	0.0	0.0
Include RPE adjustment for power	3.7	2.8
Include RPE adjustment for chemicals	2.5	3.3
Remove downward adjustment for growth	7.6	24.7
WINEP (excl. P-removals adjustment)	0.0	14.6
WINEP (P-removals adjustment)	0.0	9.7
Total Totex claim	**22.3**	**62.4**

484. In aggregate, our analysis is that Totex allowance would increase by c.£22m on wholesale water and c.£62m on wholesale wastewater. This increases our Totex allowance to £1,650m on wholesale water and £1,042m on wholesale wastewater, which brings us to a more reasonable position to provide a secure and efficient service to customers.

485. Our statement of case also highlights that Ofwat's funding arrangements for abstraction charges and business rates and leakage are not setting the correct incentives. For instance, Ofwat applies a sharing mechanism where companies are exposed to a 25% risk of cost underspend or overrun for abstraction charges and business rates. However, companies have limited control over these costs and therefore do not represent a source of potential inefficiency that should be mitigated through a cost sharing incentive. By including a 25% sharing rate for these costs, Ofwat potentially exposes us to an uncontrollable risk of a windfall loss arising from a significant increase in these costs. Therefore, Ofwat should either completely pass through these costs or include an uncertainty mechanism to review our allowance following the results of any review processes to abstraction charges and business rates.

5.9.2 Implications of the FD cost allowances

486. In this Section we have highlighted the poor justification and evidence base that Ofwat has used to set cost efficiency challenges. We consider that the absence of robust evidence for the application of these challenges ought to be sufficient justification in itself for the CMA to revisit these decisions, otherwise we are concerned that the precedent set in PR19 for poorly evidenced and unsubstantiated efficiency challenges will be allowed to persist in future price controls.

487. In aggregate these gaps constitute 3% of our base cost allowances, which is material. The challenge is much greater on our wastewater business, where the challenge amounts to c.6% of our Totex. We do recognise that many of the cost allowances we are highlighting are small individually, and would not normally constitute a cost challenge that we would warrant seeking a redetermination of the price controls. However:

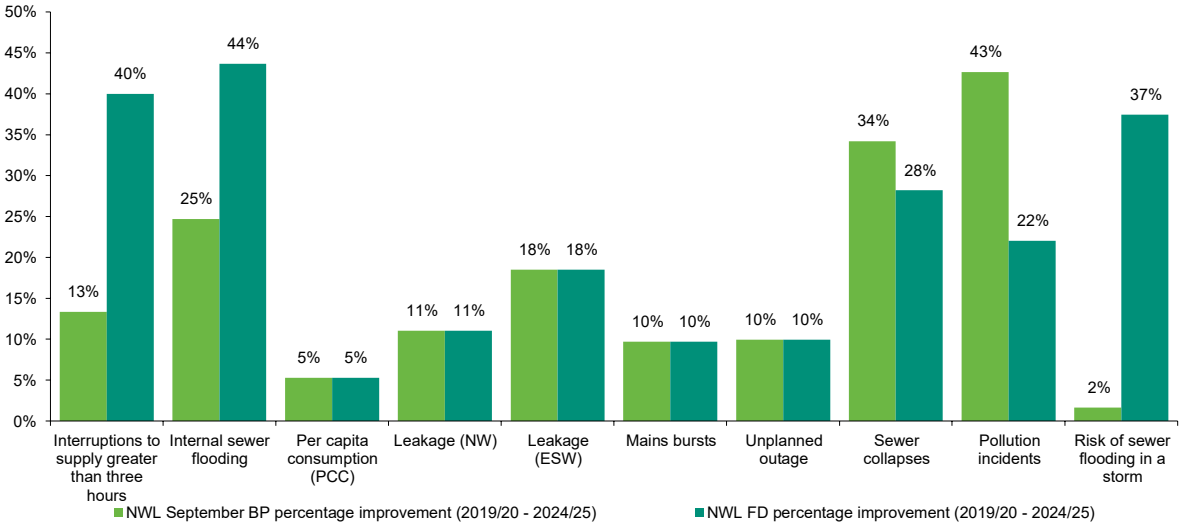
- Our concerns must be seen in the context of the overall package of FD19, as per Figure 17 and section 5.2.2. The overall package is already extremely stretching in aggregate.
- We are starting from an efficient position and our service performance metrics are already strong – see section 2.6 - there is limited 'low hanging fruit' for NWL to go after, making the package more challenging.
- The cost challenges need to be seen in the context of the overall financeability position of NWL under FD19 (see section 9.9) and the additional costs highlighted in the new information section 9, which further increases the challenge to our base cost allowances by £37.67m (see Table 52 in section 9.9).

488. In this sense FD19 represents a 'death by a thousand cuts' outcome. To illustrate this point, we show below how some of the selected outcomes in our package have changed throughout the PR19 process. In our original BP19 (ed.09.18), across the 15 common PCs that Ofwat required, we sought to set ourselves very stretching targets, for nine of those PCs, Ofwat did not seek to change our targets throughout PR19. But the other six targets were

changed. Figure 34 below shows the rates of improvement across 10 of the common PCs (excluding comparative PCs like CMex and DMex and also binary measures seeking 100% compliance for which improvement rate analysis cannot be sensibly represented e.g. Compliance Risk Index of drinking water quality, risk of severe restrictions in a drought and treatment works compliance). It compares the original business plan with the FD.

489. For the common PCs that can be compared, the figure below illustrates the following: 1) The performance improvement between 2019/20 and 2024/25 that we set out in our original September 2018 business plan; and 2) the performance improvement expected by Ofwat between 2019/20 and 2024/25 under the FD.

Figure 34: Improvements in PC targets as set out in the BP19 (ed.09/18) and as specified in the FD



Source: Analysis of App1 data for NWL and the PR19 FD

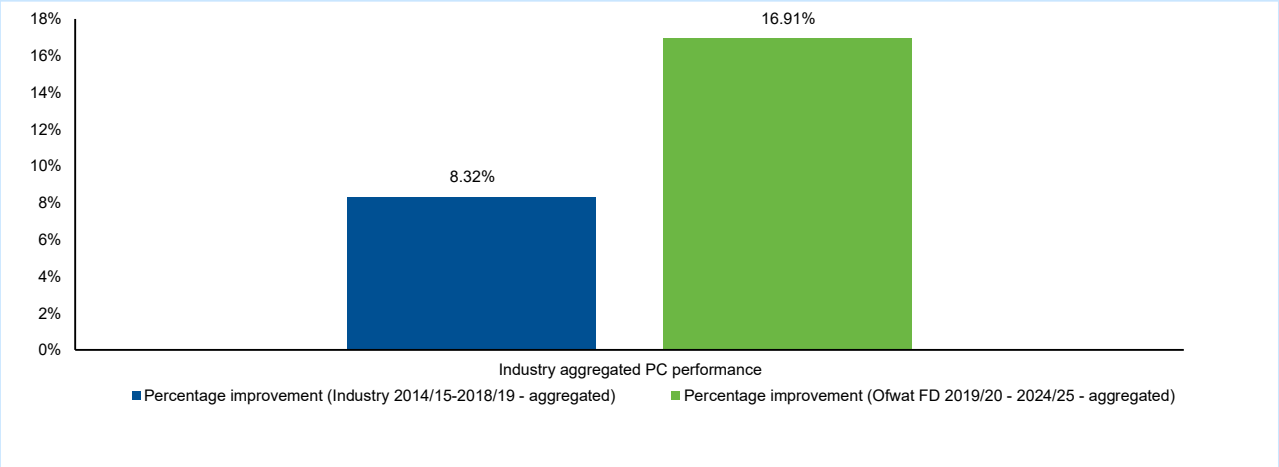
490. At the same time, whilst even on a measure by measure basis the improvement rates appear very challenging, the aggregate picture is worse. Across the sector, no company in the past has been able to improve performance on such a wide range of service metrics, all at the same time. Instead, mixed performance has been more common, a company may be able to make significant improvements in one or two service metrics but others may stall or indeed deteriorate. Improving performance across all measures is extremely challenging. This is borne out of a historical analysis of service performance. In **Error! Reference source not found.** we analyse the average historical improvement rates across four service metrics for which historical information has been published by Ofwat providing a reasonable time series and where the measure definitions have been relatively consistent over time aiding comparability, leakage, pollution events, internal sewer flooding and supply interruptions[355]. These are analysed for each company to account for the extent to which individual companies have been able to improve across all three of these metrics and a company average is taken, the same improvement rates are then compared to those observed in FD19 under a similar calculation. As can be seen from the analysis, the improvement rates required are more than double the rates achieved in recent history.

491. Indeed, Moody's independent analysis across the industry suggests that as a result of the performance regime companies remain at risk of materially overspending their allowances which is likely to have a significant impact on cashflow during AMP7.[356]

355 *Data taken from Service Delivery Report Analysis Model, SOC210. We have used these three measures because historical data is available and comparability is better, we have not included leakage because the measure definition is changing but inclusion of this measure would suggest an even tougher aggregate target.*

356 *Moody's Reviews 12 UK Water Groups for Downgrade, 20 December 2019.*

Figure 35: Industry improvement and PR19 targets in common performance level measures aggregated



Source: NWL analysis of historical data from Ofwat's Service and Performance Report, 2019 and PR19 FD

492. All of these improvements are to be delivered against an overall totex that is £179m lower than what we set out in our BP19 (ed. 08.19).

493. If the errors of judgement that we highlight above are not corrected in the costs allowed then we consider that, given the extent of the challenge in the overall package, our existing efficient position and the impact of new cost challenges that the FD does not allow for, FD19 would:

- Significantly put at risk the delivery of base service levels, which as we show above are very stretching;
- Result in cost overruns for power and chemical costs and unmodelled costs associated with business rates and abstraction charges;
- Result in cost overruns for new connections and growth costs; and
- Result in significant cost overruns or the failure to deliver aspects of our statutory WINEP programme, driving significant impacts on the environment.

6 SETTING THE RIGHT INCENTIVES

6.1 SUMMARY

- As a business, we recognise and support incentive based regulation as the best framework for delivering real improvements for customers. As we highlight in section 2.6, through the improvements that we have driven to our efficiency and service performance, customers have benefitted, both directly through benefit sharing mechanisms and more widely through the recalibration of the efficiency benchmark at each control period.
- We find that FD19 contains a number of perverse incentives that will not promote the right behaviour needed to further the Consumer Objective.
- Contrary to Ofwat's stated aims, the approach to cost sharing rates do not incentivise the submission of efficient costs in business plans. Instead, it works against companies taking due and proper account of customer preferences and resilience requirements.
- In addition, the approach to setting leakage targets disincentivises companies from showing ambition in leakage reduction which works against securing long term improvements.
- Ofwat's approach to setting an asymmetric aggregate 3% cap on ODI rewards undermines the incentive for companies to deliver excellent services for customers. We are also concerned that the 3% cap introduced by Ofwat is inconsistent with the stated preferences of our customers, is poorly designed and fails to achieve the stated aim of protecting customers against bill increases as well as driving further asymmetry in the package.
- These issues need to be remedied to ensure that the price control provides the right incentives to enable us to deliver our customers' requirements and promote the right incentives for long term cost reduction and service improvement.
- This Section sets out our overarching concerns with the incentive framework adopted by Ofwat in FD19 and details the various specific errors of judgement for Ofwat's FD19 that we have highlighted above.

6.2 INTRODUCTION

494. This Section highlights the decisions in FD19 that we consider introduce perverse incentives that will drive the wrong outcomes for customers. In particular, it sets out:

- our overarching concerns about the incentive properties of Ofwat's FD, including that aspects of FD19 will reduce the incentives for driving cost efficiency and service improvement, that the package overall is asymmetric and therefore a company cannot earn their base return on a mean expected basis and that the incentive properties fail to incentivize resilience investment (see Section 6.3).
- the incentive properties of the approach to setting cost sharing rates and why we think that the approach taken in FD19 is flawed in failing to take into account the reasons for costs being disallowed (see Section 6.4);
- the approach to setting leakage targets and how it penalises companies that show ambition in leakage reduction (see Section 6.5);
- Ofwat's approach to setting an asymmetric aggregate 3% cap on ODI rewards undermines the incentive for companies to deliver excellent services for customers. We are also concerned that the 3% cap introduced by Ofwat is inconsistent with the stated preferences of our customers, is poorly designed and fails to achieve the stated aim of protecting customers against bill increases as well as driving further asymmetry in the package (see Section 6.6); and
- a summary of our conclusions (see Section 6.7).

6.3 OUR OVERARCHING CONCERNS WITH THE INCENTIVE PROPERTIES OF OFWAT'S FD19

495. Regulatory incentives have always formed an important part of the setting of charge controls in the water sector. Set appropriately, simple, clear and powerful incentives which have the right overall properties can drive companies to improve levels of service and efficiency for customers.

496. NWL and our owners fully support the UK model of incentive based regulation. As we highlight in section 2.6, through the improvements that we have driven to our efficiency and service performance, customers have benefitted, both directly through benefit sharing mechanisms and more widely through the recalibration of the efficiency and service benchmarks at each control period. For the 2020-25 period some £403m of additional Totex would have been required for the sector to recover from customer bills had NWL performed in line with the sector average on its allowed costs for the 2015-20 period. The 'repeated game' of incentive regulation works and delivers value for customers when the incentives to outperform on costs and service are strong.

497. We are concerned that FD19 represents a material departure from the previous incentive arrangements in a number of important respects. We have the following key overarching concerns with Ofwat's changes:

- **Some of the incentives will weaken the long term efficiency and service improvement reducing customer benefits-** we highlight key errors of judgement in this section in relation to cost sharing rates and the aggregate 3% outperformance cap applied by Ofwat. Each of these individually and collectively will reduce the incentives on companies to reduce costs and improve service. In each case Ofwat's new incentives seem to be concerned about limiting returns rather than providing strong incentives for outperformance. This will reduce the incentives to deliver the cost efficiency and service improvement in the future limiting the ongoing benefits to customers from the regulatory framework.
- **In aggregate FD19 results in an asymmetric package of measures which is unfinanceable**. PC/ODI incentives are negatively skewed overall with reasonable analysis indicating more downside risk than upside opportunity even before the level of stretch in the targets themselves is considered, cost sharing factors and uncertainty mechanisms are also negatively skewed. Overall this results in an unfinanceable package, we discuss this more in Section 9.9.
- **FD19 does not incentivise resilience investment, instead driving short-term bill reductions**. Ofwat has built in a number of financial and procedural incentives in PR19 aimed at the reduction of costs but has failed to ensure that these are appropriately balanced against longer-term considerations. Ofwat's IAP19 established clear requirements on companies to accept the 'early view' of the cost of capital and provide cost estimates in line with or below the results provided by their cost models. Any company seeking an exceptional or fast-track verdict needed to accept this view, even if it considered that the underlying analysis or positioning by Ofwat was incorrect. Ofwat has provided financial rewards to companies that reduced their costs over the price control process. Companies that put forward resilience enhancements increased their Totex requirement and therefore were strongly penalised for having higher Totex under the cost sharing rate framework. In previous price controls Ofwat adopted a policy of 'two sided adjustments' for these types of investment, such as the Capital Incentive Scheme (**CIS**). Under the CIS if a proposed investment did not pass Ofwat's 'need' test, it was removed rather than retained for the purpose of the cost sharing framework, so as not to discourage companies from proposing investment which might prove to be necessary. These issues are discussed in Section 6.4

498. The impact of the incentive issues highlighted above and discussed elsewhere in our SoC is a package which is not in the long term interests of our customers, is asymmetric and unfinanceable and does not support resilience. Below we highlight specific concerns in relation to Ofwat's approach to setting cost sharing rates,

6.4 OFWAT'S APPROACH TO SETTING COST SHARING RATES HAS THE WRONG INCENTIVE PROPERTIES AND DOES NOT TAKE INTO ACCOUNT REASONS FOR COSTS BEING DISALLOWED

6.4.1 Overview of the issue

499. In PR19 Ofwat sets Totex allowances for AMP7. Actual expenditure will inevitably differ from the allowance for a variety of reasons (for example efficiency and unforeseen circumstances). A cost sharing mechanism is used to protect against the risk that those allowances are too high or too low by sharing the risk between customers and

shareholders. The cost sharing rates determine how much of any under or overspend (compared to the Totex allowances) is shared with customers.

500. We consider that Ofwat's approach to incentives works against the interests of our customers and that the rates which Ofwat has applied are calculated inappropriately because they do not take into account the reasons that expenditure was disallowed.

501. In the following sections we set out:

- Ofwat's approach to setting cost sharing rates in FD19 (see Section 6.4.2);
- our proposed approach to setting cost sharing rates (see Section 6.4.3); and
- the approach which we would request that the CMA adopts in the redetermination (see Section 6.4.4).

6.4.2 Ofwat's approach to setting cost sharing rates at PR19

502. The cost sharing rates determine the proportion of any Totex underspend or overspend that a company is exposed to (that is the proportion of any savings that a company gets to keep or the proportion of any cost overruns that it must bear). The cost sharing rates are applied to the difference between the expenditure allowances and actual expenditure.

503. Historically these cost sharing rates have been set on a symmetric basis where the same cost sharing rate was applied to both underspends and overspends. This is demonstrated by the regulatory precedent from recent price control determinations listed in Table 31 below.

Table 31: Regulatory precedent for cost sharing rates from recent UK price control determinations

Price control	Symmetric/Asymmetric cost sharing	Range of cost sharing rates
Water: PR14[357]	Symmetric	Totex: 44-57% (water), 44-55% (sewerage)
Water: PR09[358]	Symmetric	Capex: 15-35% (water), 24-35% (sewerage) Opex: 100% (water and sewerage)
Bristol PR14 appeal[359]	Symmetric	Totex: 50%
Bristol PR09 appeal[360]	Symmetric	Capex: 16% Opex: 100%
NIE RP5 appeal[361]	Symmetric	Totex: 50%
Electricity distribution: DPCR5[362]	Symmetric	Business support costs, non-operational Capex, traffic management costs: 100% Other allowed expenditure: 45-51%
Electricity distribution: RIIO-ED1[363]	Symmetric	Totex: 53-58% (slow track), 70% (Water Power Distribution (**WPD**) fast track)
Gas distribution: GDPCR1[364]	Symmetric	Opex: 100%, Capex: 33-36%
Gas distribution: RIIO-GD1[365]	Symmetric	Totex: 62-64%
Transmission: TPCR4[366]	Symmetric	Opex: 100%, Capex: 25%
Transmission: RIIO-T1[367]	Symmetric	Totex: 47-50%

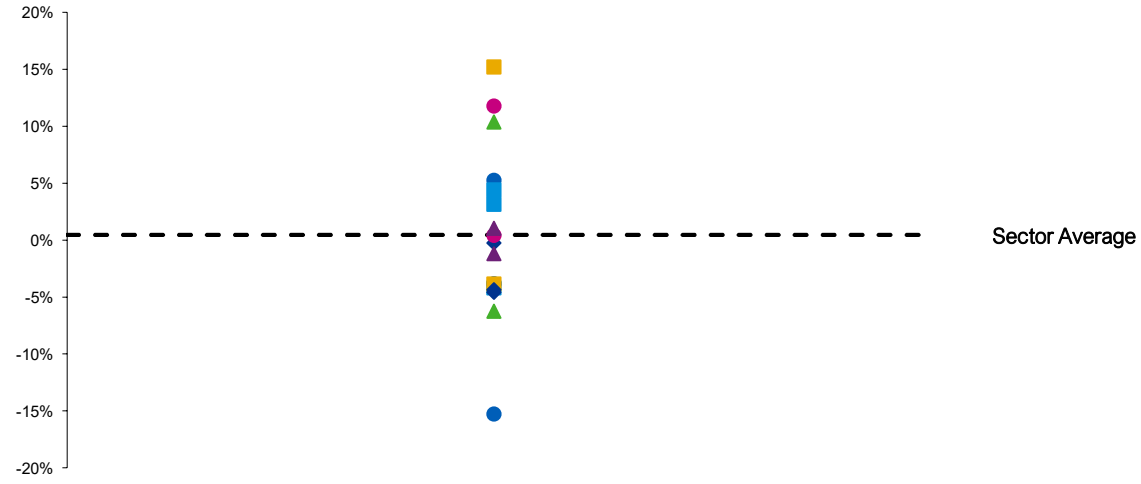
Source: NWL analysis of regulatory determinations as per referenced sources

504. Ofwat's PR14 approach used symmetrical cost sharing rates and was able to set what appear to have been appropriate cost allowances. Figure 36 shows that roughly half of the companies have outperformed AMP6 cost

357 *Ofwat DD14: technical appendix A3, SOC172, pp. 43-44; Ofwat Populated menu model: Water menu model for Northumbrian Water, 2014, SOC178; Ofwat Populated menu model: Sewerage menu model for Northumbrian Water, 2014, SOC177.*
358 *FD09, SOC295, p. 68 and p. 149.*
359 *Bristol Water PR14 CMA Decision, SOC336, p. 52.*
360 *Bristol Water PR09 CMA Decision, SOC296, p. 44.*
361 *CCRP5, SOC307, para 2.2, p. 6.*
362 *Ofgem Allowed Revenue Cost Assessment, SOC294, pp. 103-104.*
363 *RIIO-ED1:FD, SOC331, p. 22; Ofgem RIIO-ED1 Fast Track Decision Letter, 28 February 2014, SOC326, p. 11.*
364 *GDPCR Final Proposals, SOC292, p. 66.*
365 *RIIO-GD1, SOC316, p. 29.*
366 *Ofgem - Transmission Price Control Review Final Proposals, 04 December 2006, "**TPCR4**", SOC291, p. 40.*
367 *RIIO-ET1, SOC315, p. 31 and RIIO-T1: Final Proposals for SP Transmission Ltd and Scottish Hydro Electric Transmission Ltd, 23 April 2012, SOC303, p. 18 and p. 24.*

allowances to date and half have underperformed. Given that Ofwat was able to get the business plan information it needed at PR14 to set robust cost allowances using symmetric sharing rates, it follows that asymmetric cost sharing rates are not necessary for PR19 to address a problem in this area.

Figure 36: Totex overspend by company in AMP6

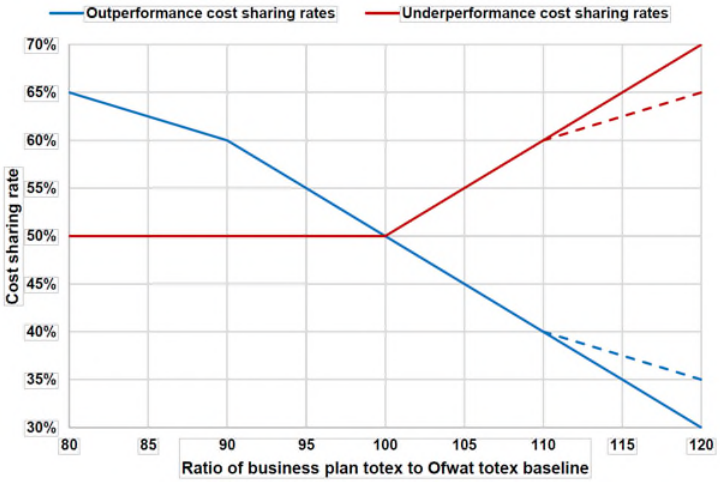


Source: Northumbrian Water analysis based on Service Delivery Report Analysis Model, 29 October 2019, SOC210.

505. However, for PR19 Ofwat decided to set asymmetric cost sharing rates depending on the ratio between the Totex in the business plan and Ofwat's baseline Totex. This sets a different rate for cost outperformance (i.e. underspends) and underperformance (i.e. overspends). Ofwat calculates each company's view of Totex for these purposes by averaging the Totex in the September 2018 business plan submissions, and in the August 2019 response to DD19.[368]

506. Figure 37 below presents Ofwat's approach to determining the cost sharing rates for AMP7. This shows that companies with lower Totex ratios (i.e. ratio of business plan Totex to Ofwat Totex baseline) attract more favourable cost sharing rates in terms of higher outperformance rates and lower underperformance rates. This means that companies with lower Totex ratios get to keep a larger proportion of any cost savings and are exposed to a lower share of any cost overruns.

Figure 37: Cost-sharing mechanism for AMP7[369]



Source: Ofwat, FD19.[370]

507. Table 32 below sets out our Totex ratios and the corresponding cost sharing rates.

368 Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 130.

369 Dashed lines show the Totex sharing rate applied by Ofwat in its Draft Determination for companies with a Totex ratio above 110. For Totex ratios lower than 110 Ofwat applied the same cost sharing rate in its Draft and Final Determinations.

370 Ofwat FD19: securing cost efficiency technical appendix, SOC417, Figure 4, p. 131.

Table 32: Totex ratios and cost sharing rates for Northumbrian Water

	Water resources and water network plus	Wastewater network plus
Totex ratio	103.8371	115.6
Cost outperformance sharing rate	46.19%	34.40%
Cost underperformance sharing rate	53.81%	65.60%

Source: Ofwat, FD19.[372]

508. The larger Totex ratio for wastewater results in greater asymmetry in the cost sharing rate than for water. This creates a penal regime as companies would not be able to recover their costs on a mean expected basis as the risk exposure attached to overspends is much greater than for underspends. Furthermore, a 34% outperformance cost sharing rate will significantly jeopardize any incentive that a company has to make efficiency improvements, especially towards the end of the 5-year review period. This is in contrast to a regime where, with properly calibrated cost allowances and an equal risk of overspends and underspends via a symmetrical incentive regime, a company would on average be expected to recover its costs. The consequences of this regime design feature are discussed further below.

6.4.3 Our preferred approach to setting cost sharing rates

509. We consider that cost sharing mechanisms should have strong incentives for efficiency improvement and promote equitable risk sharing between customers and the company. We set out the basis for that approach in the following sections:

- the rates should capture the appropriate incentive properties;
- there should be an equitable sharing of risk between NWL and our customers; and
- the selected approach should be implemented correctly and equitably across the sector.

6.4.3.1 Ensure that the appropriate incentive properties are captured

510. Ofwat's stated aim for the mechanism, in addition to providing a risk sharing arrangement, is to incentivise the submission of efficient cost proposals in business plans: "*It provides an incentive for companies to submit plans that are efficient, by providing more favourable cost sharing rates for efficient plans*".[373]

511. However, the mechanism does not achieve Ofwat's stated objective and works against the interest of consumers.

512. Rather than incentivising efficient plans, it incentivises companies to submit low proposals for Totex in business plans even if the levels of spend are not achievable. This is demonstrated in Table 33 below which shows the expected payoffs for companies with different Totex ratios and actual levels of spend based on a hypothetical Ofwat Totex benchmark of £100m.

Table 33: Payoffs under Ofwat's cost sharing mechanism

Expected Payoff (£m)	Totex ratio (%)	80	90	100	110	120
	Cost outperformance sharing rate	65.0%	60.0%	50.0%	40.0%	30.0%
	Cost underperformance sharing rate	50.0%	50.0%	50.0%	60.0%	70.0%
	Allowed expenditure (£m)	100	100	100	100	100
Actual Expenditure (£m)						
80		13.0	12.0	10.0	8.0	6.0
90		6.5	6.0	5.0	4.0	3.0
100		0.0	0.0	0.0	0.0	0.0
110		-5.0	-5.0	-5.0	-6.0	-7.0
120		-10.0	-10.0	-10.0	-12.0	-14.0

Source: NWL analysis of Ofwat's approach to setting cost sharing rates

371 *Totex ratios obtained from Ofwat's Cost-sharing-model: Cost sharing and total costs model, 16 December 2019, Dashboard - WR + WN and Dashboard -WWN.*

372 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, Table 24, p. 133.*

373 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, p. 130.*

513. The columns show different Totex ratios (from 80% to 120%), and the rows at the bottom show different actual levels of expenditure (from £80m to £120). The cells then show the expected payoffs for each combination of Totex ratio and actual expenditure. For example, the top left payoff of £13m is derived from:

- a Totex ratio of 80%;
- a corresponding cost outperformance sharing rate of 65%;
- an expenditure allowance of £100m; and
- an underspend of £20m (allowance of £100m minus actual spend of £80m) multiplied by the outperformance cost sharing rate (65%) to give £13m. This is the share of the £20m underspend that the company is able to retain from the mechanism.

514. Table 33 allows the identification of the optimal regulatory strategy in response to Ofwat's cost sharing mechanism. A company will have an assessment of its expected expenditure (this corresponds to which 'Actual Expenditure' row that it expects to be in), and it must then decide the optimal business plan forecast to submit (this corresponds to which 'Totex ratio' column it chooses). The matrix provides the expected payoffs under different business plan proposals. In every case the expected payoff is maximised by aiming for a Totex ratio of 80% (i.e. putting in a plan 20% below what is expected to be Ofwat's Totex baseline). Whilst the expected payoffs may be the same for expected expenditure above 100 from submitting plans with 90% or 100% Totex ratio, a Totex ratio of 80% is still preferable as it delivers a more favourable cost sharing rate for underspends.

515. This misalignment of incentives has a number of consequences:

- the mechanism does not incentivise companies to reveal their expected levels of costs in their business plans. This does not further the objective of encouraging efficient cost submissions. Companies are not incentivised to estimate efficient costs but are instead incentivised to second guess Ofwat's baseline cost methodology. This is a consequence of the asymmetry and the fact that the mechanism does not place any weight on the companies' proposals in setting the cost allowances (unlike Ofwat's approach under the CIS menu at PR09 and PR14);
- it could also mean that companies are disincentivised from submitting proposals that enhance resilience or performance as disallowance of these items could attract unfavourable cost sharing rates. For example, NWL would have been better off not submitting our cost claims for sewer flooding risk and the Abberton to Hanningfield pipeline even though we consider that they are required for resilience and have received strong customer support. The perverse way in which Ofwat has implemented its approach undermines the incentives to ensure resilience of the network and deliver a standard of service that matches customer preferences. These undesirable impacts are compounded as the Totex gap is also used as the basis for the efficiency challenge applied to certain enhancement costs.[374] This further undermines resilience and appropriately reflecting customer feedback in the business plans; and
- it undermines the usefulness of the information revealed in the business plans. Companies are not incentivised to reveal 'efficient' costs but are instead just incentivised to reveal 'low' costs. This means that the cost data provided does not provide a strong evidence base to identify the appropriate level of efficient costs and set appropriate cost allowances. This could mean that business plan cost data could be used to set too testing a level of cost allowances.

516. The undesirable incentive properties associated with this mechanism do not therefore further the objectives of revealing efficient costs, ensuring that plans promote resilience, or reflecting customer preferences in plans.

517. These incentive properties have not been replicated in other price control settlements. As demonstrated in Table 31 above, other price controls have used symmetric cost sharing rates. 'Menus' used by regulators (such as CIS used by Ofwat and Information Quality Incentive (**IQI**) used by Ofgem) have been 'incentive compatible' to incentivise companies' best estimates of efficient costs rather than just low costs. The use of menus by Ofwat and Ofgem have also not put exclusive weight on the regulator's view of costs when setting cost allowances. These alternative approaches are more likely to promote the revealing of efficient costs and ensuring that long term resilience and customer preferences are reflected in business plans.

374 Ofwat FD19: securing cost efficiency technical appendix, SOC417, pp. 54-55.

6.4.3.2 Ensure there is an equitable sharing of risk between the company and customers

518. Ofwat's approach to setting cost sharing rates in FD19 disproportionately exposes NWL to potential cost overspends. This creates a skew in the risk profile of our price control as overspends are treated more unfavourably than an equivalent underspend.

519. Totex overspends are not always within the control of companies (e.g. due to unexpected input price increases beyond those anticipated by any RPE adjustments). The exposure to such cost pressures is unrelated to the difference in views of costs between Ofwat's baseline and the business plans. It is therefore not justified to apply more penal cost sharing rates based on the Totex ratio.

520. Ofwat's approach also reduces the incentives for outperformance by reducing our share of any outperformance. This is particularly relevant for wastewater where an outperformance cost sharing rate of 34.4%[375] has been set. We have historically been efficient in the provision of our wastewater services and we have helped set the efficiency benchmark for price control allowances. Indeed, we consider that our performance on wastewater costs has helped save customers c.£500m[376] through its impact on setting lower cost benchmarks.

521. A weaker incentive to outperform will dampen incentives to do so. This could be detrimental to the customer interest as the efficiency benchmark may not improve as quickly with weaker incentives. This would harm consumers at PR24. A more balanced cost sharing rate would likely have a more favourable impact on the long-term interests of customers by further promoting the improvement of the efficiency benchmark for future price reviews.

6.4.3.3 Ensure that the approach is implemented correctly

522. Whilst it is important to get the cost sharing rates right in the first place, it is also important that they are implemented properly. We consider that errors made by Ofwat in the calculation of our cost allowances are then compounded in an incorrect calibration of our cost sharing rates.

523. If the aim is to promote efficient costs, the approach should take into account differences in scope when calculating the Totex ratio. It should differentiate between costs that are deemed to be inefficient and those that are disallowed by reference to the assessment of need. For example, our cost claims for sewer flooding risk and the Abberton to Hanningfield pipeline should have been excluded from the Totex ratio at FD19 as they were legitimate inclusions in our BP19to build resilience and both had received strong customer support. It creates a perverse incentive in that the mechanism operates to disincentivise us from including such proposals in our plan.

524. We consider that Ofwat has made the following errors in calculating our cost allowances which impact on the cost sharing mechanism:

- Ofwat disallowed our cost claim of £86m for reducing sewer flooding risks but reflected this in the cost sharing rate, rather than making a 'two sided adjustment' - this should be excluded from the Totex ratio (see Section 7.5 below);
- Ofwat disallowed our cost claim of £20m for Abberton to Hanningfield pipeline - this should therefore be excluded from the Totex ratio (see Section 7.6 below);
- incorrectly moving the UQ efficiency benchmark challenge to the 4th most efficient company for water and 3rd most efficient company for wastewater (see Section 5.4);
- incorrectly applying the frontier shift challenge to unmodelled costs, such as business rates and abstraction charges that are policy items rather than inefficient costs (see Section 5.8);
- Ofwat's assumptions about RPEs do not take account of potential increases in the price of energy and chemicals beyond our control (see Section 5.5);
- incorrectly applying a downward adjustment on Northumbrian Water's growth allowance of c.£5m in water and c.£21.4m in wastewater (see Section 5.6); and
- Ofwat's calculations for WINEP allowance are flawed and should be £24.3m higher (see Section 5.7).

375 See Table 7: Totex ratios and cost sharing rates for Northumbrian Water.

376 This is based on Northumbrian Water's analysis in Figure 6: Analysis of total allowed base costs at PR19 Final Determinations under Ofwat's cost assessment models versus alternative scenario for our cost performance during 2015-19.

525. Due to the errors made in Ofwat's calculations listed above, our cost sharing rates are consequently incorrectly calibrated. Table 34 below sets out the changes to our cost allowances for our wholesale water and wastewater controls and our cost sharing rates after correcting for the errors made in Ofwat's calculations.

Table 34: Totex gaps and revised cost sharing rates for Northumbrian Water after correcting for Ofwat's errors

Area	Water	Wastewater
Gap at FD (August submission versus FD)	36	114
Ofwat allows cost claims for reducing sewer flooding risk		86
Ofwat allows cost claims for Abberton to Hanningfield pipeline	20	
Moving the upper-quartile efficiency benchmark challenge to the 4th (water) or 3rd (wastewater) most efficient company	8.5	7.3
Include RPE adjustment for power	3.7	2.8
Include RPE adjustment for chemicals	2.5	3.3
Remove downward adjustment for growth	7.6	24.7
WINEP (excl. P-removals)	0.0	14.6
WINEP (P-removals)	0.0	9.7
Total cost claims	42.3	148.4
Current cost sharing rate (outperformance/underperformance)	46.19%/53.81%	34.40%/65.60%
NES's BP/Ofwat's revised baseline ratio	101.18	100.39
Revised cost sharing rate	48.82%/51.18%	49.61%/50.39%

Source: Northumbrian Water analysis based on arguments throughout Section 4 of the Statement of Case and cost sharing rates are computed on https://www.ofwat.gov.uk/wp-content/uploads/2019/12/Cost-Sharing-model_NES_FD.xlsm.[377]
Gap at FD based on Table A1.1 of Ofwat FD19: securing cost efficiency technical appendix, p 158.

526. If the CMA were to correct the errors in Ofwat's calculations, this would have the effect of lowering our Totex ratio. In water, our average BP19 submission would have only been 1.2% higher than our allowance as opposed to 3.8% before correcting for Ofwat's errors. In wastewater, our average BP19 submission would have only been 0.4% higher than our allowance compared to 15.6% before correcting for Ofwat's errors. As a result, the cost sharing rates would be more symmetric, which would promote greater efficiency improvement for benefit in future controls.

6.4.4 Proposed remedy

527. Overall, Ofwat's approach has a number of undesirable features:

- applying asymmetric cost sharing rates for outperformance and underperformance does not incentivise companies to submit a business plan that reflects efficient costs that can be feasibly delivered;
- Ofwat's approach of applying higher penal rates than rewards may incorrectly incentivise companies to remove cost claims that are based on need despite receiving strong customer support for the activity, such as costs that are required to maintain the resilience of the network;
- Ofwat's approach creates a skew in companies' risk package, such that penal treatment of overspends could be outside a company's control; and
- it reduces the incentives to outperform and push forward the efficiency benchmarks in future controls.

528. To remove these concerns we request that in its redetermination the CMA considers:

- a symmetric form of cost sharing for outperformance and underperformance;
- equitable risk sharing between customers and the company with strong incentives for efficiency improvement and to push the efficiency benchmark for future controls; and
- a 50% symmetric cost sharing rate which achieves these aims and is in line with regulatory precedent.

377 The revised business plan to allowed Totex ratio and cost sharing rates are calculated by adding the cost claims onto Ofwat's Totex allowance at Ofwat FD19: securing cost efficiency technical appendix, SOC417, in cell N9 of Ofwat's Cost-sharing-model: Cost sharing and total costs model, 16 December 2019, SOC202, Dashboard - WR + WN and Dashboard -WWN. The corresponding results are obtained from cells C50:52.

6.5 OFWAT'S APPROACH TO SETTING THE BASELINE FOR THE PR19 LEAKAGE TARGETS HAS PENALISED OUR COMPANY FOR SHOWING EARLY AMBITION IN LEAKAGE REDUCTION

529. Introducing PCs to the price control framework was an important regulatory innovation in PR14 and will continue to improve outcomes for customers in PR19. The leakage target in particular is a key driver for improvements across the industry which customers value.

530. Whilst we support the ambitious reduction levels Ofwat is proposing in the PR19 framework, we disagree in principle with the methodology Ofwat has used to calculate our baseline for the PR19 target. Ofwat has set that target baseline by using the final years of AMP6 actual performance, rather than the AMP6 PC levels. In doing so, Ofwat has directly penalised us and other companies which have invested to make a head start on the challenging AMP7 PC targets and have actual leakage levels below the PC level. In adopting such an approach, Ofwat risks disincentivising performance against PCs (not just for leakage) in the latter years of price controls as there could be similar treatment at the next price control review. It cannot be in the interests of customers to introduce incentives that do not promote continuous performance improvement. [378]

531. Our decision to make early progress on leakage targets was based on good management practice and acting in the best interests of our customers. To our detriment, this has resulted in us receiving a more challenging target with no associated expenditure allowances made available to invest in achieving it successfully.

6.5.1 Our proposed approach to setting leakage targets in our BP19

532. We aimed to set ambitious leakage targets that would incentivise us to continue to make strong progress in an area which is of high importance to our customers. The proposal we made in our BP19 was to baseline our PR19 targets on the end of our AMP6 PC level. Setting the baseline at the AMP6 closing PC level would give us certainty to plan and invest in leakage reduction throughout AMP6 and AMP7, avoiding a discontinuity in the PC level and the associated unpredictability of the targets being reset. The decision was made to take a strategic approach to investing early to increase our chance of meeting the stretching PR19 leakage targets and to deliver the benefits of reduced leakage to our customers sooner.

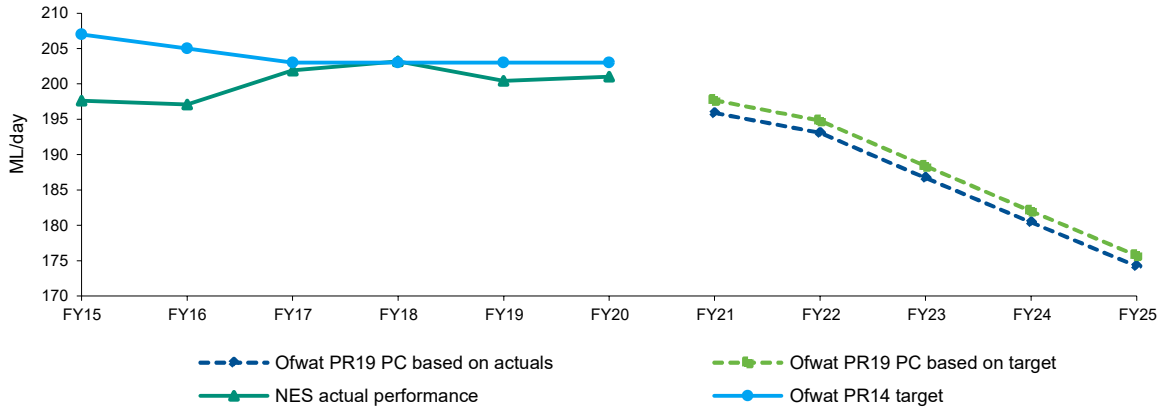
6.5.2 Ofwat's approach to setting leakage targets in PR19

533. Ofwat changed its approach to setting the leakage targets at the DD stage. Ofwat adjusted the baseline for our leakage target from the closing AMP6 PC level to the level of our actual leakage performance, calculated as an average of the FY18, FY19 and FY20 actual figures (see Figure 38). This change in approach both nullified the early progress we had made towards our PR19 target and resulted in us receiving an even more challenging target as a direct result of our pro-active approach to this issue, thereby penalising us for good performance and early investment in performance.

534. Whilst the percentage reductions did not change (the PR19 targets are a 13% reduction from current levels), the change in baseline resulted in a target which requires a further reduction in leakage of more than 1 megalitre per day across our business. This is an increase on top of an already stretching target of an 11% reduction in a million litres (or mega litres) per day (**ML/day**) across our NW business area and an 18.5% reduction in ML/day across our ESW area. This is in contrast to a total leakage reduction target of 1.93% in PR14 between 2014/15 and 2018/19.

*378 Northumbrian Water Draft Determination Company Representation, "**NWL DD Response**", August 2019, SOC056, section 4.6.*

Figure 38: NWL leakage performance and targets in PR14 and PR19



Source: PR14 and PR19 FD documents and Service Delivery Report 2018-2019, referenced below. 379

6.5.3 Ofwat's approach disincentivises a proactive approach to leakage and sets too demanding a target

535. Ofwat's approach to rebasing the targets at the DD stage has inexplicably penalised us when we were stretching ourselves to meet the targets and sets a precedent that risks dis-incentivising ambition on PC targets across the water sector in future cycles which cannot be in consumers' interests. Setting future baselines for PCs based on current performance creates a cyclicality in the incentives to improve performance and perversely discourages further improvements as these feed into tougher future targets.

536. Under Ofwat's approach there will be the strongest incentives to reduce leakage at the start of the period as there will be the greatest number of remaining years in the price control over which to benefit from the incentive payments. However, as the price control progresses the number of remaining years that a company can benefit from further improvements reduces. Moreover, if the targets for the next period will be correspondingly tightened in response to improvements there will be a negative incentive to invest in further improvements as companies will be better off from delaying investment until the next regulatory period and securing a less demanding target for that control period. This would not appear to be in the consumer's interest.

537. This approach to setting targets will also negatively affect the flexibility of our management team to best run the businesses as the focus in early years of the price control will be on PCs when this might not deliver best value for customers. It will also delay the implementation of new innovative techniques and approaches to reducing leakage as these will not be economic to implement in later years of the price control, if all returns will be erased by the target level being reset. By using the previous PC target level as the starting point, investments at any point in the price control cycle have more equal opportunity to generate returns from output performance.

538. Overall, this cyclicality in incentives is not in the interests of customers who would be best served by a constant incentive to improve performance as this will best reduce levels of leakage and secure value for future price control periods.

539. The targets set by Ofwat in PR19 are extremely demanding and at a level which has not been achieved by any company in the sector before. Historical data over PR14 shows that leakage reductions of the scale imposed by the PR19 PCs have not been achieved by any company. The largest reduction in leakage volumes achieved between 2014/15 and 2018/19 is 7.55%,[380] around half the volume of reductions built into the PR19 PCs across the industry. This unprecedented reduction in leakage may be possible, but will require sustained investment in new technology and infrastructure. This will be a significant challenge given the other elements of the PR19 framework which set a tough cost challenge.

540. These stretching targets have not been accompanied by the additional funding for the investment required to deliver them. This undermines our ability to meet the targets, despite our customers having demonstrated a willingness to pay for the investments as we engaged with them to develop our BP19 (see section 4.4). Combined with the impact on incentives to reduce leakage, a change is required in this area to put the price control back into balance.

379 FD19, NES actual performance on Service Delivery Report Analysis Model, SOC210; Ofwat PR14 targets in Ofwat - Setting price controls for 2015-20 - Final price control determination notice: company-specific appendix – Northumbrian Water, December 2014, SOC171.

380 Service Delivery Report Analysis Model, SOC210.

541. Moreover, the approach also risks setting a precedent that could also be applied to other PCs and provide the wrong incentives in these performance areas too. It is therefore an important principle that the price control provides appropriate incentives to improve performance and further the customer interest throughout the price control.

6.5.4 Proposed remedy

542. To address this issue we propose that the targets are revised to provide the same 13% improvement in performance but measured from the AMP6 end of period targets. This change would ensure that:

- The undesirable cyclicality in incentives is removed which will mean that we will have a continued incentive to improve leakage through the AMP7 period and secure the best value for our customers;
- Our management team has the necessary flexibility to focus on the most pressing issues to customers at the different points of the price control period;
- It will remove a mismatch between expenditure allowances and the investment required to deliver the PC to customers. This will improve the balance of the price control and ensure that there are not undue risks to financeability that must be compensated; and
- It reduces the risk of the approach being applied to other performance areas in the future which could disincentivise service improvements in the same way in those other areas.

6.6 OFWAT'S APPROACH TO SETTING THE ODI STRUCTURE UNDERMINES THE INCENTIVE FOR COMPANIES TO DELIVER EXCELLENT SERVICES FOR CUSTOMERS

6.6.1 Ofwat's approach to calculating ODI reward levels in PR19

543. Performance commitments (**PC**) incentivised with ODIs result in a reward or penalty for companies based on their measured performance in that particular PC. Financial rewards are reflected in customer bills with a two year lag from the performance. In PR19, 34 of our company PCs have a financial ODI attached, with the opportunity for us to earn additional revenues for exceeding the services customers request and value.[381] The financial incentives around each ODI are based on Ofwat's comparative benchmarking of customer valuations across companies, including an assumption of benefit sharing at a sharing rate of around 50:50.

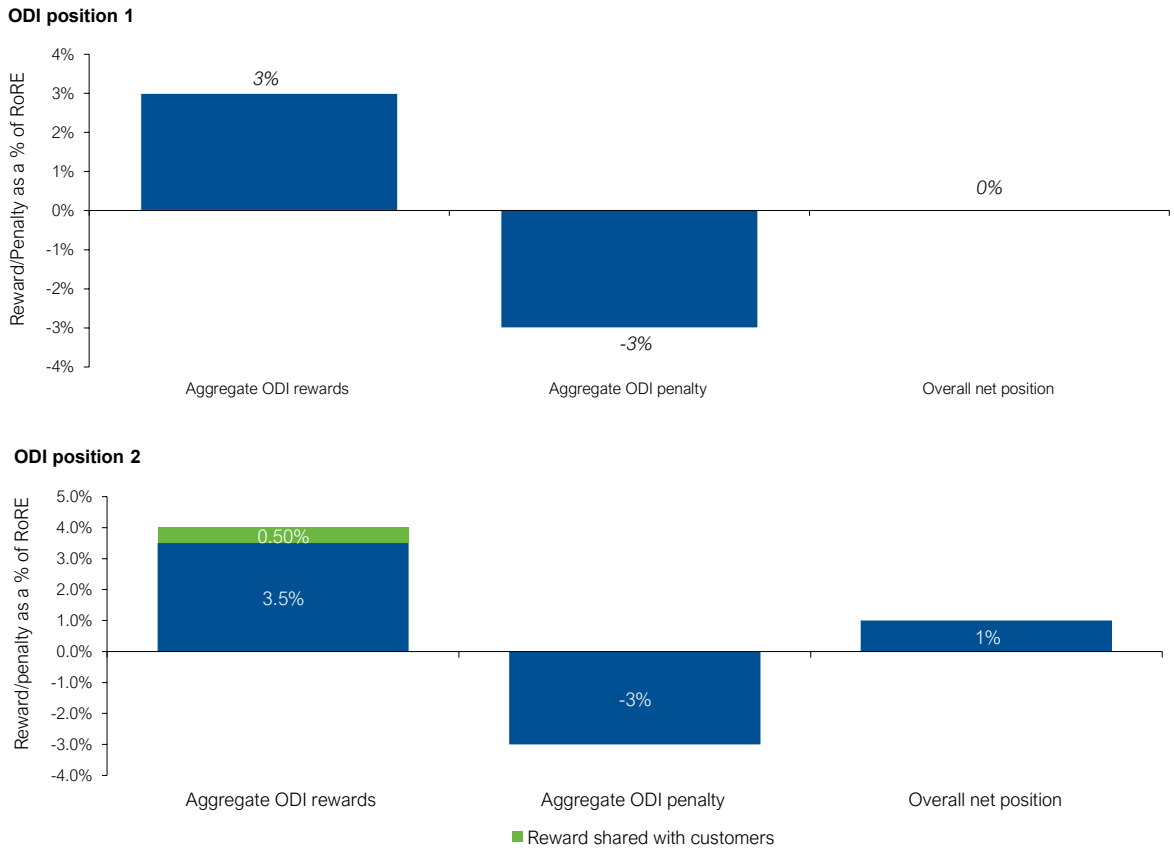
544. Ofwat has suggested that where a company earns rewards from its ODIs that exceed 3% of a companies' RoRE[382] a further sharing factors needs to be applied. Specifically, customers will receive 50% of any ODI rewards above the 3% threshold of a companies' wastewater or water RoRE.[383] Ofwat suggested that this was to protect customers against potentially high PC payments arising from significant company outperformance.

545. All the ODI rewards we earn will be aggregated and compared to wastewater or water RoRE, in order to calculate the threshold at which our rewards will be shared with customers. However, ODI penalties incurred will not be included in this aggregate sum. This means that our rewards could still be classed as exceeding 3% of RoRE, even if we have larger penalties and pay money back to customers on a net basis across all ODIs.

546. Figure 39 below summarises the approach, showing the same company in two different ODI reward/penalty positions. In this example, the company has a consistent aggregate penalty of 3% across all ODIs, whereas the aggregate rewards increase from 3% in ODI position 1 to 4% in ODI position 2. Although net rewards are 1%, this means that the gross reward threshold of 3% has been breached and the company shares half of the additional reward with customers.

381 *Data Tables for BP19 (ed. 04.19), March 2019, SOC099, App 1.*
382 *Technical Appendix 1 to IAP19: Delivering Outcomes for Customers, 31 January 2019, SOC204, p. 21.*
383 *Ofwat in Period Adjustments Model, 4 March 2020, SOC241.*

Figure 39: The reward sharing factor at two different ODI positions



547. We are concerned that:

- The 3% cap introduced by Ofwat is inconsistent with the stated preferences of our customers;
- Ofwat's gross reward calculation is poorly designed, fails to achieve its stated aim of protecting customers against bill increases from ODI payments and drives further asymmetry in the package; and
- Ofwat's mechanism creates perverse incentives that may discourage companies' from meeting customer preferences and could reduce service improvement in the future.

6.6.2 The 3% cap is inconsistent with the stated preferences of our customers

548. We undertook an extensive customer research project whilst developing our BP19. The project involved customers expressing their willingness to pay for different services and outcomes using an interactive digital tool. We gathered a representative sample of customer views and the approach ensured they considered the trade-off between their preferences and their final bill levels.

549. Our BP19 was developed through engagement with around 400,000 customers and 500 stakeholder organisations. This was one of the largest engagement campaigns in the sector and resulted in 91% of our customers accepting our plan as a whole (see section 4.3.1).

550. Customers did tell us that they were concerned about bills increasing too quickly over the PR19 and in aggregate they're preference for improved outcomes suggested bills should only rise by as much as 2% of RoRE for ODI performance. Using the findings from this research, we therefore proposed that any outperformance rewards greater than 2.04% of RoRE should be shared 50:50 with customers over PR19.[384] The 2% of RoRE threshold is a more realistic level of potential reward than the current 3% proposed by Ofwat. Given that the largest net

384 BP19 (ed.04.19), NES.OC.A1-74 – Additional Evidence – Appendix 1, March 2019, SOC120.

rewards seen in the water sector were 1% of RoRE over PR14,[385] and PR19 PC targets are significantly tougher (See Section 5.2.2), a threshold of 3% seems highly unlikely to be reached by any company in the sector.

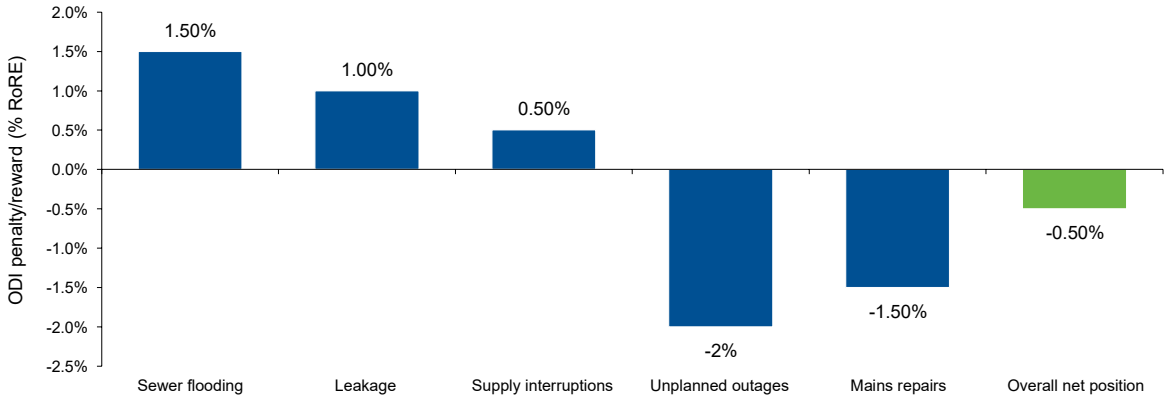
551. Our proposal was also premised on the cap being calculated on a net basis across rewards and penalties, rather than using gross rewards only.[386] This is a more accurate approach to calculating the threshold, ensuring that companies' incentives remain aligned and rewards are only shared with customers whose bills have increased.

6.6.3 Ofwat's gross reward calculation is poorly designed, fails to achieve its stated aim of protecting customers against bill increases from ODI payments and drives further asymmetry in the package

552. Ofwat has made a methodological error in its decision to calculate the threshold for the sharing rate using only gross ODI rewards (i.e. by examining rewards and penalties separately and applying the 3% sharing factor to just rewards). Ofwat suggests that the reward sharing approach was included because it wanted to develop a mechanism for 'protecting customers in case their ODI payments turn out to be much higher than expected'.[387] However, customers make ODI payments on a net basis only, i.e. the net reward or penalty to be passed through bills is based on the aggregate position of ODI rewards minus any penalties across all ODIs. Calculating the reward sharing threshold without taking into account penalties therefore undermines the connection between reward sharing and ODI payments.

553. For example, a hypothetical company with highly variable outcomes performance could be earning ODI rewards which total 3% of RoRE along with ODI penalties that total 3.5% of RoRE. These figures are aggregates, meaning they sum the company's rewards or penalties over several financial ODIs (see Figure 41 below)

Figure 40: Indicative ODI position for the company in example 1



554. As shown in Figure 40, the company is receiving rewards for ODI performance from sewer flooding, leakage and supply interruptions targets, which amount to the 3% RoRE cap when calculated using the gross aggregate rewards approach. However, the company is also receiving penalties for the unplanned outages and mains repairs ODIs, which pull down the overall net figure to -0.5%. Customer bills vary by the net figure, regardless of the level of aggregate rewards, meaning bills would therefore be reducing here by 0.5% of RoRE equivalent. However, under Ofwat's current approach, any further ODI rewards earned by this company would need to be shared with the customers. This is not protecting customers from a bill increase because their bills are decreasing overall already. This also creates differential incentives for PCs depending on whether they are in reward or penalty.

555. In setting the reward sharing approach in this way, Ofwat has also failed to consider the interactions with other mechanisms in the ODI package which are also designed to limit the risk of significant cost increases for customers. Customers are already protected through other protections which are built into the ODI mechanism.

- Caps and collars are fixed on individual ODIs to limit reward payments and penalties respectively. For customers, this mitigates risk which could arise from company performance which is significantly stronger than expected, or inaccuracies in Ofwat's forecasting for target setting;

385 Ofwat - Financial Monitoring Report 2018-19 Charts and Underlying Data, 13 January 2020, SOC403.
386 NWL Response to Ofwat DD19, SOC130, p. 28.
387 Technical Appendix 1 to IAP19: Delivering Outcomes for Customers, 31 January 2019, SOC204, p. 21.

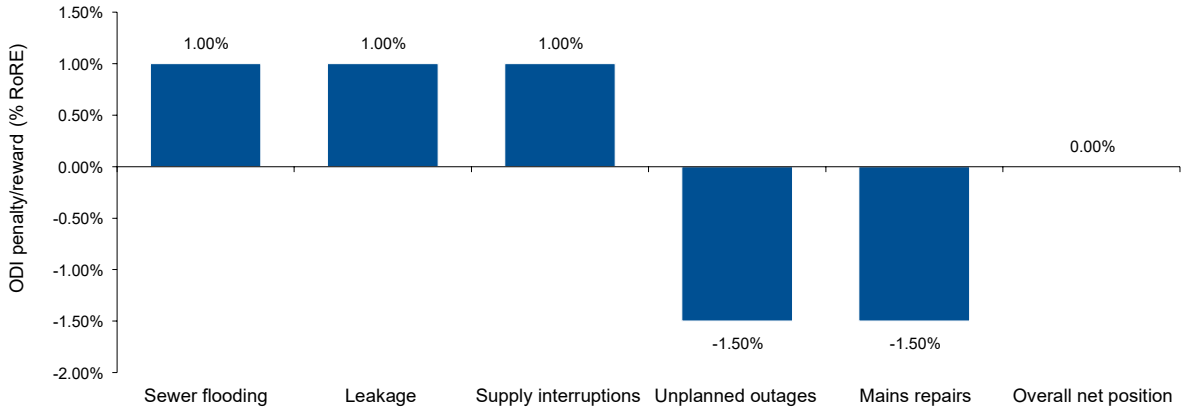
- Deadbands are performance ranges close to the PC level set for which no financial ODI applies. This protects customers against bill fluctuations caused by small performance variances which may also be outside of company management control.[388] Both deadbands and caps/collars are proposed by companies based on customer engagement and are designed to reflect customer needs and their willingness to pay for marginal improvements;
- Incentive rates for ODI rewards/penalties also implicitly share value between the company and customers, because rates are set to account only for a proportion (typically half) of the willingness to pay levels revealed by customers. This approach is based on the assumption of sharing benefits between customers and the company, as seen in other elements of the price control;
- Customers are also protected from additional costs incurred by a company investing to deliver the outputs through cost sharing rates set at the Totex level. No further cost allowances are given to companies to invest in PC delivery, meaning the Totex sharing rate (see section 6.45.8) ensures companies themselves pay for a proportion of any costs incurred which exceed their Totex determination for the price control.[389]

556. Finally, the mechanism clearly drives further asymmetry in the package, with the arrangement reflecting only the rewards, rather than the penalties in aggregate. Under the mechanism as applied by Ofwat, a company that received rewards and penalties with an even distribution of +/- 4% of RoRE would be subject to additional sharing of its rewards above 3% but would incur all of the penalties at 4% without any sharing. The application of the incentive will tend to increase the downside risk on the owners relative to the upside rewards. This means that on a mean expected basis the company cannot be expected to earn its base return as it is more likely to incur net penalties on its ODI package under the arrangement. This issue is described in greater detail in section 10.6.2.

6.6.4 Ofwat's mechanism creates perverse incentives that may discourage companies' from meeting customer preferences and could reduce service improvement in the future

557. The application of the mechanism could create disincentives to improve services in line with customer preferences. Once a company is earning aggregate ODI rewards that meet the threshold level, any further outperformance across any PC becomes 50% less rewarding for the company. On the other hand, reducing penalty payments may require similar investment but is not impacted by the threshold and incentives remain consistent. Given the opportunity, company management will therefore re-allocate resources towards avoiding penalties due to the larger relative payoff, as long as penalties are excluded from the calculation of the threshold.

Figure 41: Indicative ODI position for the company in example 2



558. For example, Figure 41 above shows a hypothetical company performing well in sewer flooding, leakage and supply interruptions, but with penalties incurred in unplanned outages and mains repairs. On a net basis, the company is not in reward or penalty, meaning customer bills are not changing. Under Ofwat's current methodology, the incentive for the company to make any further investment in ODI performance is larger for avoiding penalties in unplanned outages and mains repairs than to achieve larger rewards in the other PCs. Critically, this is the case even if the rewarded ODIs are of relatively higher importance to customers. This situation only arises when the threshold is calculated on a gross rewards basis. If the threshold was calculated on a net basis, all ODIs (irrespective of their penalty/reward position) would retain the incentive levels set by the

388 Appendix 2 to Ofwat PR19 Methodology: Delivering outcomes for customers, 13 December 2017, SOC211, p. 94.
389 Appendix 2 to Ofwat PR19 Methodology: Delivering outcomes for customers, 13 December 2017, SOC211, p. 57.

company and the regulator and based on the customer engagement process. This would mean the company in this example would continue to direct investments towards whichever PC/ODI would give the best returns across the full portfolio, either in terms of rewards earned or penalties avoided. These investments would not necessarily be the investments that customers tell the hypothetical company that they are most willing to pay for.

559. This negative outcome from the gross calculation approach arises as our incentives begin to diverge from what our customers have told us they are willing to pay for over PR19. During our research, NWL customers consistently revealed a larger willingness to pay for some PCs above others. For example, customers of our Northumbrian Water service area told us their preference was to allocate 1.33% of their bill to reducing contacts for discoloured water, compared to 0.47% of the bill for reducing interruptions to supply.[390] We have proposed ODI rates that reflect these preferences across all PCs, meaning that their reward or penalty rates align the incentives of management with delivering what is of value to customers. This is the core theory behind the calculation of PC levels in the PR19 framework.[391] The gross calculation approach undermines this by changing the relative incentives of some PCs arbitrarily, for example when aggregate rewards approach the threshold and if variability across PC performance is high (as shown in the example above). The incentive skew towards penalty avoidance arising from the gross calculation could therefore risk diverting management attention away from the issues that matter most to customers.

560. Furthermore, price regulation represents a 'repeated game' whereby the improvements in service performance can be passed back to all customers at the end of each control period through comparative benchmarking that then drives the poorer performers to 'catch-up' to the better performers.[392] This improvement is greatest when companies have the strongest incentives to improve performance levels beyond the current best performer in the sector, the 'frontier' company. Where companies do not have strong incentives to improve their performance, this can result in lower shifts in the frontier and correspondingly weaker gains for customers in the 'catch-up' service performance benefits. Some examples of these impacts are illustrated in the Background section 2. Since the frontier service level is by definition the highest service level in the sector, it will only be extended through additional rewards and the asymmetric application of this mechanism would reduce those rewards and correspondingly the incentives to drive improvements in the service performance frontier. This would weaken benefits for customers over the longer-term.

6.6.5 Proposed remedy

561. NWL recognises that there is a need to retain some aggregate sharing factors across all ODI payments to maintain customer trust in the face of any significant outperformance payments. That is why we asked our customers about this and proposed a mechanism targeted at 2% of RoRE. CMA should retain a stringent sharing threshold should ODI payments become too high, this should be set at our 2% of RoRE threshold, based on the preferences of our customers.

562. The CMA should also correct Ofwat's flawed approach to the calculation of the threshold. Instead of only calculating the 2% threshold based on gross rewards, Ofwat should use a companies' net position for ODI payments, including both rewards and penalties. This would address the stated problem that the mechanism seeks to correct, improve the symmetry of the mechanism and also remove the perverse incentives that the mechanism could create.

6.7 CONCLUSIONS

563. Overall, we are concerned that FD19 represents a material departure from the previous incentive arrangements in a number of important respects. In particular:

- some of the incentives will weaken the long term efficiency and service improvement levels in the sector through reducing the incentives for those improvements, thereby reducing customer benefits;
- in aggregate FD19 results in an asymmetric package of measures which is unfinanceable; and.
- FD19 does not incentivise resilience investment, instead driving short-term bill reductions.

390 Appendix 2.3 to BP19 (ed. 09.18): PR19 Research Tool: Striking the Right Balance Between Delivering Business Plan Insights and Cognitively Valid results, January 2018, SOC032, p. 11.
391 Appendix 2 to Ofwat PR19 Methodology: Delivering outcomes for customers, 13 December 2017, SOC211, p. 52.
392 Technical Appendix 1 to IAP19: Delivering Outcomes for Customers, 31 January 2019, SOC204, p. 18.

- We highlight three specific concerns with the cost sharing rates, leakage incentives and also the aggregate 3% sharing cap for the CMA to consider.
- Ofwat's approach to setting asymmetric cost sharing rates departs significantly from regulatory precedent, assumes an asymmetry which is not demonstrated in AMP6 performance and results in inappropriate incentives which will work against the interests of customers. We recommend that the CMA recalibrates the cost sharing rates t0 50:50 preserving the incentive properties that have been so successful in delivering benefits to customers through ongoing efficiency and creating incentives that encourage companies to reveal their efficient costs.
- On leakage, Ofwat's approach of using the final year of AMP6 actual performance rather than a continuity of the AMP6 PC level creates undesirable cyclicality in incentives of discouraging companies to improvement leakage throughout the AMP7 period and secure the best value for customers. We recommend that the CMA reset the leakage PC target to be based on the 2019/20 target rather than the actual performance of companies.
- Ofwat's approach to setting an asymmetric aggregate 3% cap on ODI rewards undermines the incentive for companies to deliver excellent services for customers'. We are also concerned that the 3% cap introduced by Ofwat is inconsistent with the stated preferences of our customers, who preferred a 2% cap, is poorly designed and fails to achieve the stated aim of protecting customers against bill increases as well as driving further asymmetry in the package. We ask that the cap is amended to 2%, in line with customer research and that the error is corrected by moving the incentive to being applied on a net basis, incorporating both rewards and penalties.

7 FURTHERING THE RESILIENCE OBJECTIVE

7.1 SUMMARY

- The water sector is facing a significant and growing risk of severe drought impacts and flooding arising from climate change, population growth and environmental drivers. These changes led the Government to introduce a new primary duty for Ofwat to further resilience.
- Resilience needs to be interpreted by reference to the other primary duties of Ofwat, including furthering the interests of current and future customers.
- NWL submitted a BP19 which was backed by extensive consumer research and supported a number of investments and enhancements to secure long-term resilience. In particular around flooding and risk of drought.
- Ofwat has failed to apply its resilience duty appropriately, by rejecting our proposed investments or expecting these to be funded through the base cost allowance. These investments are directly linked to climate change and population growth challenges that NWL will face and are not business as usual investments.
- We include in our submission to the CMA two enhancement investment cases, which set out the need, options and efficient costs for these schemes, which will improve the resilience of our water and wastewater services for our customers. Both of these schemes were strongly supported by our customers. The CMA should consider the enhancement cases put forward and allow the schemes in full.
- Ofwat has also introduced a PC for 'Unplanned outages' which represents a poor metric for driving resilience improvements that is inappropriate. The measure is too novel for comparative assessment and the imposition of financial incentives. The CMA should remove the metric and the associated financial incentives.

7.2 INTRODUCTION

564. This Section highlights the decisions in FD19 that we consider are inconsistent with the Resilience Objective and which fail to deliver in accordance with our customers' priorities. In particular, it sets out:

- the importance of achieving a greater level of resilience in the water sector, the context that provides for the introduction of the Resilience Objective, and how we addressed this in our BP19 (see Section 7.3);
- why we consider that FD19 fails to give adequate weight to the Resilience Objective (see Section 7.4);
- details of the sewer flooding resilience scheme that was not adequately funded by Ofwat in FD19 and why we consider it should be supported by the CMA in this redetermination (see Section 7.5);
- details of the Abberton to Hanningfield water transfer scheme that was rejected by Ofwat in FD19 and why we consider it should be supported by the CMA in this redetermination (see Section 7.6); and
- details of why we consider that Ofwat's unplanned outage PC is a poor metric for capturing asset health and does not have the right incentive properties (see Section 7.7).

7.3 THE NEED FOR GREATER RESILIENCE IN THE WATER SECTOR

7.3.1 The resilience challenge

565. The water sector is facing a significant and growing risk of severe drought impacts and flooding arising from climate change, population growth and environmental drivers.[393] These risks are very well established and not disputed in the sector and pose a substantial challenge to water companies in delivering longer-term resilience in water and waste water services.

393 *Water UK – Water resources long-term planning framework 2010-2065, 20 July 2016, SOC343.*

566. The seriousness of this challenge and the need for the water sector to respond is further evidenced by the fact that Defra's National Adaptation Programme especially addresses actions around managing water availability and quality as well as flood protection.[394]

567. Climate change is having a profound impact on weather patterns. Average temperatures are rising but, at the same time, the range of temperatures we experience (both high and low) is widening. Similarly, we are experiencing an increase in the frequency of hotter, drier weather, while also experiencing a greater frequency of events with extreme hourly or sub-hourly rainfall intensity. The Meteorological Office (**Met Office**) has summed up its analysis of these trends as "*warmer, wetter winters and hotter, drier summers*" but with variations around the general trend: "*However, natural variations mean that some cold winters, some dry winters, some cool summers and some wet summers will still occur and users may need to factor this into decision-making*".[395]

568. In June 2019, the Government passed legislation requiring the UK to achieve net zero emissions by 2050.[396] Achieving this will require substantial change to many sectors of the UK economy including transportation, electricity and heat generation, land use, and manufacturing.

569. While plans in the UK are accelerating to find ways to deliver the net zero emissions target, understanding and planning for the potential impacts of a 2°C or higher increase in global temperatures remains important for water companies that need to manage long-term resilience through adaptation. The Committee on Climate Change (**CCC**), for example in its study on flood risk and water scarcity based its analysis on 'medium' and 'high' climate impact scenarios where average global temperatures rise by 2°C and 4°C respectively by 2050.[397] The implication of these global scenarios can be used to model the potential impacts on water resources in the UK (using model such as the UK Centre for Ecology and Hydrology's Future Flows and Groundwater Levels models).

570. Climate change is expected to increase the probability of flooding in all regions of the UK.[398] According to the CCC, as many as 1,900,000 additional UK homes could be in significant risk areas by 2050, more than doubling the current figure of around 860,000 homes.[399] The CCC's analysis is that existing plans for adaptation may only offset 20-40% of the annual damage from flooding, suggesting substantial additional investment is required to address the escalating risks.

571. Managing flood risks in future means that water companies investing in waste water and sewer assets need to be capable of dealing with higher volumes of rainfall within shorter timeframes than today. The importance of managing these extreme hourly/sub-hourly rainfall intensity events is further underlined by the fact that higher ground water and sea levels further reduce tolerances and increase flood risks if wastewater is not captured and processed effectively. This is a key challenge for us in our North East region.

572. At the same time, there is about a 1-in-4 chance over the next 30 years that large numbers of households will have water supplies cut off for an extended period because of drought.[400] Although there will continue to be regional variation, winters are generally expected to become wetter and summers are expected to become hotter and drier as a result of climate change. The Met Office has estimated that the frequency of hot spells (where maximum daytime temperatures exceed 30°C for 2 or more days in a row) will increase from around once every four years, to around four times a year by 2070. The Met Office also estimates that summers will see up to 47% less precipitation by 2070. Together, these trends are driving the increased risk of drought events.[401]

573. The NIC has calculated that by 2050 water companies will need to have an additional 4,000 million litres per day of capacity to ensure resilient supplies.[402] This could be much higher in more extreme (but still plausible) population and climate scenarios.[403]

574. The NIC and CCC both highlight that maintaining sufficient resource availability to have a water system that is resilient, will require substantial action on: demand reduction; leakage control; and investment in new sources of

394 *Defra – The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting: Making the country resilient to a changing climate, July 2018, SOC359.*
395 *Met Office – UK Climate Projections 2018 (UKCP18) Science Overview Executive Summary, January 2019, SOC376, p.3.*
396 *The Climate Change Act 2008 (2050 Target Amendment) Order 2019 SI2019/1056, SOC500.*
397 *CCC – UK Climate Change Risk Assessment 2017: Summary of ASC-commissioned research projects, October 2015, SOC334, p.1.*
398 *CCC – UK Climate Change Risk Assessment 2017: Summary of ASC-commissioned research projects, October 2015, SOC334, p.2.*
399 *CCC – UK Climate Change Risk Assessment 2017: Summary of ASC-commissioned research projects, October 2015, SOC334, p.2.*
400 *NIC – Preparing for a drier future: England's water infrastructure needs, April 2018, SOC357, p.4.*
401 *Met Office – UK Climate Projections 2018 (UKCP18) Science Overview Executive Summary, SOC376, January 2019, p.1.*
402 *NIC – Preparing for a drier future: England's water infrastructure needs, April 2018, SOC357, p.9.*
403 *This is an issue generally, however the NWL Water Resources Management Plan, SOC264, shows that our Essex water resource zone does have sufficient raw water.*

supply. Delivering improvements in each of these areas comes with its own practical and economic challenges for the water companies and policy makers.

7.3.2 The role of resilience objective

575. As set out in Section 3.3.2 above, the Resilience Objective was introduced in 2014 to provide a statutory focus on meeting this resilience challenge. The Resilience Objective requires Ofwat to execute its functions in a way that will ensure the long-term resilience of water supply and sewerage systems with particular reference to managing the impacts of environmental pressures, population growth and changes in consumer behaviour.[404]

576. In the context of the price setting process, Ofwat has indicated that "*taking a long-term view is an essential element of planning for resilient systems and services, and is central to the resilience objective set out in our duty, as well as to resilience in its broader sense*". Given that climate change and demographic shifts will express themselves over generations, Ofwat considers that "*in the context of the water sector, 'long term' means looking 25 to 100 years ahead – a timespan that inevitably cuts across a number of price control periods*".[405]

577. This has been confirmed by the Government in its 2017 SPS (see Section 3.2.4) in which it calls on Ofwat "*challenge the water sector to plan, invest and operate to meet the needs of current and future customers, in a way which offers best value for money over the long term*".[406]

578. This means that our enhancement proposals should be viewed in this long-term context and the impact of our proposals to improve our operational resilience should be considered in light of the impact of climate change on current and future customers.

7.3.3 The role of resilience in BP19

579. As we have explained in Section 4.4.1.3 above we undertook a series of specific actions to consider resilience in the development of BP19.[407] These were designed to ensure that we would be in a position to meet the expectations of the Government and Ofwat, as well as those of our customers.

580. Based on this process of appraisal and engagement we included a number of different resilience investments in BP19. Each of our resilience enhancement schemes was supported by a detailed business case setting out the need, details of the optioneering undertaken and demonstrating that the scheme had been efficiently costed. These are specifically aimed at addressing the issues we identified around making better use of existing resources through interconnectivity and addressing flood risk.

7.4 OFWAT HAS FAILED TO MEET ITS DUTY TO FURTHER THE RESILIENCE OBJECTIVE

581. Whilst Ofwat allowed some of our proposed resilience enhancement schemes in FD19, it either rejected, or failed to adequately fund, two significant resilience schemes despite those schemes meeting clear needs, representing the best of the available options, having been costed efficiently and having the support of our customers and Water Forums.

582. We consider that these decisions are indicative of an overall approach by Ofwat that has seen an undue focus for PR19 on short term bill reductions and service improvements at the expense of on longer-term planning and investment. As a result, Ofwat has failed in FD19 to give adequate weight to the Resilience Objective.

583. In the following sections we consider this in the context of:

- Ofwat's short term focus in PR19 (see Section 7.4.1);
- a methodology that incentivised cost cutting over investment in resilience (see Section 7.4.2);
- an approach to cost assessment that does not support resilience (see Section 7.4.3); and

404 *Water Act 2014 Explanatory notes, 14 May 2014, SOC328, Chapter 21, p.3.*
405 *Ofwat – Towards resilience: how we will embed resilience in our work, December 2015, SOC245, p.8.*
406 *SPS, SOC349, p.1.*
407 *Section 3.3 of BP19 (ed. 08.19), SOC129.*

- the relative lack of resilience investment allowed in the FDs across the sector (see Section 7.4.4).

7.4.1 Ofwat had a short term focus for PR19

584. As we set out above (see Sections 3.3.2 and 7.3.2) the Resilience Objective has a specific focus on long-term planning. A focus on the long-term is also relevant to the Consumer Objective (see Section 3.3.1) which explicitly looks to protect the interests of current and future customers.

585. In considering the appropriate balance of the overall package, regulators need to balance the need for efficiency with additional investment, to ensure the ongoing delivery of the essential service over the long term.

586. In contrast, the framework and applications of PR19 have been extremely short-term in their approach. Indeed, in its methodology statement, Ofwat suggested:

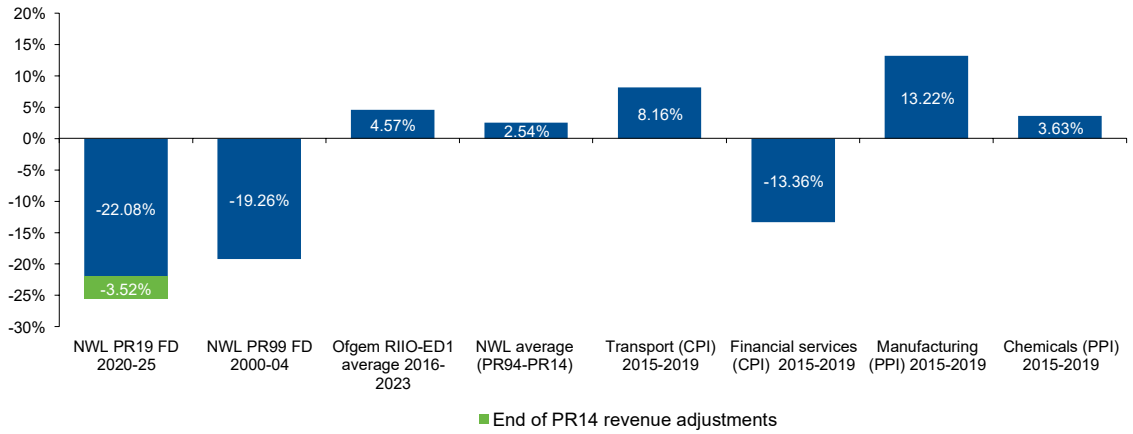
"Companies will need to deliver a step change in efficiency to provide more for customers and the environment, while reducing bills."[408]

587. This was a signal of Ofwat's clear prejudice towards supporting bill reductions. Figure 42 shows that the bill reduction of -25.60%[409] imposed on NWL in FD19 is significantly greater than:

- the largest ever bill reduction imposed on NWL in any previous price control review (-19.26% at PR99);
- the average bill change for NWL in each of Ofwat's price controls between 1995 and 2019 (+2.54%);
- the average bill change for the electricity distribution sector in Ofgem's most recent price control (+4.57%); and
- the average price changes seen in the (competitive) Transport (+8.16%), Financial Services (-13.36%), Manufacturing (+13.22%) and Chemicals (+3.63%) sectors over the last 5 years.

588. This unprecedented level of reduction must be seen in the context of a BP19 that itself proposed a bill reduction for our customers of 16.30% using Ofwat's method of calculation, or 15% based on our calculation to take account of the weighting of customers in our different regions.[410] This is clearly an affordable package, comparable with the largest previous bill reduction in the sector, and indeed greater than other competitive sectors that regulation is seeking to 'mimic' and yet Ofwat has pushed for even more.

Figure 42: Percentage change in price or bills across sectors



Source: NWL PR19 financial model for NWL, 16 December 2019, Ofwat Determinations, Ofgem RIIO-ED1 Determinations, and ONS.

589. As we set out in this SoC, in order to deliver the level of bill reduction that Ofwat's FD19 requires, we are facing a PR19 package which is unbalanced as a whole and is incredibly stretching, with substantially skewed negative incentives. In a number of instances, Ofwat has approached an aspect of the regulatory framework where well established precedent exists and chosen to take a more extreme approach. This creates short term pressures on NWL and encourages us to seek short term solutions. Many of Ofwat's interventions create inter-generational

408 *Ofwat PR19 Methodology, SOC424, p.14.*
409 *This figure is based on Ofwat's calculation of the average bill reductions envisaged by FD19 (see Footnote 10).*
410 *See Footnote 10.*

fairness challenges by pushing problems into the future for other generations to address despite its obligations under the Consumer Objective and the Resilience Objective.

7.4.2 Ofwat has created strong incentives to reduce costs (and bills) rather than investing for resilience

590. Ofwat has built in a number of financial and procedural incentives in PR19 aimed at the reduction of costs, but has failed to ensure that these are appropriately balanced against longer-term considerations. For instance:

- Ofwat's IAP19 established clear requirements on companies to accept the 'early view' of the cost of capital and provide cost estimates in line with or below the results provided by their cost models.[411] Any company seeking an exceptional or fast-track verdict needed to accept this view, even if it considered that the underlying analysis or positioning by Ofwat was incorrect;
- throughout the PR19 process, Ofwat has provided financial rewards to companies that reduced their costs over the price control process. For example, the cost sharing rates were set to the ratio of the company's view of required Totex and Ofwat's view. For the company's view, Ofwat took account of reductions made by companies over the PR19 process. Companies were incentivised to blindly and artificially follow Ofwat's view of Totex in order to gain more favourable cost sharing rates, rather than to recognise the actual amount of costs required to provide the service needed by customers. This is particularly evident among the significant scrutiny companies. Under Ofwat's methodology these companies would have received a cost sharing rate of 75% for underperformance and 25% for outperformance. However, by accepting Ofwat's view on costs, Southern Water, Hafren Dyfrdwy and Affinity Water all received improved cost sharing rates, as shown in Table 35 below;[412] and
- this incentive was particularly perverse when resilience enhancement projects are considered. Companies that put forward resilience enhancements increased their Totex requirement and therefore were strongly penalised for having higher Totex under the cost sharing rate framework. In previous price controls Ofwat adopted a policy of 'two sided adjustments' for these types of investment, such as the CIS.[413] Under the CIS if a proposed investment did not pass Ofwat's 'need' test, it was removed rather than retained for the purpose of the cost sharing framework, so as not to discourage companies from proposing investment which might prove to be necessary.

Table 35: Cost sharing rates for the four significant scrutiny companies

	Underperformance (%)		Outperformance (%)	
	Water	Wastewater	Water	Wastewater
Affinity Water	53	-	47	-
Hafren Dyfrdwy	50	50	54	59
Southern Water	64	64	36	36
Thames Water	75	75	32	44

Source: Ofwat

7.4.3 Ofwat's cost assessment approach does not support resilience

591. Ofwat's approach to cost assessment has continued to over-emphasise historical data and therefore has not sufficiently taken into account the longer-term and variable nature of resilience investment requirements. This results in cost allowances, for resilience expenditure in particular, that risk being insufficient to meet the levels of future service that Government and customers expect.

592. Ofwat has treated capital maintenance – a key component of resilience expenditure - as base expenditure and used econometric models to set allowances based on historical (2011-2018) upper quartile spending. Capital maintenance requirements vary depending on the age and health of a company's assets according to the company's historical investment profile and the use of the assets. Ofwat's models do not take into account this variability in capital maintenance expenditure requirements between companies and over time. As a result, Ofwat's approach risks systematically underfunding the capital maintenance for companies with aging assets entering into a new investment cycle.[414] Even though the weaknesses in its approach have been highlighted

411 *IAP19, SOC207, p.23.*
412 *FD19: Significant scrutiny companies – Application of lower cost sharing rates and outcome delivery incentive cap, 16 December 2019, SOC190.*
413 *Ofwat – Water Industry Forum CIS and Totex Incentives, 20 March 2013, SOC175, p.5.*
414 *First Economics – Providing appropriate regulatory funding for capital maintenance activity: Ensuring capital sustainability and service resilience, August 2019, SOC384.*

throughout the PR19 assessment process (as have alternative approaches taken elsewhere), Ofwat has chosen not to alter its approach to capital maintenance allowances.

7.4.4 Ofwat has provided relatively little investment to support resilience in the FDs

593. Ofwat states that in delivering its aim of 'Resilience in the round' PR19 will see "*£13bn of investment for new and improved services, and to tackle the challenges facing the environment*".[415] However, this includes c. £5bn for investments covered by the National Environment Programme (**NEP**) and WINEP schemes, which represent common environmental improvement programmes in water driven by specific statutory obligations (see Section 5.7) as opposed to being investment primarily aimed at furthering the Resilience Objective- these investments existed long before Ofwat was given its new duty.

594. The only investment that is clearly related to increasing the resilience of the network is funding for the increase in resilience infrastructure. This allowance is worth £643m, 5% of the £13bn total allowance that Ofwat referenced in FD19.[416]

595. If Ofwat were truly to be meeting its Resilience Objective then we might expect to see evidence that it had provided additional allowances for these investments in companies' determinations. In accordance with the aim of the Resilience Objective and the clear indications that the Government and Ofwat wanted to see resilience addressed in business plans, companies proposed a substantial uplift in their proposed investments for AMP7. Assuming that the investment cases are of comparable quality across different cost categories we would expect to observe a comparable level of efficiency challenge. Table 36 below shows the efficiency challenge applied by Ofwat to our different cost categories and the industry overall. The analysis shows that Ofwat applied the largest efficiency challenge to resilience enhancement investments.

Table 36: Efficiency challenge imposed on companies at FD19

Company	Total base costs	WINEP	Supply-Demand balance and metering	Resilience enhancement
NES	3.4%	20.0%	0.0%	28.8%
Industry	0.4%	9.8%	31.2%	42.9%

Source: NWL calculation. Comparison of FD19 and Business Plans, as reported in Ofwat's FD19.

596. None of the factors discussed here are consistent with a regulator that is focused on the long-term resilience of the sector but all would be consistent with a narrow focus on bill reduction.

597. For NWL, the impact of this has been felt most significantly with respect to Ofwat's FD19 approach to:

- our flood risk resilience proposals (see Section 7.5);
- our water scarcity and quality resilience proposals (see Section 7.6); and
- the identification of the unplanned outage PC and the decision to attach a financial incentive (see Section 7.7).

7.5 EFFICIENT COSTS FOR FLOOD RISK REDUCTION TO IMPROVE RESILIENCE ARE NOT REFLECTED IN FD19

598. In this section we provide an overview of our proposals, how they were assessed by Ofwat in FD19 and indicate how we would like the CMA to consider this issue as part of its redetermination.

415 Ofwat FD19, SOC183, p. 6.
416 Ofwat FD19, SOC183, p.6.

7.5.1 Our BP19 proposals

599. In our BP19 submissions we included an enhancement case £86m investment in wastewater resilience in our North East region focused on addressing the risks associated with sewer flooding.[417] An updated version of the enhancement case is enclosed as a supporting document.[418]

600. Our early engagement with customers highlighted clearly that customers saw sewer flooding as one of the worst service failures that they might experience.[419]

601. This is also consistent with broader industry research on common Willingness to Pay rates (**WTP**) which shows that customers are willing to pay a substantial amount to avoid sewer flooding risk.

602. In parallel, our work to understand the resilience risks facing our business (see Section 4.4.1.3) highlighted that, as a result of climate change and increased urbanisation (urban creep) in our North East region, our customers will experience a material increase in sewer flooding risk.[420]

603. Using appropriate evidence of climate change scenarios to model the most likely outcomes in the 2020-25 period, we can observe that intensity of rainfall combined with long dry antecedent weather conditions are more likely to occur.[421] At the same time urban creep in our North East region is expected, again based on recent trends and independent studies.[422] These factors suggest that our assets will experience more stress in AMP7. Hydraulic modelling on a robust sample of our network confirms that in total over the AMP7 period, these factors were expected to contribute to some additional 7,400 properties at risk of flooding.[423]

604. Given the concerns of customers around sewer flooding risks, we engaged with them to understand if we should seek to take a more proactive approach. That research confirmed that customers supported this proactive approach.[424] As a result there is a clear need for this package of pre-emptive interventions which go over and above the interventions we would normally undertake in our business as usual activity.

605. We undertook an appraisal of different options to ensure that we were selecting the best options for our customers. We also benchmarked the costs of those options against a range of similar market tested schemes. This benchmarking confirmed that our costs were efficient.[425] We have reconfirmed those cost benchmarks, with updated data ahead of this submission and also made some updates to our enhancement business case. These are provided in our updated enhancement case and confirm that the costs of our proposed interventions are efficient.[426]

606. We also needed to understand whether our customers supported these specific investments (as opposed to the general concept discussed with them at an earlier stage of our engagement) and were willing to pay for them. We discussed the package of resilience investments with the Water Forums to understand their views and agreed to take forward a package of research with our customers to understand if they supported these investments also (see Section 4.4.1.3). From that research there was very clear support for the additional investments that we highlighted. We achieved an overall acceptability of 91%, which was recognised by our Water Forums as very high.[427]

607. Our enhancement case was subject to board level assurance and we included an associated PC and ODI to protect customers in the event that we did not deliver the proposed enhancement investments.

---

417 Appendix 3.2 to BP19 (ed. 09.18): Enhancement Business Cases, p.28, SOC037.

418 Wastewater Reduce Flooding Risk for Properties Enhancement Business Case, March 2020, SOC267.

419 Appendix 2.2 to BP19 (ed. 08.19): Customer Engagement Summaries for PR19, SOC031, Service Improvement Research, 2014, p.10.

420 See for example: Future Impacts on Sewer Systems in England and Wales Summary of a Hydraulic Modelling Exercise Reviewing the Impact of Climate Change, Population and Growth in Impermeable Areas up to Around 2040, June 2011, SOC299, p.5; The CONVEX Project, 2015, SOC333.

421 Met Office, A summary of the analysis of waste water flooding events and rainfall in the Northumbrian Water Region, June 2019, SOC457.

422 Pilot Project Report of Newcastle City Council on creeping impermeability, Urban Flood Rising and integrated Drainage, March 2008, SOC450.

423 Hydraulic modelling of a 1:20 return period flooding event with uplift for climate change and urban creep has identified 16,324 properties at risk, but we have taken the highest risk categories totaling 7,400 within this cohort as being most vulnerable.

424 Appendix 2.2 to BP19 (ed. 08.19): Customer Engagement Summaries for PR19 (Flooding Response, 2016), p.66.

425 KPMG and Aqua Consultants - Reducing Property Flood Risk: Cost Assurance Benchmarking Report, March 2020, SOC282.

426 KPMG and Aqua Consultants - Reducing Property Flood Risk: Cost Assurance Benchmarking Report, March 2020, SOC282.

427 Water Forums' Report, SOC009, p.4.

7.5.2 Ofwat's FD19 Assessment

608. Throughout the PR19 process, Ofwat consistently rejected our wastewater resilience investment case.

609. Ofwat provided specific feedback following its different test areas. This feedback challenged the 'Need' for and the 'Efficient cost' of the investment. On all other aspects of its assessment, Ofwat concluded that the evidence was sufficient to 'pass' its tests.

610. In determining that the 'Need' test had been failed, Ofwat noted:

"Northumbrian Water claims that climate change and urban creep pressures are increasing its risk of sewer flooding by 10% (16,324 properties). It presents CONVEX Research, Met Office research and forward-looking analysis, amongst other pieces of evidence, to demonstrate climate change pressures. While we acknowledge the existence of climate change and urban creep pressures, the company provides insufficient evidence to demonstrate it will face exceptional pressures relative to the wider industry.

We do not allow additional enhancement expenditure relating to the common performance commitment, internal sewer flooding incidents. Achieving common performance commitments is funded under base allowances and outperformance of targets is funded under the outcome delivery incentive (ODI) framework, where appropriate.

While we acknowledge that climate change and urban creep pressures impact the entire industry, there is no industry-wide push requesting additional allowances. An extent of these pressures have also been present in previous investment periods, so base allowances provide a partial allowance for these costs in line with the historic rate of change in the pressures associated with climate change and urban creep. We have compared our implicit allowance for flooding risk reduction in our base allowance to the investments companies are requesting, and consider that our base allowance is sufficient to cover costs to address the anticipated effects of climate change. We consider the implicit allowance and the company's allowance in the round provides sufficient funding for this programme."[428]

611. In determining that the 'Efficient cost' test had been failed, Ofwat noted:

"The company undertakes hydraulic modelling using rainfall and urban creep uplift rates recommended by relevant external guidance (UKWIR) to calculate the number of properties that will face an increased risk of sewer flooding due to climate change and urban creep over the next investment period. Its claim relates to reducing this risk for 7,400 properties in the highest and second-highest risk category that have not been flooded in the past.

'The company claims it "has assessed the costs for this and other enhancement claims through a structured and robust approach, involving benchmarking of cost estimates against alternatives" (pg. 3) and puts forward a cost per property of £11,650. We consider there is insufficient evidence to demonstrate that the company has estimated an efficient unit cost. The company has applied reductions to the unit cost due to efficiencies achieved during the 2015 and 2020 period and has applied a further reduction for annual efficiency target for capex enhancements, however there is no evidence that the cost has been benchmarked across the industry."[429]

612. Ofwat suggested that improving our sewer flooding performance should have been funded through our base cost allowances. It also raised concerns about whether our proposed costs are efficient.

7.5.3 Ofwat's interpretation that this investment is covered by base costs is incorrect

613. Throughout the PR19 process, Ofwat asserted that these investments could (and should) be funded from base cost allowances. Ofwat takes the position that companies should be able to deliver upper quartile service improvement within their base cost allowances.

614. We note that several other companies have made representations to Ofwat throughout the PR19 process about the apparent disconnect between service improvement and investment in Ofwat's PR19 framework.[430] We agree that there is a clear relationship between investment and service improvement and that there is an obvious gap in Ofwat's framework for PR19, where base costs are modelled entirely separately from service levels and these are set entirely independently.

428 *Ofwat – Cost adjustment claim feeder model Northumbrian Water, 16 December 2019, SOC198, Tab 'WWN_Reducing_sewer_flooding' cell D31.*
429 *Ofwat – Cost adjustment claim feeder model Northumbrian Water, 16 December 2019, SOC198, Tab 'WWN_Reducing_sewer_flooding' cell D31.*
430 *NERA – Assessing Ofwat's funding and incentive targets for leakage reduction, 22 March 2019, SOC378.*

615. However, in line with the ambitions that we reflected in our original BP19 (ed.09.18), we accepted Ofwat's challenge to meet the target for the common sewer flooding PC through our base costs. We consider, however, that this investment proposal is distinct from that activity and justifies a different treatment.

616. In particular, we consider that this resilience enhancement proposal falls outside our base costs and that our costs are efficient for the following reasons:

- the activity that we are proposing is a new addition to any activity undertaken during AMP6 or previously, so the costs of carrying it out will not be reflected in our historical costs;
- the expenditure is clearly designed to improve flooding resilience for properties that will be at risk of flooding in the future as a result of climate change and urban creep, rather than to address current sewer flooding performance for which we have accepted Ofwat's stretching PC and not requested additional funding;
- Ofwat has been inconsistent in its approach to gathering data on expenditure for wastewater resilience and reducing flooding risk in properties and in reaching its conclusions it appears to have overlooked our planned expenditure to meet the common sewer flooding PC;
- Ofwat's 'implicit allowance' calculation cannot be relied upon as a basis for suggesting that NWL receives sufficient funding for sewer flooding activities already;
- Ofwat's cost assessment models do not contain the appropriate drivers to conclude that climate change and urban creep pressures are reflected in the modelled allowances; and
- Ofwat is incorrect in its assertion that the costs of the scheme are inefficient.

7.5.3.1 The resilience scheme envisages new, additional activity not reflected in our historical costs or activity

617. Our resilience scheme needs to be considered in the context of the various definitions and categorisations applied to sewer flooding. For instance, Ofwat distinguishes internal sewer flooding (flooding that has an impact within a building) from external sewer flooding that has impacts outside properties. Distinctions are also drawn between properties that are currently considered to be at risk of sewer flooding and those that could be at risk in the future, indeed in the coming AMP, subject to the impacts of climate change and other factors. This resilience investment refers to properties that have not previously flooded but which are expected to be at risk of internal sewer flooding (4,515 properties) and the most severe external sewer flooding (2,885 properties) in the future.

618. Over the period 2011 to 2019, NWL has invested c.£178m specifically in schemes and activities to reduce sewer flooding risk.[431] Around £65m of this has been spent during AMP6 as part of our wider c.£240m investment in our sewer network.[432] These are the base activities that we carry out to deliver the common PC to reduce sewer flooding and are typically focussed on properties that are currently at risk of flooding:

- traditional capital interventions on our sewer network (including spending on feasibility studies) to reduce flooding risk for properties that have experienced flooding previously, including upsizing of pipework, valves, or pumping station assets, or installing compensation storage facilities;
- feasibility studies through Community Action Plans to identify flooding risk reduction actions;
- identifying and installing property level protections (like flood doors and air bricks) where customers have experienced internal flooding;
- strategic flood risk studies with the EA and Lead Local Flood Authorities (undertaken through the Northumbria Integrated Drainage Partnership); and
- find and fix activities on our sewage networks in hotspot areas as part of tactical plans to address our future flooding position.

619. We report annually on these and other activities to the EA in our Section 18 reports.[433] These activities, together with our wider sewer networks investment activities, have improved our performance against the common PC, reduced the incidences of flooding in properties over the AMP and helped us beat our PC.[434]

431 Ofwat Wholesale Water Model 1 Master Data, 16 December 2019, SOC438, Tab 'Interface_real', Column JB (2017/18 base prices)

432 NWL AMP6 rolling Capex plan, January 2020, SOC267.

433 Section 18 reports are provided annually by water companies to the Environment Agency. They provide requested information on specified activities including, among other things, sewer flooding and coastal erosion.

434 Northumbrian Water Limited Annual Report and Financial Statements for the year ended 31 March 2019, SOC259, p.65.

620. Accordingly, during AMP7 we plan to continue with these activities to reduce sewer flooding risk to properties already at risk. Our current rolling plan includes c.£82m over AMP7.[435] This is an increase of £17m relative to the c.£65m spent in AMP6, recognising that additional spending will be needed to meet the more stretching common PCs placed on reducing sewer flooding risk in AMP7.[436] This expenditure will come from our base allowances.

621. It is important to note that the base programme will naturally reflect property flooding trends and prioritise properties that have flooded. This means that for later years we don't know where the priority schemes will need to be focussed. We have a track record of investing more when we experience peaks in flooding to prevent recurring flooding.

622. However, we are aiming to break this reactive cycle by addressing properties at risk of flooding before they actually flood. This is what customers strongly believe we should be doing.[437] This is why, as part of our separate enhancement case, we planned to undertake new and additional activities focussed on improving resilience and reducing the risk of sewer flooding at properties that have not yet flooded but could in the future as a result of climate change and urban creep. These activities would include:

- re-routing rainwater;
- creating ponds, lakes and rain-gardens;
- giving customers water butts; and
- having additional community plans to prepare for flooding.

623. These activities were estimated to cost £86m and were included in our BP19 submission.[438]

624. Specifically, these additional activities are focussed on reducing the risk of flooding to 7,400 properties out of the 16,324 that are at increased risk of flooding, as identified through modelling of climate change and urban creep impacts. This activity will be undertaken in addition to the measures that we currently take in an average year – thereby demonstrating a clear enhancement to the existing activities which are remunerated through base costs.

7.5.3.2 The resilience scheme is not related to the common sewer flooding PC

625. Ofwat stated consistently that the activities encompassed in our resilience enhancement proposal should be funded from base costs because they relate to improvements aimed at meeting a common PC. NWL has provided compelling evidence which demonstrates that:

- climate change and urban creep present a deterioration in environmental conditions that creates an upward pressure on service delivery and consequential costs in the future;
- analysis of our system using projected uplifts for climate change (10%) and urban creep (1.6%) has identified that some additional 16,324 properties have the potential to be flooded from sewers during the next investment period;
- the reduction of risk to 7,400 properties will reduce the risk of flooding to those properties that are in the most significant risk band as a consequence of climate change and urban creep (4,515 properties) and a proportion of properties identified in our next risk band category (2,885 properties);
- the requirement for this enhancement expenditure is therefore driven by the need for us to respond now to this significant increase in risk caused by future challenges through long-term planning. It is not seeking to address current sewer flooding issues;
- our proposal will reduce the risk of flooding for properties above and beyond that of our existing flood risk, which we will continue to reduce and monitor through our common PC for sewer flooding;
- our proactive risk reduction enhancement will focus on properties that have never experienced flooding in the past, but which hydraulic modelling demonstrates will be at risk as a result of climate change and urban creep increases from flood events above a 1:20 return period; and

435 *NWL AMP6 rolling Capex plan, January 2020, SOC267; AMP7 Flooding Investment from rolling plan, February 2020, SOC272. This represents a snapshot in time of our investment programme, we continue to re-prioritise on an ongoing basis.*

436 *The PC levels in Ofwat's FD require a 20% reduction in sewer flooding over AMP7. From 1.68 incidents per 10,000 in 2020/21 to 1.34 in 2024/25.*

437 *Appendix 2.2 to BP19 (ed. 08.19): Customer Engagement Summaries for PR19, SOC031, Service Improvement Research, 2014, p.10.*

438 *Appendix 3.2 to BP19 (ed. 09.18): Enhancement Business Cases, p.28, SOC037.*

- the 1:20 threshold is above a current base expenditure level for sewer flooding and is a proactive measure designed to mitigate the effects for both internal and external flooding, rather than our current base expenditure measure which seeks to prevent flooding to properties with a known history of flooding.

626. Hence, this investment is focussed not on reducing sewer flooding for properties currently at risk, but instead on reducing risk for properties that are not currently at risk of flooding and which will be at risk in the future given the impact of climate change and urban creep. Therefore, this investment cannot be related to reducing sewer flooding risk on the core common PC.

627. In fact, NWL has accepted the common PC and agreed to achieve its target level without any increase in base costs, despite the likely need to make additional investments to meet those new and highly stretching service levels for our customers.

7.5.3.3 Inconsistencies in data gathering have contributed to our planned expenditure to meet the common sewer flooding PC being overlooked by Ofwat

628. During AMP6 we reported costs associated with reducing flooding risk in properties as enhancement expenditure in Table 4M line 28 of our Annual Performance Reports (**APR**). This was in accordance with Ofwat's Regulatory Accounting Guidelines.[439]

629. To be consistent with this, in BP19 we reported our AMP6 expenditure to reduce flooding risk in properties in Line 30 of the WWS2 enhancement table, which shares the same definition as APR line 4M.28.[440]

630. In its PR19 Methodology, Ofwat set out how it would treat base cost and enhancement costs separately, specifying that enhancement costs in PR19 would be defined as expenditure for the purpose of enhancing capacity or quality of service beyond current levels.[441] At the IAP19 stage, Ofwat further clarified that expenditure to meet common PCs should be funded from base costs.[442] In accordance with this, we prepared our BP19 on the assumption that our spending to reduce sewer flooding risk for properties already at risk would be in base allowances – not enhancement as previously defined.

631. Therefore, in our BP19 (ed.09.18) submission the c.£82m expenditure we plan for AMP7 on reducing sewer flooding risk for properties already at risk was included implicitly in our base costs. We separately included our planned £86m expenditure on improving sewer network resilience to reduce risk of flooding in new properties not currently at risk in Line 27 of WWS2 as a resilience enhancement case. [443]

632. At the IAP19 Ofwat moved the resilience enhancement case in Line 27 to Line 30 of WWS2 (for expenditure on reducing sewer flooding).[444] We replicated this change by Ofwat in our BP19 (ed. 04.19) submission.[445]

633. This means that Line 30 of the WWS2 of the BP19 data table is inconsistent.[446] For AMP6, it captures expenditure which in PR19 would be considered to be part of base costs; and for AMP7, it captures only planned resilience enhancement expenditure (and does not show our planned base cost expenditure on sewer flooding).

634. Further, in DD19, Ofwat made a change to include the costs associated with reducing sewer flooding risk (from Line 30) in the base cost models.[447]

635. We believe that this inconsistency has led Ofwat to conclude that our £86m resilience enhancement case represents our total planned expenditure on sewer flooding, including towards meeting the common PC. Therefore, it appears that in reaching its conclusions, Ofwat has failed to take into account the c.£82m base expenditure that we have assumed in our BP19.

439 *Ofwat – RAG 4.08 – Guideline for the Table Definitions in the Annual Performance Report, January 2019, SOC226, p.71.*
440 *Data tables for BP19 (ed. 09.18), SOC068, row 148 tab 'WWS2'.*
441 *Ofwat PR19 Methodology, SOC424, p.145.*
442 *Technical appendix 2 to IAP19: Securing cost efficiency, 31 January 2019, SOC205, p.18.*
443 *Data tables for BP19 (ed. 09.18), SOC068, tab'WWS2', line 27.*
444 *Data tables for BP19 (ed. 09.18), SOC068; Data Tables for BP19 (ed. 04.19), SOC099.*
445 *Data Tables for BP19 (ed. 04.19), SOC099.*
446 *Data tables for BP19 (ed. 04.19), SOC099.*
447 *Ofwat DD19: Securing cost efficiency technical appendix, SOC432, pp. 15-16.*

7.5.3.4 Ofwat's 'implicit allowance' calculation cannot be relied upon as a basis for suggesting that NWL receives sufficient funding for sewer flooding activities already

636. In FD19 Ofwat suggest that the cost assessment models provided an 'implicit allowance' for sewer flooding of between c.£60-£105m. On that basis, it considered that NWL had sufficient funding for these sewer flooding investments. Specifically, Ofwat stated:

"While we acknowledge that climate change and urban creep pressures impact the entire industry, we do not allow additional enhancement expenditure relating to the common performance commitment, internal sewer flooding incidents. Achieving common performance commitments is funded under base allowances and outperformance of targets is funded under the outcome delivery incentive (ODI) framework, where appropriate. An extent of these pressures have also been present in previous investment periods, so base allowances provide a partial allowance for these costs in line with the historic rate of change in the pressures associated with climate change and urban creep. Furthermore, we calculate an implicit allowance in the range of £60 to £105m for reducing internal sewer flooding in our base models. We consider the implicit allowance and the company's allowance in the round provides sufficient funding for this programme."

"Implicit allowance

We calculate an implicit allowance in the range of £60-105m for Northumbrian Water for reducing internal sewer flooding in our base models. The implicit allowance is calculated as the difference between our botex and botex + base allowances (i.e. modelling base allowances excluding and including growth costs). We take a midpoint estimate in the range reported above to calculate the materiality of the cost claim."[448]

637. The premise of Ofwat's approach is flawed - in seeking to calculate an 'implicit allowance' from the econometric models. Ofwat should not be placing weight on the 'implicit allowance' calculation in its decisions.

638. Ofwat uses a series of econometric models to assess efficient base wholesale wastewater costs. As we highlight in this SoC, we support this approach. However, these models are explicitly designed to capture the overall level of efficiency in aggregate for the entire wholesale wastewater service. They are not designed to capture the 'implicit allowances' for individual granular cost lines in this way.

639. Following the logic of Ofwat's approach, within the cost allowances provided by the models there would be a series of 'implicit allowances' and the total modelled base cost allowances would be considered to represent an aggregate stack of these line items. However, because the models are designed to provide a reasonable estimate in aggregate – and therefore are not in reality built up of individually robust estimates – any individual 'implicit allowance' could be an under or over-estimate. Just as for some line items the 'implicit allowance' may happen to be higher or lower than the historical expenditure made by NWL. The range of these over and under-estimates can be wide. This point is illustrated in Table 37 below.

640. Ofwat did not publish the workings, but we have attempted to replicate its calculations. The impact of this implicit allowance calculation is shown in Table 37 below, based on our understanding. This takes the total allowance from the botex plus models for wastewater (A) and then calculates the same allowance with the relevant cost lines removed (B) and the difference (C) represents the 'implicit allowance'. From this analysis, we can infer an implied annual allowance (D). We have compared this to historical annual spend between 2011 and 2019 (E).

Table 37: Analysis of Ofwat's implied allowance (£m)

	(A) Botex plus base costs	(B) Botex plus base costs (with lines removed)	(C) Implicit allowance (5 years)	(D) Implicit allowance (annual)	(E) Historical annual expenditure (2011-12 to 2018-19)
Other operating expenditure excluding renewals	893	617	276	55.2	63.6
Transfer private sewers and pumping stations	893	881	12	2.4	3.8
Service charges / Discharge consents	893	877	16	3.2	2.85
Renewals expensed in year - infra	893	854	39	7.8	2.95

Source: NWL analysis of Ofwat's base cost models, all results are pre-efficiency, i.e. no efficiency challenge has been applied (2017/18 base prices).

641. Calculating an 'implicit allowance' from the aggregate econometric models has a poor relationship to a company's actual (historical or forecast future) costs for a given activity. The analysis applied by the models does not on its

448 *Ofwat – Cost adjustment claim feeder model Northumbrian Water, 16 December 2019, SOC198, Tab 'WWN_Reducing_sewer_flooding'.*

own provide any information about whether or not a cost item is valid (e.g. whether it falls within the definition of a relevant base cost). Therefore, the models rely on complete and accurate cost data being entered into the analysis.

642. If a valid cost item is left out of the analysis – as it is to calculate column (B) - this will affect the outcome of the analysis. However, the nature and extent of that affect are not predictable, as Ofwat seems to assume. Instead, the affect will depend on whether the excluded cost item is:

- common to all firms;
- highly correlated with one of the explanatory variables; and
- variable across firms, but uncorrelated with the explanatory variables.

643. In each case, the outcome on the total cost estimate, the coefficients and the efficiency analysis will vary. Where multiple cost items are excluded, the effect becomes harder to predict. Ultimately, excluding a valid cost from the modelling produces a bias in the total cost outcome. Comparing the 'unbiased' estimates from running the models with all costs included (A) with the 'biased' estimates from running the models with some costs removed (B) gives an estimate of the bias that removing the cost creates – but is not necessarily an accurate indication of an 'implicit allowance'.

644. Even if Ofwat's approach to an implicit allowance was valid, it is clear that in the case of sewer flooding, the models underestimate our actual costs, as shown in Table 38 below.

Table 38: Analysis of Ofwat's implied allowance - sewer flooding (£m)

Cost lines	(A) Botex plus base costs	(B) Botex plus base costs (with lines removed)	(C) Implicit allowance (5 years)	(D) Implicit allowance (annual)	(E) Historical annual expenditure (2011-12 to 2018-19)
New development and new connections enhancement costs and growth at sewage treatment works (excl. sludge)	893	854	39	7.8	5.2
Reduce flooding risk for properties	893	829	64	12.8	22.3
Totals	**893**	**N/A**	**103**	**20.6**	**27.5**

Source: NWL analysis of Ofwat's base cost models, all results are pre-efficiency, i.e. no efficiency challenge has been applied (2017/18 base prices).

645. In Table 38 above, we have replicated Ofwat's calculation of the implicit allowance for sewer flooding and new development and new connection enhancement costs ('growth') based on our understanding.

646. From the table we can see that by removing the cost line for 'growth' the total allowed base cost changes by £39m. Similarly, removing the cost line for 'sewer flooding risk' drives a change in the 'implied allowance' of £64m. We assume that taken together, these lines constitute the '£60-105m' figure to which Ofwat refers.

647. However, when this is compared to the current expenditure on these elements (E), it is clear that the base allowance is insufficient to fund even the current level of expenditure, before any additional enhancement activity is considered. Over the period 2011-19, NWL spent a total of c.£22.3m per annum on reducing sewer flooding risk (column D, according to the reported data).[449] Over a five year period this equates to c.£111m. Taken together with historical growth costs of £5.2m per annum (£26m over 5 years), this equates to a total historical expenditure of c.£137m over 5 years. This does not compare favourably with Ofwat's estimates of '£60-105m'. This analysis is before any efficiency assumptions are applied.

648. If Ofwat's approach to an estimated implicit allowance were suitable, then this analysis could reasonably support the conclusion that the £82m of (base) expenditure that we are proposing to undertake in AMP7, is reasonably funded. However, it does not allow us to conclude that the £86m enhancement investment is similarly funded.

649. These 'implicit allowances' represent a substantial reduction against the current levels of expenditure and are even more substantial against our planned base expenditure for AMP7. It certainly cannot be assumed to be sufficient to cover any additional enhancement activity. Therefore, it is not reasonable to conclude, as Ofwat appears to, that these 'implicit allowances' are sufficient for our activities to reduce sewer flooding risk.

449 *Ofwat Wholesale Wastewater Model 1 Master data, 16 December 2019, SOC203, Tab 'Interface_real', Column JB.*

7.5.3.5 Ofwat's cost assessment models do not contain the appropriate drivers to conclude that climate change and urban creep pressures are reflected in the modelled allowances

650. The econometric models that Ofwat uses to assess the efficient base cost, which Ofwat indicates provide the implicit allowance for these activities, include a series of different cost drivers or explanatory variables that seek to explain the impact on the dependent variable - in this case the assumed level of inefficiency. Specifically, the wastewater cost models include drivers for:

- load;
- density;
- topography; and
- different treatment types.

651. Where a cost driver is reflected as an explanatory variable in the model and the model is robust, then Ofwat may reasonably conclude that the models reflect the impact of those drivers on the allowed costs.

652. As the enhancement case makes clear, the drivers of the need for this investment are climate change and urban creep.[450] These drivers are not reflected in the explanatory variables of the models and hence the cost models cannot reasonably be expected to reflect these costs.

7.5.3.6 We have demonstrated that our costs are efficient

653. We have assessed the costs for this and other enhancement claims through a structured and robust approach, involving the benchmarking of cost estimates against alternatives, including market tested outcomes.

654. Aqua Consultants (**Aqua**), the expert water engineering firm, has developed an industry benchmark range between £8,200 - £11,600 per property for sewer flooding risk reduction in different catchments. This benchmark range is based on NWL and other industry cost benchmarks using actual delivered projects from the sector.[451]

655. Aqua has also developed a further benchmark based upon a bottom up estimating technique similar that used by NWL. This resulted in a cost per property of £10,800 per property, which sat within the expected industry benchmark range.[452]

656. Aqua has the highest degree of confidence in its bottom up estimate of £10,800 per property as it believes that this best reflects the specific scope, costs and risks expected at the 34 sites.

657. It has also identified other industry benchmarks from Ofwat, the EA, Anglian Water and Dŵr Cymru. These benchmarks demonstrate the wide variance in cost for this type of work, ranging from £8,000 - £540,000 per property.[453]

658. The other industry benchmarks serve to demonstrate just how sensitive the cost per property is to both the eventual solution and the number of properties addressed by a single scheme. Given the stage of development of the NWL notional schemes, it is very possible that more costly solutions would be required to achieve the risk reduction for 7,400 properties as planned by the investment.

659. Aqua considers that the other industry benchmark data does support the lowest end of its benchmark range of c.£8,000 per property. It is also Aqua's opinion that the easier, more cost-effective locations will have already been addressed over the last 2 to 3 AMPs and therefore higher average cost per property would be expected in AMP7.

660. Therefore, Aqua concludes that the benchmark range of £61m-86m represents a robust range for the scope identified in the investment case.[454] Our proposed investment case sits at the top of this range.

---

450 KPMG and Aqua Consultants – Reducing Property Flood Risk: Cost Assurance Benchmarking Report, March 2020, SOC282.
451 KPMG and Aqua Consultants – Reducing Property Flood Risk: Cost Assurance Benchmarking Report, March 2020, SOC282, p.9.
452 KPMG and Aqua Consultants – Reducing Property Flood Risk: Cost Assurance Benchmarking Report, March 2020, SOC282, p.14.
453 Ibid, p.12.
454 KPMG and Aqua Consultants – Reducing Property Flood Risk: Cost Assurance Benchmarking Report, March 2020, SOC282, p.14.

661. Further, for BP19 we commissioned EI to forecast the Relative Price Effects adjustment for Capex enhancements. This was assessed at around 1% p.a. over 2020-25.[455] We separately set ourselves an annual efficiency target for Capex enhancements of 1% p.a.

7.5.4 Ofwat has rejected the investment case for sewer flooding resilience but has erroneously retained the associated PC/ODI in FD19

662. We included in our BP19 a bespoke PC to protect customers in the event that this enhancement investment to reduce sewer flooding risk is delivered late or not at all.

663. The PC measures how many properties in our areas move from their current risk band to a lower one. As explained above, we set ourselves a target of reducing the future risk of flooding for 7,400 properties. If the investments are not successfully delivered then the ODI would ensure that £100 of Totex allowances were returned to customers for each property out of the 7,400 targeted that did not move into a lower risk category.

664. Ofwat has retained the PC in FD19, while at the same time disallowing the enhancement expenditure required to deliver the reduction in risk. Ofwat justifies its decision on the basis that "*the costs that [NWL] considered were required to deliver this performance commitment were part of base costs within [Ofwat's] models*".[456] We do not consider that this is the case and have set out our reasons for this in this SoC.

665. Ofwat also seeks to justify its decision on the basis that "*the performance commitment set at draft determination is broader than the cost claim as it applied to all reductions in risk, whereas the company investment is to reduce risk where there has been no flooding*".[457] In making this assertion, Ofwat is seeking to apply an interpretation of the PC that artificially separates it from the associated enhancement expenditure that Ofwat has chosen to disallow.

666. We can recognise that the definition of the bespoke PC may not be as clear as it could have been, in so far as the specific annex which detailed the PC does not on its own explicitly state that the measure only covers properties which have not experienced flooding before.[458] However, the association between the enhancement case and our proposed bespoke PC was unambiguous, as was the fact that the enhancement case was intended to reduce sewer flooding risk in properties which have not previously flooded. We proposed the PC and ODI so that customers could have confidence that we would deliver the investment in reducing sewer flooding risk for which we had been funded.[459] We also made this clear in our BP19 (ed. 04.19) submission, when we stated that the PC should be removed if the associated costs were disallowed.[460]

667. The intention of the bespoke PC we proposed was clear to Ofwat. In FD19 Ofwat recognises that "*The sewer flooding risk reduction performance commitment counts the number of properties where the risk of internal and external sewer flooding has been proactively reduced (at properties that have not previously flooded)*"[461].

668. Furthermore, we were clear that our proposed bespoke sewer flooding risk reduction PC was complementary to the common PC for internal sewer flooding.[462] At the same time, our enhancement case and bespoke PC are focussed on reducing flooding risk to properties that have not flooded before, whereas the common PC focusses on reducing the absolute number of sewer flooding incidents.

669. Ofwat argues that investment in reducing sewer flooding risk will have an impact to reduce the number of sewer flooding incidents, and therefore that FD19 "*gives flexibility for [us] to reduce risk where it provides greatest benefit*".[463] However, this is not the case. While the common PC measures the number of incidents of internal sewer flooding within AMP6, our bespoke PC measures the number of customers for whom we have reduced

455 *Wastewater Reduce Flooding Risk for Properties Enhancement Business Case, March 2020, SOC278.*
456 *FD19: Northumbrian Water – Delivering outcomes for customers final decisions, "**FD19: Delivering outcomes for customers**", 16 December 2019, SOC186, pp.10-11.*
457 *Ibid.*
458 *NES.OC.A57 Appendix 4.1 PR19 Bespoke Performance Commitment Definitions, March 2019, SOC083, p.16.*
459 *Wastewater reduce flooding risk for properties enhancement business case, March 2918, p.22.*
460 *BP19 (ed. 04.19), SOC077.*
461 *FD19, SOC183, p.18.*
462 *NES.OC.A57 Appendix 4.1 PR19 Bespoke Performance commitment Definitions, March 2019, SOC083, p16.*
463 *FD19: Delivering outcomes for customers, SOC186, pp.10-11.*

the risk banding. Because these risk bandings cover time horizons outside of AMP6 (see Table 39 below) there is limited correlation between the performances covered by the two PCs.

Table 39: Flooding Risk Level Bands used to measure bespoke PC on reducing sewer flooding risk

Internal or External Flooding Risk Levels						
1 in 5 year event	1 in 10	1 in 15	1 in 20	1 in 30	1 in 40	>1 in 40

Source: NWL Bespoke Performance Commitment Definitions (NES.OC.A57)

670. Ofwat acknowledges explicitly this limited correlation: "*in many cases the probability of the properties flooding that are covered by the performance commitment is lower than 1 in 10 years before work is completed and so unlikely to flood in the next five years whether the work occurs or not. Therefore the correlation in the short term is limited. However, the work to reduce the risk of flooding will provide resilience against flooding in the long term.*"[464]

671. Therefore, rather than providing flexibility to address flooding risk in the most effective way, through disallowing the enhancement while also retaining the bespoke PC, FD19 forces us to trade-off between spending to reduce the number of sewer flooding incidents within AMP7 or investing to improve the long-term resilience of our network to sewer flooding. Given the respective incentive structures and ODI rates for the common PC and our bespoke PC, this trade-off creates an incentive which encourages prioritisation of short term service improvement over longer-term resilience.

672. The ODI associated with the common PC applies a much higher penalty to underperformance relative to the bespoke ODI (total potential downside of c.£22.9m versus c.£2.2m respectively).[465] At the same time, the ODI for the common PC includes a potential reward for outperformance – whereas our proposed bespoke PC does not. The skewed incentive that this creates is a result of Ofwat's decision to disallow the expenditure for the enhancement case, while choosing to retain the associated PC and ODI.

673. We argue that the enhancement case expenditure should be allowed to enable us to invest effectively to reduce the future risk of sewer flooding to our customers. However, if the enhancement funding continues to be disallowed, we request that the corresponding PC is also removed. If it is not removed, we face the risk of having to return funding to customers which has not been allowed in the first place – further contributing to our concerns of risk/reward asymmetry as set out earlier in this representation.

7.5.5 Ofwat has systematically rejected similar enhancement cases put forward by other companies that agree that new and additional actions are required to address sewer flooding

674. Five other companies submitted substantial proposals to Ofwat to invest in additional activities to reduce sewer flooding activity. Between them, these companies proposed £403m in additional expenditure. Of this total Ofwat explicitly allowed only £16.4m. These investment cases and Ofwat's determinations are summarised in Table 40 below.

Table 40: Summary of flood risk investment requested by other Water Companies in their PR19 business plans

Company Name	Investment Case	Type of cost claim	Summary of Case	Outcome by Ofwat
Yorkshire Water[466]	c.£30m	Resilience (enhancement)	Reducing Flooding in Hull & Haltemprice	Ofwat Allowed £16.4m but as a cost adjustment claim rather than a resilience enhancement [467]
Yorkshire Water[468]	£105.9m	Cost Adjustment Claim (base)	Cellar flooding	Proposal not progressed once Ofwat rejected the case [469]

464 *FD19, SOC183, p.18.*
465 *NWL calculations based on FD19: Outcomes performance commitment appendix, 16 December 2019, SOC189, pp. 29-33 and pp. 76-78.*
466 *Yorkshire Water Business Plan Submission Document, September 2018, SOC361, p 55.*
467 *Ofwat – Final Determination for Yorkshire Water: Cost Efficiency final determination appendix, 16 December 2019, SOC238, p. 8 Table 3.*
468 *Yorkshire Water – Cost Adjustment Claim Summary Form, September 2018, SOC507, YKY WWN+01 Cellared Properties, pp. 1-4.*
469 *Yorkshire Water IAP response document, April 2019, SOC379.*

Company Name	Investment Case	Type of cost claim	Summary of Case	Outcome by Ofwat
United Utilities[470]	£87m	Cost Adjustment Claim (base)	Investment to address a combination of exogenous factors impacting surface water runoff	Disallowed [471]
Dwr Cymru[472]	£42m	Enhancement Case	Address sewer flooding caused by Hydraulic Overload (**HO**)	Disallowed [473]
Anglian Water[474]	£53m	Enhancement Case	Continued investment in property level flood risk and targeted investment to divert surface water from entering sewers and increasing flood risk	Disallowed [475]
Wessex Water [476]	£86.81m	Service Improvement Level	Improve current frontier performance for internal sewer flooding by a further 22%, reduce external sewer flooding by 10% and maintain a stable risk for overloaded sewers	Disallowed [477]

Source: NWL analysis of company PR19 submissions and Ofwat responses

675. While the investment cases put forward by Yorkshire Water focussed on regional and geographic factors, the cases put forward by United Utilities, Dŵr Cymru and Anglian Water each highlight to varying degrees, urban creep, population growth and climate change as driving new and additional investment requirements to manage sewer flooding risk.

676. Anglian Water said that its region is becoming increasable susceptible to the impact of climate change, with flood risks further exacerbated by forecast housing growth and urban creep. Similarly, Dwr Cymru set out a case that population growth, climate change and urban creep cause hydraulic overload over and above existing sewer flooding risks.

677. These factors align with those that underpin our investment case. In our investment business case we have demonstrated that urban creep and climate change have a clear and measurable impact on the risk of sewer flooding on customers in our area.[478] Specifically, we have demonstrated that trends in climate change and urban creep put properties that have not previously experienced flooding at risk from sewer flooding. Ofwat has previously set out that water companies' drainage strategies "*should recognise that population growth, new development, urban creep, climate change and changing customer behaviour all exert new pressures and demands on drainage systems*".[479]

678. Our proposed enhancement case is specifically aimed at addressing the new risks of sewer flooding to properties that have not previously experienced flooding, to address new pressures and demands on the drainage system. This is separate from what we would consider to be business as usual activity to reduce sewer flooding for properties already at risk, which have previously experienced flooding.

679. Where the investment cases made by United Utilities, Dŵr Cymru, Anglian, Wessex Water and NWL were disallowed, Ofwat has stated repeatedly that the evidence provided by water companies has not been sufficient to show that they "*face exceptional pressures relative to the wider industry*".

680. Ofwat justified this view on the grounds that sewer flooding expenditure is base expenditure and reiterated its view that these activities are already funded. However, we have set out in section 7.5.3.5 our view that Ofwat's base cost models do not incorporate the relevant drivers of various resilience risks and, as such, they systematically underfund resilience related activities – sewer flooding expenditure in particular.

470 United Utilities Water Limited, Update to claim: Combination of exogenous factors impacting surface water runoff - Cost assessment representations: Appendix, July 2019, SOC387.
471 Ofwat – Final Determination for United Utilities, Cost Efficiency final determination appendix additional information, 16 December 2019, SOC235, Table 1, p. 3.
472 Dwr Cymru, IAP Response, Ref B2.21.WSH.CE.A1 Wastewater Resilience Investment Case, 1 April 2019, SOC508, Table 1, p. 1, 35-37.
473 Ofwat – Final Determination for Dwr Cymru, December 2019, SOC236, p. 43.
474 Anglian Water – PR19 Wastewater Data Tables Commentary, April 2019, SOC382, WWS2 - Wholesale Wastewater Capital and Operating Expenditure by Purpose, p. 104.
475 Ofwat – Final Determination for Anglian Water, 16 December 2019, SOC233, p. 35.
476 Wessex Water, Appendix 8.9.A - Claim WSX05 – Flooding Programme, September 2018, SOC360.
477 Ofwat – Final Determination for Wessex Water, 16 December 2019, SOC234, p. 37.
478 KPMG and Aqua Consultants – Reducing Property Flood Risk: Cost Assurance Benchmarking Report, March 2020, SOC282.
479 Environment Agency and Ofwat – Drainage Strategy Framework Good practice guidance commission, May 2013, SOC176, p.5. (emphasis added)

681. In focussing on the question of whether a particular company faces exceptional pressures relative to the wider industry, Ofwat has overlooked the fact that new risks from sewer flooding - driven by climate change and urban creep - are creating pressures across the industry. This is demonstrated by the range of companies seeking to plan for these risks in their AMP7 business plans.

7.5.6 Proposed remedy

682. We have set out a comprehensive investment case that demonstrates a clear need for this investment in AMP7 to deliver additional resilience to sewer flooding risk increases as a result of climate change and urban creep. We have provided evidence of optioneering and efficient costs through benchmarking and market testing, clear evidence of customer support for the investment and board and external assurance.

683. We therefore request that the CMA provide an allowance for the scheme to be funded in full as a resilience enhancement investment in its redetermination.

684. If the claim is rejected then, in order to address the problems with asymmetric cost sharing rates, the investment should not be reflected in the calculation of the cost sharing rates. Similarly the bespoke PC should be removed.

7.6 EFFICIENT COSTS FOR THE ABBERTON TO HANNINGFIELD RESILIENCE SCHEME NOT REFLECTED IN FD19

685. In this section we provide an overview of our proposals, how they were assessed by Ofwat in FD19 and indicate how we would like the CMA to consider this issue as part of its redetermination. In particular, we set out:

- our BP19 proposals (see Section 7.6.1);
- Ofwat's assessment of those proposals in FD19 (see Section 7.6.2);
- why we consider it was wrong for Ofwat to reject this scheme (see Section 7.6.3); and
- how we would like the CMA to assess this as part of its redetermination (see Section 7.6.4).

7.6.1 Our BP19 proposals

686. In BP19 we included an enhancement case for the Abberton to Hanningfield raw water transfer main, also referred to as the Essex Resilience scheme.[480] The enhancement case relates to an additional £20.4m of investment to improve water resilience in our Essex region. We have provided an updated business case to accompany this submission.[481]

687. Our Essex Water Resource Zone customers are supplied with potable water from five WTWs: Chigwell, Hanningfield, Langford, Langham and Layer. The raw water is abstracted from three rivers, Blackwater, Chelmer and Stour. The rivers Stour and Blackwater can be supported with water that is transferred by the Environment Agency's Ely-Ouse to Essex Transfer Scheme (EOETS).

688. We need to provide additional resilience to our water networks to mitigate against changes that are affecting our ability to supply potable water to our customers. To reach the level of resilience that we require in the Essex WRZ we need to protect both the potable water production from Layer WTW and have the ability to transfer raw water to our Langford WTW and Hanningfield Reservoir from our larger Abberton reservoir.

689. The Essex Resilience scheme is for a pipeline to transfer water from Abberton Reservoir to Langford WTW. Water that would otherwise be abstracted from the rivers Blackwater and Chelmer for the WTW is then available to transfer through our existing equipment to Hanningfield WTW.

690. We have put forward a comprehensive business case for the Abberton to Hanningfield scheme that demonstrates: i) a clear need for this investment in AMP7 to address resilience challenges in meeting the potable

480 *Appendix 3.2 to BP19 (ed. 08.19): Enhancement Business Cases, Annex A – Abberton to Hannington Raw Water Transfer, March 2019.*
481 *Essex Resilience Enhancement Business Case, March 2020, SOC276.*

water demand; ii) evidence of optioneering and efficient costs through benchmarking and market testing; iii) clear evidence of customer support for the investment; and iv) board and external assurance.[482]

691. As demonstrated in Sections 4.4.1.3 and 7.3.3 above, in preparing our BP19 we underwent a process to understand the resilience risks to our customers and identify relevant enhancement schemes. In this case, our appraisals identified the need for investment in the Abberton to Hanningfield scheme to provide resilient potable water supplies in the Essex WRZ.

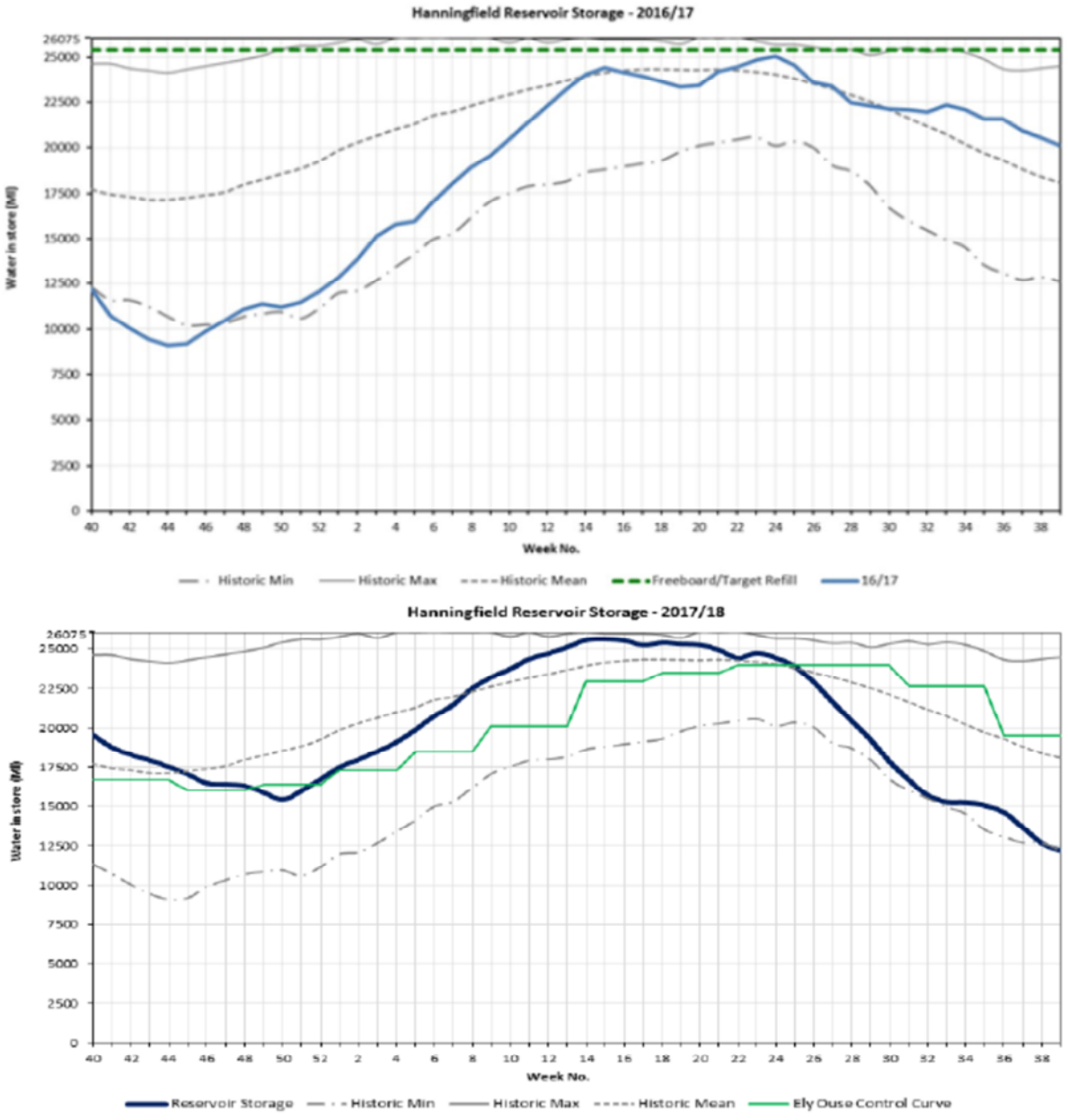
692. The needs case for this enhancement is based on a number of factors. We are currently experiencing greater variability in raw water quality, brought about primarily by climate change. We are experiencing more, longer lasting algal blooms and higher levels of cryptosporidium oocyst and nitrates in our reservoirs and rivers. The timing and intensity of rainfall over recent years is at least partially linked to the rapidly changing river water quality.

693. There is sufficient raw water as a whole within the Essex WRZ (as detailed in our Water Resource Management Plan (**WRMP19**)).[483] However, the weakness in resilience that we are seeking to address is meeting potable demand in all parts of the region. Climate and water quality trends have combined to see the Hanningfield reservoir operating below historic average storage levels, and for extended periods close to or even below its historical minimum levels. This can be seen in Figure 43 below.

482 Essex Resilience Enhancement Business Case, March 2020, SOC276.

*483 NWL Final Water Resources Management Plan 2019, "**NWL Water Resources Management Plan**", August 2019, SOC264, p. 15.*

Figure 43: Hanningfield Reservoir storage levels 2016/17 and 2017/18



Note week 40 = 1st October for each year. This was a historic low level for Hanningfield IR

Source: BP19 (ed.04.19)[484]

694. Our resilience scheme mitigates risks at Langford and Hanningfield and ensures that sufficient raw water is available at Hanningfield such that the effects of algal blooms at our Chigwell and Langham WTWs are also diminished. The scheme also provides greater ability to recover from disruptions and is sufficiently flexible that we can maintain supplies to our customers despite increasing trends of nitrate and cryptosporidium oocyst that we are witnessing. The scheme also allows us to defer investments to increase the capacity of our Layer WTW and additional stages of treatment at other WTW.

695. We identified multiple options for addressing the issue.[485] We discounted the 'do nothing' option on the basis that this would not address the risks to resilience that a longer repeat event of the outages experienced in 2016 and 2018 would represent – potentially negatively impacting the supply to over 365,000 customers. We identified and investigated an investment to increase the maximum capacity (and associated mains) at Layer WTW. Based on feasibility and conceptual designs developed by our engineering consultancy MWH at the time of the Abberton reservoir enlargement, we estimated the cost of increasing the Layer WTW capacity to be £58.8m (2006 prices).

484 *Appendix 3.2 to BP19 (ed. 08.19): Enhancement Business Cases, March 2019, SOC080, Annex A – Abberton to Hannington Raw Water Transfer.*

485 *Appendix 3.2 to BP19 (ed. 08.19): Enhancement Business Cases, March 2019, SOC080, Annex A – Abberton to Hannington Raw Water Transfer.*

Consequently, we identified the Abberton to Hanningfield transfer main as the preferred option on the basis that, at a cost of £20.4m (2017/18 prices), it would be more cost effective than the best alternative identified.[486]

696. We developed the detailed forecast costs for the preferred option according to our robust cost assurance methodology.[487] This included developing a full iMod costs estimate built up from known unit rates and forecasting based on historical spend. The costs were benchmarked and subject to third party assurance prior to inclusion in our submission.[488]

697. As described in Section 4.4.1.3 above, we engaged meaningfully with our customers and stakeholders on our resilience schemes. We shared specific details of our Abberton to Hanningfield plans with customers in the Essex water resource area in a series of workshops during March and May 2018. Overall, our customer support for our plans to improve the resilience of our Essex area was supported by 89% of customers in the region.[489]

698. Our Water Forums reported to Ofwat that they have a high degree of confidence that our resilience enhancement schemes would deliver for customers, on the basis of our approach to identifying resilience enhancement needs and ensuring these are aligned with priority resilience outcomes for customers.[490]

7.6.2 Ofwat's FD19 assessment

699. In FD19 Ofwat rejected the Abberton to Hanningfield proposal on the basis that the "Need" test had not been met. As such it disallowed all of the £20.4m costs proposed for this scheme. Ofwat did not raise any challenge with respect to any of the other assessment gates (i.e. best option for customers, robustness and efficiency of costs, customer protection, affordability or board assurance).

700. In concluding that the need test was not met Ofwat stated:

*"Abberton-Hanningfield scheme (£20.350m). In its representation the company states that the dissolved air flotation (**DAF**) treatment at Layer, for which we make an allowance in the raw water deterioration enhancement line, "seeks to restore a level of lost resilience but not increase resilience". The drawing down risk of Hanningfield reservoir described by the company is closely linked to algal and turbidity outages at Layer WTW, or to treatment works maintenance activities that are within management control. We make an allowance to mitigate the risk of algal and turbidity outages through the 'DAF treatment at Layer' investment, as part of our assessment of costs to address deterioration in raw water quality. The company mentions other (secondary) risks, but these are not quantified or assessed in the context of Layer water treatment works having a DAF treatment process in place. As a consequence, these are not considered, on their own, sufficient to support the scheme. Further, most of these secondary risks relate to issues outside of the scope of resilience enhancements (i.e. population growth, low rainfall, peak demands) or within management control (e.g. capital maintenance). As a consequence, the investment is rejected in full."*[491]

701. Ofwat believes that the Abberton and Hanningfield scheme mitigates the same principal risk as the investment for DAF treatment at Layer WTW, which Ofwat has reallocated and allowed in the raw water deterioration enhancement line.

702. Ofwat also considers that the additional risks we have described that support our business case do not qualify as risks that justify an enhancement scheme investment case.

703. Consequently, Ofwat considers that the resilience risks the Abberton to Hanningfield scheme seeks to mitigate are addressed through schemes it has already funded.

7.6.3 The flaws in Ofwat's decision to reject this scheme

704. We disagree with Ofwat's decision with respect to this resilience scheme. In particular we consider that:

486 Ofwat – Wholesale Water Enhancement feeder model: Resilience (FM_E_WW_resilience_FD), SOC509, Cell 'D15' on tab 'Deep dive NES'.

487 For further detail on the cost estimation approach, please see separate document on cost assessment for enhancement schemes - NWL PR19 Costing methodology.

488 Mott Macdonald, PR19 Enhancement Programme Business Case Assurance: Summary Report, 15 October 2018, SOC257.

489 BP19 (ed. 09.18), Appendix 2.4, PR19 Acceptability Research, July 2018, SOC033.

490 Water Forums' Report, SOC009, p.59.

491 Ofwat – Wholesale Water Enhancement feeder model: Resilience (FM_E_WW_resilience_FD), SOC509, Cell 'D15' on tab 'Deep dive NES'.

- Ofwat has incorrectly concluded that the Abberton to Hanningfield scheme seeks to mitigate the same risks as, and therefore duplicates, the DAF treatment enhancement at Layer WTW (see Section 7.6.3.1); and
- Ofwat has incorrectly categorised the risks this scheme addresses as being outside the scope of resilience enhancements (see Section 7.6.3.2)

7.6.3.1 Relationship between the Abberton to Hanningfield and the Layer WTW schemes

705. We have been very clear throughout the PR19 review that while the needs case for the Abberton to Hanningfield scheme and the Layer WTW scheme are related, they are separate and both investments are needed.

706. Hanningfield reservoir and WTW are used to provide missing output to meet peak demand in the region. Weather and population trends are affecting the frequency and duration of outages at other WTW and the rate at which Hanningfield reservoir is refilled. This increases the reliance of the region on Hanningfield and also increases the risk that the reservoir will be dangerously depleted, leading to usage restrictions on customers in some part of the region.

707. While there is sufficient raw water in the Essex WRZ, the challenge for us is meeting potable water demand in all parts of the WRZ in all circumstances. The Abberton to Hanningfield scheme will enable better strategic management of water resources across the region and specifically ensure against a situation where one part of the Essex WRZ experiences supply restrictions, while a neighbouring part holds ample supplies which cannot be used.

708. There are a number of specific trends that are increasing the resilience risks in the region, driving the need for our proposed pipeline:

- more frequent, longer-lasting, and more widespread algal blooms (not just at Layer) directly increase the reliance of the Essex WRZe on Hanningfield reservoir and WTW: Algal blooms are increasing in frequency and length. Longer and warmer summers are expected to continue contributing to this trend. These longer blooms increase the likelihood that algal blooms cause outages at more than one WTW at the same time. This limits the scope of management control over maintenance activities and puts additional strain on the Hanningfield reservoir and WTW in particular. The WTWs at Layer, Langham and Chigwell all deploy slow sand filters (**SSF**) which are unable to process raw water with high algal content. This makes them more susceptible to outages. Hanningfield deploys physicochemical filtration which is less susceptible to outages arising from algal blooms. Hanningfield therefore is relied upon to increase output to meeting missing supply;
- **reduced rainfall:** Recent years have shown changes to the rainfall patterns in the region, thereby suggesting that climate change is already affecting our weather. Therefore, the likelihood and severity of droughts is expected to increase as climate change progresses. The proposed transfer pipeline mitigates further changes to rainfall patterns by allowing the transfer of water to Hanningfield reservoir beyond the end of the refill period. At the design rate of 50 ML/d some 70% of the capacity of Hanningfield could be transferred from Langford over a full year;
- **population growth:** We expect to see a significant change in demand over the planning period, with growth of almost 20% by 2045. This will significantly increase the risk of localised supply issues associated with a lack of integration in the raw water network. Without the Abberton to Hanningfield pipeline, population growth will require an increase to our existing treatment capacity at Layer;
- **increased peak demand periods:** As stated in BP19 "*Drought is not the only effect of climate change on water supply. We have seen a marked increase in extreme weather events in recent years which have caused more frequent peaks in demand, particularly in the summer months in Essex. These peaks will grow larger as the population grows*";[492]
- **EOETS:** The scheme is operated by the EA, rather than within our control, but is an important factor in our ability to maintain supplies in the Essex WRZ and to deploy the full output at Hanningfield WTW. We have experienced circumstances outside of our control where the EOETS has not been available as expected; and
- **anticipated trends:** There is data to show that there is an increasing variability in the quality of the raw water that we abstract.[493, 494, 495] We previously identified that "*A further benefit of Abberton water going directly on to*

492 BP19 (ed. 08.19) Appendix 3.3.2 Essex Resilience – Abberton to Hanningfield Transfer Main, July 2019, SOC134, p. 6.
493 NWL - Langford Data, February 2020, SOC271, sheet 1.
494 NWL - Chigwell Raw CMA Data, March 2020, SOC273, sheet 1.
495 NWL - Langham Raw Data 2011-2020, March 2020, SOC274, sheet 4.

Langford WTW is the improvement to water quality compared to that in the River Chelmer and Blackwater, especially so in the autumn and winter months". [496]

709. There have already been a number of recent periods when some of these trends have combined to see the Hanningfield reservoir drawn down to historically low levels – risking the supply to around 500,000 customers .[497] During 2018 and 2019, the Essex region relied heavily on the Hanningfield reservoir and WTW, with the reservoir depleting rapidly to historically low levels because of a combination of: i) a hot, dry summer with peak demand 30% above normal; ii) a dry autumn with lower than average rainfall; and iii) a requirement to carry out maintenance of SSF at Layer WTW.

710. In our response to DD19 we sought to provide additional information and explanation.[498] We further explained that the Layer WTW scheme mitigates the risk of distribution input being reduced as a result of raw water deterioration. Raw water deterioration at Abberton reservoir is only one of the factors behind the Hanningfield reservoir being drawn down to dangerously low levels in recent years. Conversely, delivering the Abberton to Hanningfield pipeline without the Layer WTW scheme, to increase capability there to deal with water deterioration, would lead to an over-reliance on Hanningfield.

7.6.3.2 The scheme does address risks within the scope of resilience enhancements

711. Contrary to Ofwat's suggestion that the secondary risks that support this scheme fall outside the scope of resilience enhancements, the drivers of the costs associated with this scheme are explicitly linked to climate change trends. There are no climate change related cost drivers included in Ofwat's cost models.

7.6.4 Proposed remedy

712. We have set out a comprehensive investment case that demonstrates a clear need for this investment in AMP7 to deliver additional resilience against the impact of water scarcity, drought and water quality issues. We have provided evidence of optioneering and demonstrated that our proposed costs are efficient through benchmarking and market testing. We also have clear evidence of customer support for the investment and it has been subject to board and external assurance.

713. We therefore request that the CMA provide an allowance for the scheme to be funded in full as a resilience enhancement investment in its redetermination.

7.7 CONCERNS WITH THE UNPLANNED OUTAGE PC.

714. In this section we set out:

- an overview of the unplanned outage PC and the challenges made by multiple companies to Ofwat during its development;
- why we consider that the unplanned outage measure is unlikely to either reflect asset health or incentivise the right behaviours; and
- why a financial incentive is not appropriate in light of the novelty of the metric, measurement across companies not being comparable and the implications of that for the suitability of benchmarking to set PC targets; and
- our proposed remedies.

7.7.1 Overview of the development of the Unplanned Outage PC

715. Unplanned Outage is a new common PC being introduced by Ofwat for PR19. This measure is one of a number of measures introduced by Ofwat in PR19 to measure asset health for water abstraction and water treatment activities. The definition of this performance measure was confirmed on 4 April 2019.[499]

496 *Appendix 3.3.2 to BP19 (ed. 08.19): Essex Resilience – Abberton to Hanningfield Transfer Main, July 2019, p.17, SOC134.*
497 *Appendix 3.3.2 to BP19 (ed. 08.19): Essex Resilience – Abberton to Hanningfield Transfer Main, July 2019, SOC134.*
498 *NWL Response to Ofwat DD19, SOC130, pp.16-17.*
499 *Ofwat – Reporting Guidance – Unplanned Outage, 4 April 2019, SOC227.*

716. An unplanned outage is an outage that arises from an unforeseen event. These can include events such as:

- poor source water quality / pollution;
- turbidity;
- power failure (company assets or grid); and
- system failure (unplanned asset maintenance, asset failure).

717. This is distinguished from planned outage arising from maintenance or other foreseeable events. Planned and unplanned outages are reported separately but the impacts are calculated in a comparable way.

718. The unplanned outage measure is reported as the annualised unavailable flow in million litres per day, based on the peak week production capacity, for each company.

719. During the development of the PR19 framework and in response to Ofwat's consultation on its draft methodology, stakeholders raised concerns with this metric.[500] These concerns included:

- the consistency of reporting of unplanned outages;
- unforeseen consequences that an incorrect definition could have, such as penalising companies for unplanned outages which have not meaningful effect on risks to customer supply;
- use of maximum production capacity rather than deployable capacity; and
- inclusion of shutdowns for works to manage raw water quality events.

720. During the price control process we also challenged the design of the unplanned outage metric. In particular, we highlighted to Ofwat that this is an immature metric which both the regulator and industry have limited experience operating. While 'shadow reporting' of this metric has already begun, the risk that there are different levels of compliance across the industry remains high since there have been no industry-wide audits or assessment of whether companies are applying the measure consistently.

721. Given this immaturity and the potential for unforeseen / unintended impacts of the incentive, the sector has sought a cautious approach to PC levels and ODI rates for this incentive. Yorkshire Water and Dŵr Cymru have both argued that this should be reputational only, whilst a number of other companies have put forward other recommended collars to reflect a balanced exposure on risk, including Severn Trent Water. This is consistent with Ofwat's own targeted review of this PC in 2018.[501]

722. Companies that have not challenged the complete PR19 package also echoed these positions in response to Ofwat's consultations and are continuing to object to the construct of the metric.

723. In our BP19, we said that we would monitor the performance of our WTWs to ensure that our proactive maintenance regime and prioritized investments reduce the likelihood of unplanned outages occurring in critical locations. We took this approach because we have a strong Security of Supply Index (**SOSI**) score of 100 in all of our supply areas meaning that we are more likely to be able to manage an unplanned outage at one of our WTW given our availability of water at other sites and the levels of connectivity in our network without any deterioration in service to our customers. Obviously there are some exceptions to this, such as in the Abberton to Hanningfield example.

724. Initially, we set ourselves the objective of reducing our unplanned outages by 10% over 2020-2025. We proposed that this should be a penalty only incentive, with a deadband to reflect the fact that this is an immature metric and allow time to develop more robust data points.

725. However, Ofwat's DD19 imposed a significantly more stretching target of a 63% reduction over 2020 to 2025. It did not propose any deadband – or collar as in the case of five companies - on the under-performance.

500 Appendix 2 to Ofwat PR19 Methodology: Delivering outcomes for customers, 13 December 2017, SOC211.

501 Ofwat and WaterUK – Targeted review of common performance commitments, 19 December 2017, SOC219.

726. In our response to DD19 we argued that because Unplanned Outage is a common measure, a common approach should be applied across companies.[502]

727. We proposed that Ofwat should apply an underperformance payment to us that aligns with the rates applied to companies across the sector. Our proposed rate was -£0.628/HH/% or -£1.204m/%.

728. We also proposed to set a collar on underperformance aligned to the range of the values of £/HH/% present across other companies. The new collar we proposed was 6.5% across the AMP.

Table 41: Our proposed Unplanned Outage position at DD19

	2020-21	2021-22	2022-23	2023-24	2024-25	£m	£/HH
PC (%)	6.37	5.36	4.36	3.35	2.34		
Collar (%)	6.5	6.5	6.5	6.5	6.5		
Max Penalty	-£0.157m	-£1.373m	-£2.577m	-£3.794m	-£5.010m	-£12.91m	-£6.73

Source: NWL Draft Determination Response[503]

729. Ofwat responded to some of our concerns and included a collar on the ODI. However, it set this at a much higher level, relative to our target, and maintained its proposed incentive rate of -£1.720.

Table 42: Ofwat's proposed Unplanned Outage PCLs post intervention

Year	2020/1	2021/2	2022/3	2023/4	2024/5
PC (%)	6.37	5.36	4.36	3.35	2.34
Collar (%)	12.74	12.74	12.74	12.74	12.74
Max penalty	-£10.956m	-£12.694m	-£14.414m	-£16.151m	-£17.888m

Source: Ofwat FD19[504]

7.7.2 Flaws in the design of the metric

730. The Unplanned Outage measure is not designed in a way that is capable of serving as a measure of asset health as Ofwat intends, nor is it likely to drive the right incentives for water companies to improve resilience for customers.

731. The implicit assumption in the Unplanned Outage metric, and Ofwat's approach to incentivising a reduction in unplanned outages, is that when there is an unplanned outage it is because an asset is failing and by extension this is a resilience risk to be addressed. This assumption is flawed.

732. There is not a direct link between an unplanned outage and asset health. Unplanned outages – as they are generally understood, while recognising that there is some inconsistency in the definition and application - can be caused by a range of events. Only some of these relate the health of assets (for example, asset failure arising from poor maintenance, age, or over use). Other causes of unplanned outages such as pollution, algal blooms or turbidity are not directly related to asset health and are not necessarily within management control.

733. Also, outage at a particular asset does not necessarily imply an increased resilience risk for the system or customers. To assume so fails to take a system-wide approach to the question of resilience. Wider system features that generally influence overall resilience, in additional asset availability:

- **SOSI**: This index articulates the scarcity or abundance of water resources relative to the demand within a given water resource zone. Where the SOSI rating is high, the system has abundant resources to draw on and is more likely to be resilient to unplanned outages than in zone where the SOSI rating is low;
- **Interconnectedness**: Highly interconnected systems can be configured to transport water between areas, and as such can better respond to unplanned outages without affecting supplies. Conversely, more isolated areas that are less interconnected may be less able to move resources around to maintain resilience during unplanned outages; and

502 Appendix 4.1 to BP19 (ed. 09.18), Unplanned Outage PC, 30 August 2019, SOC148.
503 Appendix 4.1 to BP19 (ed. 09.18), Unplanned Outage PC, 30 August 2019, SOC148, p.5.
504 FD19: Outcomes performance commitment appendix, 16 December 2019, SOC189, pp. 22-24.

- **Reliance on specific sites**. There are some areas where the local water systems have been designed with a small number of large WTW. The link between asset reliability (unplanned outages) and resilience is much stronger in these areas, than it is in areas where there are a large number of smaller scale WTWs. In these areas, the ability of the water company to manage asset to maintain supply is greater.

734. The NWL zones all have high SOSI ratings and are reasonably well interconnected. This means that NWL can generally manage resilience effectively even if there are higher cases of unplanned outages although there are some exceptions.

735. The comparison-based approach makes no allowance for company-specific factors that affect performance. Ofwat has not undertaken any assessment of company-specific factors that could give rise to different economic levels of asset outages (for example, differences in asset configuration). Therefore, this is not a level playing field from which to set targets for the different companies.

736. Finally, the comparison-based target has no link to what customers are willing to pay. It is possible to operate a high level of unplanned outages with any impact on customer service. By not considering what customers are willing to pay, Ofwat's approach runs the risk of driving uneconomic levels of service.

737. There is a risk that the PC and ODI, as Ofwat has implemented them, could provide perverse incentives for companies. This has been observed and stated previously in a report produced for Ofwat and WaterUK:

"Companies are likely to become focussed on minimising periods of unplanned outages related to the measure, redirecting expenditures to maintain a low level of unplanned outages even in instances where they may have sufficient redundant capacity that the outage has no impact on customers whatsoever. Thus the measure could drive inefficient behaviours and a weaker customer focus."[505]

738. Similarly, even where there is a potential resilience concern, companies may prefer to spend money to reduce unplanned outages at a given asset, rather than seek more effective or efficient solutions (such as increased interconnection) which do not reduce the unplanned outages.

739. Ofwat has not recognised these challenges in the way that it has sought to implement the new Unplanned Outage metrics.

7.7.3 A financial incentive is not appropriate

740. Despite the fact that the link between Unplanned Outages and asset health is unclear and the fact that companies do not assess and measure these things in the same way, Ofwat has chosen to impose a comparative benchmark for the Unplanned Outage PCs and ODIs. This implies that all companies are measuring asset availability in a consistent way, which we know is not the case: 'Across companies we find that there are extremely low levels of consistency in the approaches adopted and do not consider that this measure could sensibly be used comparatively at PR19 in its current form.'

741. In spite of the risk that the incentive could lead to perverse outcomes, Ofwat has also chosen to apply a financial (downside) incentive to performance against the targets. This implies that there can be a high degree of confidence in the measurement and the desired outcome for customers, which is not the case.

742. Ofwat has set NWL a target for unplanned outage performance of 63% reducing over 2020-2025. This is based on industry average performance. However, given that companies were not compliant with the definition when developing their business plans, setting a comparison-based target is patently not robust.

743. Unplanned Outages is a new measure and its definition has been changing over the recent period. As a result, companies still face significant uncertainty around how to implement this definition and how they should capture the data required to calculate their performance.

744. This was reflected in a report by Jacobs and KPMG for Ofwat and Water UK in 2017. In their findings they highlighted that the level of maturity of reporting against the new definition was not sufficient to set targets with a financial incentive. The report concluded (emphasis added):

505 *Ofwat and WaterUK – Targeted review of common performance commitments, 19 December 2017, SOC219, p.88.*

"…the measure is still at a very early stage of development and our view is that meaningful comparative assessment is not currently possible. We recommend that a period of shadow reporting is undertaken to bed in the new guidance and that there is a further review of the PC guidance and definition during AMP7";

"This metric will not be at a suitable stage of development to be consistent for the start of AMP7 and we recommend further development of the metric and shadow reporting." [506]

745. This level of immaturity remained ahead of the start of PR19 when most companies (with exception of Dŵr Cymru and Bristol Water) did not report their full compliance with the definition as shown in the table below.

Table 43: Unplanned outages shadow reporting summary

	Number of 'ambers' (i.e. semi-compliance)	Number of 'reds' (i.e. non-compliance)
Anglian	6	-
Hafren Dyfrdwy	4	-
Northumbrian	-	7
Southern	2	-
Severn Trent	5	4
South West	Data not available	
Thames	3	-
United Utilities	6	-
Dŵr Cymru	-	-
Wessex	6	2
Yorkshire	5	-
Affinity	5	-
Bristol	-	-
Portsmouth	2	-
SES	2	-
South East	6	-
South Staffs	5	-

Source: Ofwat shadow reporting data

746. This has been a concern pointed out by several companies as part of the PR19 process as summarised in Table 44 below:

Table 44: Issues with unplanned outages raised by the sector

Company	Quote
Anglian	As this is a new measure we are developing our understanding of our performance. Our forecasts are based on maintaining the 2017/18 level of performance.[507]
Hafren Dyfrdwy	Until we better understand our performance against this measure, our target for AMP7 is to maintain stable performance.[508]
Severn Trent	Until we better understand our performance against this measure, our target for AMP7 is to maintain stable performance, given at current levels of performance we have demonstrated no deterioration to the water supply service that customers receive due to a loss of production capacity.[509]
Northumbrian	As this is a new measure, we need to build up a full data set to understand how we perform in 2018/19 and 2019/20.[510]
Dŵr Cymru	Unplanned outages is a new measure and the lack of historical data would make it difficult to calibrate appropriate outcome delivery incentives.[511]

506 Ofwat and WaterUK - Targeted review of common performance commitments, 19 December 2017, SOC219, pp. 4-5.
507 Anglian Water – PR19 Appointee Data Tables Commentary, April 2019, SOC382, p. 5.
508 Hafren Dyfrdwy – PR19 business plan, September 2018, SOC427, p. 156.
509 Severn Trent – A3: Designing performance commitments, September 2018, SOC367, p. 118.
510 BP19 (ed. 08.19) SOC129, p. 112.
511 Dŵr Cymru – Ref 5.5 PR19 Outcome Delivery Incentives, September 2018, SOC368, p. 6.

Company	Quote
Yorkshire	Unplanned outage is not something we have measured previously, so while we have a very good understanding of our historical production volumes, we cannot retrospectively categorise the unplanned outage volumes at the level of detail required by this PC. Using the best data available to us we have had to estimate our forecast performance in the period 2020-25. Once we have completed two years of shadow reporting of the measure, we will have a much better understanding of our current performance and may have to review these targets retrospectively.[512]
Bristol	As this is an asset health metric that has no reliable historical performance information to compare ourselves to, we have set our service levels for AMP7 based on the expert knowledge of Bristol Water staff.[513]
Portsmouth	Finally, we do not propose a financial ODI for unplanned outage. At this stage of its recording, we have very little data to set a target. In addition, customers did not see that a reward/penalty were appropriate for this measure – as it did not (necessarily) affect them directly.[514]

Source: NWL review of company responses

747. Therefore, this lack of comparable data means that the development of targets based on comparing reported data could result in targets that are impossible to deliver as they are based on different in definitions between the companies.

748. While some companies may have reached a position where they consider a low value target to be acceptable within the context of their business plan, it is not a robust approach to set a comparison-based target for this measure.

749. In a similar vein, it is not appropriate to set a financial incentive around this measure.

7.7.4 Remedies

750. The CMA should consider and comment on whether the unplanned outage approach remains a sensible asset health measure in light of the concerns set out above. NWL considers that SOSI remains a better measure of asset health and reporting on this is well established.

751. If the CMA chooses to retain Unplanned Outage as a PC/ODI, for example to ensure comparability across the sector, we request that it changes the target for our Unplanned Outage PC approach back to the level suggested in our BP19 and removes the financial penalty.

512 Yorkshire Water Business Plan Submission Document, September 2018, SOC361, p. 129.
513 Bristol – Water for All: Our Plan to deliver excellent water experiences, SOC366, p.137.
514 Portsmouth Water LTD – PR19 Business Plan, September 2018, SOC425, p. 31.

8 SETTING THE APPROPRIATE COST OF CAPITAL

8.1 SUMMARY

- Based on our detailed analysis, including market-based evidence and input from independent experts, we conclude that Ofwat has incorrectly calculated the WACC and set it at a level that is demonstrably well below what is in the customers' long-term best interests.
- Our conclusion draws on the IER we have commissioned from KPMG and Professor Alan Gregory of Exeter University. Their findings support a WACC range of 2.49-2.75%.
- We propose that any appropriately set WACC should accommodate the following four criteria:
  - We believe our customers would not want the CMA determination to result in a worse bill outcome for them than what our original BP19 (ed.09.18) proposed.
  - Our capital providers should receive a fair and reasonable return for the level of risk they are exposed to under the overall package and through their ongoing investment.
  - Calculation of underlying WACC components should accurately reflect market based evidence and recognised financial theory, consistent with the approach taken in the IER.
  - In setting the WACC, the CMA should undertake appropriate cross-checks to ensure the overall package is financeable.
- Our own analysis suggests the CMA should be able to achieve all the above criteria.

8.2 SECTION OVERVIEW

752. This Section sets out:

- Important background information on the cost of capital, including:
  - our views on the role of the cost of capital in the context of a price setting process and our concerns about the approach taken by Ofwat (see Section 8.4);
  - a summary of Ofwat's allowed return on capital in FD19 (see Section 8.5);
  - the framework for setting the allowed return and why the application of that framework needs to be consistent and a long-term, 'through the cycle' view (see Section 8.6);
  - our key overarching concern that Ofwat's approach to setting FD19 increases systematic risk and fails to meet its stated objective (see Section 8.7);
- an assessment of each of the parameters of the allowed WACC, drawing from the IER including the errors in Ofwat's approach to::
  - setting the Total Market Return (see Section 8.8);
  - setting the Risk Free Rate (see Section 8.9);
  - setting Beta (see Section 8.10);
  - setting the cost of debt (see Section 8.11);
  - providing a retail margin adjustment (see Section 8.12); and
- other considerations:
  - some of the risks that arise if the WACC is set too low (see Section 8.13)
  - why we believe the Gearing Sharing Mechanism (**GSM**) should be repealed (see Section 8.14).

8.3 INTRODUCTION

753. Investors are exposed to uncertainty when they provide capital to firms. This means that investors will only provide capital if their expected return is sufficient to compensate them for the risks involved. If the mean expected return is below this level, then investors are exposed to an opportunity cost. This is the missed opportunity of earning returns that are commensurate with the risks taken from alternative investments. It follows that, in order to attract and retain equity and debt finance, firms must expect to earn sufficient profits to pay investors a market-based return on capital (the 'cost of capital', or **CoC**).

754. It has for a long time been recognised by economic regulators, and indeed in their statutory objectives, that the consumer has a strong interest in securing that companies are able to attract and retain finance. This is critical in a capital intensive sector like this one, where the safe delivery of these essential services is dependent on continuing investment and access to low cost finance. In our view, the longer-term consumer interest is of central importance to our request that the CMA carries out a redetermination.

755. Equity and debt investors in the same company face different risks. Therefore, the returns expected by each will, in general, not be equal. An average of the market-based rate of return expected by equity investors (the 'cost of equity', or CoE) and by debt investors (the 'cost of debt', or CoD), weighted by the value of the investment in each, is known as the weighted average cost of capital (the 'return on capital' or WACC).

756. In setting a price control, a regulator must make allowances in light of these expectations. To differentiate the allowances from the expectations themselves, this Section refers to them as **A-CoE**, **A-CoD** and **A-WACC**.

757. Throughout this Section, references to return expectations should be read as being on a mean expected basis.

758. Additionally, we set out our views on the outperformance sharing mechanism for high gearing, that is, the GSM. While this is not explicitly WACC related it does raise concerns in relation to Ofwat's approach to assessing water company returns (see Section 8.14).

759. As part of our SoC we have commissioned the IER from KPMG and Professor Alan Gregory from Exeter University.[515] Given the materiality of the issue and the level of concern it was necessary to obtain an independent assessment on these matters. Our high level concerns, particularly relating to the CoE are informed by the IER which provides evidence and commentary on Ofwat's approaches to the underlying calculation of each of the different parameters associated with the cost of capital. We encourage the CMA to carefully review the analysis and commentary in that report in the first instance. In this Section we have sought to focus on our more high level concerns and do not necessarily refer to or repeat material issues addressed in the IER. The IER should therefore be read together with our SoC.

760. We are aware that the CMA published its Provisional Findings in the NATS appeal on the 24th of March and that some aspects of that case may have a bearing on our appeal. Again, we have not addressed the NATS findings explicitly in our SoC but intend to respond to the CMA's Provisional Findings on the 15th of April as part of that process.

8.4 OVERVIEW OF OUR POSITION

8.4.1 Link between return and risk

761. There is an intrinsic link between the level of risk that a regulated water company incurs and the expected return commensurate with that risk. The price control must provide a level of return commensurate with the level of risk in the package. This relationship is well established and recognised by Ofwat and the CMA.[516]

515 KPMG - Estimating the cost of capital for PR19, March 2020, SOC416.

*516 Ofwat FD19: Allowed Return on Capital, SOC187, section 5.1; CMA - SONI Limited v Northern Ireland Authority for Utility Regulation: Final determination "**SONI FD**", 10 November 2017, SOC312, para. 7.372.*

8.4.2 Our BP19 was stretching using the early view on returns but financeable

762. In our original BP19 (ed.09.18) we used Ofwat's preliminary estimate of the appropriate return, the 'early view'. We did raise some concerns around this calculation in our response to earlier consultations and participated in a joint report alongside other companies on Ofwat's approach to calculating the Total Market Return (**TMR**).[517] Nevertheless we adopted this early view, which was set at 2.4% (real RPI).

763. This was part of a balanced package of measures that included the largest bill reductions from any company across the sector, above average levels of service with some service levels at the performance frontier and additional investment to improve the capacity, quality and resilience of our services. This package reflected what customers had told us they wanted through thousands of hours of engagement with them on a wide range of topics. Crucially NWL and its board considered that the package was financeable, would allow the company to earn its base return and provide sufficient financial headroom to manage plausible downside shocks in the future.

8.4.3 The increased level of challenge has threatened financeability

764. Throughout PR19 we have gone to great lengths to try and accommodate the various additional challenges that Ofwat has sought to impose on top of our original BP19. Many of these have focussed on further ratcheting our already stretching cost efficiency targets and service level commitments to customers. As a consequence, the changes we have accepted through PR19 have materially increased the risks associated with the current package.

765. Section 5 of our SoC highlights the level of 'stretch' that now exists in the package (see for example Figure 17 and Figure 35 **Error! Reference source not found.Error! Reference source not found.**). By way of example, even if the CMA were to accept all of the arguments in our SoC, the package would still represent a much tougher one for NWL to deliver than the plan we submitted to Ofwat in September 2018.

766. At DD19 we highlighted that the level of stretch in the package had increased to such an extent that, alongside the WACC estimate assumed by Ofwat, we could no longer see that the package was financeable. Almost every company in the sector responded similarly. In our representations to Ofwat we asked that they move some of the parameters to reduce the level of risk in the package or offer more reward, we did not propose any specific mechanism to address this imbalance, a number of levers could be used.

767. At FD19 Ofwat did reduce some elements of the stretch in the package overall, however it also further reduced the allowed return to 1.92% (real RPI). Independent analysis of the FD19 undertaken for us by KPMG shows that FD19 was not financeable.[518]

768. Work by EI also demonstrates that the package is much tougher than previous controls, with a 126% increase in the level of challenge relative to previous price controls in terms of the scale of Ofwat's challenge to revenues from the BP19 (ed.04.18) versus the FD at PR19 compared to the average across PR04-14.[519]

769. Concerns over the financeability of FD19 were an important part of our basis for rejecting FD19. This analysis is provided alongside our SoC and we elaborate further on these points in Sections 5 and 9.9.

8.4.4 Ofwat's approach is not in the long-term interests of customers

770. In addition to Ofwat incorrectly calculating the WACC, as we will demonstrate later in this Section, we are also concerned that Ofwat's approach to setting the allowed return is not in the long-term interests of consumers and it would increase volatility and systematic risk.

771. As we will highlight, much of Ofwat's proposed reduction in the allowed WACC arises from methodological choices in the way it is calculated rather than due to observed market movements.

517 KPMG - A review of Ofwat's proposed approach to total market returns, August 2017, SOC347.

518 KPMG - Estimating the cost of capital for PR19, March 2020, SOC416.

519 Economic Insight – Top-down analysis of the financeability of the notionally efficient firm: A follow on report for Anglian Water, Northumbrian Water and Yorkshire Water, 20 March 2020, SOC413,

772. We are significantly concerned by the trend away from long-term approaches to calculating the cost of capital parameters that would give regulators more discretion, drive higher volatility in the setting of the allowed return and increase systematic risk.

773. Water and wastewater services are essential services, capital intensive and have very long asset lives. We believe the most appropriate approach is to take a long-term view of these matters, which will best meet the long term interests of our customers and minimise the risk of underinvestment in the future.

774. The expert report attached to this SoC (the IER) sets out a range of arguments and evidence on each of the parameters of the calculation of the allowed return under the Capital Asset Pricing Model (**CAPM**). It is these arguments that we consider warrant most attention from the CMA.

8.4.5 We consider that any WACC estimate should meet four criteria

775. The CMA is well versed in these calculations and we simply refer them to the arguments and analysis in the IER that support the calculations for the underlying parameters as well as the points raised in this SoC.[520] We would highlight a series of tests that we believe the CMA should apply to its calculations:

- we believe our customers would not want the CMA determination to result in a worse bill outcome for them than what our original BP19 (ed.09.18) proposed – up to the midpoint of the IER range customers would face similar or better price reductions than we offered in our BP19 (ed.09.18), which 91% of our customers supported;
- our capital providers should receive a fair and reasonable return for the level of risk they are exposed to under the overall package and through their ongoing investment;
- calculation of underlying WACC components should accurately reflect market based evidence and recognised financial theory, consistent with the approach taken in the IER; and
- In setting the WACC, the CMA should undertake appropriate cross-checks to ensure the overall package is financeable. Our analysis suggests that, all else being equal, the WACC would need to rise considerably above the 1.92% presented in FD19 to provide a financeable package and even at the 'early view' the package is unlikely to be financeable.

776. Our own analysis suggests that the CMA should be able to achieve all of these criteria.

8.5 OFWAT'S ALLOWED RETURN ON CAPITAL

777. Ofwat sets an allowed return on capital for water companies over the price control period. Ofwat's stated objective in setting the allowed return on capital is "*to provide a reasonable base level of return reflective of the sector's risks, and which is sufficient to cover efficient debt and equity financing costs for a company adopting [its] notional financial structure*".[521] For the reasons outlined above, this allowed return on capital is fundamental to the sector's ability to retain and attract investment.

778. In FD19, Ofwat sets a wholesale allowed return on capital of 1.92% in RPI terms, and 2.92% in CPIH terms.[522] This is materially lower than the equivalent return set in PR14 of 3.60% in RPI-terms.[523]

779. We consider that Ofwat has failed to set its wholesale allowed return using a robust assessment framework. This failure has led to inappropriately calibrated parameter estimates, resulting in the setting of a wholesale allowed return that is below the CoC implied by publicly traded instruments. Further, Ofwat does not consider important factors when setting the wholesale allowed return, which may undermine its ability to achieve its objective over the charge control period.

780. We propose a framework for setting the allowed return on capital, which corrects for Ofwat's errors.

520 KPMG - Estimating the cost of capital for PR19, March 2020, SOC416.
521 Ofwat FD19: Allowed Return on Capital, SOC187, p. 3.
522 Ofwat FD19: Allowed Return on Capital, SOC187, p.5.
523 Ofwat: Final price control determination notice: policy chapter A7 – risk and reward, December 2014, SOC169, p. 42.

8.6 THE FRAMEWORK FOR SETTING THE ALLOWED RETURN ON CAPITAL NEEDS TO BE CONSISTENT AND SHOULD REFLECT A LONG-TERM 'THROUGH THE CYCLE' VIEW

8.6.1 Market-based weighted average cost of capital

781. The WACC is an average of the CoE and CoD, weighted by the assumed level of gearing of the notional entity. In general, these concepts can be taken to be 'market-based', reflecting the risk-adjusted opportunity cost of capital. The CoE and the CoD are best estimated using appropriate methodologies and publicly available market data over specified time horizons.

782. It is convention, and is agreed between NWL and Ofwat, that CAPM should be used to estimate the CoE.[524] CAPM requires a number of parameters to be estimated, including the three most important:

- the risk-free rate (**RFR**), the return expected from investing in riskless assets;
- the TMR, the return that is expected by investors from an investment in a suitably diversified portfolio of equities;[525] and
- beta, which measures the systematic riskiness for investors in the relevant company or sector relative to the markets as a whole,[526] and which can be expressed as an equity beta (the riskiness in a company's equity) and an asset beta (the riskiness in a company's entire capital base).

783. It is also agreed that the CoD can be estimated directly, using evidence from publicly available debt indices, although the conversion of directly estimated nominal costs of fixed rate debt into real terms relies on forecasts of inflation.

784. The WACC changes over time, primarily as a result of movements in financial markets, including interest rates, and changes in the riskiness of the sector in question.[527] This means that the parameters, including any mechanisms used to determine them, need to be periodically re-evaluated. The policy context and other factors influencing regulatory decisions when re-evaluation takes place and, in general, the individuals involved in re-evaluation, will also change over time. An essential policy consideration is therefore how the regulator ensures these changes do not introduce unnecessary inconsistency and risk, potentially with a costly systematic component that would be detrimental to consumers and, if not appropriately remunerated, investors too.

8.6.2 The importance of consistency

785. The CMA, in its decision for Bristol Water PR14 Decision noted that:

"An important part of this analysis is the application of a consistent approach to setting the assumptions which form the basis of the calculation of the cost of capital. Both debt and equity investors make long-term financing decisions, including debt financing of up to 30 years' maturity. This reflects investors' expectations not just in respect of the immediate regulatory period, but of a consistent approach over the longer-term…the financing environment is influenced by the stable approach to the estimation of the cost of capital, applied by both sector regulators and also in previous CC/CMA decisions."[528]

786. An important study for the UK Regulators Network (**UKRN**) has further highlighted some of the principles involved. One of the four principles the authors adopted in formulating their view and recommendations was:

524 Ofwat FD19: Allowed Return on Capital, SOC187, section 5.1.

525 More accurately, the returns to investing in the 'market portfolio'.

526 More specifically, in this case beta can be observed as the covariance of returns of a portfolio of comparable equities (in the water sector, Severn Trent plc and United Utilities Group plc) with returns to the market portfolio, normalised by the variance of returns to the market portfolio. Beta therefore captures systematic risk only, or risk that affects the market as a whole, as opposed to unsystematic risk, often called diversifiable risk or specific risk.

527 The risk premium component of the WACC can change due to structural breaks or progressive changes in beta, itself a result of changes in systematic risk of the activities of the relevant business/sector and in particular those arising from changes in the regulatory environment in which those activities are undertaken.

528 Bristol Water PR14 CMA Decision, SOC336, paras. 10.6-10.7.

787. "*The degree of discretion that can be applied by regulators should be limited, to no more than necessary to ensure consistency of treatment over time, which is necessary to promote the credibility of the regime and to manage investors' perception of regulatory risk.*" [529]

788. The UKRN study identified that the approach to regulation can influence levels of systematic risk[530] and cites the third of three key messages in a discussion paper issued by Ofwat:

"Risk exposure of regulated companies is intrinsically linked to the regulatory framework. This includes the way the companies are regulated and the manner in which they are remunerated for their exposure to risk."[531]

789. The UKRN study further notes:

that "many [UK regulators] have formalised policies to ensure that adaptation of the regulatory system is done in such a way as to minimise uncertainty"; and

that there is a "risk that regulators could be tempted to use their discretion over the key components - beta, TMR – in ways that could undermine the stability of the regime. This stability is the cornerstone of the UK regulatory model, where the focus has been squarely on achieving two highly desirable outcomes: maintaining investor confidence in order to keep the WACC low; and stimulating significant dynamic efficiency improvements (in large part through a predictable approach to remuneration of assets and performance)."[532]

790. These principles of consistency do not indicate that estimates should not change. We recognise that the WACC does change over time and parameters do need to be re-evaluated. It is necessary and proper that regulatory judgement and discretion are exercised in doing so. The principles do however indicate that, to protect the longer-term consumer interest and minimise the actual cost of capital, the choice of methodologies and the exercise of re-evaluation is undertaken with sufficient care that they do not, by themselves, introduce unnecessary and costly risk.

8.6.3 The allowed weighted average cost of capital

791. Having established a best estimate of the WACC over the relevant time horizon, there should be an explicit consideration as to whether adjustments are required to reflect appropriate policy considerations. Two key policy considerations are:

- Are investors unduly exposed to market movements, given that certain allowances, such as the CoE, are fixed throughout the price control?
- Where there is a range of appropriate estimates for the CoE or the CoD, should an estimate be selected that is above the mid-point of the relevant range, recognising the asymmetric risk of the trade-off between incentivising investment versus keeping bills low?

8.7 OFWAT'S ALLOWED RETURN IN FD19 INTRODUCES UNNECESSARY INCONSISTENCY AND RISK AND FAILS TO MEET ITS OBJECTIVE

792. Our fundamental concern with Ofwat's overarching approach to setting the allowed return is that throughout its assessment it has:

- Departed substantially from previous regulatory precedent in its judgments relating to methodology and evidence bases across all parameters, in conflict with the objective of 'consistency' highlighted above;
- Taken a selective and partial view of the evidence base, particularly in relation to betas and the RFR;
- Taken a number of short term perspectives on key parameters, notably in the RFR, adding further scope for instability in allowed returns across successive control periods.

529 Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018, SOC353, p. 4.
530 Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018, SOC353, p. 83.
531 Ofwat - Cost of capital and risk mitigants – a discussion paper, June 2011, SOC174, p. 3.
532 Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018, SOC353, p .84.

793. Taken together, uncorrected by the CMA as a consequence of this appeal, Ofwat's approach signals greater regulatory instability and uncertainty in the industry for the future to the detriment of consumers as we describe in Section 8.7.2 below.

794. Our views have been informed by the Report on Allowed Returns,[533] which we provide alongside our SoC. The report provides very helpful evidence and commentary on Ofwat's approaches to the underlying calculation of each of the different parameters associated with the cost of capital. We encourage the CMA to carefully review the analysis and commentary in that report in the first instance.

795. We have reflected on the scale and significance of the issues raised in that report and on the principles we set out in section 8.6 above. We consider that Ofwat has erred in its approach to setting the A-WACC, and in particular the A-CoE. First, Ofwat has failed to ensure its methods and judgements avoid introducing unnecessary inconsistency and risk. Second, and as a consequence, its approach to individual parameters lacks robustness, is internally inconsistent and fails to consider all relevant evidence.

796. The flaws in Ofwat's approach undermine its objective set out at paragraph 791 and thus, the effectiveness of its regulatory regime in respect of aligning the interest of companies and investors with those of customers. Ofwat's defects are grave enough to risk material detriment to the interest of consumers and the longer-term sustainability of incentive-based regulation for the water sector.

797. This overarching error of judgement is demonstrated through an analysis of Ofwat's approach to the CoE. Ofwat's A-CoE, on an RPI-basis, has reduced from 5.65% for its PR14 final determinations to 3.18% for its PR19 final determinations. We have carried out analysis of the components of that reduction, summarised in Table 45 below. Only 0.27% of the reduction can be attributed to changes in financial markets. The largest part of the reduction, 1.81% (2.08% from the table, less 0.27%), arises from judgements relating to method and estimation, choices that Ofwat has made for PR19 where it departed from its position in PR14.

Table 45: Summary of movements in Ofwat's A-CoE

Description	Change	Parameter affected	Impact on A-CoE	RPI-based A-CoE
Cost of equity assumed for PR14, RPI-basis				5.65%
Adjustment for long-horizon market returns	0.4% reduction to prospective TMR	TMR	-0.32%	
Other changes to TMR methods/judgements	Residual: PR14 = 6.75%, PR19 = 5.5%	TMR	-0.70%	-1.02%
Underlying movement in 15-year gilt yields	11/12/14 = -0.81%, 13/12/19 = -2.18%	RFR	-0.27%	
Choice of outlier evidence for RFR	Sep 19 = -2.61%, 13/12/19 = -2.18%	RFR	-0.09%	-0.72%
Other changes to RFR method/judgements	Residual: PR14 = 1.25%, PR19 = -2.39%	RFR	-0.36%	
Debt beta assumption	PR14 = 0.000, PR19 = 0.125	beta	-0.14%	
Other changes to beta method/judgements	Residual	beta	-0.20%	-0.34%
Total impact of market and judgement changes			-2.08%	
Effect of lower gearing assumption		gearing	-0.39%	-0.39%
Total change in Ofwat's CoE estimate				-2.47%
PR19 CoE, RPI-basis				3.18%

798. Without exception, all of those choices have had a downward impact on the A-CoE.

799. We recognise that regulatory judgements do not take place in a vacuum and are informed by the wider societal and political environment, which has shifted markedly regarding regulated utilities since the financial crisis and as the effects of austerity measures have been felt. This effect co-varies with the rest of the economy. Inevitably, in this way, regulatory judgements have the potential to convey systematic risk.[534] It is natural and quite proper that Ofwat will have, consciously or unconsciously, been subject to these influences. Our concern is that Ofwat, in its approach for PR19, has not exercised the caution that would be necessary to avoid introducing disproportionate risk.

533 KPMG - Estimating the cost of capital for PR19, March 2020, SOC416.

534 National Grid ESO – Facilitating the transition to a flexible, low carbon energy system: The Electricity System Operator RIIO-2 Business Plan 2021-23, 9 December 2019, SOC397, p. 93 (p. 20 of the embedded report). The analysis indicates that "regulatory discretion is the primary transmission mechanism for regulatory risk" for regulated networks.

800. The scale of discretionary change represented in the PR19 final determinations is substantial and in our view unprecedented. Uncorrected, and allowed to set new benchmarks for regulatory practice in future reviews, it is liable to represent a costly increase in the level of systematic risk facing water sector investors. This would be to the longer-term detriment of both investors and consumers.

8.7.1 Implications of Ofwat's approach

801. We recognise that Ofwat could plausibly claim that the methods it employed and judgements it made in PR14 built-in more caution than it now considers necessary. However, the outcome goes considerably further than a recalibration of caution and represents a substantial change in the basis of Ofwat's judgements.

802. The CC, in its final determination for Phoenix Natural Gas, noted that:

"Regulators are free to depart from previous decisions where appropriate in pursuit of their statutory objectives, but they should consider carefully whether their actions may be considered to lead to regulatory instability that will add to uncertainty in the industry."[535]

803. Ofwat has not adequately considered the longer-term implication of its approach.

804. There has been a palpable change in the wider societal environment in which PR19 has been carried out relative to PR14. This was most evident in the period after the PR14 review up to more recent months.

805. Important landmarks in this change in the societal environment included the NAO report on economic regulation of the water sector, published in October 2015.[536] Although the report was balanced, there was particular interest from media and commentators on benefits companies had received in the 2010-15 control period from factors outside their control. The Public Accounts Committee report published on 13 January 2016 focused on windfall gains companies were said to have made in the 2010-15 period and recommended that Ofwat should review its approach to setting allowances for the CoD and corporation tax.[537] In parallel, the Energy and Climate Change Select Committee concluded its inquiry into energy network costs in February 2015, a more politically charged process in which Ofgem was criticised around the profits of energy networks, "*that have been greater than expected after the first year of a new regulatory framework introduced by Ofgem to keep costs down*".[538]

806. These reports introduced a new awareness of water and energy regulation as a focus for criticism. In energy, this emerged in a significant interest from politicians in profits and dividends, notably those of National Grid, and extended to the profitability of the Big 6 energy suppliers. CAB followed through with a sustained campaign, culminating in its July 2017 'Missing Billions' report that energy networks "*are making £7.5 billion in unjustified profits over 8 years*".[539] Although the focus explicitly on the water sector was more muted, the level of societal and political concern translated across sectors, influenced the Labour Party agenda for re-nationalisation and conditioned the context for regulatory strategy for both Ofwat and Ofgem at the start of their respective control reviews, PR19 and RIIO-2.

807. It is understandable that Ofwat might respond to a more critical environment in the way it has, but we are concerned that the consequences for the risk environment will be detrimental to the longer-term interests of the sector and its customers. Meanwhile, it would also impact adversely on incentives, financeability and the underlying attractiveness of the sector to investors. The causative defect is that Ofwat did not appropriately undertake its re-evaluation of the A-CoE with the care that would have avoided introducing unnecessary and costly risk. The outcome, NWL believes, is an estimate of the A-CoE that makes it insufficient to cover efficient equity financing costs.

535 Paragraph 9.112.
536 National Audit Office - The economic regulation of the water sector, 14 October 2015, SOC335.
537 House of Commons Committee of Public Accounts - Economic Regulation of the water sector, 13 January 2016, SOC337, recommendation 1.
538 House of Commons Energy and Climate Change Committee - Energy network costs: transparent and fair, 23 February 2015, SOC310.
539 Citizens Advice - Energy networks making £7.5bn in unjustified profit over 8 years, 12 July 2017, SOC423.

808. As important, uncorrected, Ofwat's approach will create a longer-term detriment.

8.7.2 The longer-term detriment

809. Paragraph 855 below refers to Ofwat's choice to depart from an approach that smooths out cyclical variations in the RFR. It reflects a wider theme in Ofwat's approach which is to depart from past conventions and sensibilities and has the effect of reducing stability in the CoE assessment. Referring to the passage cited in paragraph 851, it tends to undo earlier attempts by Ofwat and other regulators to support "*investor confidence by providing long-term stable returns on their long-term investments*".[540]

810. The importance of this is particularly relevant for a capital intensive regulated sector providing essential services such as water. These characteristics mean the policy considerations are distinct from some other regulated sectors.

811. The general issue was recognised in a passage in the seminal 2003 Wright, Mason & Miles 'Smithers' report for the regulators:

"This source of systematic regulatory risk is particularly acute when the regulator has a large amount of discretion, in terms of both the frequency with which and the degree to which the regulator can adjust the price cap. If the regulator can make large adjustments very frequently to the price cap, then there is considerable systematic regulatory risk. If, on the other hand, the regulator is constrained to make small changes infrequently to the price cap, then there is little systematic regulatory risk from this source."[541]

812. For PR19, Ofwat evidently did not feel constrained to make small changes to the A-CoE, this most central component of the price cap.

813. This, combined with more recent awareness that regulatory discretion could be the primary transmission mechanism for regulatory risk (see footnote 534 above), means that the issue is liable to have a substantive effect on systematic risk in the sector. Longer-term, this would increase the cost of capital to the detriment of consumers. Paragraphs 800, 864 and 827 also refer.

814. The scale of discretion that Ofwat has invoked in its PR19 A-CoE assessment risks being seen in future reviews as an over-correction. Investors and consumers are better served by a more stable approach to determining the A-CoE. This is one that should be capable of supporting investor and consumer confidence in a regulatory process that limits the transmission of systematic risk into price control decisions.

815. It will be in the consumer interest to have a regulatory process that recognises the important role that discretion plays in regulatory decisions, its relevance to systematic risk and the longer run cost of capital and the value of responsible regulation that seeks to mitigate the transference of systematic risk rather than yield to it. That is the route to truly efficient longer-term finance for the water sector and we would request that this is something the CMA considers in its redetermination.

8.7.3 Suggested remedy

816. We believe it is necessary for the CMA to carry out a full review of the A-WACC in light of the principles outlined in section 8.6 above and the criteria we set out in Section 8.4.5 above. In conducting its review, the CMA should consider carefully how it avoids adding undue regulatory instability that will add to uncertainty in the industry (see paragraph 802 above) and the longer-term detriment to consumers.

817. In doing so, we believe the CMA should give weight to the balanced conclusions of the IER and the issues we raised in Sections 8.8 to 8.12 below. In these sections we provide commentary on Ofwat's errors of judgement, and the scale of judgement changes, in relation to setting the individual parameters of the allowed WACC drawing on the arguments and evidence set out in that expert report.

*540 PwC Economics, Refining the balance of incentives for PR19, "**Refining the balance of incentives for PR19**", June 2017, SOC345, p. 75.*
541 A Study into Certain Aspects of the Cost of Capital for Regulator Utilities in the UK, 13 February 2003, SOC426, p. 122.

818. The IER's approach to determining the A-WACC parameters is consistent with maintaining the desirable attribute of stable and predictable returns, the first such attribute that Ofwat identifies in its Cross-cutting issues submission to the CMA.[542] Our analysis in this section highlights how Ofwat's approach will lead to a loss of stability and predictability. In turn, this is liable to represent a structural break in the risk environment for the water sector. This has potentially enduring adverse implications for the cost of capital in future periods and also has implications for the beta estimate for the period covered by PR19, after this structural break. We address this particular issue further in Section 8.10.

8.7.4 Consideration of the main parameters

There follows in sections 8.8 to 8.12 below our detailed consideration of these issues by parameter.

8.8 ERRORS IN OFWAT'S APPROACH TO THE TMR

819. For PR19, Ofwat estimated the real, RPI-adjusted Total Market Return (TMR) to be 5.47%, a full 1.25% below its estimate of 6.75% for PR14. In both cases, Ofwat took as its reference point the longer run evidence of equity market returns, since 1900.

820. Updated market data in the five years that have elapsed since Ofwat's PR14 final determinations have caused no material change in the longer run market return itself. Ofwat has instead changed its interpretation of the historical returns.

821. To consider these changes, we first consider the components of the movements in Ofwat's judgements identified in Table 45:

- longer horizon market returns, Section 8.8.1; and
- other changes to TMR methods/adjustments, Section 8.8.2.

822. We then consider the insights from the IER on allowed returns, Section 8.8.3, and our proposed remedy, Section 8.8.4.

8.8.1 Longer horizon market returns (averaging)

823. PwC noted in its July 2013 report for Ofwat[543] that "*Economic regulators typically use arithmetic averages or short-term holding periods in using historical returns to assess expected equity returns for price controls, rather than geometric averages or long-term holding periods*".[544] In this way, the implication of longer holding periods for estimating market returns was understood, but not explicitly applied.[545]

824. The UKRN has made this understanding explicit by incorporating, although in a very rough way in its single-page Appendix E, a smaller adjustment from their view of longer run geometric market returns.[546] They explained that an adjustment as large as 2% (within its range of 1-2%) is distinctly weakened if regulators wish to set returns at a relatively long horizon. This represents a marked change from previous regulatory practice.

825. Ofwat states that its adjustment for longer holding periods focused on the Jacquier Kane Markus (**JKM**) estimator method.[547] The JKM method provides for an adjustment of around 1.35-1.6% to the full period geometric mean for 5-10-year holding periods, while the alternative Blume method provides for an uplift of around 1.6-1.7%.[548]

826. Recognising that Ofwat's final views on TMR involved some triangulation with other evidence, the outcome of 6.5% on a CPI basis represents an uplift from the full period geometric mean of as little as 1.35%.[549] This is

542 Ofwat - Reference of the FD19: Cross-cutting issues, March 2020, SOC243, para. 5.11.

*543 PwC - Cost of capital for PR14: Methodological considerations, "**PwC PR14 Report**", July 2013, SOC320, p. 39.*

544 PwC PR14 Report, SOC320, p. 39.

545 A Study into Certain Aspects of the Cost of Capital for Regulator Utilities in the UK, 13 February 2003, SOC426.

546 Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018, SOC353. Adjustments to geometric means is the preferred approach, noting the view of one of the authors, Derry Pickford, that finance practitioners make little or no use of arithmetic averaging.

547 Ofwat FD19: Allowed Return on Capital, SOC187, p. 41.

548 Ofwat DD19: cost of capital technical appendix, July 2019, SOC229, Table 3.5, p. 32.

549 This takes 5.14%, rounded to the nearest 5bps, as the geometric mean for the full period as set out in Ofwat FD19: Allowed Return on Capital, SOC187, Table 3.5.

clearly towards the lower end of the 1-2% range advised by the UKRN and difficult to reconcile with even the JKM method.[550]

827. It represents a departure from established and more cautious regulatory practice.

828. Technical Appendix 1 of the IER concludes that "*this is a highly complex problem with no clear answers".* The authors explain a number of possible approaches to averaging and rationalise an approach that places some weight on each of them. We consider this is a more balanced and robust approach.

8.8.2 Other changes to TMR methods/adjustments

829. After taking account of the reduction in the TMR for longer holding periods, the aggregate effect of all the other changes in Ofwat's methods and judgements have a downward impact of about 0.70% on the A-CoE. We would have expected Ofwat to recognise that its explicit adjustments for longer holding periods, representing a significant departure from regulatory precedent, should lead to greater caution in its other judgements, rather than less.

830. For PR14, some of that caution would have been built-in to the judgements that Ofwat made around issues such as its response to the RPI issues flagged by the ONS and its adherence to long-standing regulatory practice for interpreting the TMR.

831. In Ofwat's initial submission to the CMA for the NATS determination, it cites an issue in the construction of the Consumer (**COLI**),[551] an inflation index used before the Interim Index of Retail Prices was introduced in 1946 and the Retail Prices Index in 1956. We are aware of the inflation measurement issue that arose during World War II due to a failure to update expenditure weights in the construction of the COLI. Ofwat cites this issue as a reason for adopting a different long run inflation series than it used in PR14.

832. While not dismissing the pertinence of the COLI expenditure weights issue in isolation, the issues with COLI are not new and were understood effectively as far back as 1938 when new expenditure weights were first determined (though not implemented because of the onset of WWII).[552] Ofwat citing these old issues as justification for an alternative inflation series demonstrates that it is another example of inconsistency in its stance relative to previous periodic reviews.

833. We also consider the issue in the broader context of inflation measurement and relating the current highly granular and technology-assisted methods of inflation measurement with what Ofwat describes as "*numerous revisions to historical calculations*".[553] Inflation measurement is not a precise science even now and we have no alternative but to use less precise measures when estimating the longer run history of market returns. We have no reliable way of determining whether, taken together, these measures are upward or downward biased.

834. In this context, in its initial submission to the CMA for the NATS determination, Ofwat also highlighted that "*numerous revisions to historical calculations of RPI have caused current RPI to be structurally higher than its historical equivalents*".[554]

835. In this statement, Ofwat echoes concerns expressed by the ONS, UK Statistics Authority (**UKSA**) and the House of Lords Economic Affairs Committee, among others, relating to the changes to data collection for clothing and footwear inflation that the ONS implemented in 2010.[555] These changes led to the RPI losing its National Statistics status after the ONS completed its review of RPI in January 2013.

836. The issues arising from these changes were explored extensively in the ONS review and were evident well before Ofwat concluded PR14. Notably, the issues and their implications for regulatory estimates of the cost of capital

550 For the purpose of the analysis in Table 45 above, the effect is characterised as a movement of 0.4% in the TMR, calculated as the difference between the outcome of 6.5% and the full period arithmetic means calculated using Ofwat's preferred inflation basis as shown in Table 3.5 of its DD19 cost of capital technical appendix, SOC229, (i.e. 6.89%). The consequence for A-CoE, after applying beta, is a reduction of 0.32%.

*551 Ofwat - NATS En-route Limited (NERL) Price Determination – referral to the CMA "**NATS CMA Referral**", December 2019, SOC237, p.4.*

552 Blood, Sweat and Tears: British Mobilisation for World War II, 16 January 2002, SOC287, p. 11.

553 NATS CMA Referral, SOC237, p.4.

554 NATS CMA Referral, SOC237, p. 4.

555 House of Lords Economic Affairs Committee - Measuring Inflation, 17 January 2019, SOC377, pp. 24-29.

were highlighted in Ofgem's 6 December 2013 equity market return consultation[556] and its 17 February 2014 decision.[557]

837. These issues arising from the changes to RPI in 2010 were therefore not new information and were taken into account by regulators at the time of PR14 final determinations.

838. The implication is that the change in Ofwat's estimate of TMR since its PR14 estimate simply reflects a different regulatory stance. This would represent a marked reduction in the level of caution exercised by Ofwat in making its judgements and signalling a sharp increase in regulatory inconsistency and uncertainty in the industry.

8.8.3 The IER on allowed returns

839. The Report on Allowed Returns sets out its estimate of the TMR at 6.25%, a full 0.5% below Ofwat's estimate for PR14 but 0.75% above its estimate for PR19.

840. The authors highlight a number of concerns with Ofwat's reliance on a single new series of inflation data. Just as we discuss unreliable inflation data in the first half of the 20th century, the IER's authors rightly point out that uncertainties infect the whole period and argue for a range of approaches to measure deflated returns, including approaches to averaging for longer horizons, over such a long period. They acknowledge the need for cross checks but point out[558] that Ofwat's own cross checks were made on an inconsistent basis.

841. Ofwat's estimate is part of the general defect in its approach that we describe in paragraph 792. By opting for a very particular way to estimate the total market return without recognising the depth of the data and methodology issues and the range of approaches that might justifiably be taken, Ofwat is introducing unnecessary regulatory instability and uncertainty in the industry to the detriment of consumers.

8.8.4 Proposed remedy

842. The fundamental review of the A-WACC we recommend in Section 8.7.3 above should estimate the TMR on a balanced basis, taking account of the depth of data and methodology issues. Consistent with the advice of its predecessor body, the CC, cited in paragraph 802 the CMA would consider carefully whether its approach could lead to regulatory instability that will add to uncertainty in the industry and how it might minimise that uncertainty.

8.9 ERRORS IN OFWAT'S APPROACH TO THE RFR

843. For PR19, Ofwat estimated the real, RPI-adjusted Risk-Free Rate (RFR) to be -2.35%. Its estimate for PR14 was +1.25%. Of this 3.6% reduction, 1.37% can be attributed to the genuine movement in the market yields on 15year gilts between the two final determination dates. The rest, 2.23%, relates to a change in Ofwat's stance, having an impact of reducing the A-CoE by about 0.45%.

844. We consider this change in stance and its damaging consequences further:

- Ofwat's choice of outlier evidence for its RFR estimate, Section 8.9.1; and
- The use of a spot basis for the RFR, Section **Error! Reference source not found.**.

845. We set out our proposed remedy in Section 8.9.3.

8.9.1 The choice of outlier evidence for calibrating the RFR

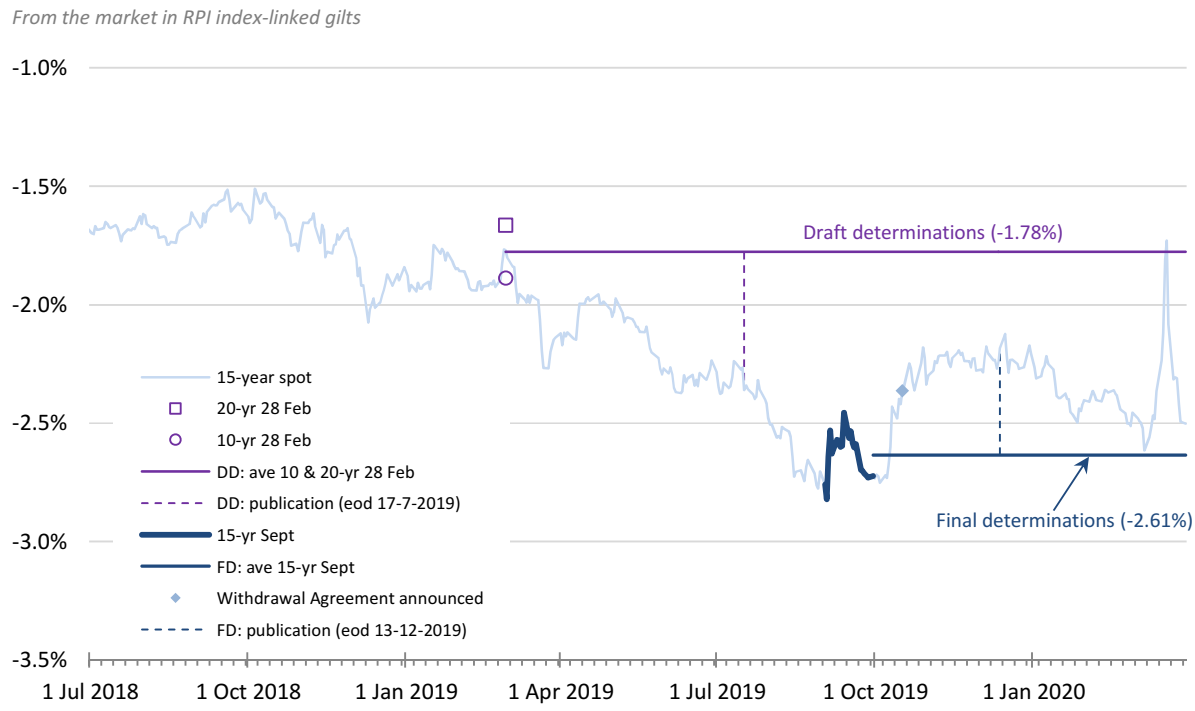
846. Although this issue represents a relatively small movement in Table 45, a reduction in A-CoE of 0.09%, it sheds light on the wider defects that Ofwat has made.

556 *Ofgem - Consultation on our methodology for assessing the equity market return for the purpose of setting RIIO price controls, Appendix 2, 6 December 2013, SOC306.*
557 *Ofgem - Decision on our methodology for assessing the equity market return for the purpose of setting RIIO-ED1 price controls, 17 February 2014, SOC305, para. 1.17.*
558 *KPMG - Estimating the cost of capital for PR19, March 2020, para. 1.2.10, SOC416.*

847. The approach Ofwat took to determine the market basis for its RFR allowance in FD19 was not the same as the approach it took for DD19. It had a choice. For FD19 it took the average yield on 15-year index linked gilts during the month of September 2019 as its base (it uplifted this base yield for an upward shape of the yield curve over the PR19 period). It was apparent at the time and became starkly so before FD19 was published that the month of September 2019 was unlikely to provide representative evidence of the forward-looking RFR at the time of concluding the review. September 2019 was characterised by an exceptional level of uncertainty around how the UK would exit the EU. It was only in October when it became clear that the UK Government would be able to navigate to a withdrawal agreement before the then-legislated exit day of 31 October 2019 that yields started to recover.

848. The impact of this uncertainty during September 2019 and the impact on Ofwat's chosen method for determining 15-year yields (average of 10 and 20-year yields for DD19), to base its estimate of the RFR, is illustrated in Figure 44.

Figure 44: Ofwat's DD19 and FD19 RFR basis IL gilt yields



Source: Bank of England yield curves data to 30 March 2020

849. The chart shows considerable volatility in yields since the final determinations. It can be seen that Ofwat has calibrated its estimate of the RFR to be consistent with a particular state of economic crisis, one that existed in September 2019. At the time of writing, we remain in a state of crisis. It is a different kind of crisis, and the level of volatility in yields tells us that it would be inappropriate to assume that the unique conditions in September 2019 could be taken as in any way a fair estimate of market conditions throughout the control period. We do not believe it is consistent or safe to estimate an RFR on this basis.

8.9.2 The use of a spot basis for the RFR

850. The main driver of the reduction in RFR is Ofwat's choice to follow the recommendation of the UKRN in using the yield on inflation indexed-gilts (effectively on a spot basis) at the chosen horizon.[559]

851. There has been a remarkable trend of falling interest rates since the mid-1990s, consistently fooling market expectations. If markets were fooled, it is not surprising that regulatory allowances during this period also consistently overshot outcomes. However, the UKRN's principal concern doesn't seem to be around overshooting, per se, but around the "*dragging anchor*" appearing to have considerable stretch or, in their words,

559 Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018, SOC353, Recommendation 4.

"*infinite elasticity*".[560] This concern is more about how regulators reached a 'through-the cycle' estimate than in the underlying idea of one. They acknowledged that a 'through-the cycle' estimate would in principle be consistent with their recommended approach to the TMR and they cited a PwC report that it would support "*investor confidence by providing long-term stable returns on their long-term investments*".[561]

852. In departing from this approach in their recommendation, the UKRN differentiated the strategy for estimating the TMR to that for the RFR on the basis that the TMR cannot be directly observed while the RFR "*can clearly be observed, with minimal error*".[562]

853. We accept that the RFR can be determined as at a time of a regulatory decision "*with minimal error*" (e.g. by not using outlier evidence). However, it is a simplification to suppose that a company's investment decisions are pre-determined at the time of that regulatory decision. A price control conditions the incentive environment for companies' operational decisions throughout the five-year price control period, particularly investment decisions. Because it does not pre-determine those decisions, a spot basis for the RFR estimate at what might turn out to be an historical low point for the measure risks a damaging context for investment and finance in the control period itself. The future path of the RFR is far from clear.

854. The longer-term investment prospect of returns that will be driven by five-yearly cycles of spot rates, taken at specific times of the regulator's choosing and plausibly introducing conscious or unconscious bias in the selection of those times, would be unattractive, with heightened levels of risk. There would be no assurance that reviews, like PR19, taking place at what might turn out to be historical lows, would be balanced by regulators being able or inclined to adopt the same approach through historical highs.

855. What is at issue, therefore, is the question of whether bound-to-be-incorrect ex ante RFR estimates should be made on a spot basis, without any attempt to smooth out short-term cyclical variations, or on a basis (more consistent with the TMR) that provides for relatively stable returns on long-term investments and an inherently safer context for investment and finance.

856. The authors of the IER argue that the yields on gilts are volatile over time and currently in a disequilibrium. Accordingly, they argue that more weight should be placed on equilibrium estimates of RFR.

857. The IER indicates a range of justifiable estimates from -1.5% to -0.8%.

858. This state of volatility and disequilibrium, referred to also in paragraph 849 above, compounded by the two-faceted crisis the markets have been experiencing, means there is little confidence that the spot rates in a narrow recent window will be representative of the risk-free rate over the forthcoming five year period. Ofwat acknowledges this lack of confidence in its approach to the cost of new debt and it is being inconsistent in adopting the approach it does for the RFR.

859. Ofwat's approach to the RFR is part of the general error in its approach described in paragraph 792. By opting for an inherently less stable short term spot rate as its reference point, giving no clarity on how narrow windows of evidence should be determined in future reviews, Ofwat is introducing unnecessary regulatory instability and uncertainty in the industry for the future to the detriment of consumers.

8.9.3 Proposed remedy

860. The full review of the A-WACC we recommend in Section 8.7.3 above should estimate the RFR on a basis that places more weight on equilibrium estimates of RFR and avoids the prospect of destabilising effects of investor returns being dependent on arbitrary 5-year cycles of narrow-window spot rates.

560 Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018, SOC353, p. 34.
561 Refining the balance of incentives for PR19, SOC345, p. 75.
562 Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018, SOC353, p. 34.

8.10 ERRORS IN OFWAT'S APPROACH TO BETA

8.10.1 Debt beta assumption

861. Although the debt beta assumption is used in both de-gearing the raw equity beta observation and re-gearing to the chosen notional gearing, there is a modest impact of a change in assumption where there is a difference between actual (Ofwat = 54.2%[563]) and notional (60.0%) gearing levels. While we accept that a non-zero debt beta estimate is appropriate, Ofwat's assumption is high relative to regulatory precedents with little reliable market data or evidence to support it. This has the effect of further minimising the A-CoE by 0.14%.

862. We consider that the lender protections built into the ring fence and special administration regimes would indicate a lower debt beta estimate than 0.1, but note that this is the value used in the IER.

8.10.2 Other changes to beta method/judgements

863. The other changes in Ofwat's beta estimate account for a further 0.20% reduction in the A-CoE, as shown in Table 45. Due to the societal factors described earlier and the risk transmission mechanisms described above the underlying systematic risk environment has deteriorated significantly since PR14. This perspective is not inconsistent with the patterns of beta observations over the period, albeit recognising the more recent influences we describe. Factors leading to this deterioration in the underlying risk environment are unlikely to be transient – awareness and concerns having been raised and found to have resonance with consumers of commercial and political media will continue to have resonance for the longer-term. These point to higher levels of beta risk in the 2020-25 period, rather than lower.

864. Consistent with paragraph 814, we are also concerned that Ofwat's wider approach to the A-CoE will further aggravate the systematic risk environment. It signals less stability in A-CoE assessments and greater propensity for wider societal and economic information to influence return outcomes. This will heighten investor perceptions of systematic risk in regulatory discretion in successive reviews. A correction made as a result of the CMA's redetermination appeal would help mitigate some of these effects.

865. In addition, the authors of the IER consider Ofwat's approach to beta estimation is not reliable and set out their reasons.[564] They in particular highlight a number of difficulties with giving the weight Ofwat gives to evidence from short term high frequency betas.[565]

866. The authors identify that the need for consistency and a longer-term investment horizon in estimating the WACC points to a longer-term unconditional beta estimate. They consider it appropriate to see the start of the PR14 period as a structural break point and thus use a 5-year time horizon. As we discuss above, we expect the start of PR19 period will represent another structural break, with the prospect of a heightened beta going forward.

867. The authors also explain why monthly observations over 5-year time horizons would be more reliable.[566] They point to the presence of noise in daily beta observations due to the scope for information lag in asset returns. The movements in two-year daily betas in recent weeks may emphatically reinforce this point.

868. Taking 5-year monthly betas as a better justified reference point, they identify a range for raw equity beta anchored at a level of 0.72. They indicate a lower end of the raw equity range at 0.66, but this relies on the less reliable daily observations.[567]

869. In line with the recommendations of the IER, we consider lower sampling frequency (namely monthly) 5-year beta estimates provide a more reliable basis for beta estimation. However, we note that the gearing level that Ofwat indicates would be pertinent to such estimates is 52.1%[568] rather than the 54.2% used in the IER and in Ofwat's final determination.

563 *Ofwat FD19: Allowed Return on Capital, SOC187, p. 64.*
564 *From paragraph 4.6.6.*
565 *From paragraph 4.6.10.*
566 *Paragraph 4.6.15 and 4.6.16.*
567 *Paragraph 4.6.22.*
568 *Ofwat FD19: Allowed Return on Capital, SOC187, Table 5.7.*

870. The IER authors' estimates cannot pick up on any progressive change in the risk environment as discussed in paragraph 863 and any structural break arising from the issues first described in paragraph 800. For this reason, we consider that even the top of the authors' beta range may underestimate the forward-looking beta for the 2020-25 period.

8.10.3 Proposed remedy

871. The full review of the A-WACC we recommend in Section 8.7.3 above should estimate the equity beta on a basis that places more weight on lower sampling frequency 5-year beta estimates from historical market data and also more weight on a wider consideration of the risk drivers for regulated networks and the associated transmission mechanisms for systematic risk in light of a deteriorating risk environment. Provided the CMA makes the necessary corrections as a consequence of its fundamental review, it should help minimise the further aggravation of this risk environment as a result of Ofwat's approach to PR19.

8.11 ERRORS IN OFWAT'S APPROACH TO THE COD

872. In contrast with the A-CoE, our concerns around Ofwat's approach to the A-CoD are less fundamental.[569]

873. We agree with Ofwat's:

- specification of a consistent time horizon;
- use of the iBoxx A/BBB index[570] as an appropriate benchmark for the cost of new debt;
- logic in using a trailing average of the iBoxx A/BBB index to simulate the cost of embedded debt for a notional company in the sector, subject to overarching checks; and
- design of a reconciliation mechanism at the end of the control period to mitigate the risk of locking in a fixed allowance that is not reflective of the outturn CoD.

874. We acknowledge the importance for incentives and risk allocation of maintaining a sectoral basis for determining the CoD.[571] In this way, companies can decide on their approach to financing and accept the risk of diverging from the sector-based allowance. If the regulator allows it to, the incentive effect through the operation of successive price controls will ensure that consumers will benefit from companies' efforts in driving the lowest possible financing costs for the sector.[572]

875. However, we disagree with one important aspect of Ofwat's methodology for estimating the A-CoD, which is its approach to adjusting the iBoxx A/BBB index to account for an outperformance wedge or 'halo effect'. Ofwat makes two adjustments to its A-CoD, a 25bps adjustment to the cost of embedded debt and 15bps adjustment to the cost of new debt.[573] The weighted average impact is 23bps.

876. Informed by the IER, we are concerned that Ofwat's estimation of the historical wedge is not rigorous and takes insufficient account of the tenor of the debt issuances it has analysed.[574] Once tenor is corrected for, any assumed outperformance converges on zero.

877. Its forward-looking view of the wedge is therefore also incorrect.

878. The presence of any sustained halo effect is in effect an inference that the rating agencies' methodologies were inconsistent with the market view of the credit risk in water company debt relative to other sectors at the same rating level. This would be a function of the relationship between those methodologies, the real world risk exposure to debt holders and the perspectives of debt market participants. Those methodologies are not mechanistic, include significant subjective assessments and are not fixed in time. Rating agencies would be expected to refine their methodologies as required to maintain the quality and consistency of their ratings. There should not therefore be any persistent halo effect.

569 Ofwat derives its A-CoD using a weighted average of the prospective cost of new debt and historical cost of embedded debt, in both cases derived from publicly available debt indices.
570 An average of the A and BBB rated IHS Markit iBoxx non-financial 10 years+ indices.
571 Bristol Water PR14 CMA Decision, SOC336, paras. 10.3 to 10.6.
572
573 Ofwat FD19: Allowed Return on Capital, SOC187, Tables 6.2 and 6.1 respectively.
574 KPMG - Estimating the cost of capital for PR19, March 2020, SOC416, sections 1.6 and 5.2.

879. The accounting context for the agencies' credit metrics can also change, and we have a structural change in the transition from RPI to CPIH as the basis for indexing the RCV. This changes the relationship between economic returns and cash flows, two key areas of focus for credit metrics. This structural break in the accounting context makes it doubly unsafe to project any halo effect into the future.

880. Ofwat's estimate of embedded debt costs relies on inflation forecasts published by HM Treasury in August 2019. The fall in these forecasts since August 2019,[575] and the parallel falls in implied forward inflation in fixed rate and index-linked gilt yields, indicates that the allowances for embedded debt costs are liable to be understated in any event.

881. For these reasons, we agree with the view expressed in the IER that there should be no adjustments for any outperformance wedge, either for embedded debt or new debt.

8.11.1 Proposed remedy

882. The full review of the A-WACC we recommend in Section 8.7.3 above should adopt a rigorous approach to evaluate whether or not there is an outperformance wedge and, if there is, its scale. CMA's consideration should also take account of updated forecasts for inflation for deflating trailing averages of nominal cost of debt benchmarks.

8.12 ERRORS IN OFWAT'S APPROACH TO THE RETAIL MARGIN ADJUSTMENT

883. Finally, as explained by Ofwat in the FD, the RCV is now 'essentially free' of retail assets[576]. In applying the appointee WACC to the RCV, there is therefore no double count of the retail margin, unless i) the appointee beta reflects the systematic risk of an integrated wholesale/retail firm and ii) the systematic risk of retail activities is materially higher than wholesale activities and iii) the risks attributable to retail activities are fully remunerated by the permitted retail margin.

884. Furthermore, we note that the IER retains Ofwat's WACC adjustment of 0.04% on account of the retail margin. While we understand the logic of making an adjustment to avoid "*companies being compensated twice for bearing the same risks*",[577] we do not consider the risks are the same. The retail business is exposed to a more complex mix of risk and we believe that the considerations in the CMA final determination for SONI[578] provide a relevant reference point and highlight the limitations of Ofwat's own analysis of the risks involved.

8.12.1 Proposed remedy

885. The fundamental review of the A-WACC we recommend in Section 8.7.3 above should consider the complex mix of risk facing water business retail activities and the consequent margin requirements before determining whether there is any adjustment that can be properly made to the A-WACC.

8.13 IMPLICATIONS OF SETTING THE ALLOWED WACC TOO LOW

886. The arguments for setting the allowed WACC too low are well rehearsed. We outline them here because the likelihood of an allowed WACC that is set too low has increased, as it has been materially lowered by regulators in 2019.

887. In essence, setting the A-WACC at an appropriate level requires balancing short term benefits to consumers in the form of lower prices now, with incentives for investors to provide financing for efficient investment. If the A-WACC is set too high, then there is a welfare loss as customers pay an excessive amount for their bills. However, if the cost of capital is set too low, there is a welfare loss in terms of longer-term loss of investor confidence,

---

575 *Forecasts for the UK economy: a comparison of independent forecasts, August 2019, SOC392; p. 18; Forecasts for the UK economy: a comparison of independent forecasts, February 2020 editions, SOC409, p. 16.*

576 *Ofwat FD: Allowed return on capital, SOC187, p.14*

577 *Ofwat FD19: Allowed Return on Capital, SOC187, p. 12.*

578 *SONI FD, SOC312, para 7.379. The risks for SONI will be different from those of our retail activities, but the CMA's analysis provides a reference point for consideration of more complex risk profiles of asset light businesses.*

distorted decision-making and underinvestment, or in extremis, financial distress or the non-operation of the regulated company. Either outcome fails to achieve an appropriate balance across the statutory duties

888. Given that demand for most regulated services is inelastic, because these services are essential in nature, the welfare loss from under investment or longer-term deterioration in investor confidence is large.

889. In addition, the implications of setting the A-WACC too low are linked to the CoD. This is because rating agencies evaluate key ratios, which are largely aimed at estimating the headroom above interest costs. All else being equal, the higher the A-WACC, the higher the headroom and the better the credit rating. Where the A-WACC is set too low, the ratios tighten and companies could face a credit downgrade.

890. Therefore, in the event that the A-WACC is set too low, firms may be incentivised to defer expenditure to improve cashflows, and/or potentially suffer rating downgrades, which increases the CoD.

891. Notwithstanding these reasonably well-rehearsed arguments, the longer-term implications of Ofwat's approach described in section 8.7 are of more urgent concern and would have a more pervasive detrimental effect on consumers if not corrected by the CMA as a consequence of this redetermination.

8.14 OFWAT'S OUTPERFORMANCE SHARING MECHANISM FOR HIGH GEARING

892. We believe Ofwat made an error in introducing the GSM.[579]

893. The GSM is designed to impose Ofwat's view on what maximum leverage is appropriate for companies by penalising them if they exceed certain predetermined thresholds.

894. The penalty is calculated as a share of the difference between the nominal A-CoE and a company's actual (nominal) CoD on the value of debt in excess of a threshold level of RCV gearing. Ofwat specified threshold levels[580] that reduce from 74% to 70% during the course of the PR19 control period. The sharing proportion is 50%.

895. We expect our gearing will remain lower than 70% during AMP7, as it has in the past. Notwithstanding this, we are concerned that the mechanism is poorly conceived and will, longer-term, operate against the consumer interest. For the reasons we set out below, we believe Ofwat made an error in introducing it.

8.14.1 Key reasons why we believe the GSM should be repealed

896. We continue to disagree with the underpinning principles behind Ofwat's GSM and its design.

8.14.1.1 The GSM is not consistent with well-established corporate finance theory and regulatory precedent

897. The GSM is not consistent with financial theory and regulatory precedent. The new regulations are based on the premise that risk to equity and hence the required equity returns from companies with higher gearing do not fully increase with leverage. If they did, then it would not be justified to reduce equity returns at higher leverage because that would be inconsistent with required remuneration to ensure financeability and with Ofwat's financeability duty.

898. The work by Modigliani and Miller first showed that firms in fact cannot lower their cost of capital by simply increasing leverage, because the required return on equity increases with leverage as equity risk becomes more concentrated. The MM Capital Structure Irrelevance Proposition stipulates that under certain circumstances including no taxes, the cost of capital is invariant to the level of gearing, and instead, is determined by the riskiness of the firm's cashflows.

579 Ofwat – Putting the sector back in balance – summary of Ofwat's decision on issues for PR19 business plans, 3 July 2018, SOC221, p. 1
580 Ofwat FD19: Aligning risk and return technical appendix, "**Ofwat FD19: Aligning risk and return"**, 16 December 2019, SOC188, p. 112.

899. All UK regulators, including Ofwat to date, have recognised the basic MM principle. The proposals, as drafted, constitute a significant departure from this principle and from how Ofwat has been setting the cost of capital allowance in the water sector (and other UK regulators in other sectors) since privatisation.

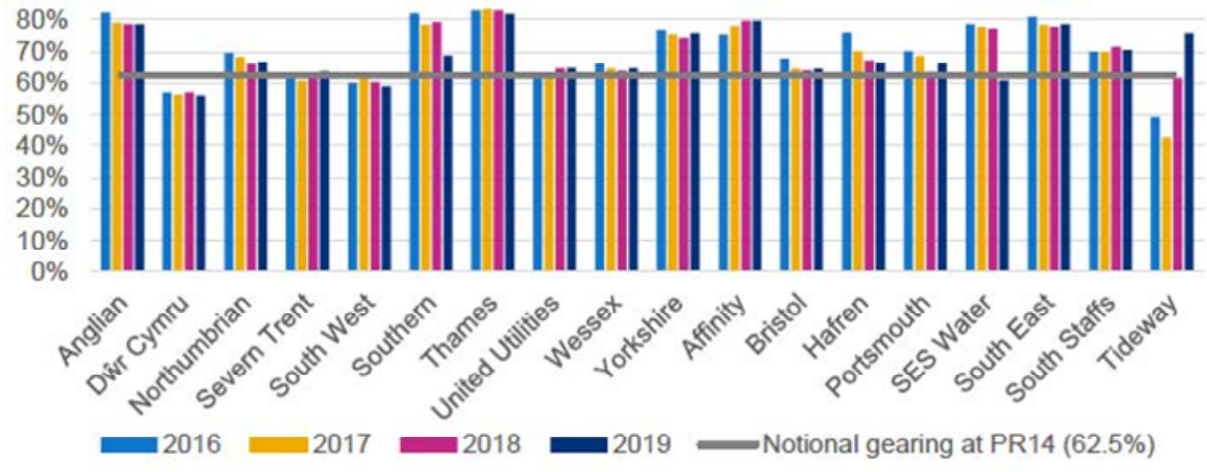
8.14.1.2 There is no one size fits all level of gearing that is optimal for all companies

900. A number of factors influence what might be the optimal level of gearing for a specific company. Although the risk profile of companies in the water sector might be thought to be broadly comparable, performance and investment challenges will differ and governance arrangements will also depend on company specifics.

901. The quantum of debt is clearly a consideration in a company's governance, but so are other factors such as the identity of the shareholders, the governance structures within the wider group, the nature of debt covenants, the structure of management agreements between company, other members of the group and lenders and the nature of security that can be given. All of these factors influence credit quality but they also affect the relationships between the parties involved in ways that will influence the governance of a company. In large part this is through imposing discipline on management, affecting the transparency of the company's performance reporting and how the interested parties hold managers to account.

902. In light of these potential differences and the relative invariability of the WACC for different levels of gearing (as we describe in Section **Error! Reference source not found.**), we would not expect a single optimal gearing structure. If there were to be one, we would not see the diversity across the sector shown in Figure 45 below.

Figure 45: Gearing ratios across the water sector



Source: 'Monitoring financial resilience', Ofwat, January 2020, page 6

903. We believe a diversity of approaches is healthy in an incentive-driven sector.

8.14.1.3 The GSM would most likely increase customer bills over time

904. The GSM, if implemented, might result in a short term, relatively small reduction to bills for some customers. However, as companies de-lever, bills will likely increase to higher levels than before in real terms as the additional risk is priced in and the benefits of the tax shield dissipate and tax allowances have to be increased. If the assumptions about the impact of leverage on the overall cost of capital are correct, then the cost of capital in the sector must rise in the medium term with a corresponding cost to customers in a sustainable, steady state. Therefore, it appears difficult to justify the implementation of these proposals in terms of their impact on customer bills as for the most part customers might be actually worse off (especially if financial resilience can be ensured either way).

8.14.1.4 The GSM would impact on a long-standing regulatory precedent to optimise financial structures

905. In the past, and in other regulated sectors, the role of the notional gearing determination has not been fundamental. Ofwat, like other regulators, has determined the notional capital structure based on a wide range of benchmarks, which means its estimates of the efficient capital structure have not needed to be particularly precise, and did not directly translate into the level of return.

906. Under the GSM, Ofwat's determination of the 'notional' capital structure will suddenly become very important—it will directly influence financing choices and will significantly reduce the incentive to find the most efficient capital structure. It will also penalise deviations from the Regulator's view of what the optimal leverage looks like.

907. The GSM would effectively stop the process of discovery through competitive efforts of companies to reduce their financing costs and optimise their governance arrangements. This would be to the long term detriment of consumers.

8.14.1.5 The GSM would impact on regulatory stability, thereby increasing systematic risk in the sector

908. Placing the determination of a single appropriate, efficient and optimal capital structure for all water companies in the hands of the Regulator could also lead to increased financing risk, in that companies and customers will have to bear the risk that the Regulator may not end up selecting the most optimal level, given asymmetry of information, the lack of relevant experience, and inability to tailor it to each company's individual circumstances (business characteristics, embedded financing etc).

909. The GSM is an asymmetric one-sided penalty designed to give companies a strong incentive to bring gearing levels down to a level prescribed by Ofwat. Having established the mechanism, Ofwat would be free to reduce (or increase) the prescribed level at future price control reviews. A change in the level would have implications for investor cash flows and debt management for any affected companies.

8.14.2 Suggested remedy

910. For these reasons, we believe that Ofwat's introduction of the GSM. Leaving it uncorrected would be to the longer-term detriment of both investors and consumers and is inconsistent with the concept of the notionally efficient company being the basis of regulation with the companies free to make their own decisions around the actual financing structure. We would ask the CMA to reconsider the use of the GSM in FD19.

9 TAKING ACCOUNT OF NEW INFORMATION

9.1 SUMMARY

- The CMA's redetermination will likely be decided in third quarter 2020, almost a year after our last opportunity to present new and updated information to Ofwat for inclusion in FD19.
- During that period there have been a number of externally driven changes to our cost base, which have an impact on the price control calculation. Therefore, we request the CMA to take into account the most up-to-date information available when reaching its redetermination of the FD19. This includes both movements that would have the effect of increasing our allowance, as well as those that would have the effect of reducing it.
- We believe that it should not be contentious for the CMA to reflect changes to the level and timing of externally driven costs outside our control. Had these changes occurred, or the understanding of the potential timing of the costs been sufficiently certain at the time of FD19, we believe that Ofwat would have taken these points into account.
- In particular, we ask the CMA to consider updated information with respect to:
  - Corporation Tax rate changes: An uplift to allowances to reflect the higher tax burden on NWL announced at the March 2020 Budget;
  - Industrial Emissions Directive (**IED**) compliance costs: An uplift to allowances, plus an uncertainty mechanism to reflect higher costs required of NWL, but also recognising the current uncertainty as to the ultimate extent of this requirement;
  - Business rates overstatement: Reducing allowances to reflect lower business rates that were not recognised by Ofwat;
  - KTS: Impact on abstraction charges resulting from business rates: An uplift to allowances to cover higher abstraction charges in the North East;
  - Thames bulk supply abstraction costs: Similarly, an uplift to allowances to cover higher abstraction charges in Essex; and
  - Grants and contributions – Double counting: A correction of an Ofwat modelling error to revenue offsets in the FD19 that was not consulted upon.
- This Section provides detail on each of these areas, then summarises the total adjustments to be made to our allowed revenues calculation to take account of this new information. We have included these changes in our PR19 SoC Financial Model, which is submitted alongside the SoC.

9.2 INTRODUCTION

911. This Section sets out the areas where we would like the CMA to take account of new and updated information in its redetermination:

- corporation tax rate changes (see Section 9.3);
- IED compliance costs (see Section 9.4);
- business rates overstatement (see Section 9.5);
- KTS and abstraction charges (see Section 9.6);
- Thames bulk supply abstraction costs (see Section 9.7);
- and grants and contributions (see Section 9.8).

9.3 CORPORATION TAX RATE CHANGES

912. In its FD19 modelling, Ofwat modelled a reduction in Corporation Tax to 17% from 19%, in 1 April 2020, following Government projections.[581]

913. On 11 March 2020, the Chancellor announced in the Budget that further cuts to Corporation Tax would not take place and that the Government would be retaining the current 19% rate.[582] This means that the financial model needs to be changed to reflect this new policy. We have uplifted the 17% Ofwat assumption to 19% in the SoC financial model, as shown in the Table 46 below.

Table 46: Effect of new information about Corporation Tax on Ofwat's NWL modelling

			2020-21	2021-22	2022-23	2023-24	2024-25
Original FD19, Financial Model, F_Inputs_FM							
A3023	Statutory Corporation tax rate	%	17.00%	17.00%	17.00%	17.00%	17.00%
To be replaced by:							
A3023	Statutory Corporation tax rate	%	19.00%	19.00%	19.00%	19.00%	19.00%

Source: Ofwat PR19 Financial Model (Corporation tax rates change), 16 December 2019, SOC431; NWL projection.

914. The impact of the changes is spread across all five revenue controls and for all five years of the 2020-25 period. If the uplift is not reflected in the CMA's redetermination, then we would have to cover a £10.2m material increase in tax during the five years from 2020 to 2025.

9.3.1 Considerations for the CMA

915. We request the CMA to analyse this issue and to uplift the appointee total revenues as shown in the Table 47 below. This is a pass-through item and would be profit-neutral for NWL.

Table 47: Uplift to appointee total revenues for Corporation Tax new information

Revenue (£m, 2017/18)	2020-21	2021-22	2022-23	2023-24	2024-25	Total
FD (unsmoothed)	670.975	671.855	673.870	676.325	678.804	3,372
NES SoC post tax adjustment	673.133	673.863	675.929	678.280	680.782	3,382
Difference	2.158	2.009	2.059	1.955	1.978	10.159

Source: NWL calculation.[583]

9.4 IED COMPLIANCE COSTS

916. Ofwat did not include in FD19 the costs of complying with the IED[584] covering our sludge activity. Until now, sewage sludge has been excluded from the IED, as a result of the UWWTD.[585] Since December 2019, after the FD19 analysis had been concluded, it has become clear that we will need to become compliant with the IED, as described below. We ask the CMA to analyse this issue and to include the suggested regulatory treatment in its redetermination.

917. In this Section, we outline the:

- background to the IED (see Section 9.4.1);
- details of the current anticipated cost of compliance (see Section 9.4.2);
- continuing uncertainty in relation to policy, timing and costs (see Section 9.4.3); and
- our suggested remedy (see Section **Error! Reference source not found.**).

581 Ofwat PR19 Financial Model (Corporation tax rates change), 16 December 2019, SOC431; Data Tables for BP19 (ed. 04.19), March 2019, SOC099, App 29, line 99.
582 UK Government – Budget Speech 2020, 11 March 2020, SOC412.
583 Note – to make these changes, we have switched off the re-profiled revenue switch in the financial model (Input override line 1304) first as this is necessary to avoid a modelling error.
584 Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) (Recast) (IED) OJ L 334/17, 24 November 2010, SOC297.
585 Council Directive concerning urban waste water treatment (91/271/EEC) (UWWTD) OJ L 135/40, 21 May 1991, SOC285.

9.4.1 Background

918. The IED is the main EU instrument regulating pollutant emissions from industrial installations. It was adopted on 24 November 2010 and entered into force on 6 January 2011.

919. The IED provides that:

"Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day including one or more of the following activities, and excluding activities covered by Directive 91/271/EEC: biological treatment;…

…When the only waste treatment activity carried out is anaerobic digestion, the capacity threshold for this activity shall be 100 tonnes per day."[586]

920. When the IED was transposed, Defra expressed the view in March 2012 that sludge treatment was covered not by the IED, but rather, by the UWWTD:

"Point 5.3(a) and (b) of Annex I of the Industrial Emissions Directive each exclude activities covered by the Urban Waste Water Treatment Directive. Our view is that this excludes all activities conducted at sewage works for the treatment of 'domestic waste water or the mixture of domestic waste water with industrial waste water and/or run-off rain water' and 'residual sludge, whether treated or untreated, from urban waste water treatment plants' so long as they are dedicated to that treatment. Anaerobic digestion plants used for sludge treatment will therefore be covered by the exclusion, unless those plants also treat other waste material not derived from the sewage treatment process. However, the European Commission may express a view on this issue."[587]

921. However, the EA has since clarified its position in a letter to the industry that the biological treatment of sewage sludge is captured by IED.[588]

922. This means that we will need to bear the costs of complying with the IED in the AMP7.

9.4.2 Estimated cost of compliance

923. IED compliance will require us to make one-off structural changes to many of our facilities, as well as incur ongoing operating compliance costs. This includes purchasing EA permits for any site that has over 100 tonnes/day capacity (100 tonnes/day). Such structural changes would include additional containment, sealing and odour control for sites that process sludge, to ensure low risk of contamination of the surrounding air, land and water; particularly in the following stages of waste processing:

- sewage sludge thickening sites;
- strategic centrifuge dewatering sites;
- advanced anaerobic digestion (**AAD**) sites; and
- biosolids storage sites.

924. This will require the installation of secondary containment measures (e.g. bunds), leakage detection, housing of process facilities currently operating in open air and the fitting of odour abatement. There is also the requirement for biosolids to be stored undercover in sealed odour-controlled buildings, with capacity for several months' production for times when access to final recycling sites is restricted. This means that our AAD sites and many of the large coastal STW, strategic centrifuges locations and some large inland sites will fall under the regulations and require compliance through remedial action.

925. In developing the estimate for the impact of complying with the conditions set out in IED, we have used the range of estimates for AD sites that was collated by United Utilities for Water UK.[589] The methodology we have followed is to use the highest estimate for large sites (£16m), the central estimate (£9.43m) for our medium sites and the lowest estimate (£4m) for the smaller locations – recognising the scale of the operation at each site and hence

586 *Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) (Recast) (IED) OJ L 334/17, 24 November 2010, SOC297, Annex I, 5.3(b).*

587 *Defra –Waste Water Treatment in the United Kingdom – 2012 Implementation of the European Union Urban Waste Water Treatment Directive – 91/271/EEC, March 2012, SOC302.*

588 *Environment Agency – Letter to each English WaSCs and Dŵr Cymru, 8 July 2019, SOC388.*

589 *WaterUK –Workshop Notes, 20 February 2020, SOC408. We have been provided with cost estimates that accompanied the WaterUK/United Utilities study.*

the number of facilities that will need to be retrofitted. Table 48 lists our relevant sites along with their type, size and cost estimate used. In total, these estimates indicate that we might need to incur c.£100m Capex to make the structural changes needed for IED compliance.

Table 48: Estimates for one-off capital costs to ensure IED compliance, per NWL site

Site Name	Type	Size	Capital cost Estimate (£m, 2019)	Water UK Estimates
Bran Sands AAD	AD Sludge Treatment Centre	Large	16	Highest estimate
Howdon AAD	AD Sludge Treatment Centre	Large	16	Highest estimate
Hendon STW	Sludge Handling Centre - Thickening	Medium	9.43	Central estimate
Stressholme STW	Sludge Handling Centre - Thickening	Medium	9.43	Central estimate
Willington STW	Sludge Handling Centre - Dewatering	Smaller	4	Lowest estimate
Tudhoe Mill STW	Sludge Handling Centre - Dewatering	Smaller	4	Lowest estimate
Birtley STW	Sludge Handling Centre - Dewatering	Smaller	4	Lowest estimate
Morpeth STW	Sludge Handling Centre - Dewatering	Smaller	4	Lowest estimate
AycliffeSTW	Sludge Handling Centre - Dewatering	Smaller	4	Lowest estimate
Seaton Carew STW	Sludge Handling Centre - Thickening	Smaller	4	Lowest estimate
Consett STW	Sludge Handling Centre - Thickening	Smaller	4	Lowest estimate
Blyth STW	Sludge Handling Centre - Thickening	Smaller	4	Lowest estimate
Newbiggin STW	Sludge Handling Centre - Thickening	Smaller	4	Lowest estimate
Cramlington STW	Sludge Handling Centre - Thickening	Smaller	4	Lowest estimate
Low Wadsworth STW	Sludge Handling Centre - Thickening	Smaller	4	Lowest estimate
Bishop Auckland	Sludge Handling Centre - Thickening	Smaller	4	Lowest estimate
			99	

Source: NWL estimation.

926. In addition, we expect to incur ongoing annual operating costs for each of these sites. The Water UK estimate[590] is that these pex items will amount to £56,000 per site, per year, which includes: Annual subsistence fee (permit) to the EA £11,000; Technically Competent Managers (**TCMs**) on site £33,000; and air emissions monitoring £12,000. This totals £0.9m per year for all of our sites[591]. However, this does not include further operating costs incurred through additional compliance requirements, such as a significant increase in waste inventory control analysis.

9.4.3 Uncertainty

927. Currently, formal compliance with the IED is required by August 2022. However, there is a high degree of uncertainty as to the EA's final policy position and its cost implication, which we expect could extend the compliance horizon. This uncertainty covers:

- regulated sites: Uncertainty remains about whether and how smaller sludge treatment or sludge handling facilities will be regulated moving forward (for example whether smaller AD facilities, dewatering sites or sludge storage will require a permit), and the financial implications for the industry. This is related to the EA's current new thinking on Controlled Waste Regulation (i.e. that sewage sludge treatment is not integral to the UWWTD). The Waste and Recycling Network has proposed a phase 2 cost impact assessment to communicate this uncertainty and impact;
- a schedule of permit applications for relevant sites is being developed by the EA with WaSCs. The intention is for companies to apply for permits in batches of 25 sites per quarter; with the first being submitted by 30 September 2020;

590 Ibid. We have been provided with cost estimates that accompanied the WaterUK/United Utilities study.
591 2019 prices.

- capital cost per site: We are basing our total Capex estimate on the WaterUK assessment made with United Utilities.592 Once the requirement is fully clarified, we would need to complete a construction estimate for the works, and complete the construction programme; and
- Opex annual permit and other operating costs per site: Again, we are basing our total Opex estimate on the WaterUK assessment for operating costs.[593] This could vary depending on the decision made by the EA, both in terms of the cost per site and the timing from when permitting is required.

928. Therefore, the current estimate for IED compliance costs is dependent upon the guidance from the EA on requirements, such as for undercover biosolids storage and odour control systems. We note that these costs might decrease, but they could also increase significantly.

929. We understand that the EA is in discussion with Defra about the significant challenge facing the water sector to meet the current deadline. We do not currently have a clear view on when the EA's guidance might be finalised. However, as we move through the CMA's process we will seek to develop our understanding of the actions required, and the associated Capex and Opex, in order to ensure that the CMA has the best available information at the point at which it makes it redetermination.

9.4.4 Considerations for the CMA

930. If the EA extends its compliance requirement over each of our sites, then the current estimates for IED compliance costs are significant, at c.£100m for the capital costs of making structural changes to sites and £0.9m annual operating costs. This totals £102.6m of gross Totex, which equates to c.10% of Ofwat's FD19 wastewater Totex allowance. Clearly, we cannot maintain our operation to the same extent if we need to incur such costs without an uplift in Totex allowances.

931. Given the uncertainty associated with these changes, and the associated costs, we have assumed the capital and operating costs will be spent equally between years two and five years of AMP7 (2021/22 to 2024/25). In the financial model that accompanies the SoC, we have allocated this adjustment to both wastewater network plus and bioresources price controls, following Ofwat's allocation rule.

932. In order to manage this known risk but also reflect some of those uncertainties, we ask the CMA to provide the following in its redetermination:

- **Totex allowance uplift:** We ask for our Totex allowances to include an additional amount to cover the likely IED compliance costs for our two most significant sites – Bran Sands and Howdon AADs, as shown in Table 48. Based on current estimates, this equates to £33m. We have chosen to ask for this estimate to recognise the uncertainty around the final cost, but also to mitigate the risk to the business from incurring unremunerated costs until the end of AMP7.
- **Uncertainty mechanism:** We recognise the early stage development of the EA's proposals and our assessment of the compliance costs. We do not seek to recover sums in excess of the compliance cost. Therefore, we suggest an uncertainty mechanism that would correct at the end of AMP7, with an adjustment to the RCV, over and under-recovery of IED compliance costs.

  We want to work with the CMA to provide assurance about the reporting of IED compliance costs, such that there is no uncertainty that the amount of allowance remunerated represents the total IED compliance cost for the period.

933. We note that this issue is similar to the WINEP challenge that we have tackled. The request for allowances plus an uncertainty mechanism follows the precedent set for WINEP costs.

934. An alternative proposition could be a recovery mechanism at the end of AMP7. However, without an up-front allowance in-period, the size and proportion of the possible cost impact of these compliance costs (c.10% of the FD19 wastewater Totex allowance) would create a sizeable funding gap that would increase the risk profile of the business.

592 WaterUK –Workshop Notes, 20 February 2020, SOC408. We have been provided with cost estimates that accompanied the WaterUK/United Utilities study.
593 Ibid.

9.5 BUSINESS RATES OVERSTATEMENT

935. Our business rates for our wholesale water business are tied to the water cumulo rateable value (**RV**) published by the VOA. We have a single RV for our entire water asset base.

936. The RV set in 2017 of £85m was an increase of c.65% compared to the previous valuation in 2010.[594] Having challenged this increase it became apparent that the VOAs methodology was based on asset data from PR04. The annual business rates charge represents 47.9% of the RV, which means that we included £41m p.a. in BP19 (ed.09.18).

937. Following extended dialogue between NWL and the VOA, the RV was revised down from £85m to £77.5m in October 2018, effective from July 2018.[595] This was not picked up in FD19 and we want to ensure that we are not over-recovering a higher allowance than the cost to NWL.

938. Part of our business rates expense (£17m) is attributed by the VOA to the KTS, which are recovered from NWL through abstraction costs. Therefore, the final RV for NWL, net of the KTS attribution is £60.5m. This results in an annual business rates charge of £28.98m p.a., which should be recovered through allowed revenues.

9.5.1 Considerations for the CMA

939. Given the FD19 makes an allowance for the overstated annual business plan charge of £41m p.a., this means that FD19 overstates the annual business rates charge by £11.74m p.a. This is a pass-through item and would be profit-neutral for NWL. We request the CMA to analyse this issue and to reduce the appointee total revenues across the five years from 2020 to 2025 by £11.74m p.a.

9.6 KTS: IMPACT ON ABSTRACTION CHARGES RESULTING FROM BUSINESS RATES

940. New information has arisen concerning abstraction charges that result from the KTS, paid by NWL to the EA. These result from higher business rates. These higher abstraction charges were not included in FD19.

941. In the section below, we explain this situation:

- background to the KTS and the relationship between NWL and the EA (see Section 9.6.1);
- the cost impact from re-charges between the EA and NWL (see Section 9.6.2);
- EA's proposed changes to our abstraction charges (new information) (see Section 9.6.3);
- Ofwat's treatment of abstraction charges in FD19 (see Section 9.6.4); and
- our suggested remedy (see Section 9.6.5).

9.6.1 Background

942. The abstraction charges applicable to NWL have changed since FD19, as a result of a new EA consultation on the KTS[596] and its recognition of higher business rates on the relevant facilities.

943. The KTS is a regional water grid, constructed between 1975 and 1982, that enables transfers of water across Tyneside, Wearside and Teeside to manage demand on a local basis. The KTS is part of our Non-Appointed business.

944. At privatisation in 1989, NWL entered into an agreement with the National Rivers Authority (subsequently changed to the EA) for the operation of the KTS – the Kielder Operating Agreement (**KOA**).[597] The KOA was established for an indefinite period.

594 Valuation Office Agency – Central Ratings List for England 2010, SOC298, p.78.
595 Valuation Office Agency – Central Ratings List for England 2017, 11 October 2018, SOC350, p.71.
596 Environment Agency charge proposals: Kielder Reservoir, SOC404.
597 For more detail on the background to the KOA, including the financing arrangements, see NWL Abstraction Charges, Explanation of Sustained Increase in Charges from 2017/18, March 2019, SOC112, Appendix B.

945. Under the KOA, the EA must pay NWL a return on investment and 100% of the operating costs of the KTS, including the costs of operating, maintaining, repairing and renewing the KTS. Until 2018, the operating costs recovered from the EA did not include the relevant business rates on facilities used for the KTS.

946. We notified the EA of the business rates cost in December 2018 that needed to be recovered from the EA. We proposed that increased cost recovery under the KOA could be balanced by an increase in abstraction charges, and that it could be deferred until April 2020 to allow the EA sufficient time to make the necessary adjustments.[598]

947. During the course of 2019, the EA challenged the classification of the business rates as falling within the 'operating costs' of the KTS; however, in January 2020, the EA accepted liability for the business rates charges as operating costs covered by the KOA. The EA proposes to recover those increased costs through higher abstraction charges paid by NWL.[599]

9.6.2 Cost impact from re-charges between the EA and NWL

948. The VOA's attribution of the RV to the KTS is £17m. Given that the annual business rates charge represents 47.9% of the RV, NWL re-charges an annual charge of £8.14m to the EA. The EA will then recover this cost through abstraction charges paid by NWL to the EA.

949. Abstraction charges are paid to the EA for the abstraction of water. The EA recovers its water resources costs on a regional basis and is expected to keep its water resources accounts in balance through the recovery of those abstraction charges.

950. Within the EA's North East region, NWL pays c.97% of all abstraction charges, given our geographic coverage in the region; while the KOA accounts for c.80% of the EA's cost in the North East region. As such, there is a clear link between the costs incurred by the EA in our region, and the abstraction charges that it levies.

951. To properly apportion the costs associated with KTS across all of the abstractions in the North East region, those abstractions which benefit from KTS are subject to a 9x 'Kielder Source Factor' (**KSF**), introduced in 2017, which is applied to Standard Unit Charges (**SUC**).[600]

9.6.3 EA's proposed changes to our abstraction charges (new information)

952. On 28 January 2020, the EA published a consultation on its abstraction charges relating to the KTS.[601] The EA also needs to recover £8m costs associated with capital works on one of the pumping stations that supports the KTS at Riding Mill, which will be recovered through abstraction charges. The EA's consultation explains that it wants to ensure that subsistence rates on its permits that benefit from use of the KTS are reflective of costs.[602]

953. There will be two increases to abstraction charges:

- **Backdated KTS business rates and Riding Mill capital costs:** First, the EA proposes to recover its backdated KTS business rates charges up to 2020/21 and Riding Mill capital costs in one year. For the recovery of backdated costs under the EA's proposals, the KSF would be increased to 22.4x for one year with a 1 April implementation date:[603]
    - If the EA's proposals are adopted unaltered, our abstraction charges in the first year of AMP7 will be £33m higher than the FD19 allowance. However, we have clarified these costs with the EA and identified that 22.4x would over-recover costs by £4.68m. We expect the one-off KSF backdated charge to become £28.31m paid in 2020/21.[604]

598 NWL – Response to consultation on charge proposals for Kielder transfer scheme, 25 February 2020, SOC270.
599 Environment Agency charge proposals: Kielder Reservoir, SOC404, Section 2.2, p.6.
600 Ibid, Section 2.2, p.6.
601 Ibid.
602 Ibid, Section 2.1, p. 6.
603 Ibid, Section 2.2, p. 6. The EA notes that a later implementation date will result in an increased KSF, but that the total cost recovered over the year would remain the same.
604 NWL calculations.

- In our consultation response, we asked the EA to recover the costs over two years instead of a single year, which would represent an increase in abstraction charges of £14.16m for two years.[605] The EA's consultation closed on 25 February. A full response should be published within 12 weeks (19 May 2020).

- **Uplift for annual charges in the future**: Second, in the future with effect from April 2021, abstraction charges will increase by £8.14m to reflect the higher KTS related business rates charge.

9.6.4 Ofwat's treatment of abstraction charges in FD19

954. Ofwat treated abstraction charges as an unmodelled cost in the FD19. At DD19, Ofwat effectively assumed that abstraction charges would remain constant in real terms, before the application of an efficiency factor as part of FD19.

955. During AMP6, we incurred a significant increase in our abstraction charges as a result of the introduction of the KSF in 2017. Ofwat disallowed this increase in its IAP19. We challenged this underfunding in our RBP19 and submitted a paper explaining the basis for the increase in charges.[606] In particular, this covered the interplay between the costs of the KTS and abstraction charges. This was accepted by Ofwat and the actual abstraction charges were funded in DD19 and FD19.

956. The information related to the EA's proposed one-off increase of abstraction charges of £33m (corrected to £28.31m), or the uplift of annual charges of £8.14m, which was made public through the EA's consultation on 28 January 2020, was not available to Ofwat when it set the FD19.

957. If the uplift is not reflected in the CMA's redetermination, then NWL would have to cover £60.88m (representing £28.31m backdated and four years of £8.14m annual uplifted charges) material increase in abstraction costs during the five years from 2020 to 2025.

9.6.5 Considerations for the CMA

958. These abstraction costs are a pass-through item and would be profit-neutral for NWL. We request the CMA to analyse this issue and to uplift the appointee total revenues across the five years from 2020 to 2025, as included in the Table 49 below:

Table 49: Uplift to appointee total revenues for KTS abstraction charges new information

£m	2020-21	2021-22	2022-23	2023-24	2024-25	Total
Backdated costs	28.31	-	-	-	-	28.31
Annual uplift	-	8.14	8.14	8.14	8.14	32.56
Total	28.31	8.14	8.14	8.14	8.14	60.88

Source: NWL calculation.

9.7 THAMES BULK SUPPLY ABSTRACTION COSTS

959. Similarly, we have also become aware since Ofwat set its FD19 of an additional increase to our abstraction charges of £0.5m p.a. with effect from April 2020. This relates to our bulk supply agreement with Thames Water to receive water at Chigwell in Essex.

960. The cost includes a proportion of the Thames abstraction charges. Thames Water and the Canals & Rivers Trust (**CRT**) were unsuccessful in their appeal, which has resulted in Thames Water paying higher charges for abstraction from certain watercourses.[607] Under the Chigwell Agreement for bulk supply, we are compelled to pay an additional c.£0.5m p.a. to reflect our share of those charges.[608]

605 NWL – Response to consultation on charge proposals for Kielder transfer scheme, 25 February 2020, SOC270.

606 NWL – Abstraction Charges, Explanation of Sustained Increase in Charges from 2017/18, March 2019, SOC112.

607 Canal & River Trust v Thames Water Utilities Ltd. EWCA Civ 342 (on appeal from the judgment of Asplin J, [2016] EWHC 1547), 2 March 2018, SOC352.

608 Water trading agreement "Chigwell Agreement" made between Metropolitan Water Board (succeeded by Thames Water) and the South Essex Waterworks Company (succeeded by NWL), May 1963, SOC284. As amended by the water trading agreement made between NWL and Thames Water, 1 September 2014. As amended by the deed of variation to the September 2014 agreement, 2018.

961. Thames Water raised this liability with us in November 2019, therefore it is not reflected in the FD19. We will have to cover this c.£2.5m material increase in abstraction costs during the five years from 2020 to 2025.

9.7.1 Considerations for the CMA

962. These abstraction costs are a pass-through item and would be profit-neutral for NWL. As with the increased abstraction costs resulting from the KTS, we request the CMA to analyse this issue and to uplift the appointee total revenues across the five years from 2020 to 2025 by £2.5m (£0.5m p.a.).

9.8 GRANTS AND CONTRIBUTIONS – DOUBLE COUNTING

963. Grants and contributions represent a revenue to NWL from developers, which Ofwat offsets against our customer charges (**Grants and Contributions**).

964. In the Grants and Contributions NES model (**G&C model**), Ofwat made an adjustment in FD19 to add a one-off contribution of £14.4m to the G&C component of the projected water network plus control.[609] This adjustment was not made in the DD19, so NWL had no opportunity to comment ahead of the FD19.

965. FD19 states:

"Table 4.15 below shows our assumed amounts of 'gross' grants and contributions (price control) that is used to calculate net Totex for cost sharing. This includes a one-off contribution equal to £14.4 million that Northumbrian Water did not originally include within grants and contributions in its business plan:

"Northumbrian Water included £14.4 million as supply-demand balance expenditure despite its business plan suggesting that this expenditure relates to investment directly connected with housing developments. Northumbria Water's business plan commentary also stated that this expenditure is paid for by developers through infrastructure charges. Therefore, we consider this to be growth related expenditure and assume it is recovered from developers (Water network plus: £14.4 million)." [610]

966. This £14.4m adjustment is an error as it double counts a contribution that is already included in the infrastructure charge receipts. The G&C model shows our projected water infrastructure charges of £13.6m[611] that are set to recover the £14.4m of costs over the five years (less an underspend adjustment). This £13.6m amount is then added to the £14.4m[612] creating a double-count.

967. The key point, as Ofwat notes, is that the £14.4m of infrastructure network reinforcements are recovered from developers via infrastructure charges (and thus not recovered through requisition charges or any other 'one-off' developer income).

968. The adjustment should be removed from the G&C model and the lower Grants and Contributions for Water Networks[613] should be fed into the Financial Model.[614] There is a material impact on revenue, customer bills and RCV of the adjustment.

969. If the adjustment is not reflected in the CMA's redetermination, then NWL would have to cover a £14.4m material shortfall in revenue during the five years from 2020 to 2025.

9.8.1 Considerations for the CMA

970. We request the CMA to analyse this issue and to remove the £14.4m G&C offset amount. Given that a portion of the G&C offset amount is capitalised, the adjustment would need to be made to both the RCV and to appointee total revenues across the five years from 2020 to 2025. Finally, as the G&C amount is an offset against customer charges, there needs to be a corresponding increase in appointee total revenue.

*609 Ofwat – Grants and Contributions Model, 16 December 2019, "**Ofwat's G&C model reference**", SOC199, InpOverride, line 93.*
610 Ofwat, FD19, SOC183, p.65.
611 Ofwat's G&C model reference, SOC199, InpActive, line 61.
612 Ofwat's G&C model reference, SOC199, G&COutputs, lines 110-112.
613 Ofwat's G&C model reference, SOC199, F Outputs PR19GC0061.
614 Ofwat's G&C model reference, SOC199, F Inputs, line 245.

971. The modelling correction required is:

Table 50: Modelling correction for G&C double counting[615]

(£m 2017/18)	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	Total
Ofwat FD19						
One-off contribution to Capex - water network - price control	2.88	2.88	2.88	2.88	2.88	14.40
NES SoC adjustment						
One-off contribution to Capex - water network - price control	0	0	0	0	0	0

Source: Ofwat's FD; NWL calculation.

972. While the 'single till' aspect of the revenue control rebalances the majority of the reduction, there is a material impact on revenue, customer bills and RCV of the adjustment, as shown in the next section. The impact of the changes is spread across all five revenue controls and for all five years of the 2020-25 period. The table below shows the net adjustments for appointee total revenues[616] and for the RCV.[617]

Table 51: Net adjustment to appointee total revenues and the RCV for G&C double counting[618]

Revenue (£m, 2017/18)	2020-21	2021-22	2022-23	2023-24	2024-25	Total
FD (unsmoothed)	670.98	671.86	673.87	676.33	678.80	3,372
NES SoC	670.14	671.00	673.14	675.78	678.43	3,368
Difference	(0.84)	(0.85)	(0.73)	(0.55)	(0.38)	(3.346)

RCV (£m Real)	2020-21	2021-22	2022-23	2023-24	2024-25	Total
FD	3,981.97	4,030.85	4,093.05	4,191.68	4,227.30	
NES SoC	3,983.15	4,033.23	4,096.54	4,196.14	4,232.59	
Difference	1.18	2.38	3.49	4.46	5.29	5.29

Source: Ofwat's FD; Our calculation.

For NWL, this has a material impact on taxation and revenue, a decrease in the revenue controls of £3.346m across 2020-25, but an increase in the RCV of £5.293m is required.

9.9 TOTAL ADJUSTMENTS FOR NEW INFORMATION

973. In conclusion, the adjustments to be made to our gross Totex that take into account new information not available to Ofwat as it set FD19 are shown in the table below.

Table 52: Adjustments to gross Totex for new information

Adjustment (£m, 2017/18)	2020/21	2021/22	2022/23	2023/24	2024/25	Total
IED*	-	8.25	8.25	8.25	8.25	33
Business rates overstatement	(11.74)	(11.74)	(11.74)	(11.74)	(11.74)	(58.7)
KTS abstraction costs	28.31	8.14	8.14	8.14	8.14	60.88
Thames bulk supply abstraction costs	0.5	0.5	0.5	0.5	0.5	2.5
Total adjustment	17.07	5.15	5.15	5.15	5.15	37.67

Source: NWL calculation. * Presented in 2019 prices.

974. Two adjustment items in this Section do not impact on gross Totex but would result in a change to appointee allowed revenue allowances, as shown in the table below.

615 Ofwat PR19 Financial Model, 16 December 2019, "**Ofwat's PR19 model reference**", SOC200, Inputoverride, line 93. The adjustment should be removed from the G&C model and the lower Grants and Contributions for Water Networks (F Outputs PR19GC0061) should be fed into the Financial Model (F Inputs line 245).

616 Ofwat's PR19 model reference, SOC200, Exec Summary tab of the Financial Model, line 48.

617 Ofwat's PR19 model reference, SOC200, Exec Summary tab of the Financial Model, line 129 (deflated to real terms by CPIH inflation (Index line 76)).

618 Note – to make these changes, we have switched off the re-profiled revenue switch in the financial model (Input override line 1304) first as this is necessary to avoid a modelling error.

Table 53: Further adjustments to appointee total allowed revenue for new information

Adjustment (£m, 2017/18)	2020/21	2021/22	2022/23	2023/24	2024/25	Total
Corporation Tax rate changes	2.16	2.01	2.06	1.96	1.98	10.16
Grants and contributions	(0.84)	(0.85)	(0.73)	(0.55)	(0.38)	(3.35)
Total adjustment	1.32	1.56	1.33	1.41	1.60	6.81

Source: NWL calculation.

975. While as discussed above, the Grants and Contributions double counting adjustment also requires an increase to the RCV, as shown in the table below.

Table 54: Increase to the RCV for new information

Adjustment (£m, 2017/18)	2020/21	2021/22	2022/23	2023/24	2024/25	Total
Grants and contributions	1.18	2.38	3.49	4.46	5.29	5.29

Source: NWL calculation.

976. Finally, we ask the CMA to create an uncertainty mechanism to recover the costs that outturn during AMP7 for compliance with the IED.

977. We ask the CMA to consider these items. If an adjustment is not made to the price control for these items, then the spend will divert funds from providing for customer outcomes, which is not in our customers' interests.

10 ENSURING THAT NWL CAN FINANCE ITS FUNCTIONS

10.1 SUMMARY

- In setting price controls Ofwat and the CMA must secure that water companies can finance the proper carrying out of their functions, in particular through securing reasonable returns on capital, in accordance with the Financing Duty.
- The CMA has recently interpreted financeability as "*achieved when the rate of return (or WACC) has been set at a high enough rate, such that the revenues and therefore cash flows made by the firm are sufficient to pay investors and lenders*".[619]
- As expressed in previous Sections (5, 6 and 7), FD19 is unbalanced. The combination of unrealistically low cost allowances, challenging and stretching performance targets, an asymmetric and downwardly skewed package and an unprecedentedly low cost of capital means that we cannot: on average expect to earn a reasonable level of return in the base case; achieve a credit rating that is consistent with what is assumed in the A-CoD; and have sufficient financial headroom as reflected in projected credit metrics to be resilient to plausible downside scenarios including those prescribed by Ofwat. Overall, this will impact on our ability to finance our functions at the allowed level of financing costs (both for equity and debt). As such, Ofwat has failed to satisfy its Financing Duty.
- The expected deterioration of credit quality at PR19 is not only the view of the company but is also the view of the independent credit rating agencies who rate the company's debt. This is evidenced by Moody's recently reviewing 70% of the industry for downgrade and S&P downgrading four companies.[620]
- In FD19 Ofwat explicitly targeted a Baa1/BBB+ credit rating. Ofwat's own analysis identified financeability constraints for NWL under the notional financial structure, in particular that projected Adjusted Interest Cover Rate (**AICR**) (the core metric applied by Moody's under its rating methodology) is below the 1.5x minimum threshold for Baa1.
- Ofwat sought to enhance projected metrics in its FD but has not applied an effective remedy to address the underlying financeability issues presented by the Totex allowance, stretching performance targets and low cost of capital.
- Specifically Ofwat has attempted to 'fix' the financeability concerns identified at FD19 by adjusting the PAYG rate to bring forward revenues from future price controls and increase cashflows across AMP7. Ofwat adjusted the PAYG rates for 12 water companies, including NWL, and for two of these companies it also adjusted the RCV run-off rate.[621] The value of these allowances amounts to shifting a total of c. £560m across all water companies,[622] indicating the scale of the financeability challenge implied by FD19 for notional companies across the sector.
- This is not a sustainable solution. Adjusting PAYG rates effectively brings forward cash flows from the future which – all else equal – defers the financeability problem into future price control periods. This approach risks the future financial resilience of the company by reducing the RCV and associated returns in the future and causes inter-generational issues between today's and tomorrow's consumers.
- The PAYG is effectively the capitalisation rate and governs the timing of capital recovery (either through fast or slow money). These cashflows (accelerated or otherwise) return capital invested and are not available for the management of risk or servicing interest payments.
- As a result, adjustments to PAYG fail the key test applied in the market as rating agencies do not take into account adjustments to PAYG or run off rates. In fact, the excess PAYG (above the 'natural' rate) is stripped out from revenues when calculating coverage metrics.[623] In the real world rating agencies 'look through' the use of regulatory levers as they do not address underlying or alleviate financeability

619 Firmus Energy (Distribution) Limited v Northern Ireland Authority for Utility Regulation, CMA Final Determination, 26 June 2017, SOC344, para. 7.60.

620 Moody's reviews 12 UK water groups for downgrade, 20 December 2019, SOC400; Standard & Poor's downgrades four of the final determination acceptors, 1 March 2020, SOC411. '

621 PAYG is the proportion of operational expenditure that is recovered as revenues from total allowed expenditure in each year of the price control period. RCV run-off is a measure of the annual depreciation of the RCV. Similar to PAYG, the RCV run-off rates can be adjusted to shift cash flows from future periods.

622 Ofwat FD19: Aligning risk and return, SOC188, Table 6.4. For each company the implied percentage of this adjustment relative to the allowed revenue ranges between 0.1% and 3.7%.

623 Moody's – Ofwat tightens the screws further, 26 July 2019, SOC389, p.5.

concerns, reduce the comparability of credit metrics across the sector and limit the level of protection the financeability duty implies for lenders.

- Adjusting projected metrics to strip out cash forwarding from financial metrics results in a negative impact on the key credit ratios and implies that NWL with a notional financial structure would only achieve a Baa2 rating (at best) based on the latest Moody's rating methodology.
- This results in an inconsistency between the projected credit rating for the company with a notional financial structure based on the FD and Ofwat's own allowed cost of debt based on an average of 'A' and 'BBB' bonds i.e. BBB+/Baa1, and that (1) credit quality of the notional company will decline, reducing financial resilience; and (2) the company will incur higher costs of financing than assumed by Ofwat in setting the allowed cost of new debt.
- The need for a robust and comprehensive downside analysis is also crucial to test whether financial headroom implied by FD19 is sufficient for management of increased risk. The company is exposed to material risks over AMP7, which we have translated into a set of realistic, potential risk scenarios that could lead to financial difficulty or distress. These downside scenarios would lead to financial difficulty for NWL under the notional financial structure given the level of financial headroom available based on FD19. There is therefore a material inconsistency between the company's exposure to downside risks and the financial headroom available to the company under the FD, which means that the company is not financeable.
- The scale of the Totex gap (of c.5.7%) between our BP19 and the allowances set under FD19 in combination with the stretching PC targets and the calibration of caps and collars on PCs means that on an expected basis, as an efficient company, we will incur unfunded costs and penalties. The additional unfunded costs and expected losses from ODI mechanisms materially affect expected returns falling significantly below both the required returns and below Ofwat's allowed returns on an expected basis. These expected losses will also have a negative impact on projected credit metrics.
- This Section sets out our views on how the Financing Duty should be interpreted, outlines the approach by Ofwat to assess the financeability of FD19 and why it is inadequate, analysis our financeability under FD19 and sets out the remedies we would like the CMA to consider in reaching its redetermination.

10.2 INTRODUCTION

978. As part of our financeability assessment we consider the following key areas:

- the interpretation and application of the Financing Duty, its relationship with the other statutory duties, and what that means for an assessment of financeability (see Section 10.3);
- an overview of the approach to assessing financeability (see Section 10.4);
- our views on the inadequacy of Ofwat's approach to financeability, including in particular its proposed solutions to financeability constraints identified and its assessment of resilience to downside scenarios (see Section 10.5);
- describes how the PR19 package is significantly more challenging than the past and asymmetric which exposes us to downside risk in the base case (see Section 10.6);
- an assessment of our financeability under FD19 (see Section 10.7); and
- our proposed remedies to address financeability constraints identified under FD19 in the context of this redetermination (see Section 10.8).

10.3 OFWAT'S FINANCING DUTY

979. As set out in Section 3 above Ofwat is subject to the following primary statutory duties: the Consumer Objective, the Functions Duty, the Financing Duty and the Resilience Objective.

980. Ofwat, and therefore the CMA are required to consider the balance of these various duties when looking at the settlement in the round. As we have set out in the preceding Sections, Ofwat's interventions in relation to our

cost allowance, our performance targets, our resilience investment and our cost of capital have resulted in an unbalanced FD19.

10.3.1 Application of the Financing Duty and overview of NWL financeability concerns

981. Ofwat's Financing Duty, as set out in Section 3, is defined as being best calculated "*to secure that companies holding appointments under Chapter 1 of Part 2 of this Act as relevant undertakers are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of those functions*". A generally accepted view, based on regulatory precedent and economic and finance theory, is that the finance duty would be met if the regulator sets a revenue allowance such that a regulated company is able to earn a reasonable rate of return with an efficient level of costs.

982. Ofwat's Financing Duty is materially different from the financing duty of other economic regulators.

983. As the CMA has previously set out in its redeterminations, the exact statutory wording is important in this respect. This difference is fundamental to the way in which Ofwat should carry out its duties. As part of its primary duties, it must regulate in such a way as is best calculated to secure that the licensee is able (in particular by securing reasonable returns on its capital) to finance the proper carrying out of those functions. Prima facie, therefore, if the licensee is not able to earn a reasonable return on its capital, then Ofwat has failed to discharge its Financing Duty. The duty to regulate in a manner best calculated to achieve a result is clearly a higher standard to that, for example, in the electricity sector which is only to 'have regard to'.[624] We therefore consider whether NWL will be able to earn a reasonable return on an expected basis across AMP7 through the application of robust, objective criteria and tests.

984. We are concerned that as FD19 is unbalanced and asymmetric – it is highly unlikely that we will on average be able to secure a reasonable return on our capital. This is a function of the design and calibration of the regulatory framework and mechanisms at PR19, such that (1) the cost of capital is not consistent with market evidence and under-states our required return; (2) there is a material Totex gap under FD19 (5.7%) such that on an expected basis we will incur unfunded costs; and (3) stretching PC targets imply losses on an expected basis.

985. This view is corroborated by the two key rating agencies (Moody's and S&P) which consider FD19 to be credit negative (with approximately 70% of the sector on review for downgrade by Moody's) taking into account allowed returns and expected performance, and also by the unprecedented number of companies which have rejected the final determinations.

986. Earning a reasonable return on capital is not a `nice to have', it is a fundamental part of the financeability of our company and its ability to finance the long-term investments in infrastructure on which customers rely on.

987. Where the outcome of the FD process is credit negative and – even under the notional structure – the company is projected to achieve a Baa2 rating, this results in an inconsistency between the projected credit rating for the company with a notional financial structure based on the FD and Ofwat's own allowed cost of debt based on an average of 'A' and 'BBB' bonds i.e. BBB+/Baa1.

988. As a result it cannot be assumed that an efficiently run company with a notional financial structure will be able to raise debt at the assumed rates. The company will incur *higher* costs of financing than assumed by Ofwat in setting the allowed cost of debt. This is an important factor to consider, because the ability of a company to access financing at a reasonable cost is essential for the company to deliver on services and improvements expected by customers.

989. We are also concerned that Ofwat, in its determination to drive down customer bills for current customers, is failing to take a longer-term view of financeability. Part of the reason that water only and water and sewerage companies are able to currently finance their functions at low levels of interest is because the regulator has previously provided stable and predictable regulation, with a reasonable return to investors (both debt and equity).

990. This stable and predictable regulation has facilitated the investment of billions of pounds into the sector since privatisation at relatively low costs of capital. However, during the PR19 process Moody's downgraded the

624 As the CMA will be aware from its determination of NATS price control, Ofwat's Financing Duty is also a higher standard than applies in the air transport sector, where the Secretary of State must, as part of its secondary duties only, exercise functions in the manner best calculated to secure that licensees will not "find it unduly difficult" to finance their activities.

'Stability and Predictability of the Regulatory Regime' factor from Aaa to Aa as a result of the increased regulatory risk for water companies.[625] This not only reflects an independent rating agency's view on a riskier regulatory regime, but also undermines investor confidence in the long track record of a stable and predictable regime.

991. The implications of the misalignment between returns and risk affect both debt and equity holders as discussed in detail in KPMG's independent assessment of financeability[626] and outlined below. Specifically, equity investors would earn a lower return ex-ante (in the FD19 base case) due to: a lower A-CoE than is implied by market evidence; expected ODI penalties in the base case resulting from more challenging and stretching performance targets; and a Totex overspend resulting from not being fully provided with the efficient costs needed to deliver on our plan. We would achieve a projected credit rating at least one notch below the credit rating assumed in allowed returns (Baa1) in the base case. This would mean that we would raise debt at a higher cost compared to what is allowed for resulting in unfunded financing costs, and there would be very little headroom available to maintain financial resilience under plausible downside scenarios.

10.3.2 Why financeability is important to further the Consumer Objective

992. Given the long-lived nature of any water or water and sewerage company's assets, long-term financeability is central to the licensee's role as a long-term steward of the assets and their critical services to customers. This is as true for NWL as for any other water only or water and sewerage company.

993. Financeability relates to a company's ability to raise the financing it requires both to finance its ongoing operations and to make new investments in the network while also being resilient to plausible shocks. In order to raise that financing, it will need to demonstrate to its investors (both debt and equity) that it is resilient to financial shocks. If it is not able to demonstrate that resilience, then it may not be in a position to raise financing at a reasonable cost, which is key to be able to deliver on the services and improvements expected by consumers as well as continued and sustainable capital investment.

994. Financeability therefore enables regulated companies to provide their services to customers and meet customer interests. As such, the protection of customers' interests and financeability are highly complementary and mutually reinforcing rather than in conflict, as two aspects of the same principal objective.

995. A common response in competitive markets to circumstances where a company cannot access financing on a reasonable basis is to cut or postpone Capex, or to cut back, stop or slow the provision of services. In the context of water companies, this would be to the detriment of consumers, and would not be consistent with companies' licence obligations. Furthermore, in such a scenario it would be future customers who would be required to pay extra to address the shortfalls created, which would increase inter-generational unfairness.

996. In our view, and as recognised by the legislature in the framing of the primary duties on the Secretary of State and the regulator, there is a critical and mutually reinforcing relationship between Consumer Objective, the Resilience Objective, the Functions Duty, the Performance Duty and the Financing Duty (as mutually balancing aspects of the same principal objective).

997. It is not possible to trade-off, on some continuous basis, a degree of company's financeability for consumer interest, whereas securing financing requires meeting certain financeability criteria, which are largely binary in a sense that they are either met or not. Not meeting these criteria could undermine financeability and result in the detriment to customer interest.

998. We are concerned that in FD19, Ofwat has misapplied these duties and has mischaracterised the Consumer Objective (lower bills for current consumers) at the expense of what are its actual statutory duties to ensure that the Consumer Objective (service provision for existing and future customers), the Resilience Objective (long-term investment to balance long-term environmental issues and growth) and the Financing Duty (to make sure companies can fund their Functions) are all in balance and alignment. By de-emphasising the importance of ex ante financial headroom for the management of risk and to support financial resilience based, Ofwat is in fact jeopardising the long-term investment needed to discharge the Consumer Objective.

625 Moody's – Regulator's proposals undermine the stability and predictability of the regime, 28 May 2018, SOC358, p.4.
626 KPMG – Financeability of Northumbrian Water under the PR19 Final Determination, March 2020, SOC285, Section 5.

999. This unbalanced and short-term approach to financeability is detrimental to customers and we do not believe a credit negative FD19 to be in the consumer interest now or in the long term.

10.4 ASSESSING FINANCEABILITY

1000. In its Bristol Water PR09 Decision, the CC considered the question of financeability.[627] The CC stated that the WACC should be set to ensure that Bristol Water can maintain its investment grade issuer shadow status. The CC found that:

- it must balance the duty under section 2(2A)(c) against other duties under section 2(2A) to further the Consumer Objective. As set out above equal weight should be given to balance these duties;
- the actual financial structure is for the particular undertaker to determine, but that choice is taken at the undertaker's own risk; and
- at the gearing assumed in the WACC, the financial projections should be consistent with the undertaking retaining an investment grade credit rating.[628]

1001. It is our case that the combination of measures in the FD19, together with flaws in the way in which Ofwat has calculated the cost of capital, means that it has failed to discharge its statutory duty, as interpreted by the CC (as it then was) in the Bristol Water PR09 Decision.

1002. A robust financeability assessment would encompass assessing financeability with respect to specific, objective and robust criteria. The financeability analysis we have carried out is predicated on three criteria and the associated tests, which are set out in the **Financeability Report** (submitted alongside this SoC). The criteria have been supported with relevant CMA, regulatory and market evidence.[629]

1003. KPMG's Financeability Report sets out the following economic and financial criteria for financeability:

- a company should be able to earn a reasonable return on its capital (including its required return on equity) on a mean expected basis;
- the company should be able to achieve the assumed credit rating and to raise debt at the rates assumed in the A-CoD as set under the FD; and
- there should be sufficient financial headroom to manage business risks and withstand significant, but plausible downside scenarios.[630]

1004. Financeability is in fact a condition for any private company, regulated or not, to be able to carry out its operations and provide services in a sustainable way, so they are at the core of the private provision of utilities. In practice, this means that the price control should be set at a level that enables an efficient company to access financing on reasonable terms, which can be established through a series of financeability tests as illustrated in the table below.

Table 55: Criteria and tests for the financeability assessment

Criteria	Tests
A company should be able to reasonably expect to earn the required equity return on a mean expected basis and remain financeable.	Assess whether, in the base case, an efficient company can meet its business plan requirements, deliver on the required performance and recover costs without a material negative financial impact on its projected returns.
The notional company should be able to achieve the assumed credit rating and to raise debt at the rates assumed in the A-CoD.	Apply the methodologies used by credit rating agencies to assess Regulated Water Utilities to determine whether the rating implied by financial projections based on the FD is consistent with Ofwat's cost of capital assumptions, i.e. whether the company can achieve a rating that is consistent with the Baa1 / BBB+ rating assumed in the A-CoD.

627 Bristol Water PR09 CMA Decision, SOC296, p. 68.
628 Bristol Water PR09 CMA Decision, SOC296, p. 65.
629 KPMG – Financeability of Northumbrian Water under the PR19 Final Determination, March 2020, SOC285, Section 3.2.
630 KPMG – Financeability of Northumbrian Water under the PR19 Final Determination, March 2020, SOC285, Section 3.2.

There should be sufficient financial headroom to manage business risks and withstand significant, but plausible downside scenarios (securing sufficient financial resilience).	Assess whether the financial projections based on the FD provide sufficient financial headroom under plausible downside scenarios and hence allows for the required financial resilience.

Source: KPMG (2020), 'Financeability of Northumbrian Water and the PR19 Final Determination', March

1005. Financeability assessments on debt are typically based on how rating agencies and lenders would assess the financeability of a company under the regulatory determination. This is on the basis that rating agency methodologies are applied in the market, relied upon by lenders, and constitute a robust, independent market test of company creditworthiness from a debt perspective. Debt financeability tests are therefore not market-based where they deviate from rating agency or lender methodologies applied in practice.

1006. As set out in the Financeability Report, the analysis simulates the methodologies applied by rating agencies, and is focused on Moody's and S&P.

1007. Moody's published methodology sets out their approach to regulated water networks which is based on a rating scorecard (with adjustments to take into account company specific factors) to assess the rating for each company. This scorecard places a 60% weight on qualitative factors and 40% weight on leverage and coverage metrics, implying that an overall credit rating could be achieved through a combination of qualitative and quantitative factors.

1008. The AICR, however, is a key primary metric for Moody's and would likely constrain the overall rating implied by the 'ratings scorecard'. In a recent publication downgrading the water sector, Moody's updated the thresholds for their metrics following a revised view of business risk in the sector. Specifically, Moody's set out minimum guidance of 1.5x and 1.3x on AICR for a Baa1 and Baa2 rating respectively.[631] While Moody's has not specifically set out a threshold for Baa3 as it has not hitherto been required, KPMG's Financeability Report sets out why this threshold is expected to be 1.1x.

1009. The key financial ratio for S&P is Funds From Operations (**FFO**)/Net debt. S&P's FFO/Net debt is similar to Moody's FFO/Net Debt but also accounts for the accretion of index-linked debt in the FFO. As set out in the Financeability Report, a threshold of 9% could be considered to be the minimum FFO/Net Debt that is consistent with maintaining a target BBB+ credit rating assuming an "*excellent*" business risk profile.[632]

1010. The table below summarises the thresholds against which projected metrics implied by financial projections will be assessed. These are based on Moody's thresholds, but with the assumption that AICR ratios which are 0.1x above the minimum threshold would be required for a 'stable' rating to be achieved.

Table 56: Ratio thresholds and Red Amber Green (RAG) grid

Ratio thresholds and RAG grid							
RAG Grid	**Stable Baa1**	**Baa1**	**Stable Baa2**	**Baa2**	**Stable Baa3**	**Baa3**	**Baa3 at risk**
Moody's							
- AICR	≥ 1.6	≥ 1.5	1.5 - 1.4	1.4 - 1.3	1.3 - 1.2	1.2 - 1.1	≤ 1.1
- Net debt / RCV	≤ 70%	≤ 72%	72%-75%	75%-80%	80%-82.5%	82.5%-85%	≥ 85%
S&P							
FFO / Net debt (S&P)	≥ 10%	≥ 9%	9%-8.5%	8.5%-8%	8%-7%	7% - 6%	≤ 6%

Source: KPMG (2020), 'Financeability of Northumbrian Water and the PR19 Final Determination', March, Section 4

10.5 ADEQUACY OF OFWAT'S APPROACH TO FINANCEABILITY

10.5.1 Ofwat's financeability tests

1011. The financeability tests are the means by which the regulator can transparently demonstrate that it has discharged the Financing Duty.

631 *Moody's – Regulator's proposals undermine the stability and predictability of the regime, 28 May 2018, SOC358, p.5.*

632 *Standard & Poor's – Corporate methodology, November 2013, SOC322, Table 3; Standard & Poor's – For U.K. water utilities, challenging cost-of-capital guidance may bring rating stress, 7 February 2014, SOC309, Table 3.*

1012. The need for an explicit check on the ability of a regulated utility to access capital at the appropriate level of financial risk over and above determining the appropriate allowed rate of return is driven by a number of issues, including the cashflow negative financial profile of regulated utilities, significant capital expenditure and hence large financing requirements, and the importance of ensuring significant debt capacity, among others.

1013. Ofwat stated that in carrying out its assessment it has given consideration to the thresholds and the levels of the financial ratios set out in each company's revised business plan (which are informed by current guidance from the credit rating agencies). Ofwat is also clear at FD19 that it is targeting a Baa1 rating for the notional company, and we assess whether this target rating (which is consistent with average actual company ratings across the sector as well as the A/BBB iBoxx indices used to set the cost of debt allowance) can be achieved based on the FD.

1014. Ofwat states that it has exercised "*judgement in our assessment of the financial metrics in the round…reflecting that guidance issued by credit rating agencies does not necessarily imply a minimum requirement for individual financial ratios for a target credit rating. We take into account the relative strength of financial ratios in the round as well as profile of financial ratios in our assessment*".[633]

1015. Ofwat's stated view is that rating agency thresholds for individual metrics should not be a binding constraint on financeability.[634] However, in practice Ofwat is correct to identify AICR as a primary driver of ratings under Moody's methodology and has sought to mitigate financeability constrains identified based predominantly on this one metric (AICR).[635] Specifically, Ofwat targets a 1.5x AICR on average across AMP7 through the use of PAYG adjustments based on Moody's guidance for the minimum threshold required to achieve a Baa1 rating. A detailed assessment of the effectiveness of using PAYG rates to assess financeability is set out below.

1016. Ofwat has failed to demonstrate that its FD would achieve a stable Baa1 credit rating in practice based on relevant market tests i.e. rating agency methodologies, has conducted an inappropriate assessment of whether we will be resilient to downside scenarios under the FD19 (see Section 10.5.3 below), and has not considered whether our equity investors would be able to earn their return on a mean expected basis. Ofwat has therefore not conducted a robust financeability assessment.

10.5.2 Ofwat's proposed solution to financeability constraints

1017. Where Ofwat identified financeability constraints for the notional company such as shortfalls in key projected credit metrics against thresholds, it has sought to address these by advancing revenue through adjustments to PAYG rates. The regulator is of the view "*that if the financeability challenge results from insufficient levels of cashflow headroom, then the appropriate response is to alter cashflows through the use of PAYG or RCV run-off levers, provided that the use of PAYG or RCV run-off levers does not lead to a material depletion of the RCV.*"[636]

1018. A key concern with FD19 across the industry is that Ofwat has adjusted regulatory levers, in particular PAYG rates, in order for the financial projections under FD19 to imply an AICR ratio of 1.5x, which is Moody's minimum guidance to achieve Baa1 (as outlined above and discussed in further detail below).

1019. Given an AICR below the target, rather than adjust PAYG rates, Ofwat should have considered a recalibration of the PR19 framework and the assumptions underpinning it. In general, the identification of a financeability constraint for the notional company driven by low coverage metrics implies that the return on capital, rather than the return of capital (e.g. through PAYG or run-off rates) is too low.

1020. Ofwat's mitigants are insufficient and misdirected as they attempt to improve liquidity at particular points in time, e.g. by shifting cash flows over time through PAYG adjustments, rather than addressing the actual, underlying financeability issues.

1021. Improving liquidity at particular points in time is not the same as improving creditworthiness effectively to address financeability issues. Ofwat's regulatory mitigations do not reduce the company's risks related to asset risk and shortfalls in revenues, and hence do not improve the actual financial position of the firm on a sustainable basis.

633 Ofwat FD19: Aligning risk and return, SOC188, p. 97.
634 Ofwat – Reference of the PR19 final determinations: Cross-cutting issues, March 2020, SOC243, p.68.
635 Ofwat FD19: Aligning risk and return, SOC188, p. 97.
636 Ofwat FD19: Aligning risk and return, SOC188, p. 86.

For the same reasons, these adjustments are typically not taken into account by the rating agencies for key financial metrics, or are adjusted for to derive the true underlying financial position, and hence do not alleviate underlying financeability issues.

1022. The market should be able to provide similar liquidity solutions itself, as long as the company is solvent and financeable to start with. Markets can efficiently shift money over time, credit facilities can be arranged ex ante and or even ex post if a business is viable. Private contracts can shift risks across debt and equity, or ring fence one type of capital provider, and would do this at a cost which is appropriately priced. As a result additional liquity is not required as it does not constitute an efficient market outcome.

1023. In its financeability assessment in its Bristol Water PR14 Decision, the CMA also noted that "*moving revenue between regulatory periods may be Net Present Value (**NPV**) neutral but could be detrimental for both the company and customers. Therefore, we do not consider it good practice to increase PAYG without justification, so have performed analysis that we consider to be consistent with […] the 'natural rate' for PAYG*".[637]

1024. Rating agencies (in particular Moody's and Fitch Ratings (**Fitch**) have indicated that they do not consider adjustments to PAYG will improve financeability on a sustainable basis and that adjustments to regulatory levers such as PAYG above the natural rate can distort financial headroom over time. As a result, rating agencies strip out the excess PAYG adjustment when calculating projected coverage metrics.[638]

1025. The methodology applied by rating agencies determines in the real world the credit quality of each water company, taking into account the dynamics of the regulatory framework. As such the rating achieved based on extant rating agency methodologies represents the critical market test for assessing whether the notional company is able to achieve a target rating. This is acknowledged by Ofwat in its decision on strengthening the regulatory ringfence.

1026. Companies are required under licence to maintain an investment grade credit rating (Corporate Family Rating) assigned by a Credit Rating Agency (Moody's, S&P, Fitch) to reflect its opinion of the ability of a corporate group to honour all of its financial obligations.

1027. In this context Ofwat notes that rating agencies are helpful for monitoring Appointees because they provide a widely recognised and independent, forward-looking view of an Appointee's financial strength and resilience.

1028. As the accelerated cashflows are not available for management of risk or taken into account by rating agencies in coverage metrics, the financeability constraint identified by Ofwat in its FD19 for the notional company remains. Based on Ofwat's test, but – excluding the acceleration of cashflows from future periods (to be in line with the approaches applied by rating agencies) would imply that projected metrics for the notional company are below threshold. The quantum of the advanced revenue was sized to increase the AICR to 1.5x relative to the AICR of 1.43x before any PAYG adjustments were made. This would already suggest that Ofwat's FD19 does not meet the target AICR of 1.5x in the base case. Ofwat has therefore identified a financeability constraint but failed to apply an effective remedy.

1029. The concern that Ofwat's FD19 is credit negative is supported by independent analysis of rating agencies. In particular, following the FD19, Moody's placed 12 UK regulated water companies (c.70% of the sector) on review for downgrade;[639] whereas S&P downgraded four of the companies that accepted the final determination, and put the companies that rejected the Final Determinations on ratings review.[640]

1030. Ofwat does not hold itself to the same standard in its application of its financeability test, and departs from rating agency methodologies and hence the relevant market test by assuming that the PAYG adjustment would enhance coverage metrics and improve credit quality. It is not clear on what basis Ofwat believes it has a better view on the creditworthiness of water companies than the tests applied by rating agencies in the market. Implicitly Ofwat is suggesting that rating agencies are misstating credit risk, however we have seen no evidence to suggest that rating agencies are overstating credit risk. Ensuring the required return on equity and hence headroom to absorb risks is required if companies fail robust, market-based tests.

637 Bristol Water PR14 CMA Decision, SOC336, para. 11.22.
638 Moody's – Ofwat tightens the screws further, 26 July 2019, SOC389, p.5.
639 Moody's reviews 12 UK water groups for downgrade, 20 December 2019, SOC400.
640 Standard & Poor's downgrades four of the final determination acceptors, 1 March 2020, SOC411.

1031. If there is evidence that water companies might not be financeable, i.e. not able to maintain a solid investment grade credit rating, appropriate headroom and manage exposure to downside risks using market-based solutions, the question has to be why? The transfers of cash over time which the PAYG adjustment seeks to achieve are not a structurally compelling solution. Ofwat does not demonstrate that the application of the PAYG adjustment would approximate an efficient, competitive market outcome.

1032. An efficient market outcome would be expected to reflect fully the pricing of risks, which is likely to fundamentally differ from the solution promoted by the PAYG adjustment. The PAYG adjustment does not price in under-remunerated risks or secure financial headroom, but instead seeks to provide a temporary, and costly, liquidity injection.

1033. It appears that Ofwat does not accept the most likely competitive market outcome (i.e. the true price of equity capital and financial headroom) so uses adjustments to PAYG to justify what it considers a better price for customers.

1034. In the most likely market dynamics that would result in an economically efficient outcome, the price of capital would rise (or rather not fall by as much as Ofwat proposes) if the capital is insufficient to provide the necessary financial headroom for the assumed debt and equity risks. This would attract more capital until sufficient financial headroom is secured, corresponding to present risk exposures and consistent with a financial buffer necessary to support debt at the target credit rating.

1035. It could be argued that, if a solution akin to the PAYG adjustment was generally a justified intervention in the absence of a clear market failure, then it would be appropriate for similar public support to be introduced in many other industries.

1036. The global financial crisis of 2007−8 is a potentially useful parallel here where many financial institutions faced increased risks and, in many cases, financial difficulty. This required the price of capital and required returns by financial institutions to rise rather than fall in order to make the industry viable. Indeed, the policy implemented at the national and EU level was to allow banks' profitability to increase to make it financially viable and avoid public support in the future.

1037. Instead, adjustments to PAYG seem to move in the opposite direction—it substitutes regulation for what might otherwise be the expected market outcome, i.e. a higher price of equity capital, or rather a lower reduction in returns, which would be implied by efficient pricing of risk and required financial headroom.

1038. In summary, Ofwat's approach is not robust for the following reasons. These are discussed in detail in the Financeability Report:

- it assumes that the minimum threshold for AICR of 1.5x will be sufficient to achieve a Baa1 rating, which may not be achieved in practice as the threshold represents the absolute minimum required for a Baa1 rating;
- the cashflows brought forward through the adjustment to PAYG rates relate to the recovery of capital invested in the business and do not constitute a risk buffer. As a result, they are not available for the management of risk; and
- even if we were to assume that this capital was available to manage risk, this would not be sustainable over time if the cash flows brought forward are used to absorb downside shocks rather than to reduce gearing.

1039. Removing the adjustment to PAYG rates consistent with rating agency treatment reduces projected AICR across AMP7 from 1.50x (at the minimum level for Baa1) to 1.43x (consistent with Baa2) before taking into account expected performance. This indicates that Ofwat's FD does not meet the target AICR of 1.5x in the base case, and has failed to apply an appropriate remedy for the financeability constraint identified by Ofwat's own analysis.

1040. Critically, Ofwat has disregarded the implications of the notional financeability test as a cross-check on allowed returns, and thereby (1) has undermined the importance of robust financeability tests for the notional company, as the regulator has implicitly assumed that projected metrics assessed by lenders cannot identify miscalibration or misapplication of market data in setting allowed returns; and (2) has applied a remedy that increases bills but does not address the financeability constraints identified and could jeopardise the long term financeability and resilience of the notional and actual financing structures, which is not in the interests of customers.

1041. Therefore we do not consider the way in which the regulator has sought to address the financeability identified in its tests is appropriate or effective, and the problem identified by the regulator in its analysis of financeability – namely that projected metrics for the notional company are inconsistent with a Baa1 rating – remains for NWL. All else equal (and discussed in more detail below) this inconsistency implies higher, unfunded financing costs for the notional company.

10.5.3 Ofwat's assessment of resilience to downside scenarios

1042. A key criterion for ensuring financeability is that the company should be resilient to plausible downside shocks.

1043. However, it is not clear how Ofwat has assessed our risk exposure across different drivers and variables, and whether we will be resilient to plausible downside scenarios under the FD19 (e.g. be able to maintain an investment grade rating).

1044. In FD19, Ofwat has carried out high level reverse stress tests to check whether its determination provides sufficient headroom for an efficient company under the notional capital structure to be able to manage risk and to maintain an investment grade credit rating. In particular, Ofwat assesses whether companies can maintain an average adjusted interest cover ratio of 1.0x on average across the AMP (the point at which a company can pay its ongoing expenses, maintain its regulatory capital and just service its cash interest costs) based on the regulator's own definition of AICR. No further downside analysis has been carried out. [641]

1045. There are methodological issues with the reverse stress test applied by Ofwat. Specifically:

- Ofwat's threshold of 1.0x is not consistent with the AICR threshold to achieve a minimum investment grade rating (i.e., >1.1x as identified in section 10.4 above); and
- Ofwat has not taken into account the companies' analysis of actual projected operational risk exposure, nor carried out its own to assess whether the company is likely to be exposed to risks which lead to financial difficulty or compromise financial resilience.

1046. In practice the limited financial headroom implied by Ofwat's FD (1) suggests that a number of plausible but severe downside scenarios (not modelled by Ofwat) are likely to indicate a financeability challenge; and (2) highlights that the notional company has limited ability to manage risk based on the FD19 in the context of a tougher regulatory settlement (characterised by 'step changes' in performance targets and large cuts in allowed returns and costs) that significantly increased the likelihood and potential severity of downside scenarios.

10.5.4 Ofwat's financeability assessment

1047. Overall Ofwat has not undertaken a robust financeability assessment as:

- its analysis of projected FD19 credit metrics is not consistent with rating agencies' methodologies;
- it has decoupled the notional financeability test from its cost of capital analysis, which undermines the notional test as a key cross-check on the calibration of allowed returns;
- it has applied a remedy that does not address the financeability constraints identified and could jeopardise the long-term financeability and resilience of the company based on the notional and actual financing structures, which is not in the interests of customers;
- it has not conducted sufficient downside scenario analysis to test financial resilience in the FD19; and
- there is limited consideration of the implications of the FD19 for equity financeability.

641 Ofwat FD19: Aligning risk and return, SOC188, p. 98.

10.6 THE PR19 PACKAGE IMPLIES A SIGNIFICANT CHALLENGE AND NWL IS LIKELY TO INCUR A LOSS ON A MEAN EXPECTED BASIS

10.6.1 The FD represents a significantly stretching package

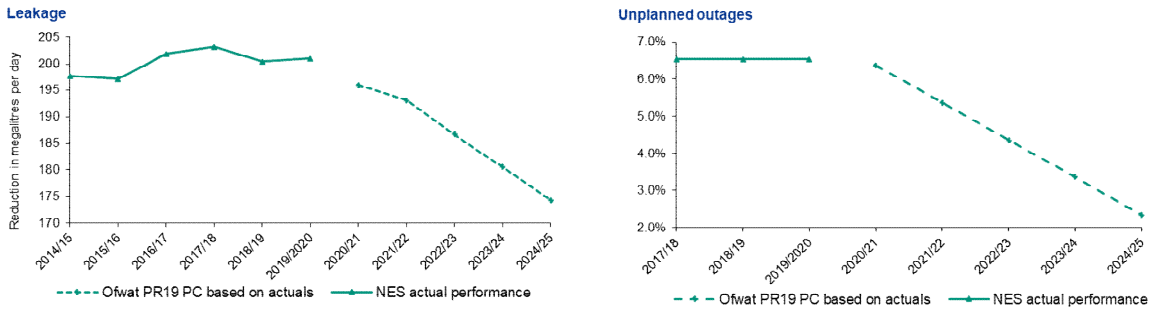
1048. The PR19 determination is significantly more challenging than PR14 with tougher performance targets and cost allowances that are not adequate enough to meet these targets (also discussed in section 5.2.2). This is consistent with EI's paper; i.e. that companies are unquestionably being set a 'step change' in the overall level of challenge they face at PR19. Specifically, the paper finds that the extent of the challenge for NWL at PR19 is 2.3x higher than the past. The equivalent figure for most other companies is below 1x, with NWL ranking third (relative to the other water companies) in terms of challenge relative to the previous controls.[642] Moreover, as illustrated in Figure 17, PR19 represents the most challenging price control in recent history in terms of service improvements, productivity improvements, efficiency catch up improvements, and cost of equity allowance.

1049. FD19 resents a significant challenge on top of the already tough and stretching BP19 we had proposed. In particular;

- our performance targets on PCs are considerably more challenging relative to the performance achieved in the previous AMP;
- we have reduced our Totex over the PR19 process (i.e. between the September 2018 BP stage and the response to DD19), as well as accepted greater efficiency targets;
- we are already an efficient company, and are at the upper quartile relative to the sector. As a result, achieving the efficiencies under FD19 is going to be significantly harder for us; and
- we have new cost pressures which have not been reflected in FD19 (see section 9). These are likely to result in cost overruns in the base case.

1050. Ofwat's performance targets have been set at levels that are significantly more stringent than we proposed in our BP19 (ed.09.18). Noting that we had already set stretching performance targets, this means it is likely that we will incur ODI penalties. The figure below illustrates the magnitude of the 'step change' in performance targets for two PCs/ODIs that we raise concerns over (see section 6.5 and 7.7) leakage and unplanned outages. In line with Ofwat's methodology requirements we have accepted a significant reduction over AMP7 relative to what was achieved over AMP6. This would require companies to make significant improvements which come at the expense of additional Totex that has not been allowed for. For example, Ofwat is expecting companies to achieve a leakage reduction of 15% and a reduction in Unplanned Outages of 64% by 2024/25. This level of reduction has not been achieved in the past.

Figure 46: Performance targets set for Leakage and Unplanned Outages are significantly more challenging than AMP6



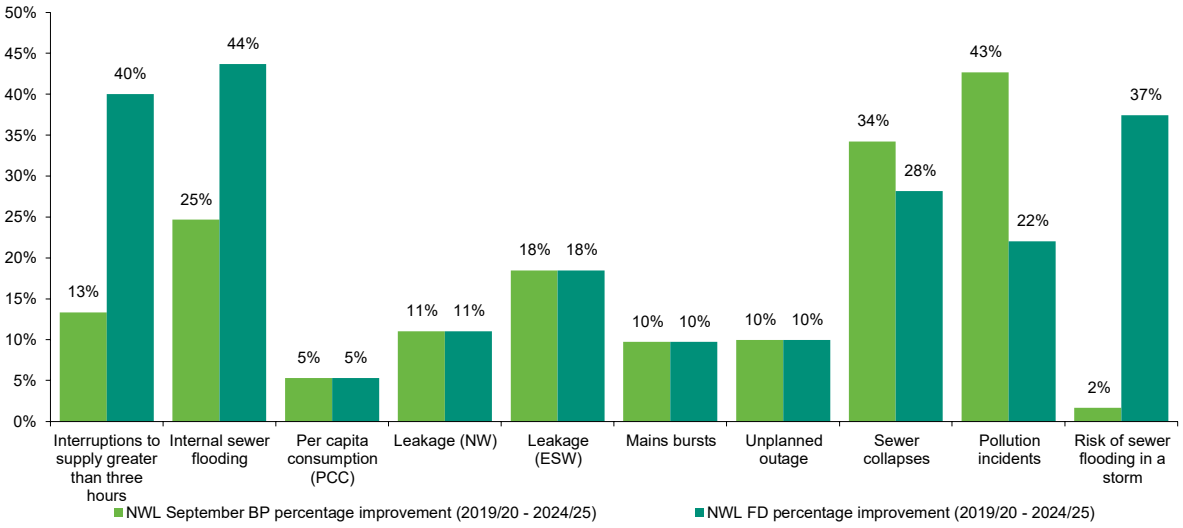
Source: NWL analysis of historical data and PR19 FD

1051. For the common PCs that can be compared (see section 5.9.2), the figure below illustrates the following: 1) The performance improvement between 2019/20 and 2024/25 that we set out in our original September 2018 business plan; and 2) the performance improvement expected by Ofwat between 2019/20 and 2024/25 under the FD.

642 *Economic Insight 2020, SOC413, p.23.*

1052. As can be seen across the PCs, the level of challenge at PR19 has increased progressively. Across all these 10 common PCs, the average rate of improvement has increase form 17% in the business plan to 23% in the FD.

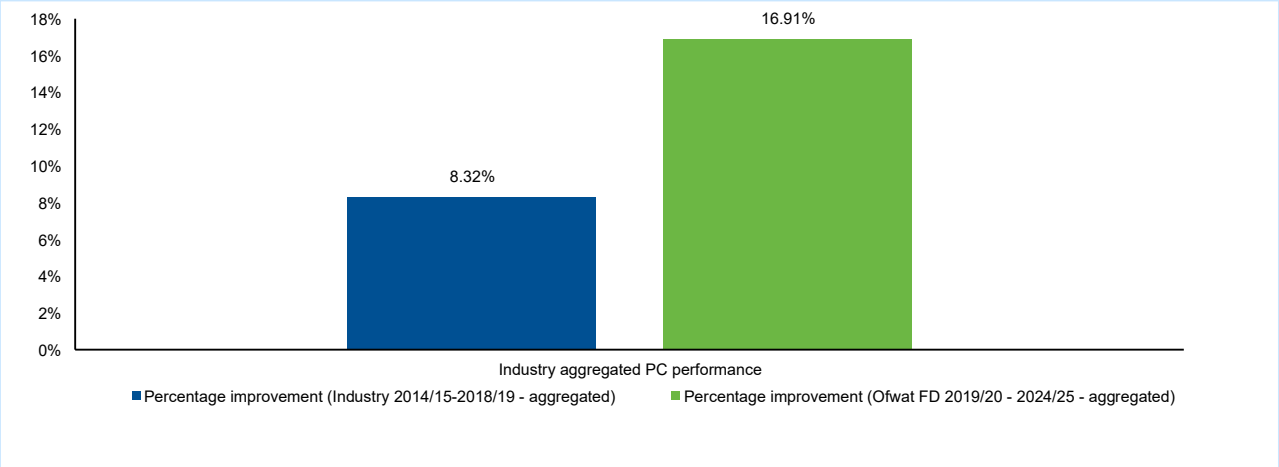
Figure 47: Improvements in PC targets as set out in the BP19 (ed.09/18) and as specified in the FD



Source: Analysis of App1 data for NWL and the PR19 FD

1053. At the same time, whilst even on a measure by measure basis the improvement rates appear very challenging, the aggregate picture is worse as we discuss in section (cross reference). In **Error! Reference source not found.** we analyse the average historical improvement rates across four service metrics for which historical information has been published by Ofwat providing a reasonable time series and where the measure definitions have been relatively consistent over time aiding comparability, leakage, pollution events, internal sewer flooding and supply interruptions[643]. These are analysed for each company to account for the extent to which individual companies have been able to improve across all three of these metrics and a company average is taken, the same improvement rates are then compared to those observed in FD19 under a similar calculation. As can be seen from the analysis, the improvement rates required are more than double the rates achieved in recent history.

Figure 48: Industry improvement and PR19 targets in common performance level measures aggregated



Source: NWL analysis of historical data from Ofwat's Service and Performance Report, 2019 and PR19 FD

1054. Ofwat has justified setting 'stretching targets' on the basis that there has been historical outperformance in the sector at PR14. However, this is not justified (see section 5.2.3). Moreover, as discussed by EI, there has not

[643] *Data taken from Service Delivery Report Analysis Model, SOC210. We have used these three measures because historical data is available and comparability is better, we have not included leakage because the measure definition is changing but inclusion of this measure would suggest an even tougher aggregate target.*

been substantial, systematic or persistent outperformance of regulatory determinations in the water industry [644], which suggests that the challenges proposed by Ofwat are not warranted.

1055. Aside from this, it is important to recognise that the past is not a perfect predictor of the future in the context of an extremely challenging and stretching settlement. Therefore, it is not reasonable to automatically assume that if a company has outperformed in the past, they will continue to outperform in the future.

1056. Throughout the PR19 process Ofwat has asked us to accept tougher performance and efficiency challenges. This has resulted in us accepting these challenges and reducing our base cost allowances, which has led to a package that is very challenging overall. The implication of this is that there is a considerably higher risk of under-performing on costs and PCs, which is likely to result in cost over-runs and ODI penalties under the package.

1057. As discussed in section 5.9.2, the performance improvements set by Ofwat need to be delivered against an overall Totex that is £179m (c. 6%) lower than we set out in our BP (ed. 08.19). Given the extent of the challenge in the overall package, the FD19 would result in significant cost overruns such as: power and chemical costs, unmodelled costs associated with business rates and abstraction charges; and failure to deliver aspects of our statutory WINEP programme.

10.6.2 ODI mechanisms are asymmetric which would result in a material negative financial impact on a mean expected basis

1058. Asymmetry in the regulatory framework would imply that there could be a higher probability of under-performance compared to out-performance, which would result in a return that is lower than the mean expected return, i.e. an expected loss. Material asymmetry in FD19 and the regulatory framework would therefore significantly undermine our ability to earn the required return on a mean expected basis.

1059. Downside risk can arise from asymmetry where normally distributed financial projections imply a loss on a mean expected basis. Asymmetry is an important consideration for investors in a regulatory context, because the allowed cost of capital is based on the CAPM which does not price in asymmetric risk and would therefore not price in an expected loss. It is expected that the price control constitutes a 'fair bet', i.e. that potential upside and downside risks are symmetric and in practice on the equilibrium path no out- or under-performance would be expected relative to the regulatory framework.

1060. The CMA has also considered the implications of asymmetric risk. For example, in SONI's appeal against the Northern Ireland Utility Regulator (**UR**), the CMA stated:

"*the UR failed to have regard to asymmetric risk and that, as indicated by SONI's own analysis, this would result in expected returns being lower than the assumed WACC*".[645]

1061. The FD is asymmetric in a number of respects, for example:

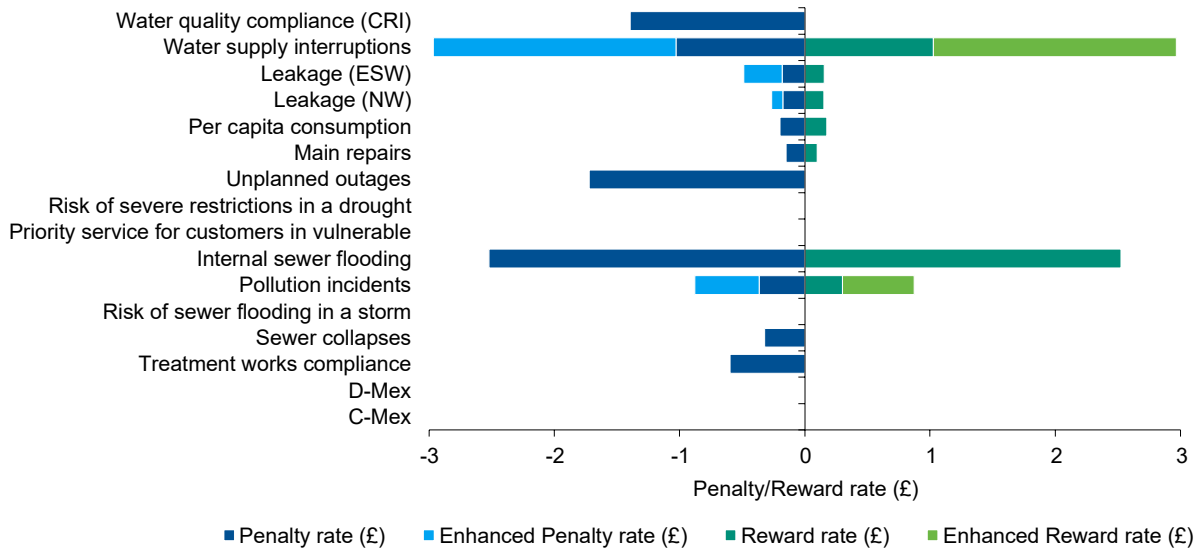
- the specification of penalty and reward rates;
- the specification of cost sharing factors (as explained in section 10.7.1 and section 5);
- the specification of uncertainty mechanisms;
- the calibration of caps and collars; and
- the aggregate sharing mechanism for outperformance on ODIs.

1062. As concluded in section 6.7, FD19 in aggregate is asymmetric. The asymmetry in penalty and reward rates implies that for a range of performance outcomes, the penalty on an outcome below the performance target is greater than the reward on an equivalent outcome above the target, which would imply that we would incur a penalty on average.

645 SONI FD, SOC312, para. 7.371.
645 SONI FD, SOC312, para. 7.371.

1063. The figure below illustrates a significant amount of asymmetry in the setting of penalty and reward rates, with some PCs only having a penalty rate and no reward.

Figure 49: Penalty and reward rates for common PCs (£/unit)

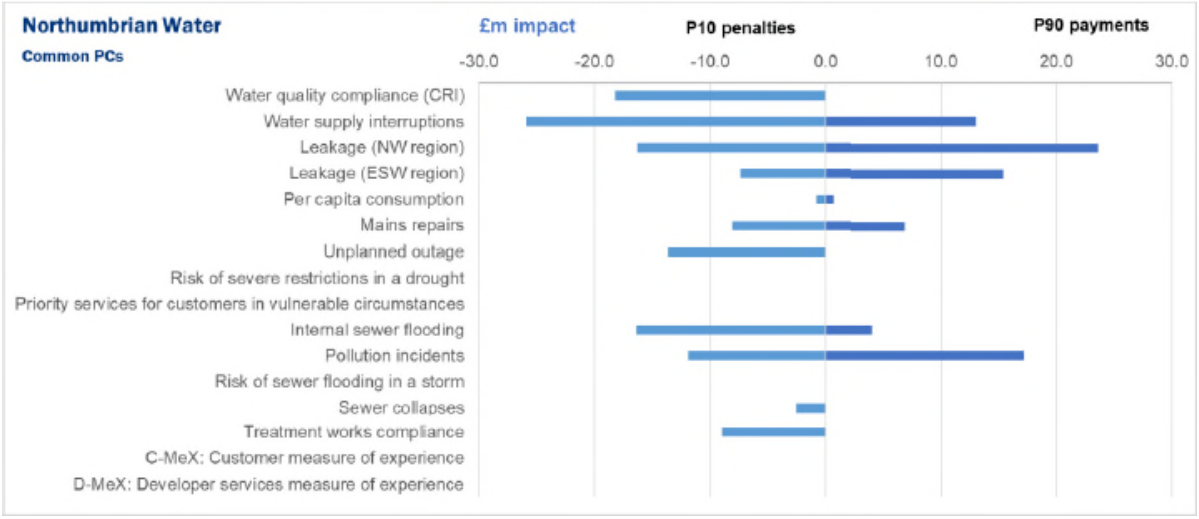


Source: NWL analysis of historical data and PR19 FD

1064. The calibration of caps and collars on PCs is set such that upside potential is smaller than downside loss, which exacerbates the overall negative asymmetry.

1065. The regulatory settlement is calibrated such that the potential penalty at the P10 level far exceeds the reward at the P90 level. This is evident in Ofwat's own analysis of the likely financial impact of ODIs, which shows that NWL is exposed to more downside risk in the base case. The figure below, presented in Ofwat's FD, provides an indication of the financial value of our ODIs for the common PCs. It shows how much NWL would have to return to customers if it underperformed at the P10 level, and how much it would gain if it outperformed at the P90 level. The figure illustrates that; four of the eleven common PCs have no upside, and in general that even based on the analysis carried out by Ofwat – which under-states risk exposure – the potential downside exposure exceeds potential upside across the ODI package.

Figure 50: Projected P10 underperformance payments and P90 outperformance payments, 2020 – 2025 (£m)



Source: Ofwat (2020), 'PR19 Final Determinations: Northumbrian Water final determination', p.26

1066. However, Ofwat's analysis indicates that P10 and P90 impact on RoRE from ODIs is -1.54% and 1.36% respectively.[646] This range is more symmetrical compared to the individual P10 penalties and P90 rewards in the figure above, which is a function of Ofwat's approach to combining the individual ODIs.

1067. Ofwat has stated that when adding up the ODI impacts, it is necessary to take into account correlations as a simple additive measure would likely overestimate the overall package. Ofwat, however, does not appear to have adopted a stochastic approach to risk assessment. Ofwat adopted the following approach: [647]

- Ofwat recognises that companies used Monte Carlo or similar analysis to derive estimates based on individual company analysis of risk exposure. Ofwat however has not sought to replicate this company-specific risk modelling, but rather consider how to use the company data to adjust for the additive approach;
- Ofwat has considered how to adjust for the additive approach by reviewing the adjustments made by companies. Specifically, it considers the ratio between company risk exposure for individual ODIs and for the package of ODIs as a whole to adjust for correlation between ODIs, which it describes as a 'scaling factor'; The scaling factor is calculated as the P10 and P90 payments on PCs at the package-level (provided by companies) divided by the simple additive P10 and P90 values of all the individual PCs. Effectively, this is the ratio between the overall P10 and P90s reported by companies (which takes into account factors such as correlation) and the simple addition of all PCs (which does not take into account factors such as correlation);
- Ofwat then calculated a scaling factor for each company, and took the industry average. The average P10 scaling factor is 70% and 68% for water and wastewater respectively. The equivalent figures at the P90 level are 53% and 65%.
- Ofwat, first, aggregated all the P10 and P90 ODIs on PCs, and then applied the scaling factors;
- Ofwat applies a 70% scaling factor, broadly in line with the average ratios provided by companies, on the additive P10 estimates; but uses a 90% scaling factor at the P90 level which Ofwat considers should be higher to correct for the likely pessimism in company estimates (the average scaling factor for P90 is 53% and 65% for water and wastewater respectively)[648], but this scaling factor does not appear to be supported by risk analysis or modelling. The P90 scaling factor is 30% higher than the sector average scaling factor to correct for perceived bias in company estimates.

1068. The approach used by Ofwat to determine the P10 and P90 RoRE range on ODIs is therefore inconsistent, judgement based, arbitrary and does not reflect a robust estimate of potential outcomes across ODIs. Our specific concerns with this analysis include:

- The same P10/P90 scaling factors are applied to all companies. Ofwat is overriding company-specific risk analysis with its own industry wide view, disregarding company evidence on risk exposure and as a result not considering whether the package is actually balanced or the FD takes into account the overall balance of risk and return;
- Ofwat is adjusting the P90 for company 'pessimism' based on AMP6, which appears to ignore the step change in performance implied by PR19. Specifically, Ofwat states that "Our experience of PR14 also suggests the simple additive P10 and P90s were unduly pessimistic compared to the outturn evidence";[649]
- Ofwat is also excluding outliers (>100%) which seems reasonable but should either (1) seek to capture these factors in some form (e.g. based on upper quartile); or (2) should exclude companies with low scaling factors such as Yorkshire or Wessex; and
- Ofwat's analysis of NWLs position indicated c.87% scaling factors (symmetric P10/P90 scaling factors). This indicates higher downside exposure taking into account correlation than assumed by Ofwat based on industry wide analysis.

1069. Overriding company specific analysis of risk is unjustified and – based largely on a view of performance across AMP6 – Ofwat distorts the underlying asymmetry of the ODI package through adjustments to overstate the P90 scaling factor and understate the P10 scaling factor. As a result Ofwat in error has not considered the impact of asymmetry on mean expected returns and not reflected probability adjusted cashflows in its financeability or resilience analysis at FD. NWL's ODI downside exposure per the DD response was significantly higher than corresponding upside; this is not captured by the Ofwat industry wide analysis.

646 FD19, SOC183, p.28.
*647 Ofwat FD19: Delivering outcomes for customers policy appendix, "**Ofwat FD19: Delivering outcomes for customers policy**", 16 December 2019, SOC429, p.173 – 175.*
648 Ofwat FD19: Delivering outcomes for customers policy, SOC429, p.174, table 7.2.
649 Ofwat FD19: Delivering outcomes for customers policy, SOC429, p.174.

1070. Aside from the caps and collars applied to individual ODIs, the regulatory settlement includes a mechanism for ODI outperformance sharing on the upside (at an aggregate level), but no or limited sharing of under-performance. This would, all else equal, exacerbate the asymmetric design of the ODI framework.

"This mechanism operates alongside our wider customer protection approach, where a company's annual outperformance payments (standard plus enhanced) across all performance commitments greater than 3% of water or wastewater regulated equity in any year are shared with customers)." [650]

1071. Ofwat's uncertainty mechanisms are also asymmetric, for example: the reconciliation mechanisms for changes in business rates and Environment Agency abstraction licence charges have a cost sharing rate of 75% (for customers) and 25% (for the company).[651]

1072. Overall, the above analysis indicates that FD19 is asymmetric, which would expose us to significant downside risk in the base case. This does not take into account the significantly more stretching performance targets and cost efficiency challenges compared to what has been achieved historically (as discussed in section 10.6.1).

1073. Taken together, the: 1) significantly stretching PR19 package, and 2) asymmetry in the regulatory framework implies that PR19 is going to be very challenging to deliver, with underperformance expected in the base case,

10.7 ASSESSMENT OF OUR FINANCEABILITY UNDER FD19

1074. The following sub-sections summarize the findings of the Financeability Report, which provides an assessment of our financeability against the three criteria outlined.

10.7.1 Ability to earn the required equity return on a mean expected basis

1075. The ability of our equity holders to expect to earn the required return on an expected basis is a key criterion for securing equity financeability. However, we expect to incur the following additional costs on an expected basis, which all else equal will on average reduce our projected returns and financial headroom:

- financing costs due to: the 'outperformance wedge' applied by Ofwat on the A-CoD. Effectively this would mean that the notional company would raise debt at a higher cost than is allowed for in revenues (see section 8.11);
- additional Totex spend due to the shortfall in cost allowances (as discussed Section 5);
- stretching performance targets set by Ofwat (as discussed above); and
- new information spend. The drivers of these costs are either statutory or licence related and include the following key cost items: 1) Higher abstraction costs; 2) a change in business rates, which have a negative adjustment i.e. will reduce costs and partially offsets the increase in abstraction charges; and 3) Industrial Emissions Directive, which is an EU directive that regulates pollutant emissions and creates cost impacts for the business (see section 9). Given the nature of the costs, management has limited control over these over these cost items, and as a result cost overruns are likely.

1076. We are likely to incur additional costs in each of these areas on a mean expected basis. This will imply a lower expected return for equity investors ex ante on a mean expected basis and that ex ante projected returns are lower than the allowed cost of equity.

1077. These additional costs are summarised in the table below, and set out in further detail in KPMG's Financeability Report. [652]

Table 57: Overview of key assumptions – Ofwat's FD and Base case scenario with additional costs

	Ofwat FD	Base case with additional expected costs
PAYG rates	Adjusted PAYG rates are applied to accelerate cashflows.	Consistent with rating agencies' methodology, which 'look through' PAYG adjustments.

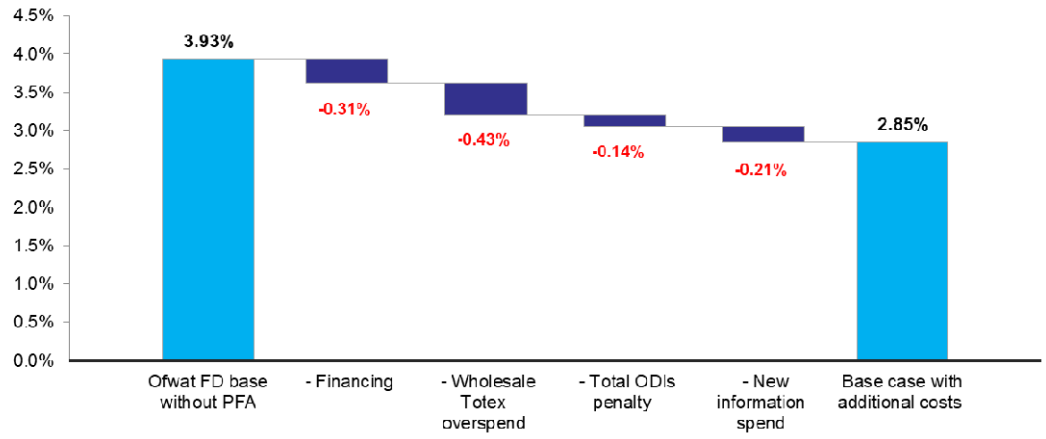
650 Ofwat FD19: Delivering outcomes for customers policy, SOC429, p.122.
651 Ofwat FD19: Aligning risk and return, SOC188, p.37
652 KPMG – Financeability of Northumbrian Water under the PR19 Final Determination, March 2020, SOC285, Section 5.

	Ofwat FD	Base case with additional expected costs
Financing	Ofwat's A-CoD includes an outperformance wedge adjustment of 25bps on embedded debt of 15 bps on new debt. **Nominal** cc) Embedded debt: 4.47% dd) New debt: 2.54%	We do not consider that the outperformance wedge is consistent with the aim of determining the CoD for a company with a notional financial structure, and therefore add back the wedge. **Nominal** ee) Embedded debt: 4.72% (+25bps) ff) New debt: 2.69% (+15bps)
Totex	As per allowances specified in the FD	£85.1m of additional totex that NWL will spend in the base case. The position on the shortfall in totex in the SoC is £191.1m (£42.35m for water and £148.7m for wastewater) as set out in Section 5, which is higher than the £85.1m applied in the financeability assessment. This is because the total includes £86m of sewer flooding risk costs and £20m for the Abberton to Hanningfield pipeline, which NWL will not spend unless allowances for these costs are provided for
ODI penalties	Base case assumes no out- or underperformance on ODIs, i.e. no penalties or rewards.	Total ODI penalties over AMP7 of £12m resulting from differences in performance targets set by Ofwat, and those outlined our plan (as set out in the Financeability Report).
New information spend	As per Ofwat FD.	This includes the additional adjustments we make as summarized in Section 9 of the SoC

Source: KPMG (2020), 'Financeability of Northumbrian Water under the PR19 Final Determination', March, Section 5.1

1078. As illustrated in the figure below, the total impact on RoRE from the additional financing costs, Totex spend and ODI penalties is c.1.1%, materially lower than the allowed RoRE assumed by Ofwat. This is attributed to 0.31% from the higher financing costs, c. 0.43% from the additional Totex spend, c. 0.14% from the ODI penalties, and c. 0.21% from the new information spend.

Figure 51: RORE movements from Ofwat's notional FD base case to base case with additional costs



Source: KPMG (2020), 'Financeability of Northumbrian Water under the PR19 Final Determination', March, Section 5.1

1079. The RoRE impact is calculated on a post-tax basis and assumes that Totex overspend is shared with consumers based on the cost sharing rates set out in FD19. [653] The cost sharing rates set out in Ofwat's FD19 are asymmetric in that we would bear a higher proportion of any overspend, but keep a lower proportion of underspend. As explained in the Financeability Report, this would result in higher downside risk, and contributes to the loss on a mean expected basis.

1080. The material negative impact on returns can be reasonably expected even after taking into account the mitigating actions available to NWL to minimise the financial impact of under-performance.

10.7.2 Ability to raise debt at the assumed rates

1081. A key component and rationale for carrying out a financeability test based on an assumed notional financing structure to check whether the notional company is able to achieve a credit rating that is consistent with that in

653 KPMG – Financeability of Northumbrian Water under the PR19 Final Determination, March 2020, SOC285, Section 5.

the A-CoD. Ofwat sets the A-CoD using an average of 'A' and 'BBB' bond indices, equivalent to a Baa1/BBB+ rating.

1082. The Baa1/BBB+ rating reflected in the A-CoD is consistent with the 'strong' investment grade rating typically targeted by regulated utilities, which is interpreted as including a sufficient degree of headroom to enable the companies to meet the licence obligation under reasonable downside scenarios.

1083. The assessment of the notional structure in the base case does not take into account the impact of legacy adjustments on AMP7 projections, as the financeability of the price control should be considered on a standalone basis and irrespective of out- or underperformance in previous control periods. The credit rating assessment is conducted based on the FD assuming no out- or underperformance in financial projections.

1084. Based on the analysis undertaken in the Financeability Report and Moody's rating methodology for the UK water sector (i.e. after stripping out the 'excess fast money' created through adjusting PAYG rates), NWL does not achieve a Baa1 rating under the notional structure under the Ofwat's FD19 scenario. An assessment of Ofwat's FD19 for NWL implies a credit rating of Baa2 in the base case based on Moody's rating methodology.

Table 58: Projected metrics – Ofwat's FD19 under the notional structure (after removing the PAYG adjustment)

	2020/21	2021/22	2022/23	2023/24	2024/25	AMP7 average	Target Baa1	Target Baa2
Moody's metrics								
- AICR	1.38x	1.42x	1.44x	1.46x	1.47x	1.43x	≥ 1.5	≥ 1.3
- Net debt / RCV	59.5%	59.4%	59.5%	59.7%	59.6%	59.5%	≤ 72%	≤ 80%
- FFO / Net debt	9.9%	10.0%	10.0%	10.0%	10.0%	10.0%	≥ 10%	≥ 9%
- RCF / Net debt	7.8%	7.9%	8.0%	8.0%	8.0%	7.9%	≥ 6%	≥ 5%
FFO / Net debt (S&P)	8.9%	9.0%	9.1%	9.1%	9.1%	9.0%	≥ 9%	≥ 8%
Moody's rating	Baa2	Baa2	Baa2	Baa2	Baa2	Baa2		

Source: KPMG (2020), 'Financeability of Northumbrian Water under the PR19 Final Determination', March, Section 5.2

1085. In Ofwat's FD19 Base Case under the notional financing structure and against the thresholds stipulated by Moody's, NWL achieves metrics consistent with a stable Baa2 rating. In particular, the average AICR of 1.43x is lower than Moody's minimum threshold of 1.5x for Baa1. Moreover, we achieve a FFO/Net (S&P) debt of 9% which is just at S&P's requirement of 9% for 'stable' outlook at the current rating (BBB+).

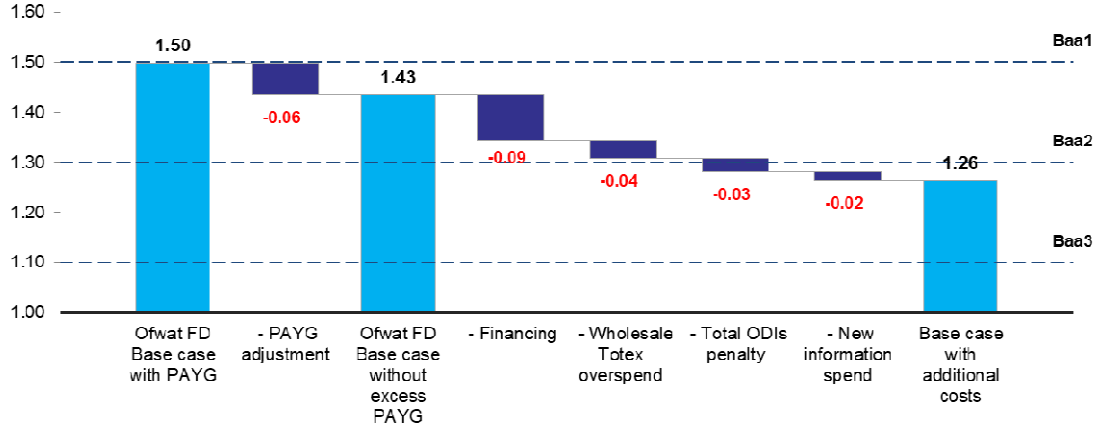
1086. As illustrated below, the base case including the additional costs would achieve projected metrics that are consistent with a Baa3 rating.

1087. The combined impact of the additional Totex spend and ODI penalties in the base case (with additional costs) on leverage and coverage ratios is summarised in the figure and table below. Based on a simulation of Moody's rating methodology, this implies a credit rating of Baa2. [654] The average AICR over the period of 1.26x, however, is below Moody's minimum acceptable threshold of 1.3x to achieve Baa2, suggesting a likely rating of Baa3 (the minimum investment grade rating) in the base case after taking into account these additional costs. In the first year of 2020/21, the AICR is lower than other years because of the profile of the new information costs. S&P FFO / Net Debt is on average 8.3%, which is below the 9% threshold consistent with a BBB+ rating.

1088. In addition to higher financing costs resulting from an implied credit rating that is lower than Baa1 (assumed in the allowance), the lower credit rating would imply limited headroom and lower resilience for the notional company to downside shocks as well as additional, unfunded financing costs which would pose a financeability challenge for NWL.

654 KPMG – Financeability of Northumbrian Water under the PR19 Final Determination, March 2020, SOC285, Section 5.

Figure 52: AICR movements from Ofwat's notional FD base case to NWL base case with additional costs incurred



Source: KPMG (2020), 'Financeability of Northumbrian Water under the PR19 Final Determination', March, Section 5.1

Table 59: Projected metrics – FD19 base case with additional costs incurred under the notional structure

	2020/21	2021/22	2022/23	2023/24	2024/25	AMP7 average	Target Baa1	Target Baa2
Moody's metrics								
- AICR	1.08x	1.31x	1.31x	1.30x	1.30x	1.26x	≥ 1.5	≥ 1.3
- Net debt / RCV	60.3%	60.9%	61.5%	62.3%	62.8%	61.6%	≤ 72%	≤ 80%
- FFO / Net debt	8.9%	9.6%	9.5%	9.3%	9.2%	9.3%	≥ 10%	≥ 9%
- RCF / Net debt	6.8%	7.6%	7.5%	7.4%	7.3%	7.3%	≥ 6%	≥ 5%
FFO / Net debt (S&P)	7.9%	8.6%	8.5%	8.4%	8.3%	8.3%	≥ 9%	≥ 8%
Moody's rating	Baa3	Baa2	Baa2	Baa2	Baa2	Baa2		

Source: KPMG (2020), 'Financeability of Northumbrian Water under the PR19 Final Determination', March, Section 5.2

1089. Overall, the notional efficient company's financial projections are not consistent with the allowed cost of capital. This would imply that we would raise debt at a higher cost than is allowed for in revenues, resulting in additional unfunded financing costs. Lower expected financial headroom would also reduce our resilience to downside scenarios.

1090. These financeability challenges and pressure on ratings are likely to transfer to the actual company. Moody's notes that "*individual companies, few of which resemble the hypothetical notional entity, will face additional pressure on metrics where gearing, interest cost or both exceed the notional assumptions*".[655]

10.7.3 Sufficiency of financial headroom under plausible scenarios

1091. As set out and evidenced in the Financeability Report, a key criterion for financeability is that the notional efficient company should be able to manage business risks and withstand significant, but plausible downside scenarios.[656] Testing financial resilience through analysis of downside scenarios reflects standard market practice and is a pre-condition for investors to commit capital. This has been recognised by the CMA and regulators.[657]

1092. The need for a robust and comprehensive downside analysis is crucial in the context of the Totex gap (of c.5.7%)[658] between our BP19 and the allowances set under FD19 and the asymmetry inherent in the regulatory framework. Specifically in: the specification of penalty and reward rates on ODIs; the calibration of caps and collars on PCs; and the specification of cost sharing factors. This would mean that the company would be exposed to more downside exposure than upside potential in the base case, which would undermine financeability.

655 *Moody's – Rock of low returns meets hard place of covenants, 8 October 2019, SOC393, p.3.*
656 *KPMG – Financeability of Northumbrian Water under the PR19 Final Determination, March 2020, SOC285, Section 3.2.*
657 *Bristol Water PR14 CMA Decision, SOC336, para. 11.52; RIIO-ED1:FD, SOC331.*
658 *Ofwat FD19: securing cost efficiency technical appendix, SOC417, Annex 1, Table A1.1.*

1093. In combination with the stretching PC targets and the calibration of caps and collars on PCs, this would mean that on a mean-expected basis, as an efficient company, we may not be able to meet our BP19's requirements, deliver on the performance targets set by Ofwat, and recover our costs without expecting a material negative financial impact on projected returns to our equity holders and a signification deterioration in our coverage ratios and debt financeability position.

1094. The Financeability Report includes the results of downside scenario analysis that is conducted on Ofwat's prescribed scenarios as well as our company specific scenarios. These include:[659]

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

1095. NWL specific scenarios:[660]

- Opex overrun – Ofwat: 10% underperformance each year;
- Capex overrun – Ofwat 10% underperformance each year;
- Totex: 3% Totex underperformance each year;
- Operational incident: This would result in a £25m Opex shock in 2021;
- C-MeX and D-MeX penalties: 2.4% of residential revenue each year;
- C-MeX and D-MeX penalties: 1.2% of residential revenue each year; and
- Combined scenario: Assumes: 1) a 3% ODI penalty in 2020/21; (2) Capex and Opex overspend of 3%; and (3) a phased increase in the cost of new debt by 0.2% per annum over AMP7;
- P10 ODI penalties: ODI penalty of 2.1% of RoRE; and
- P10 Totex overrun: Totex under-performance of c. 6%.

1096. The figures below present the impact of the downside scenarios for both the Ofwat FD base case (excluding PAYG adjustments), and the base case including the additional costs incurred.

1097. The company's investment grade credit rating would be at risk if AICR is projected to fall below 1.1x. Credit rating downgrades are likely to have negative implications for the business such as: higher financing costs on new debt, increased likelihood of covenants being triggered, and a challenge for the business to reverse the credit rating downgrade.

1098. Ofwat has recently strengthened the regulatory ring-fence to require all companies to maintain an investment grade credit rating. A cash lock-up which would be triggered if the rating is not investment grade or Baa3 with negative outlook, which would restrict the company from making dividend payments. [661] An adjustment is therefore made to the Ofwat model such that if AICR drops below 1.1x, dividend payments are locked-up.

1099. Where AICR drops below 1.2x (light red/pink), this would imply a Baa3 rating. However, where the AICR drops below 1.1x (red), it is likely the investment grade rating would be at risk.

659 Ofwat – Putting the sector back in balance – summary of Ofwat's decision on issues for PR19 business plans, 3 July 2018, SOC221, p.4.
660 BP19 (ed.04.19), Appendix 8.2, Stress Test Evidence, March 2019, SOC087.
661 Ofwat – Conclusions on strengthening the regulatory ring-fencing framework, 9 July 2019, SOC232, p.12.

1100. Under Ofwat's FD19 'base case', the results show that several plausible but severe scenarios (such as: Ofwat's Totex overspend, Ofwat combined scenario, Ofwat's increase in interest rate scenario and our Opex overspend and ODI scenarios) could result in an AICR that is just at or below 1.1x, which could put our investment grade rating at risk.

1101. In addition, a number of combinations scenarios are likely to result in a downgrade of at least one notch from the Baa2 rating implied in the Base Case. For example, our combined scenario – which assumes a combination of modest Totex, ODI and interest rate downsides – would result in an AICR of 1.08x on average across AMP7, which would imply that the minimum investment grade rating (Baa3) would be at risk.

1102. Projected AICR under several plausible but severe scenarios such as Ofwat's 10% Totex overspend scenario, our Operating Expenditure (**Opex**) overspend and the P10 ODI scenario would drop to c. 1.10x, which is the minimum threshold for a Baa3 rating under Moody's methodology and highlights the limited headroom available for management of risk.

Table 60: Projected metrics – implications of downside scenarios under Ofwat's FD19 base case (excluding the impact on AICR from adjusted PAYG rates)

Scenario indicator	Case Name	AICR (Moody's)	Net debt / RCV (Moody's)	FFO / Net debt (S&P)
NWL	Base Case	1.43x	59.5%	9.0%
Ofwat	Totex overspend	1.10x	61.8%	7.8%
Ofwat	ODI penalties	1.30x	60.5%	8.5%
Ofwat	Penalty (Appointee revenues)	1.39x	59.8%	8.8%
Ofwat	Bad debt cost shock	1.42x	59.6%	9.0%
Ofwat	High inflation	1.61x	57.5%	9.7%
Ofwat	Low inflation	1.28x	61.8%	8.3%
Ofwat	Debt refinancing	1.07x	57.6%	8.1%
Ofwat	Combined scenario	0.79x	61.2%	6.8%
NWL	Opex overspend	1.10x	59.8%	8.0%
NWL	Capex overspend	1.43x	61.2%	8.8%
NWL	Totex downside 3%	1.32x	60.6%	8.6%
NWL	Operational incident	1.36x	60.0%	8.7%
NWL	C-MeX and D-MeX penalties (2.4%)	1.37x	59.9%	8.8%
NWL	C-MeX and D-MeX penalties (1.2%)	1.40x	59.7%	8.9%
NWL	NWL Combined scenario	1.08x	59.4%	8.0%
RoRE	Totex for low RoRE	1.20x	61.7%	8.1%
RoRE	ODI for low RoRE	1.08x	57.7%	8.1%

Source: KPMG (2020), 'Financeability of Northumbrian Water under the PR19 Final Determination', March

1103. Overall, the results of the financeability analysis are significantly worse when financial projections include the additional costs and penalties we expect to incur under Ofwat's FD as illustrated in the table below.

1104. The majority of our modest and plausible downside scenarios (for example the operational incident shock in 2021 and C-Mex and D-Mex penalties) result in projected AICR below the 1.3x threshold for Baa2 and under a number of scenarios indicate a weak Baa3 rating.

1105. Several scenarios result in metrics substantially below the minimum threshold to service debt, with significant negative headroom (shortfall).

1106. The AICR of 1.0x is specified by Ofwat as the minimum level consistent with a financeable plan. In practice, the company would not be financeable with no headroom above 1.0x.

1107. The projected levels of AICR are in a number of the scenarios considered substantially worse than the 1.1x threshold assumed for maintaining the lowest investment grade credit rating (Baa3). This means that our investment grade credit rating would be at risk in these realistic outturn scenarios.

1108. Under a Totex overspend scenario of 3%, AICR would deteriorate to 1.16x and imply a Baa3 rating. We developed this scenario based on our BP19 (ed.03.19) which assumed; 1) the company would receive a higher Totex allowance (5.7% more than the current FD allowance), and 2) less challenging performance targets on PCs. Taken together, these would imply that the 3% under-performance scenario is in fact an understatement given a FD that is significantly more challenging to what the company had assumed during BP19 submissions. The 3% Totex overspend scenario is for example considerably lower than Ofwat's prescribed scenario of 10% as well as the 5.7% Totex gap between our BP19 and the FD.

1109. Moreover, our 3% Totex overspend scenario is lower than observed under-performance exhibited by companies such as Thames Water and United Utilities across AMP6 (6% and 7% respectively).[662] This suggests that Totex overspend of at least 6% would be plausible across AMP7, where risks inherent in meeting stretching performance targets and material challenges on Totex efficiency have increased. A more severe but realistic Totex scenario based on observed sustained under-performance at PR14 would result in projected metrics below minimum investment grade thresholds.

1110. In addition, in several scenarios, the FFO/Net Debt ratio is also under pressure, falling to levels consistent only with a BBB credit rating (S&P).

1111. Overall, the results of this test show that the notional company, under the FD and incurring additional costs on a mean expected basis, would not be able to withstand a number of plausible downside scenarios tested.

Table 61: Projected metrics – implications of downside scenarios under the base case including additional costs

Scenario indicator	Case Name	AICR (Moody's)	Net debt / RCV (Moody's)	FFO / Net debt (S&P)
NWL	Base Case	1.26x	61.6%	8.3%
Ofwat	Totex overspend	1.00x	61.4%	7.5%
Ofwat	ODI penalties	1.14x	62.5%	7.8%
Ofwat	Penalty (Appointee revenues)	1.22x	61.9%	8.2%
Ofwat	Bad debt cost shock	1.25x	61.6%	8.3%
Ofwat	High inflation	1.40x	59.5%	9.0%
Ofwat	Low inflation	1.14x	63.9%	7.7%
Ofwat	Debt refinancing	0.95x	59.7%	7.3%
Ofwat	Combined scenario	0.64x	63.5%	6.0%
NWL	Opex overspend	1.00x	59.7%	7.6%
NWL	Capex overspend	1.26x	63.2%	8.2%
NWL	Totex downside 3%	1.16x	62.6%	7.9%
NWL	Operational incident	1.20x	62.0%	8.1%
NWL	C-MeX and D-MeX penalties (2.4%)	1.20x	61.9%	8.1%
NWL	C-MeX and D-MeX penalties (1.2%)	1.23x	61.7%	8.2%
NWL	NWL Combined scenario	0.95x	61.5%	7.3%
NWL	Totex for low RoRE	1.10x	61.3%	7.8%
NWL	ODI for low RoRE	0.95x	59.7%	7.5%

Source: KPMG (2020), 'Financeability of Northumbrian Water under the PR19 Final Determination', March

1112. The analysis of specific scenarios is supplemented by reverse stress testing. In this case, rather than test for a specific downside scenario, the analysis considers the maximum potential downside exposure that a company can sustain over the price control period. The maximum downside that can be sustained is defined as the level of shock required for projected metrics to deteriorate to the relevant thresholds for the minimum investment grade credit rating (Baa3/BBB).

1113. The level of headroom implied by the reverse stress-testing is calculated with reference to an AICR threshold of 1.1x in order to determine the magnitude of downside shock required to breach the threshold.

662 Ofwat – Service delivery report, October 2019, SOC209. Reflects Totex underperformance between 2015 and 2019.

1114. The results of the test suggest that a Totex overspend of 10% is required in Ofwat's FD19 base case for the projected metrics to deteriorate to a level commensurate with a Baa3 rating, i.e. Ofwat's prescribed downside scenario on Totex. The equivalent figure for the base case including the additional costs is a Totex overspend of c.5%. These scenarios would impose significant financeability challenges for the company. A c.5% Totex overspend is considered to be a plausible scenario given that in AMP6, which represents a less challenging settlement that FD19, Totex underperformance for two of the largest companies, Thames and United Utilities, was 6% and 7% respectively.[663]

1115. Overall, it is likely based on the FD19 and under the notional financing structure, we will have limited financial headroom to manage risk, and will not be resilient to plausible downside scenarios. Plausible, realistic downside scenarios would lead to financial difficulty and/or financial distress given the level of financial headroom available based on the FD.

1116. This poses a material risk for consumers, as: (1) a downgrade could impact on our ability to access capital markets and undermine delivery of the plan; (2) could incentivise risk-averse behaviour from the company, with negative consequences for the delivery of core customer objectives and company performance; and (3) some downside scenarios could result in covenants and cash-lock ups being triggered, which would restrict dividends to equity, and consequently have a negative impact on equity financeability.

1117. As discussed in the Financeability Report, similar results and conclusions are made for the financeability assessment under the actual structure.

10.7.4 Uncertainty mechanisms

1118. Ofwat has stated that there are provisions in place which allow price limits to be re-opened in certain limited circumstances where a materiality thresholds has been exceeded, and that such risk mechanisms are in place to protect companies.[664] These are outlined below:[665]

- Reopening of price limits under certain limited circumstances where a materiality threshold has been exceeded ('interim determinations');
- Inflation indexation of revenues;
- Volume-based reconciliation mechanisms that limit exposure of companies to revenue risk; and
- Reconciliation mechanisms at the end of the AMP, which correct for under or over recovery of revenue.

1119. While Ofwat has a range of reconciliation mechanisms, these are not effective in addressing the financeability concerns as discussed below.

1120. Reopening of price limits require a significant materiality threshold to be breached, which is not met under the scenarios modelled. As discussed below, this would require; 1) thresholds being breached on Notified items, which are not relevant for NWL as Ofwat did not specify Notified items; 2) NWL incurring higher costs due changes in circumstances – this is not expected in the downside scenarios and even if they were, the materiality threshold is sufficiently high and unlikely to be breached; and 3) additional costs incurred due to unforeseen circumstances, which also have a very high materiality threshold (20% of turnover) that is unlikely to be breached.

1121. The downsides modelled include Ofwat's prescribed downside scenarios. It is unlikely that Ofwat will have prescribed downside scenarios that will warrant a re-opening of the price control under the FD.

1122. A company can ask Ofwat to reset its price limits between five-yearly price reviews if specific changes lead to a significant reduction in revenues or increase in costs. This is referred to as an interim determination and is relevant for Notified items and a Relevant Change of Circumstances.[666] These are summarised below:

663 Ofwat – Service delivery report, October 2019, SOC209, p.7. Reflects Totex underperformance between 2015 and 2019.

664 Ofwat – Reference of the PR19 final determinations: Cross-cutting issues, March 2020, SOC243, p.28.

665 Ofwat – Reference of the PR19 final determinations: Cross-cutting issues, March 2020, SOC243, p.23.

666 For example, Ofwat – Final Determination of Thames Water's IDoK application, November 2013, SOC213.

- Notified Items: These are specified in the FD and could, subject to relevant thresholds being met, lead to a change in the level of price controls through an interim determination. Ofwat has not specified any Notified Items for NWL.[667]
- Relevant Change of Circumstances (**RCC**): In this case if there are changes in law result in the company incurring higher costs, then there could be an interim determination. Specifically, for NWL, variations in value received or expected to be received from the relevant disposals of land will constitute a RCC.[668]

1123. However, if there are unforeseen circumstances, companies can ask Ofwat for changes in its price limits if such circumstances substantially increases any of its costs or revenues.

1124. The table below summarises the materiality thresholds, for the three categories outlined above, under which Ofwat will consider a change to price limits. If the materiality tests are passed, then Ofwat will examine the application and may adjust its price limits. Overall, the scenarios do not breach the materiality thresholds and as such would not trigger these mechanisms.

Table 62: Summary of materiality thresholds on Uncertainty Mechanisms and the implications for scenarios

Uncertainty Mechanism	Materiality threshold	Implications for scenarios
Notified Items	Ofwat considers that if changes in costs, receipts or revenues are at least equal to 10% of the company's turnover, then the application is material. The company also has to pass 'Triviality', i.e. if the value of a change relating to one issue is less than 2% of the company's turnover, then this is not included in the materiality test.	Not applicable for NWL as Ofwat has not set Notified Items
Relevant change of circumstances		Scenarios modelled do not breach this threshold
Substantial effects	Ofwat considers whether the application is sufficiently material, defined as 20% of company turnover.	

Source: Ofwat. 'Interim determinations', Available: https://www.ofwat.gov.uk/regulated-companies/price-review/interim-determinations/. Ofwat. 'Substantial effect determinations'. Available: https://www.ofwat.gov.uk/regulated-companies/price-review/substantial-effect-determinations/

1125. Ofwat has not re-opened any price controls in the past seven years, with the last case being opened by Thames Water in 2013 which was rejected by Ofwat.[669]

1126. While Ofwat's risk mitigants protect us from volume risk, this would not mitigate the risks under the downside scenarios modelled since the scenarios are not driven by volume.

1127. The reconciliation mechanisms at the end of the price control, for example the true-up on cost over-runs (post sharing) allow companies to recover a share of any under-performance on Totex in the next AMP. However, the company would still have to fund the additional costs and incur the additional cost of doing so in the current AMP. This would have implications for financeability. Moreover, rating agencies base the calculation of projected metrics on company cash flows and annual reports, which adhere to accounting standards and do not reflect the regulatory true-up mechanisms on an accruals basis. Relatedly, on costs, the true-up is exacerbated by the asymmetric sharing factors.

1128. Overall, uncertainty mechanisms cannot therefore be considered as a credible defence and are not effective mitigants in addressing financeability concerns resulting from the downside scenarios assessed.

10.8 PROPOSED REMEDIES

1129. Where FD19 fails the robust financeability tests, it is necessary to consider what can be done to address the underlying issues, including adjusting some of the regulatory assumptions and allowances to ensure financeability.

1130. When assessing our financeability under FD19 and determining appropriate remedies, the CMA should consider first:

667 Ofwat – Notification of the final determination of price controls for Northumbrian Water, December 2019, SOC184, Annex 1.
668 Ofwat – Notification of the final determination of price controls for Northumbrian Water, December 2019, SOC184, Annex 1.
669 Ofwat – Final Determination of Thames Water's IDoK application, November 2013, SOC213, p.1.

- re-calibrating Totex allowances such that the notional company is able to recover efficiently incurred costs and deliver on its plan;
- re-calibrating other parameters, such as the performance targets on PCs; and
- setting the correct allowed return by estimating the cost of capital based on robust market evidence and reflecting the level of risk presented by the other elements of the package.

1131. Following a bottom-up re-determination of each of these components, the CMA should consider the financeability of the notional efficient company using the updated parameters.

1132. This is consistent with the approach CMA applied to the Bristol Water PR14 Decision:

"We have made an assessment of Bristol Water's wholesale Totex requirements and its financing costs. In doing so, we have determined a reasonable level of costs that Bristol Water could be expected to incur. If these estimates are reasonable, then Bristol Water should be able to finance its functions, since it will be able to raise finance at our assumed rates, and meet its operational and investment requirements".[670]

1133. The financeability assessment needs to be re-conducted after implementing these adjustments.

10.8.1 Remedies that would not be effective in addressing financeability

1134. As set out in the Financeability Report, the following remedies would not be effective in addressing our financeability issues.

10.8.1.1 Acceleration of cashflows through use of levers such as PAYG ratios and run-off rates

1135. Ofwat's proposed mitigants for financeability challenges at FD19 are PAYG and Run-off levers, which can be used to shift revenue between periods and address financeability concerns on a NPV neutral basis.

1136. The regulatory framework needs to be sustainable, that is the determination needs to be set with a view on long-term financeability considering both current and future customers. For example, mitigants proposed to address financeability concerns need be sustainable in the long term, and should address current financeability concerns without shifting these to a future date. A key indicator of this is whether such mitigants are overlooked by rating agencies.

1137. It is an appropriate (if high) hurdle for departing from the natural rate or accelerating cashflows to be supported by a robust impact assessment that shows that changes to the regulatory framework promotes economically efficient market outcomes, remedies potential distortions and creates value for customers.

1138. There are economic consequences of adjusting PAYG rates, as this will create a mismatch between cost recovery and benefit realisation which will mean an inequitable allocation of costs to current customers. Furthermore, whilst shifting cash flows through adjustments to PAYG and run-off rates away from the natural rate may address financeability concerns in the short term, it could shift these issues to the future.

1139. Potential adjustments to/use of regulatory levers (such as the split between fast and slow money or depreciation) are also designed to provide liquidity for a time-limited period by shifting cash flows over time rates, rather than ensuring financial sustainability.

1140. Improving liquidity in the short- or long-term is not the same as improving creditworthiness or financial viability. Regulatory levers cannot reduce company or asset risk, or improve the financial position of a firm, on a sustainable basis.

1141. Cashflows in any regulatory period must cover the costs of operation, the recovery of and return on investment and provide a buffer against risk. Bringing forward cashflows for financeability suggests that they will effectively be used to provide a buffer against risk, which may imply that these funds are not available for the recovery of capital invested.

670 *Bristol Water PR14 CMA Decision, SOC336, 11.19.*

1142. This suggests that the use of such mechanisms cannot be justified in practice, and material use of PAYG and run-off rates to resolve financeability is unjustifiable in principle.

1143. Rating agencies have indicated that they do not consider adjustments to PAYG as a mechanism to improve financeability and will remove the excess PAYG in calculating company specific ratios. This is because there is a risk that moving away from the 'natural rates' may introduce distortion in financial headroom over time and reduce comparability of metrics across companies. As a result, this does not address financeability concerns in the long-term, and is therefore not likely to be a sustainable solution.

1144. Whilst rating agencies do take PAYG and run-off adjustments into account for some metrics (e.g. FFO/net debt), Moody's and Fitch both adjust projected coverage metrics to exclude the impact of PAYG and run-off adjustments. For example, Moody's states:

"Regulators may provide options for companies to choose a different allocation of fast and slow money to address financeability issues if they are persuaded it would aid the financeability of the notional company. This means that companies can, with the regulator's consent, advance an element of future revenue to receive more cash in a given regulatory period, but this cash will no longer be available in future periods. We aim to disregard these individual adjustments for the purpose of calculating our AICR metrics."[671]

1145. Fitch also stated that they will not consider the excess PAYG in their interest coverage ratios.[672]

1146. There is a more fundamental point. Although shifting cash may improve financial metrics, it does not tackle the underlying financeability issues as such. It does not reduce our risks, and hence does not improve our actual financial position on a sustainable basis.

1147. The CMA has also stated that adjustments to PAYG rates might be unsustainable in the long-term, and may also potentially generate issues with inter-generational equity:

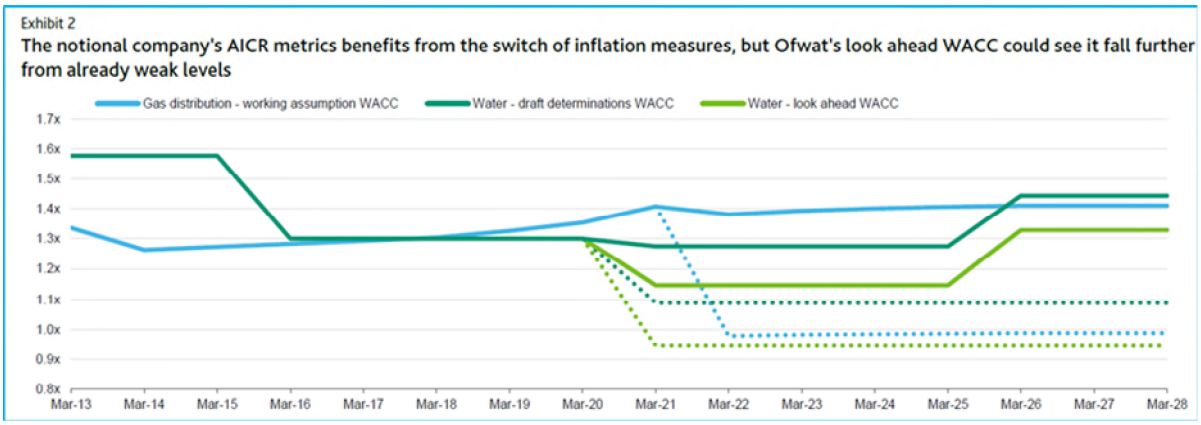
"When deciding the level of revenue taken in this period compared with that retained for the future, it is important to consider the impact on the company and its customers. Moving revenue between regulatory periods (e.g. via PAYG changes) may be NPV neutral. However, if the amounts are excessive then this would be detrimental for both the company ' s long-term financial position (as recognised by the credit rating agencies), and for customers (as inter-generational differences could result in current customers paying more than their fair share)."[673]

10.8.1.2 Full transition to CPIH

1148. The CMA could propose a full transition to CPIH. While the shift to CPIH indexation is NPV neutral, it has the effect of higher cash flows early on compared to RPI indexation. The uplift to cash flows in the short-term will increase headroom and improve the financeability position. Moody's analysis illustrates that the notional company's AICR metric benefits from the switch of inflation measures. The dark green line shows the AICR is slightly below 1.3x in a CPIH world, whereas the dotted dark green line shows AICR at 1.1x in a RPI world.[674]

671 Moody's – Rock of low returns meets hard place of covenants, 8 October 2019, SOC393, p.5.
672 Fitch – Ofwat Price Review Intensifies Pressure on UK Water Sector, July 2019, SOC390.
673 Bristol Water PR14 CMA Decision, SOC336, para. 11.14.
674 Moody's – Rock of low returns meets hard place of covenants, 8 October 2019, SOC393, p.11.

Figure 53: AICR in CPIH and RPI worlds



Source: Moody's (2019), 'Rock of low returns meets hard place of covenants', October, Exhibit 2

1149. However, we do not consider this to be an appropriate approach to the financeability concerns for the reasons set out below.

1150. The improvement in headroom in the short-term is a result of shifting cash flows forward, which will come at the cost of headroom in the future. While in principle this has the same effect as adjusting regulatory levers such as PAYG ratios, we note that unlike adjusting PAYG ratios this would be a significant change to the regulatory regime.

1151. A significant proportion of debt in the sector is index-linked (specifically RPI linked debt). As noted in Ofwat's monitoring financial resilience report, "*for WaSCs, in 2019 an average of 44% of debt was index linked, compared to 47% in 2018. For WoCs, in 2019 an average of 75% of debt was index linked, compared to 72% in 2018.*"[675] Similarly, we have a high proportion of RPI linked debt, ranging from 35% to 48% over the price control, as illustrated in the table below. The proportion of index-linked debt will increase given the inflation accretion year-on-year. A full transition to CPIH would expose us to the risk of a mismatch in revenues and debt costs given that our revenues would be entirely linked to CPIH, but our debt costs are linked to RPI. A non-constant wedge between RPI and CPIH would therefore expose us to significant risk. Moreover, we have RPI linked debt that will be in place as far out as 2040, and therefore will need more time to make the transition.

Table 63: Proportion of index-linked debt

	2020/21	2021/22	2022/23	2023/24	2024/25
Fixed rate debt (opening)	1,831	1,803	1,776	1,949	1,787
Floating rate debt (opening)	30.5	27.1	23.6	20.2	16.7
Index-linked debt (opening)	1,024	1,148	1,276	1,409	1,646
Proportion of index-linked debt	35%	39%	42%	42%	48%

Source: App19 data tables

1152. In order to hedge against this risk, we would need to enter into swap agreements to match our debt payments to the CPIH linked revenue stream. However, given that the CPIH linked market is relatively new and still developing, such agreements would be relatively expensive. While we have not sought to quantify this, we note there is evidence which suggests that this is the case. For example, the Pension Insurance Corporation, estimated that; bid-ask spreads quoted by banks on 20 and 30-year CPI swaps tend to be around 20bps, compared to just 5bps for RPI swaps of the same maturities. This would imply a 15bps liquidity premium for CPI swaps over RPI swaps.[676]

1153. However, even if this market was fully developed, we would have to incur additional costs to enter into these arrangements that have not been allowed for in revenues.

1154. Given that the switch to CPIH represents a significant change to the regulatory approach, we consider that it is prudent to allow companies to transition into it. This was also recognised by Ofwat in its decision to adopt a phased transition to CPIH.

675 Ofwat – Monitoring Financial Resilience Report 2018-2019, 9 January 2020, SOC239, p.14.
676 Pension Corporation – Investment Implications of RPI to CPI, September 2011, SOC300, p.8.

"Our decision to adopt a transition reflected concerns raised at the time by companies and their investors about the need for a managed transition and also reflected considerations about the potential impact on customer bills of an immediate switch."[677]

1155. The (phased) transition to CPIH indexation, is likely to mask the extent of the financeability challenge since RPI linked revenues are lower than CPI linked revenues initially, but higher in future price controls. The switch from RPI to a phased CPIH indexation would therefore already show a better financeability position than what would have been seen if revenues were linked to RPI.

1156. It is important to consider the impact on bills of a faster transition to CPIH. A full transition to CPIH would lead to an increase in customer bills in the short term. This would be in addition to the relatively higher consumer bills from Ofwat's partial transition to CPIH from RPI. Therefore, a full transition to CPIH is likely to have an inter-generation impact.

1157. It has also been recognised that a faster transition could also have an impact on the NPV neutrality, which would need to be appropriately assessed. Specifically, in a paper prepared for Ofwat, Oxera states:

"However, we are mindful of the potential bill impact of a fast transition, and the impact that this appears to have on the perceived credibility of Ofwat's NPV – neutrality commitment. Therefore, on balance, there is a credible case for some form of transition of the RCV indexation."[678]

1158. A full transition to CPIH would create comparability issues across the industry, where some companies would have a 50% transition to CPIH whereas others would have a 100% transition. This would make the overall mechanics across the industry more complicated, which are particularly relevant for rating agency comparisons and where companies have different arrangements for hedging of index-linked debt.

10.8.1.3 Changes to notional structure

1159. It could be argued that changes to the notional capital structure, in particular through a reduction in the notional level of gearing, could be used to reduce the debt service requirement, increase financial headroom and reduce the magnitude of the financeability challenge. However, this is not a robust solution to addressing financeability issues.

1160. Adjustments to the notional structure, for example through changing the level of gearing, are likely to be arbitrary and would introduce a material wedge between the actual financing structure adopted and the notional financing structure in previous controls. This inconsistency is particularly important for the actual financing structure which has been directly influenced by the notional gearing assumption set in previous controls.

1161. It would also critically change the ratio of embedded to new debt, which would result, based on the current FD19 WACC, in unfunded financing costs and a deterioration of credit metrics if notional gearing assumed was reduced. It would therefore not alleviate the problem

1162. Moreover, it is unlikely that equity holders would be willing to inject significant amounts of additional equity to fund the shortfall.

1163. A reduction in the notional dividend yield is also not considered to be an appropriate solution. The principle is that this would free up the cash flows that are restricted for dividend payments, which would alleviate the strain on debt and interest repayments, increase headroom in ratios and improve the debt financeability position. However, this does not consider the implications for a holistic financeability assessment as it fails to take into account equity financeability. A notional dividend yield that is below market benchmarks would represent a significant strain on equity financeability. Especially for investors in utilities who expect to earn a return through dividend payments.

677 Ofwat FD19: Aligning risk and return, SOC188, p. 84.
678 Oxera – Indexation of future price controls in the water sector, Water 2020 programme, 31 March 2016, SOC338, p.5.

11 CONCLUSIONS

1164. We are proud of our service to our customers. We have performed well over the last five years, as demonstrated by our operational PCs and cost underspend – but there are challenges ahead in the short and medium term, which we addressed in our business plan.

1165. In our BP19, we developed a bottom-up balanced plan. We conducted detailed customer research that informed the plan and we have responded positively to the challenge from our Water Forums. Our plan balanced:

- the need to stretch our operational outcomes, with minimising the impact on operating costs;
- the interests of future customers through greater resilience, with the interests of current customers who would have benefitted from an overall 15% bill reduction;
- the right incentives to pursue additional cost efficiency and outcome stretch, while still maintaining our key service; and
- the right incentives to invest in the future of the operation, while making returns to shareholders and debtholders reasonable.

1166. Our BP19 was broadly efficient and was financeable; and it provided evidence to Ofwat to enable the right judgements to be made about enhancement projects for the future.

1167. We have sought this reference to the CMA in order to protect the interests of our current and future customers – but we have not taken this measure lightly. We recognise and accept that as a water and waste water monopoly provider, appropriate regulation that balances the different demands on management is essential to ensure that customer interests are promoted. Our central concern with Ofwat's FD19 is that the price control was not appropriately balanced and as we explain in this SoC, the consequences of allowing FD19 to be implemented unchanged would be contrary to our customers' interests.

1168. In this SoC, we have developed the arguments and evidence to demonstrate this lack of balance. Balance is a concept at the heart of the Government's intention for economic regulation in the water sector. **Ofwat's primary and secondary statutory duties require balance in operational and financial outcomes**, in order to serve the interests of customers. The price control needs to enable the *functioning* of the company's own supply statutory duties, while ensuring that the business can *finance* the function, providing *resilience* – in an *efficient* and *sustainable* manner - in order to meet the *consumer objective*. The consequence of not ensuring balance in the price control, could threaten the functioning and financing of the operation; at best, this would store up problems for future customers to resolve in the next price control in five years' time.

1169. The remainder of the SoC has demonstrated how FD19 is imbalanced in component parts of the price control:

- **Working towards the consumer objective:** Ofwat has misinterpreted its Consumer Objective and placed little or no weight on the customer evidence that guided our BP19. For example, FD19 promotes bill reduction over long term risk reduction and resilience – whereas our BP19 was able to offer a significant 15% reduction in bills, while still ensuring resilience investment.

  The consequence of not building a price control based on customer research is that the final result relies on analysts' preferences rather than customers' preferences, thereby threatening the legitimacy of the regulatory process. Rather than continue to drive further deeper relationships with customers Ofwat's approach therefore encourages less engagement in the future- it will not be reflected in Ofwat's decisions if it is not consistent with some other benchmark.

- **Setting the appropriate level of challenge in the round:** We have accepted the efficiency challenge to stretch our business plan base costs by an additional c.3% to the efficient benchmark levels revealed by Ofwat's PR19 process. However, Ofwat has then sought to add significant further cost challenges across the five years, beyond the efficient level, through a number of other analytical inventions, which would amount to a further cut of 3% of our base cost allowances. The cuts implied by these inventions will need to be found from efficiencies elsewhere in our operation.

  In addition, while our BP19 included a 17% stretch to common PC targets, FD19 implies a 23% stretch to targets. In aggregate across AMP 7 for four of the core common service performance targets Ofwat is seeking a rate of improvement that is more than double what the sector has achieved in the recent past.

We want to take on the challenge set by FD19 to stretch our future performance. However, we note that this can only be made harder through the cuts to costs beyond the efficient benchmark level.

We want to stretch ourselves, for the sake of our customers. However, the consequence of unachievable cuts beyond the efficient benchmarked level of costs could mean that we will not be able to provide for the performance outcomes for current customers or at worst, to invest in the necessary capabilities to serve our future customers.

- **Setting the right incentives:** Given that we are accepting a significant challenge, the remaining targets and incentives need to be achievable and set to incentivise improved outcomes. We demonstrate the flaws in the design of the leakage PC, cost sharing rates and the ODI rewards cap for incentivising improvements over time.

  The consequence of imbalance in the incentives structure could result in worse outcomes for our customers, and a missed opportunity to seek long term improvements in our service, which would not be in our customers' interests.

- **Furthering the Resilience Objective:** In our BP19, we set out the evidence in support of investment in the water and waste operations, for the sake of our future customers. The projects highlighted in this SoC were rejected by Ofwat, as it sought to increase bill reduction to 24% overall.

  The consequence of not investing in resilience at this stage would be to increase the risks associated with flooding and fail to achieve the wide range of customer benefits offered by the Abberton to Hanningfield scheme in the future. This is unwarranted when these projects can be funded alongside a significant bill reduction that was supported by customers, as demonstrated in our BP19. If we do not invest at this stage, then we would benefit current customers, who would see a larger bill reduction, but damage the interests of future customers, who would suffer from higher risk and less long term resilience.

- **Setting the appropriate cost of capital:** We have provided evidence to the CMA to demonstrate that Ofwat's approach to setting the WACC has a number of errors, particularly in the choice of some of the underlying data, which results in impacts that suppress the component parts of the WACC calculation.

  The consequence of imbalance and incorrectly setting the WACC are that the interests of current customers, who benefit from lower bills, are promoted at the expense of future customers, who benefit from efficient investment, when it is correctly incentivised. A fair return to equity and debt investors promotes the long term health of long term assets, which overall is in the interests of our customers.

- **Taking account of new information:** We provide information about further cost challenges, which have arisen since Ofwat set FD19, and whose inclusion in the price control should be non-contentious. The consequence of not including these cost items in the price control would result in the diversion of c.£45m needed to secure customer outcomes, which would not be in the customers' interests.

- **Ensuring that NWL can finance its functions:** Finally, we demonstrate how FD19 would not enable the company to finance its statutory functions, given an assessment of feasible risks, together with a fair buffer – particularly, as Ofwat has sought to solve financeability merely by advancing significant revenue, which delays the key decisions of this price control to burden future customers.

  Ensuring financeability is one of Ofwat's statutory duties and the constraint on financeability in FD19 is symptomatic of the imbalance across the price control decision. The consequence of a non-financeable price control would be that customer outcomes and investment could be impacted, which acts against the interests of customers. We have provided analysis to the CMA about the realistic scenarios to consider when assessing financeability and we ask the CMA to ensure that its final decision is itself financeable.

1170. We operate a complex operation with a good service for our customers and we want to do even better in the future. We know what balance in a price control means on the ground, because we take the difficult decisions on a day to day basis to continually improve our service. We provided Ofwat with a balanced business plan and through the PR19 price control review, we have accepted significant additional challenge for the next five years – which we are not seeking to overturn through the CMA's process. However, in this SoC, we have demonstrated how FD19 is imbalanced, with significant consequences, against the intention of Ofwat's duties and the interests of our current and future customers.

1171. We ask the CMA to consider carefully the points made in this SoC and we commit to working closely and promptly with the CMA to ensure that the right decision is made for the future of our operation.

APPENDIX ONE: GLOSSARY

Term	Meaning
"**Acorn**"	Consumer classification system which segments the UK population.
"**A-CoD**"	Allowed Cost of Debt
"**A-CoE**"	Allowed Cost of Equity
"**A-WACC**"	Allowed Return or Allowed Weighted Average Cost of Capital
"**AAD**"	Advanced Anaerobic Digestion
"**AICR**"	Adjusted Interest Cover Rate
"**AMP**"	Asset Management Period: the price controls for a water company for a five-year period.
"**AMP6**"	Asset Management Period between 2015 and 2020.
"**AMP7**"	Asset Management Period between 2020 and 2025.
"**Appointee**"	A WaSC or WAC which has been appointed by Ofwat as a licensee under the WIA.
"**APR**"	Annual Performance Reports
"**Aqua**"	Aqua Consultants Limited
"**BEIS**"	Department for Business Energy and Industrial Strategy
"**Big 6**"	The six largest energy suppliers in the UK: British Gas, EDF Energy, E.ON, Npower, Scottish Power and SSE
"**Board**"	NWL's Board of Directors.
"**Botex**"	Base expenditure
"**Botex plus**"	Base expenditure model which includes growth enhancement expenditure
"**BP19**"	NWL's Business Plan for PR19. There have been three editions, which are denoted in the draft as follows: BP19 (ed. 09.18) BP19 (ed.03.19) BP19 (ed.08.19)
"**BR**"	Bioresources
"**BR1**"	Ofwat base cost model #1 for Bioresources
"**BR2**"	Ofwat base cost model #2 for Bioresources
"**BRP**"	Ofwat base cost model for Bioresources Plus which includes sewage treatment
"**BRP1**"	Ofwat base cost model #1 for Bioresources Plus
"**BRP2**"	Ofwat base cost model #2 for Bioresources Plus
"**Bristol Water PR09 Decision**"	CMA's redetermination of Bristol Water's PR09 price control. Final determination dated 14 September 2010
"**Bristol Water PR14 Decision**"	CMA's redetermination of Bristol Water's PR14 price control. Final determination dated 21 October 2015
"**CAA**"	Civil Aviation Authority
"**CAB**"	Citizens Advice Bureau
"**CAGR**"	Compound Annual Growth Rates
"**Capex**"	Capital expenditure
"**CAPM**"	Capital Asset Pricing Model
"**CC**"	Competition Commission, former name for the CMA
"**CCC**"	The Committee on Climate Change
"**CCG**"	Customer Challenge Group, NWL's CCGs are the Water Forums.
"**CCWater**"	Consumer Council for Water
"**CEO**"	Chief Executive Officer
"**Chigwell Agreement**"	Water trading agreement made between Metropolitan Water Board (succeeded by Thames Water) and the South Essex Waterworks Company (succeeded by NWL). May 1963. As amended by the water trading agreement made between NWL and Thames Water. 1 September 2014. As amended by the deed of variation to the September 2014 agreement. 2018.

"**CIS**"	Capital Incentive Scheme: a scheme introduced by Ofwat in PR09 to give water companies an incentive to forecast their Capex as accurately as possible.
"**CKHH**"	CK Hutchison Holdings Limited
"**CKI**"	CK Infrastructure Holdings Limited
"**CMA**"	Competition & Markets Authority, formerly known as the Competition Commission (CC).
"**CMF**"	Company Monitoring Framework
"**C-MeX**"	Customer measure of experience
"**CoC**"	Cost of Capital
"**CoD**"	Cost of Debt
"**CoE**"	Cost of Equity
"**COLI**"	Cost of Living Index
"**Consumer Objective**"	The duty on Ofwat under section 2(2A) of the WIA to exercise and perform its powers and duties under the WIA in the manner which it considers is best calculated to further the consumer objective.
"**COVID-19**"	Coronavirus Disease 2019, a disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2).
"**CP5**"	Control Period 5 for the price control for Network Rail
"**CPI**"	Consumer Price Index
"**CPIH**"	Consumer Prices Index Including Owner Occupiers' Housing Costs
"**CRT**"	Canals & Rivers Trust
"**DAF**"	Dissolved Air Flotation
"**DD**"	Draft determination: produced by Ofwat during each periodic price review, serving as the basis for consultation on the price limits for each water company. Each individual DD is referred to by adding the year of the DD (e.g. DD09, DD14, etc.)
"**DD19**"	Ofwat's draft determination of NWL's price limits for during PR19, dated 18 July 2019.
"**Defra**"	Department for the Environment, Food and Rural Affairs
"**Deloitte**"	Deloitte Touche Tohmatsu Limited
"**D-MeX**"	Developer Services Measure of Experience
"**DPCR5**"	Ofgem Distribution Price Control Review period 5 (between 2010 and 2015)
"**DSR**"	Demand side response
"**DWI**"	Drinking Water Inspectorate
"**EA**"	Environment Agency
"**EI**"	Economic Insight Limited
"**EOETS**"	Ely Ouse to Essex Transfer Scheme
"**ESW**"	Essex & Suffolk Water – trading name of Northumbrian Water Limited in the South East of England.
"**Europe Economics**"	Europe Economics Research Limited
"**Explain Market Research**"	Explain Market Research Limited
"**FD19**"	Ofwat's final determination of water companies' price limits for the period 1 April 2019 to 31 March 2025, dated 16 December 2019.
"**FFO**"	Funds From Operations
"**Financeability Report**"	KPMG report 'Financeability of Northumbrian Water under the PR19 Final Determination', dated March 2020 (SOC285)
"**Financing Duty**"	Ofwat's duty under section 2(2A) of the WIA to exercise and perform its powers and duties under the WIA in the manner which it considers is best calculated to secure that companies holding appointments under Chapter 1 of Part 2 of this Act as relevant undertakers are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of those functions.
"**Fitch**"	Fitch Ratings

"**Functions Duty**"	The duty on Ofwat under section 2(2A) of the WIA to exercise and perform its powers and duties under the WIA in the manner which it considers is best calculated to secure that the functions of a water undertaker and of a sewerage undertaker are properly carried out as respects every area of England and Wales.
"**G&C model**"	Grants and Contributions NES model
"**GDPCR1**"	Ofgem's First Gas Distribution Price Control Review (2008 – 2013)
"**Gearing**"	A company's net debt expressed as a percentage of its total capital.
"**GFC**"	Global Financial Crisis (2008)
"**GSM**"	Gearing Sharing Mechanism
"**Habitats Directive**"	Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora
"**HH**"	Household
"**HS1**"	ORR's High Speed 1 periodic review and access charges review
"**IAP19**"	Ofwat's Initial Assessment of Plans for PR19, dated 31 January 2019
"**IED**"	Industrial Emissions Directive
"**IER**"	Independent expert report on allowed returns; KPMG report 'Estimating the cost of capital for PR19' dated March 2020 (SOC416)
"**INED**"	Independent Non-Executive Director
"**Interim Index of Retail Prices**"	A predecessor price index to the Retail Prices Index
"**IQI**"	Information Quality Incentive
"**JKM**"	The Jacquier Kane Markus estimator method
"**K-factor**"	Financial model which determines the adjustments to price limits.
"**KOA**"	Kielder Operating Agreement
"**KPMG**"	KPMG LLP
"**KSF**"	Kielder Source Factor
"**KTS**"	Kielder Transfer Scheme
"**Licence**"	The instrument appointing NWL as a water undertaker (or water and sewerage undertaker) under Part II of the WIA.
"**LKSF**"	Li Ka Shing Foundation Limited
"**Met Office**"	The Meteorological Office
"**ML/day**"	Million litres (or mega litres) per day
"**Moody's**"	Moody's Investors Service
"**MRS**"	Market Research Society
"**NACE II**"	European Classification of Economic Activities Revision 2
"**National Debtline**"	A debt advice charity hotline, run by the Money Advice Trust
"**NAO**"	National Audit Office
"**NATS**"	NATS (En Route) plc (previously called National Air Traffic Service)
"**NEA**"	National Energy Action
"**NED**"	Non-Executive Director
"**NEP**"	A programme of work covering the expected requirements under Phase 5 of the EA's National Environment Programme. Making adequate provision for the activities expected in the 2015-20 plan period under NEP is a requirement of PR14, as set out in Defra's Statement of Obligations.
"**NES**"	Northumbrian Water Limited (old abbreviation) used by Ofwat for Northumbrian & Essex and Suffolk
"**Net Debt**"	Total debt minus cash and cash equivalents
"**Net Zero**"	The UK government's target to bring all greenhouse gas emissions to net zero by 2050.
"**NIC**"	National Infrastructure Commission
"**NIE**"	Northern Ireland Electricity
"**Non-Appointed Business**"	Part of NWL's business which is not covered by Ofwat's appointment / the License
"**Notice of Reference**"	Ofwat's notice referring NWL's FD19 to the CMA, dated 19 March 2020.

"**NPV**"	Net Present Value
"**NUAR**"	National Underground Asset Register
"**NW**"	Northumbrian Water, the trading name of Northumbrian Water Limited in the North East of England.
"**NWG**"	Northumbrian Water Group.
"**NWGL**"	Northumbrian Water Group Limited.
"**NWL**"	Northumbrian Water Limited
"**OBR**"	Office of Budgetary Responsibility
"**ODI**"	Outcome Delivery Incentive
"**Ofgem**"	The Office of Gas and Electricity Markets, the government regulator for the electricity and downstream natural gas markets in Great Britain.
"**Ofwat**"	The Water Services Regulation Authority, The economic regulator of water and sewerage companies in England and Wales.
"**ONS**"	Office of National Statistics
"**Opex**"	Operating expenditure
"**ORR**"	Office of Rail Regulation
"**Oxera**"	Oxera Consulting LLP
"**PAYG**"	Pay As You Go
"**PC**"	Performance Commitment
"**Performance Duty**"	The duty on Ofwat under section 2(2A) of the WIA to exercise and perform its powers and duties under the WIA in the manner which it considers is best calculated to secure that the activities authorised by the licence of a licensed water supplier and any statutory functions imposed on it in consequence of the licence are properly carried out.
"**PPI**"	Producer Price Inflation
"**PR**"	Periodic price review, the process undertaken every five years by Ofwat to determine water company price limits for the next five years. Each individual PR is referred to by adding the year of the PR (e.g. PR09, PR14, etc.)
"**PR04**"	Ofwat's periodic price review for 2004, covering the period from April 2005 until 31 March 2010.
"**PR09**"	Ofwat's periodic price review for 2009, covering the period from 1 April 2010 until 31 March 2015.
"**PR14**"	Ofwat's periodic price review for 2014, covering the period from 1 April 2015 until 31 March 2020.
"**PR19**"	Ofwat's periodic price review for 2019, covering the period from 1 April 2020 until 31 March 2025.
"**PR24**"	Ofwat's periodic price review for 2024, covering the period from 1 April 2025 until 31 March 2030
"**P-Removal**"	Phosphorus removal
"**PwC**"	Price Waterhouse Coopers
"**Q6**"	CAA price control period from 1 April 2014 to 31 December 2019 (Heathrow) / 31 March 2021 (Gatwick)
"**RAG**"	Red Amber Green chart
"**RCC**"	Relevant Change in Circumstance (in relation to interim determinations)
"**RCF**"	Retained Cash Flow
"**RCV**"	Regulatory Capital Value
"**RESET**"	Ramsey Regression Equation Specification Error Test
"**Resilience Objective**"	The duty on Ofwat under section 2(2A) of the WIA to exercise and perform its powers and duties under the WIA in the manner which it considers is best calculated to further the resilience objective.
"**RFR**"	Risk Free Rate
"**RIIO**"	Ofgem Price Controls review period, based on the formula Revenue=Incentives+Innovation+Outputs

"**RIIO-2**"	The next price controls for the network companies running the gas and electricity transmission and distribution networks, based on the formula Revenue=Incentives+Innovation+Outputs.
"**RIIO-ED1**"	The Ofgem price control for electricity distribution. This price control applies from 1 April 2013 to 31 March 2023.
"**RIIO-ED2**"	The next Ofgem price control for electricity distribution following RIIO-ED1. This price control applies from 1 April 2023.
"**RIIO-ET1**"	The Ofgem price control for electricity transmission. This price control applies from 1 April 2013 to 31 March 2021.
"**RIIO-GD1**"	The Ofgem price control for gas distribution. This price control applies from 1 April 2013 to 31 March 2021.
"**RIIO-T1**"	The Ofgem price control for gas and electricity transmission. This price control applies from 1 April 2013 to 31 March 2021.
"**RoRE**"	Return on Regulatory Equity or Return on Retained Earnings
"**RPE**"	Real Price Effect
"**RPI**"	Retail Price Index: a general purpose domestic measure of inflation in the UK.
"**RV**"	Rateable Value
"**SIM**"	Service Incentive Mechanism
"**S&P**"	Standard and Poor
"**Secretary of State**"	Secretary of State for the Environment, Food and Rural Affairs
"**Smart DCC**"	The Data Communications Company
"**SoC**"	NWL's Statement of Case, submitted to the CMA on [2 April 2020]
"**SOSI**"	Security of Supply Index
"**SPS**"	The UK Government's Strategic Policy Statement to Ofwat, published in September 2017.
"**SSF**"	Slow sand filters
"**StepChange**"	StepChange Debt Charity (trading name of the Foundation for Credit Counselling)
"**STW**"	Sewage Treatment Works
"**SUC**"	Standard Unit Charges
"**SWC1**" and "**SWC2**"	Ofwat wastewater base cost models for sewage collection
"**SWT**"	Sewage Treatment
"**TCM**"	Technically Competent Managers
"**TFP**"	Total Factor Productivity
"**TMR**"	Total Market Return
"**Totex**"	Total Expenditure
"**TPCR4**"	Ofgem's gas and electricity transmission price control period ending on 31 March 2012
"**TWD**"	Treated Water Distribution
"**UKRN**"	United Kingdom Regulators Network
"**UKSA**"	United Kingdom Statistics Authority
"**UQ**"	Upper quartile (efficiency target)
"**UR**"	Northern Ireland Utility Regulator
"**UWWTD**"	Urban Waste Water Treatment Directive
"**VOA**"	Valuation Office Agency
"**WACC**"	Weighted Average Cost of Capital
"**WaSC**"	Water and Sewerage Company
"**Water Forums**"	NWL's CCGs.
"**Water Forum Environment Network**"	Specialist Water Forum sub-group, which provided expertise on environmental aspects of BP19
"**Water UK**"	A water industry association, representing UK statutory water supply and wastewater companies.
"**WFD**"	Water Framework Directive
"**WIA**"	Water Industry Act 1991

"**WICS**"	Water Industry Commission Scotland
"**WINEP**"	Water Industry National Environment Programme
"**WPD**"	Western Power Distribution (an electricity distribution network operator)
"**WRMP19**"	NWL's Water Resource Management Plan (2019)
"**WRP**"	Water Resources Planning Guideline issued by the EA, Ofwat, Defra, Welsh Government, June 2012
"**WRP1**"	Ofwat base cost model #1 for water resources plus which also includes raw water distribution and water treatment
"**WRP2**"	Ofwat base cost model #2 for water resources plus
"**WRZ**"	Water Resource Zone
"**WTP**"	Willingness to Pay
"**WTW**"	Water Treatment Works
"**WW**"	Wholesale Water
"**WW1**" **and** "**WW2**"	Ofwat aggregation of base cost models for wholesale water. The aggregation consist of water resources, raw water distribution, water treatment and treated water distribution models.

APPENDIX TWO: INDEX OF SUPPORTING DOCUMENTS

NWL's Statement of Case (as submitted on 2 April 2020) represents NWL's latest position. However, to assist the CMA (and in accordance with the guidance issued in its letter to NWL on 4 March 2020), we have identified the most up to date appendices, financial models and supporting documents across each of our prior Business Plan Submissions (Sept 18, April 19 and Aug 19) in the column titled "*Latest position?*" below.

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
1. NWL Business Plans			
A. BP19 (ed. 09.18), appendices, financial models and additional evidence			
SOC001	BP19 (ed. 09.18)	NES – Living Water: Our Plan 2020-25 and Beyond (September 2018)	No
SOC002	BP19 (ed. 09.18) Video Submission	NES – Video Submission (September 2018)	No
SOC003	BP19 (ed. 09.18) A Guide to our Plan	NES – A Guide To Our Plan (September 2018)	No
SOC004	BP19 (ed. 09.18) Board Assurance Statement	NES – Board Assurance Statement (September 2018)	No
SOC005	BP19 (ed. 09.18) Executive Summary	NES – Executive Summary (September 2018)	No
SOC006	Appendix 1.1 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 1.1, Glossary of Acronyms (September 2018)	Yes
SOC007	Appendix 1.2 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 1.2, Published Documents (September 2018)	Yes
SOC008	Shaping Our Future 2018-40	Appendix 1.2, Published Documents (September 2018), Shaping Our Future 2018-40	Yes
SOC009	Water Forums' Report	Appendix 1.2, Published Documents (September 2018), Water Forums Report (NW) & Water Forums Report (ESW).	No
SOC010	Customer Participation Report	Appendix 1.2, Published Documents (September 2018), From Customer Consultation To A Culture Of Customer Participation Report	Yes
SOC011	NWL 2017 Contribution Reports	Appendix 1.2, Published Documents (September 2018), Our Contribution Reports for 2017	Yes
SOC012	NWL 2018 Contribution Reports	Appendix 1.2, Published Documents (September 2018), Our Contribution Reports for 2018	Yes
SOC013	NWL Customer Strategy 2016 -2020	Appendix 1.2, Published Documents (September 2018), Our Unrivalled Customer Experience Strategy 2016 -2020	Yes
SOC014	NWL Finances Guide	Appendix 1.2, Published Documents (September 2018), Our Finances Explained - Detailed Guide To Our Finances	Yes
SOC015	Tax Strategy	Appendix 1.2, Published Documents (September 2018), Appointed business Tax Strategy (pg 152-153 of Annual Performance)	Yes
SOC016	Responsible Procurement Strategy	Appendix 1.2, Published Documents (September 2018), Responsible Procurement Strategy	Yes
SOC017	NWL Customer Inclusivity Strategy	Appendix 1.2, Published Documents (September 2018), Our Customer Inclusivity Strategy	Yes

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC018	Annual Assurance Plan	Appendix 1.2, Published Documents (September 2018), Annual Assurance Plan	Yes
SOC019	Water Resources Management Plan	Appendix 1.2, Published Documents (September 2018), Water Resources Management Plan (NW)	Yes
SOC020	NW Water Management Plan	Appendix 1.2, Published Documents (September 2018), NW Water Management Plan March 2018.	Yes
SOC021	ESW Water Management Plan	Appendix 1.2, Published Documents (September 2018), ESW Water Management Plan Final August 2019	Yes
SOC022	ESW Water Management Plan Final March 2018	Appendix 1.2, Published Documents (September 2018), ESW Water Management Plans March 2018	Yes
SOC023	NW Drought Management Plan	Appendix 1.2, Published Documents (September 2018), NW Drought Management Plan	Yes
SOC024	ESW Drought Management Plan	Appendix 1.2, Published Documents (September 2018), ESW Drought Management Plan	Yes
SOC025	NWG Trading and Procurement Code	Appendix 1.2, Published Documents (September 2018), NWG Trading And Procurement Code	Yes
SOC026	Board Governance Code	Appendix 1.2, Published Documents (September 2018), Board Governance Code	Yes
SOC027	Terms Of Reference	Appendix 1.2, Published Documents (September 2018), Terms Of Reference	Yes
SOC028	Company Monitoring Framework	Appendix 1.2, Published Documents (September 2018), Company Monitoring Framework: 2017 Assessment	Yes
SOC029	Data Assurance Summary 2018	Appendix 1.2, Published Documents (September 2018), Data Assurance Summary 2018	Yes
SOC030	Appendix 2.1 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 2.1, NWL's Approach to Triangulation (September 2018)	Yes
SOC031	Appendix 2.2 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 2.2, Customer Engagement Executive Summaries (September 2018)	Yes
SOC032	Appendix 2.3 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 2.3, PR19 Research Tool: Striking the Right Balance Between Delivering Business Plan Insights and Cognitively Valid results (Frontier Economics, January 2018)	Yes
SOC033	Appendix 2.4 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 2.4, PR19 Acceptability Research (July 2018)	Yes
SOC034	Appendix 2.5 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 2.5, Our Plan 2020-2025 Essex and Suffolk Water and Northumbrian Water (September 2018)	Yes
SOC035	Appendix 2.6 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 2.6, Long Term Water Quality Plan (September 2018)	Yes
SOC036	Appendix 3.1 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 3.1, Extraordinary Leadership Programme (September 2018)	Yes
SOC037	Appendix 3.2 to BP19 (ed. 09.18)	NWL 2018 Business Plan, Appendix 3.2, Enhancement Business Cases (September 2018)	No

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC038	Appendix 3.3 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 3.3, Our Approach to Void Properties and Gap Sites (September 2018)	
SOC039	Appendix 3.4 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 3.4, Resilience Framework Independent Assessment (PWC, September 2018)	Yes
SOC040	Appendix 3.5 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 3.5, Workforce 2020-25 Strategy (September 2018)	Yes
SOC041	Appendix 3.6 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 3.6, Resilience Assessment Final Report: P19 Too-Critical-To-Fail Sites (September 2018)	Yes
SOC042	Appendix 3.7 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 3.7, Our Drainage & Wastewater Management Plans (DWMPs) Implementation Plan (September 2018)	Yes
SOC043	Appendix 3.8 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 3.8, Digital Vision 2020-2025 (September 2018)	No
SOC044	Appendix 3.9 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 3.9, WINEP Cost Adjustment Mechanism (September 2018)	Yes
SOC045	Appendix 4.1 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 4.1, PR19 Bespoke Performance Commitment Definitions (September 2018)	No
SOC046	Appendix 4.2 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 4.2, Performance Commitments Evaluation (September 2018)	No
SOC047	Appendix 4.3 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 4.3, Data Table Submission Commentary (September 2018)	No
SOC048	Appendix 5.1 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 5.1, Separate Price Controls Analysis (September 2018)	No
SOC049	Appendix 5.2 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 5.2, Review of Bioresources RCV Allocation: An Assurance Report for Northumbrian Water (Economic Insight, April 2018)	Yes
SOC050	Appendix 5.3 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 5.3, Review of Water Resources RCV Allocation: An assurance Report for Northumbrian Water (Economic Insight, May 2018)	Yes
SOC051	Appendix 6.1 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 6.1, Bid Assessment Framework (March 2019)	Yes
SOC052	Appendix 6.2 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 6.2, Bioresources Strategy (September 2018)	No
SOC053	Appendix 7.1 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 7.1, PR19 Wholesale Real Price Effects Analysis and Evidence (Economic Insight, February 2018)	Yes
SOC054	Appendix 7.2 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 7.2, PR19 Retail Household IPP Analysis and Evidence (Economic Insight, February 2018)	Yes
SOC055	Appendix 7.3 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 7.3, VOA Alteration Impact Report WS7 (Turner Horam, September 2018)	Yes

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC056	Appendix 7.4 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 7.4, Uniform Business Rates Revaluation 2017: Northumbrian Water, Letter to David Alborough (September 2018)	Yes
SOC057	Appendix 8.1 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 8.1, Our Approach to Taxation (September 2018)	Yes
SOC058	Appendix 8.2 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 8.2, Stress Test Evidence (September 2019)	Yes
SOC059	Appendix 10.1 to BP19 (ed. 09.18)	BP19 (ed. 09.18), Appendix 10.1, Data Assurance Reports (September 2018)	No
SOC060	BP19 (ed. 09.18) Addendum	NES – Addendum – PR19 Data Changes (September 2018)	No
SOC061	BP19 (ed. 09.18) Revised Data Tables	NES PR19 Data Tables Revised (29 September 2018)	No
SOC062	BP19 (ed. 09.18) Bill Waterfall Model 1	NES – Bill Waterfall Model – Links (September 2018)	No
SOC063	BP19 (ed. 09.18) Bill Waterfall Model 2	NES – Bill Waterfall Model – no Links (September 2018)	No
SOC064	Commentary on Modelling Assumptions	NES – Commentary on the Financial Modelling Assumptions (September 2018)	No
SOC065	Pro-Forma IAP	NES – Initial Assessment of Business Plans Pro-Forma (September 2018)	No
SOC066	Pro Forma Guidance Tables	NES – Plan presentation Pro Forma Guidance Tables (September 2018)	No
SOC067	Pro Forma Plan Presentation	NES – Plan Presentation Pro Forma Updated August 2018	No
SOC068	BP19 (ed. 09.18) Data Tables	NES – PR19 Business Plan Data Tables (September 2018)	No
SOC069	BP19 (ed. 09.18) Notional Gearing Model	NES – PR19 Financial Model Notional Gearing (September 2018)	No
SOC070	BP19 (ed. 09.18) Actual Gearing Model	NES – PR19 Financial Model Actual Gearing (September 2018)	No
SOC071	BP19 (ed. 09.18) RCV Model	NES – RCV Adjustments Feeder Model (September 2018)	No
SOC072	BP19 (ed. 09.18) RRV	NES Residential Retail PR14 Reconciliation (September 2018)	No
SOC073	BP19 (ed. 09.18) RAF Model	NES Revenue Adjustments Feeder Model (June 2018)	No
SOC074	BP19 (ed. 09.18) Totex Menu	NES Totex Menu PR14 Reconciliation (September 2018)	No
SOC075	BP19 (ed. 09.18) Water Trading Model	NES Water Trading Incentive Model (September 2018)	No
SOC076	BP19 (ed. 09.18) WRFIM	NES WRFIM PR14 Reconciliation (September 2018)	No
B. BP19 (ed. 04.19) appendices, financial models and additional evidence			

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC077	BP19 (ed. 04.19)	NES Living Water: Our plan 2020 – 2025 and Beyond (April 2019)[679]	No
SOC078	BP19 (ed. 04.19) Executive Summary	BP19 (ed.04.19), Executive Summary (March 2019)	No
SOC079	BP19 (ed. 04.19) Guide	BP19 (ed.04.19), A Guide to Our Plan (March 2019)	No
SOC080	Appendix 3.2 to BP19 (ed. 04.19)	BP19 (ed.04.19), Appendix 3.2, Enhancement Business Cases (March 2019)	Yes
SOC081	Appendix 3.7 to BP19 (ed. 04.19)	BP19 (ed.04.19), Appendix 3.7, Our Drainage & Wastewater Management Plans (DWMPs) Implementation Plan (March 2019)	Yes
SOC082	Appendix 3.9 to BP19 (ed. 04.19)	BP19 (ed.04.19), Appendix 3.9, WINEP Cost Adjustment Mechanism (March 2019)	Yes
SOC083	Appendix 4.1 to BP19 (ed. 04.19)	BP19 (ed.04.19), Appendix 4.1, PR19 Bespoke Performance Commitment Definitions (March 2019)	Yes
SOC084	Appendix 4.2 to BP19 (ed. 04.19)	BP19 (ed.04.19), Appendix 4.2, Performance Commitments Evaluation (March 2019)	Yes
SOC085	Appendix 4.3 to BP19 (ed. 04.19)	BP19 (ed.04.19), Appendix 4.3, Data Table Submission Commentary (March 2019)	Yes
SOC086	Appendix 6.1 to BP19 (ed. 04.19)	BP19 (ed.04.19), Appendix 6.1, Bid Assessment Framework (March 2019)	Yes
SOC087	Appendix 8.2 to BP19 (ed. 04.19)	BP19 (ed.04.19), Appendix 8.2, Stress Test Evidence (March 2019)	Yes
SOC088	BP19 (ed. 04.19) Notional Gearing Model	BP19 (ed.04.19), NES PR19-17z Notional Gearing (March 2019)	Yes
SOC089	BP19 (ed. 04.19) Actual Gearing Model	BP19 (ed.04.19), NES PR19-17z Actual Gearing (March 2019)	Yes
SOC090	BP19 (ed. 04.19) Adjustment Feeder Model	BP19 (ed.04.19), NES RCV Adjustments Feeder Model IAP (March 2019)	Yes
SOC091	BP19 (ed. 04.19) RRV Model	BP19 (ed.04.19), NES Residential Retail Revenue IAP (March 2019)	Yes
SOC092	BP19 (ed. 04.19) RAF Model	BP19 (ed.04.19), NES Revenue Adjustments Feeder Model IAP (March 2019)	Yes
SOC093	BP19 (ed. 04.19) Totex Menu	BP19 (ed.04.19), NES Totex Menu IAP (March 2019)	Yes
SOC094	BP19 (ed. 04.19) Water Trading	BP19 (ed.04.19), NES Water Trading IAP (March 2019)	Yes
SOC095	BP19 (ed. 04.19) WRFIM	BP19 (ed.04.19), NES WRFIM IAP (March 2019)	Yes
SOC096	BP19 (ed. 04.19) Bill Waterfall Model	BP19 (ed.04.19), NES Bill Waterfall Model 12c (January 2019)	Yes
SOC097	BP19 (ed. 04.19) Land Disposals	BP19 (ed.04.19), NES Land Disposals IAP (March 2019)	Yes

679 *The BP19 (ed. 09.18) appendices are also appended to BP19 (ed. 04.19) save for the updated appendices reflected below.*

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC098	BP19 (ed. 04.19) ODIs IAP	BP19 (ed.04.19), NES PR14 Reconciliation – Financial Outcome Delivery Incentives Summary (March 2019)	Yes
SOC099	BP19 (ed. 04.19) Data Tables	BP19 (ed. 04.19) Data Tables (March 2019)	Yes
SOC100	Social Tariffs Report	NES.AV.A2 – Appendix 1 - Social Tariffs 2019 Research Report (Executive Summary) (March 2019)	Yes
SOC101	Board Statement Extracts	NES.CA.A1-A2 – Additional Evidence – Extracts from Board Assurance Statement (March 2019)	Yes
SOC102	NWL Response to Assurance Report	NES.CA.A6 – Additional Evidence – NWL Response to Data Assurance Report Findings (March 2019)	Yes
SOC103	Data Assurance Reports	NES.CA.A6 – Additional Evidence – Data Assurance Reports (March 2019)	Yes
SOC104	Sewage Pumping Station Capacity	NES.CE.A1.1 – Additional Evidence – Sewage Pumping Station Capacity – Revised Approach (March 2019)	Yes
SOC105	Sewage Pumping Station Capacity A	NES.CE.A1.1 - Additional Evidence – Sewage Pumping Station Capacity – Revised – Support Document A (March 2019)	Yes
SOC106	Sewage Pumping Station Capacity B	NES.CE.A1.1 – Additional Evidence – Sewage Pumping Station Capacity – Revised Approach – Supporting Document B (March 2019)	Yes
SOC107	Sewage Pumping Station Capacity C	NES.CE.A1.1 – Additional Evidence – Sewage Pumping Station Capacity – Revised Approach – Supporting Document C (March 2019)	Yes
SOC108	Review of Ofwat Sewage Models	NES.CE.A1.1 – Additional Evidence – A Review of Ofwat IAP Base Sewage Collection Models (18 March 2019)	Yes
SOC109	Response to Ofwat's Challenge	NES.CE.A1.3 – Forecasted BOD Load – Response to Ofwat's Challenge March 2019 (March 2019)	Yes
SOC110	Review of the Treatment of Enhancement Opex	NES.CE.A1.4 – Review of the Treatment of Enhancement Opex in Ofwat's PR19 Initial Assessment of Business Plans (7 March 2019)	Yes
SOC111	KPMG Waste Water Model Review	NES.CE.A1.7 – KPMG Waste Water Enhancement Econometric Model Review (18 March 2019)	Yes
SOC112	Explanation of Charges	NES.CE.A1.2 – Abstraction Charges – Explanation of Sustained Increase in Charges from 2017/18 (March 2019)	Yes
SOC113	Response to Ofwat on Water Trading	NES.CMI.A3.1 – Response to Ofwat on Water Trading – Action (March 2019)	Yes
SOC114	Report on Water Trade	NES.CMI.A3.2 – Additional Evidence – Appendix 1 – Report on the NES-TMS 2015-35 Water Trade (March 2019)	Yes
SOC115	Thames-Essex Chigwell Agreement	NES.CMI.A3.2 – Additional Evidence – Thames-Essex Chigwell Agreement (March 2019)	Yes
SOC116	Howdon STW Expansion	NES.CMI.A5 – Howdon STW Expansion (March 2019)	Yes

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC117	Howdon STW Expansion Plan	NES.CMI.A5 – Howdon STW Expansion Plan (March 2019)	Yes
SOC118	TCMI	NES.CMI.B1.2 – Additional Evidence – Targeted Controls, Markets and Innovation (March 2019)	Yes
SOC119	NWL Response to PwC's Resilience Assessment	NES.LR.A4 – Additional Evidence – Our Response to PwC's Resilience Assessment (March 2019)	Yes
SOC120	A1-74 Appendix 1	NES.OC.A1-74 – Additional Evidence – Appendix 1 (March 2019)	Yes
SOC121	Action Response	NES.OC.A19 – Action Response -v0.1 – Action Plan (March 2019)	Yes
SOC122	Response to Ofwat on Drought Resilience	NES.OC.A24 + NES.OC.A24A – Additional Evidence - Response to Ofwat on Drought Resilience (March 2019)	Yes
SOC123	Sewer Flooding Methodology	NES.OC.A25 – Action Response – v0.1 – Risk of Sewer Flooding in a Storm Methodology (March 2019)	Yes
SOC124	Unplanned Outage Plan	NES.OC.A35 – Additional Evidence – Unplanned Outage 2018-19 Work Plan (March 2019)	Yes
SOC125	UPO Actions	NES.OC.A35 – Additional Evidence – UPO Actions (March 2019)	Yes
SOC126	A4 Appendix 1	NES.OC.A4 – Additional Evidence – Appendix 1 (March 2019)	Yes
SOC127	WEI Definition	NES.OC.A57 + NES.OC.A58 – Additional Evidence – Water Environment Improvements Bespoke Definition (March 2019)	Yes
SOC128	WEIP Guidance	NES.OC.A57 + NES.OC.A58 – Additional Evidence – Water Environment Improvements Performance Commitment Guidance (March 2019)	Yes
C. BP19 (ed. 08.19) appendices, financial models and additional evidence			
SOC129	BP19 (ed. 08.19)	NES Living Water: Our plan 2020 – 2025 and Beyond (August 2019)[680]	Yes
SOC130	NWL Response to Ofwat DD19	NWL Response to Ofwat DD19	Yes
SOC131	Ofwat DD19 NES Representation	PR19 Draft Determinations NES Representation Pro-Forma	Yes
SOC132	Appendix 3.3.1 to NWL Response (Flooding)	NWL Response to Ofwat DD19, Appendix 3.3.1 Reducing Property Flooding Risk	Yes
SOC133	Appendix 3.3.1 to NWL Response (Environment Letter)	NWL Response to Ofwat DD19, Appendix 3.3.1 Environment Agency Letter (29 August 2019)	Yes
SOC134	Appendix 3.3.2 to NWL Response	NWL Response to Ofwat DD19, Appendix 3.3.2 Essex Resilience – Abberton to Hanningfield Transfer Main (July 2019)	Yes
SOC135	Appendix 3.3.3 to NWL Response	NWL Response to Ofwat DD19, Appendix 3.3.3 Suffolk Resilience	Yes
SOC136	Appendix 3.3.4 to NWL Response	NWL Response to Ofwat DD19, Appendix 3.3.4 Howdon STW Resilience Enhancement	Yes

680 *The BP19 (ed. 09.18) and BP19 (ed. 04.19) appendices are also here.*

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC137	Appendix 3.3.6 to NWL Response	NWL Response to Ofwat DD19, Appendix 3.3.6 Wastewater WINEP (August 2019)	Yes
SOC138	Appendix 3.3.7 to NWL Response (Layer Letter)	NWL Response to Ofwat DD19, Appendix 3.3.7 Layer Final Decision Letter (10 July 2019)	Yes
SOC139	Appendix 3.3.7 to NWL Response (Notice A)	NWL Response to Ofwat DD19, Appendix 3.3.7 Layer Reg 28 Notice A (22 August 2019)	Yes
SOC140	Appendix 3.3.7 to NWL Response (Notice B)	NWL Response to Ofwat DD19, Appendix 3.3.7 Layer Reg 28 Notice B (22 August 2019)	Yes
SOC141	Appendix 3.3.7 to NWL Response (Layer Business Case)	NWL Response to Ofwat DD19, Appendix 3.3.7 Layer Business Case	Yes
SOC142	Appendix 3.3.7 to NWL Response (Mosswood Letter)	NWL Response to Ofwat DD19, Appendix 3.3.7 Mosswood Final Decision Letter (10 July 2019)	Yes
SOC143	Appendix 3.3.7 to NWL Response (Notice A)	NWL Response to Ofwat DD19, Appendix 3.3.7 Mosswood Reg 28 Notice A (July 2019)	Yes
SOC144	Appendix 3.3.7 to NWL Response (Notice B)	NWL Response to Ofwat DD19, Appendix 3.3.7 Mosswood Reg 28 Notice B (July 2019)	Yes
SOC145	Appendix 3.3.7 to NWL Response (Mosswood Business Case)	NWL Response to Ofwat DD19, Appendix 3.3.7 Mosswood Business Case (July 2019)	Yes
SOC146	Appendix 3.3.9 to NWL Response	NWL Response to Ofwat DD19, Appendix 3.3.9 Wearside Resilience (July 2019)	Yes
SOC147	Appendix 3.3.12 to NWL Response	NWL Response to Ofwat DD19, Appendix 3.3.12 Strategic Regional Water Resource Solutions (July 2019)	Yes
SOC148	Appendix 4.1 to NWL Response	NWL Response to Ofwat DD19, Appendix 4.1 Unplanned Outage PC (30 August 2019)	Yes
SOC149	Appendix 4.3 to NWL Response	NWL Response to Ofwat DD19, Appendix 4.3 Internal Sewer Flooding Penalty Collar (30 August 2019)	Yes
SOC150	Appendix 4.8.3 to NWL Response	NWL Response to Ofwat DD19, Appendix 4.8.3 Carbon Emission PC	Yes
SOC151	Table and Model Commentaries	NWL Response to Ofwat DD19, NES Table and Model Commentaries	Yes
SOC152	Draft Determination Data Tables	NWL Response to Ofwat DD19, NES PR19 Draft Determination Data Tables (August 2019)	Yes
SOC153	Outcomes Representations Data Submission	NWL Response to Ofwat DD19, PR19 Draft Determinations – Outcomes Representations Data Submission	Yes
SOC154	Outcomes Representations Data Submission Commentary	NWL Response to Ofwat DD19, PR19 draft determinations – Outcomes Representations Data Submission Commentary (30 August 2019)	Yes
SOC155	Corrected DD Opex/Capex Split and PAYG	NWL Response to Ofwat DD19, NES Corrected DD Opex/Capex Split and PAYG of August 2019 DD Response (August 2019)	Yes
SOC156	Revised App28	NWL Response to Ofwat DD19, NES Revised App28 (August 2019)	Yes

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC157	Developer Services Data Request	NWL Response to Ofwat DD19, PR19 Draft Determinations – Developer Services Data Request (August 2019)	Yes
SOC158	Developer Services Data Request Commentary	NWL Response to Ofwat DD19, PR19 Draft Determinations – Developer Services Data Request Commentary (August 2019)	Yes
SOC159	Economic Insight Financeability Report	NWL Response to Ofwat DD19, Economic Insight Report: "Financeability of the Notionally Efficient Firm" (August 2019)	No
SOC160	Response to Developer Services DD Consultation	NWL Response to Ofwat DD19, NES Response to Developer Services DD Consultation (August 2019)	Yes
D. NWL's Resilience Action Plan and Support Documents			
SOC161	NWL's Resilience Action Plan	NES.LR.A2 PR19 IAP Resilience Action Plan (21 August 2019)	Yes
SOC162	NWL's DWMP Delivery Plan	NES.CMI.A2 Drainage and Wastewater Management Plan Delivery Programme (21 August 2019)	Yes
SOC163	NWL's DWMP Delivery Plan – Planning Objectives	NES.CMI.A2 Drainage and Wastewater Management Plan Fig5 Mapping of Planning Objectives (21 August 2019)	Yes
SOC164	NWL's DWMP Delivery Plan - Programme	NES.CMI.A2 NWG Drainage and Wastewater Management Plan Programme Fig1 A3 Print Out (21 August 2019)	Yes
2. Presentations to Ofwat and associated materials			
SOC165	PR19 Resilience Presentation	NWL Ofwat PR19 Resilience Meeting – Final for Ofwat (5 June 2019)	N/A
SOC166	Video Presentation	Video Presentation NWL (October 2019)	N/A
SOC167	Ofwat Video Submission	Ofwat Video Submission (September 2018)	N/A
3. OFWAT Documents			
A. PR14			
SOC168	Ofwat FD14	Ofwat Setting Price Controls for 2015-20: Overview, (December 2014).	N/A
SOC169	Ofwat FD14: A7 – Risk and Reward	Ofwat Setting price controls for 2015-20: Final Price Control Determination Notice: policy chapter A7 – risk and reward, (December 2014)	N/A
SOC170	Ofwat FD14: A3 – Wholesale Water and Wastewater Costs and Revenues	Ofwat - Setting price controls for 2015-20: Final price control determination notice policy chapter A3 – wholesale water and wastewater costs and revenues (December 2014)	N/A
SOC171	Ofwat FD14: NWL-specific appendix	Ofwat - Setting price controls for 2015-20 - Final price control determination notice: company-specific appendix – Northumbrian Water, (December 2014)	N/A
SOC172	Ofwat DD14: Technical Appendix A3	Ofwat PR14 Draft price control determination notice August 2014 technical appendix A3 – wholesale water and wastewater (August 2014)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC173	Ofwat RIA Supporting Information	Ofwat - Relative Efficiency Assessments 2006-07 – Supporting Information (2006)	N/A
SOC174	Cost of capital and risk mitigants – a discussion paper	Ofwat - Cost of capital and risk mitigants – a discussion paper, (June 2011)	N/A
SOC175	Ofwat WIF CIS and Totex Incentive	Ofwat, Water Industry Forum CIS and Totex Incentive, (20 March 2013)	N/A
SOC176	Ofwat and EA Drainage Strategy Guidance	Ofwat and EA, Drainage Strategy Framework Good practice guidance commission, (May 2013)	N/A
SOC177	Ofwat Sewerage Menu Model for NWL	Ofwat Populated Menu Model, Sewerage Menu Model for Northumbrian Water, (2014)	N/A
SOC178	Ofwat Water menu model for NWL	Ofwat Populated menu model, Water menu model for Northumbrian Water, (2014)	N/A
SOC179	**Note: Intentionally left blank**		
SOC180	Ofwat Towards Water	Ofwat, Towards Water 2020 – Policy issues: Customer Engagement and Outcome, (July 2015)	N/A
SOC181	Ofwat PR14 Reflections	Ofwat - Reflections on the price review - learning from PR14 (July 2015)	N/A
SOC182	Ofwat Affordability and Debt	Ofwat, Affordability and Debt 2014-15, (December 2015)	N/A
B. PR19			
SOC183	FD19	Ofwat PR19 Final Determinations: Northumbrian Water Final Determination, 16 December 2019	N/A
SOC184	FD19 Notification for NWL	Notification of the final determination of price controls for Northumbrian Water (December 2019)	N/A
SOC185	Ofwat FD19	Ofwat PR19 Final Determinations: Overview of Companies' final determinations, (16 December 2019)	N/A
SOC186	Ofwat FD19: NWL Delivering Outcomes For Customers Final Decisions	Ofwat PR19 Final Determinations: NWL Delivering outcomes for customers final decisions (16 December 2019)	N/A
SOC187	Ofwat FD19: Allowed Return on Capital Technical Appendix	Ofwat PR19 Final Determinations: Allowed Return on Capital Technical Appendix (16 December 2019).	N/A
SOC188	Ofwat FD19: Aligning Risk and Return Technical Appendix	Ofwat PR19 Final Determination, Aligning risk and return technical appendix, (16 December 2019)	N/A
SOC189	Ofwat FD19: Outcomes Performance Commitment Appendix	PR19 Final Determinations Northumbrian Water Outcomes Performance Commitment Appendix, (December 2019)	N/A
SOC190	Ofwat FD19: Significant Scrutiny Companies	Ofwat PR19 Final Determinations Significant scrutiny companies – Application of lower cost sharing rates and outcome delivery incentive cap (16 December 2019)	N/A
SOC191	FD19: Overall Level of Stretch Across Costs Outcomes	Ofwat, PR19 final determinations: Overall Level of Stretch Across Costs Outcomes, (16 December 2019)	N/A
SOC192	Ofwat FD19: WW4	Ofwat Final Determination Cost Assessment Model WW4 FD (16 December 2019)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC193	Ofwat FD19: WWW4	Ofwat Final Determination Cost Assessment Model WWW4 FD (16 December 2019)	N/A
SOC194	Ofwat FD19 Cost Assessment Model	Ofwat Final Determination Cost Assessment Model – Capex Enhancement Allowances Aggregator Feeder Model (16 December 2019)	N/A
SOC195	Ofwat FD19: Cost Assessment Model WW2 FD	Ofwat Final Determination Cost Assessment Model WW2 FD: Calculation of Catch-Up Efficiency Challenge, (16 December 2019)	N/A
SOC196	Ofwat FD19: Cost Assessment Model WWW2 FD	Ofwat Final Determination Cost Assessment Model WWW2 FD: Calculation of catch-up efficiency challenge, (16 December 2019)	N/A
SOC197	Ofwat FD Cost Assessment Model Nutrients	Ofwat FD Cost Assessment Model Nutrients (Phosphorus removal) enhancement feeder model (16 December 2019)	N/A
SOC198	Ofwat Cost adjustment claim feeder model	Ofwat - Cost adjustment claim feeder model Northumbrian Water, (16 December 2019)	N/A
SOC199	Ofwat Grants and Contributions Model	Ofwat, Grants and Contributions Model (16 December 2019)	N/A
SOC200	Ofwat PR19 Financial Model	Ofwat PR19 Financial Model (16 December 2019)	N/A
SOC201	Ofwat Totex Menu FD Model	Ofwat Totex Menu NES FD Model (16 December 2019).	N/A
SOC202	Ofwat's Cost-Sharing Model	Ofwat's Cost-Sharing Model: Cost Sharing and Total Costs Model, (16 December 2019)	N/A
SOC203	Ofwat Wholesale Wastewater Model	Ofwat Wholesale Wastewater Model 1 Master Data, (16 December 2019)	N/A
SOC204	Ofwat IAP19 Technical Appendix 1	Ofwat PR19 Initial Assessment of Plans, Technical Appendix 1: Delivering Outcomes for Customers, (31 January 2019)	N/A
SOC205	Ofwat IAP19 Technical Appendix 2	Ofwat Initial Assessment of Plans technical appendix 2 Securing cost efficiency, (31 January 2019)	N/A
SOC206	Ofwat IAP19 NWL	Ofwat PR19 Initial Assessment of Plan NWL, (January 2019)	N/A
SOC207	Ofwat IAP19: Overview	Ofwat PR19 Initial Assessment of Plans: Overview of Company Categorisation - Final (31 January 2019)	N/A
SOC208	Ofwat NWL Company Monitoring Framework	Ofwat, Company monitoring Framework: 2018 assessment – Individual company report – Northumbrian Water Limited (January 2019)	N/A
SOC209	Ofwat Service Delivery Reports	Service Delivery Report (October 2019)	N/A
SOC210	Service Delivery Report Analysis Model	Service Delivery Report Analysis Model, (29 October 2019)	N/A
SOC211	Appendix 2 to Ofwat PR19 Methodology	Ofwat, Delivering Water 2020: Our methodology for the 2019 price review, Appendix 2: Delivering outcomes for Customers (Appendix to chapter 4: Delivery outcomes for customers), (13 December 2017)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC212	Appendix 3 to Ofwat PR19 Methodology	Ofwat, Delivering Water 2020: Our methodology for the 2019 price review, Appendix 3: customer measure of experience (C-Mex) and developer services measure of experience (D-Mex) (Appendix to chapter 4: Delivering Outcomes for Customers), (13 December 2017)	N/A
SOC213	Ofwat FD of Thames Water IDOK	Ofwat, Final Determination of Thames Water IDOK (November 2013)	N/A
SOC214	Ofwat Sim Survey 2016/17	Ofwat SIM Survey 2016/17 Annual Report – prepared for Ofwat, prepared by BMG Research (2016)	N/A
SOC215	Ofwat - Water 2020: Our regulatory approach for Water and Wastewater	Ofwat Water 2020: Our regulatory approach for Water and Wastewater services in England and Wales, (May 2016)	N/A
SOC216	Ofwat – Customer Engagement Policy Statement	Ofwat's customer engagement policy statement and expectations for PR19 (25 May 2016)	N/A
SOC217	Ofwat Consultation on PR19 Methodology	Ofwat Consultation on PR19 Methodology, (11 July 2017)	N/A
SOC218	Ofwat – Resilience in the round	Ofwat – Resilience in the round: Building resilience for the future #resilienceintheround (September 2017)	N/A
SOC219	Ofwat Targeted Review Of Common Performance Commitments	Ofwat and WaterUK, Targeted review of common performance commitments, (19 December 2017)	N/A
SOC220	Ofwat - Cost Assessment for PR19 a Consultation on Econometric Cost Modelling	Ofwat - Cost Assessment for PR19 a Consultation on Econometric Cost Modelling, (March 2018)	N/A
SOC221	Ofwat PR19 Business Plans Comparison Table	Ofwat PR19 Business Plans Comparison Table (March 2018)	N/A
SOC222	Putting the sector back in balance: Consultation on proposals for PR19 business plans	Ofwat, Putting the sector back in balance: Consultation on proposals for PR19 business plans (April 2018)	N/A
SOC223	Benefit Sharing Decision statement	Ofwat, Putting the sector back in balance – Summary of Ofwat's decisions on issues for PR19 Business plan (03 July 2018)	N/A
SOC224	Ofwat Setting Expectations	Ofwat setting expectations for well-evidenced proposals and clarifying interaction with cost adjustment claims (June 2018)	N/A
SOC225	Out in the cold, water companies' response to the 'Beast from the East'	Ofwat – Out in the cold, water companies' response to the 'Beast from the East', (19 June 2018)	N/A
SOC226	Ofwat RAG 4.08	Ofwat, RAG 4.08 – Guideline for the Table Definitions in the Annual Performance Report (January 2019)	N/A
SOC227	Ofwat Reporting Guidance – Unplanned Outage	Ofwat, Reporting Guidance – Unplanned Outage, (04 April 2019)	N/A
SOC228	Ofwat DD19	Ofwat, PR19 draft determinations: Overview of companies' draft determinations, (July 2019)	N/A
SOC229	Ofwat DD: Cost of Capital Technical Appendix	Ofwat's PR19 Draft Determinations: Cost of Capital Technical Appendix (July 2019)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC230	Ofwat DD19 for NWL: Securing cost efficiency actions and interventions	Ofwat PR19 Draft Determinations Northumbrian Water - Securing cost efficiency actions and interventions, (July 2019)	N/A
SOC231	Ofwat's Strategy	Ofwat, Time to act, together: Ofwat's strategy (October 2019)	N/A
SOC232	Ofwat Strengthening The Regulatory Ring-Fencing Framework	Ofwat, Conclusions on strengthening the regulatory ring-fencing framework (July 2019)	N/A
SOC233	Anglian Water FD19	Ofwat PR19 final determinations Anglian Water final determination, (16 December 2019)	N/A
SOC234	Wessex Water FD19	Ofwat PR19 final determinations Wessex Water final determination, (16 December 2019)	N/A
SOC235	United Utilities FD19: Cost Efficiency Final Determination Appendix	Ofwat, Final Determination for United Utilities, Cost Efficiency final determination appendix additional information, (16 December 2019)	N/A
SOC236	Dwr Cymru Welsh Water FD19	Ofwat Final Determination for Dwr Cymru Welsh Water, (16 December 2019)	N/A
SOC237	NATS CMA Referral	Ofwat, NATS En-route Limited (NERL) Price Determination – referral to the Competition and Markets Authority (CMA) – (December 2019)	N/A
SOC238	Yorkshire Water FD19: Cost Efficiency Final Determination Appendix	Ofwat - Final Determination for Yorkshire Water Cost Efficiency final determination appendix, (16 December 2019)	N/A
SOC239	Ofwat Monitoring Financial Resilience Report	Ofwat - Monitoring Financial Resilience Report 2018-2019, (09 January 2020)	N/A
SOC240	Ofwat's Draft Forward Programme 2020-2021	Ofwat's forward programme 2020-2021 – Draft for Consultation, (09 January 2020)	N/A
SOC241	Ofwat in Period Adjustments Model	Ofwat in Period Adjustments Model, (04 March 2020)	N/A
SOC242	Water Sector Overview	Ofwat, Water Sector Overview (March 2020)	N/A
SOC243	Reference of the PR19 final determinations - Cross-cutting issues	Ofwat, Reference of the PR19 final determinations - Cross-cutting issues (March 2020)	N/A
4. NWL Other Documents			
SOC244	NWL Licence	Northumbrian – Water & Sewerage Undertaker – Appointment, (June 2015)	N/A
SOC245	Towards Resilience	Towards resilience: how we will embed resilience in our work, (December 2015)	N/A
SOC246	NWL Customer Engagement Proposal	NWL Management Team, Outcomes Customers Research and Engagement Proposal (11 March 2016)[681]	N/A
SOC247	NWL Customer Research and Engagement Proposal	NWG Living Water: Our Customer Research and Engagement Proposal 2016-19, (2015)	N/A
SOC248	NWL Resilience Research Report	Northumbrian Water Ltd - Resilience Research Report, (2016)	N/A
SOC249	Customer and Stakeholder Engagement Audit Report	Customer and Stakeholder Engagement Audit Report (May 2016)	N/A

[681] *Please note the date in the document states December 2015, but the external date is 11 March 2016.*

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC250	River Water Report	NWL, River Water Quality Customer Research Report (September 2016)	N/A
SOC251	Outcomes Review	NWL, Outcomes Review (May 2017)	N/A
SOC252	Service Measures Research	NWL, Service Measures Research (June 2017)	N/A
SOC253	Resilience, Asset Health & Long-Term Affordability	NWL, Resilience, Asset Health & Long-Term Affordability (March 2018)	N/A
SOC254	NWL Discretionary Projects Research	Northumbrian Water Group: Discretionary Projects Research, (April 2018)	N/A
SOC255	NWL Commits To Ending Water Poverty	Northumbrian Water Group - commits to ending water poverty in its areas by 2030 – WWT, (01 June 2018)	N/A
SOC256	NWL, Long Term Strategy Research	Northumbrian Water Long term strategy research, (June 2018)	N/A
SOC257	PR19 Enhancement Programme Business Case Assurance Summary Report	Mott Macdonald, PR19 Enhancement Programme Business Case Assurance Summary Report, (October 2018)	N/A
SOC258	PR19 Costing methodology	NWL PR19 Costing methodology (referenced as separate document on cost assessment for enhancement schemes) (2018)	N/A
SOC259	Annual Report and Financial Statements for the year ended 31st March 2019	Northumbrian Water Group (2019), Annual Report and Financial Statements for the year ended 31st March 2019 (2019)	N/A
SOC260	Water Forums Executive Summary	Water Forums Executive Summary (April 2019)	N/A
SOC261	Water Forums Supplementary Report	Water Forums Supplementary Report (01 April 2019)	N/A
SOC262	Press Release, Intelligent Asset Management (IAM) Global Awards	Press Release, NWL was recognised for Information Management Achievement at The Intelligent Asset Management (IAM) Global Awards December 2019 and received the BIM4Water Award for “Outstanding Achievement in Digital Delivery within the UK Water Industry” (May 2019)	N/A
SOC263	Water Forums DD response	Water Forums DD response (29 August 2019)	N/A
SOC264	NWL Water Resources Management Plan	NWL Final Water Resources Management Plan 2019, (August 2019)	N/A
SOC265	Northumbrian Water Group leads the way on affordability with commitment to eradicate water poverty by 2030	NWG – Living Water – Northumbrian Water Group leads the way on affordability with commitment to eradicate water poverty by 2030 (2019)	N/A
SOC266	NWL, Global award win for NWL’s intelligent approach	NWG –Global award win for Northumbrian Water's intelligent approach, (04 December 2019)cost	N/A
SOC267	NWL AMP6 Rolling Capex Plan	NWL AMP6 rolling Capex plan, (January 2020)	N/A
SOC268	NWL Letter to Ofwat – 14 Feb 2020	Letter to Ofwat (14 February 2020)	N/A
SOC269	NWL Press Release -World’s Most Ethical Water	NWL Press Release, Northumbrian Water on cloud nine with World’s Most Ethical Water company accolade, (25 February 2020)	N/A
SOC270	NWL response to consultation on charge proposals for Kielder	NWL response to consultation on charge proposals for Kielder transfer scheme (25 February 2020)	N/A
SOC271	NWL Langford Data	NWL - Langford data (February 2020)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC272	AMP7 Flooding Investment from rolling plan	AMP7 Flooding Investment from rolling plan, (February 2020)	N/A
SOC273	NWL Chigwell CMA Data	NWL, Chigwell Raw CMA Data (March 2020)	N/A
SOC274	Langham Raw Data 2011-2020	Langham Raw data 2011-2020.xlsx, sheet 4 (March 2020)	N/A
SOC275	NWL Wholesale Revenue Forecasting Incentive Mechanism Model	Northumbrian Water Ltd, Wholesale Revenue Forecasting Incentive Mechanism model – Northumbrian Water	N/A
SOC276	Essex Resilience Enhancement Business Case	Essex Resilience Enhancement Business Case, (March 2020)	Yes
SOC277	NWL Board	NWG - Living Water: NWL Board, (March 2020)	N/A
SOC278	Wastewater Reduce Flooding Risk for Properties Enhancement Business Case	Wastewater Reduce Flooding Risk for Properties Enhancement Business Case, (March 2020)	Yes
SOC279	National Green Infrastructure Facility	NWG – Living Water – Newcastle University, National Green Infrastructure Facility	N/A
SOC280	CK Infrastructure Holding Web Bio	CK Infrastructure Holding Web Bio (2020)	N/A
SOC281	Board Effectiveness Review	NWL, Board Effectiveness Review (2020)	N/A
SOC282	KPMG and Aqua Consultants - Cost Assurance Benchmarking Report	KPMG and Aqua Consultants - Reducing Property Flood Risk: Cost Assurance Benchmarking Report, (March 2020)	N/A
SOC283	KPMG, Financeability of Northumbrian Water under the PR19 Final Determination	KPMG - Financeability of Northumbrian Water under the PR19 Final Determination (2020)	Yes
5. Additional Documents			
SOC284	Thames Chigwell Bulk Supply Agreement	Thames Water LTD – Chigwell Bulk Supply Agreement (1963)	N/A
SOC285	Directive 91/271/EEC	Directive 91/271/EEC of concerning Urban Waste Water Treatment (21 May 1991)	N/A
SOC286	Productivity and Price Performance in the privatised water and sewerage companies	Saal and Parker, Productivity and Price Performance in the privatised water and sewerage companies and England and Wales (November 2000).	N/A
SOC287	Blood, Sweat and Tears: British Mobilisation for World War II	S. Broadberry, and P. Howlett. Blood, Sweat and Tears: British Mobilisation for World War II (16 January 2002)	N/A
SOC288	Determining the contribution of technical change, efficiency change to productivity growth in the privatised sewerage industry	Saal, Parker, Weyman-Jones, Determining the contribution of technical change, efficiency change to productivity growth in the privatised English and Welsh Water and sewerage industry: 1985- 2000 (21 June 2007)	N/A
SOC289	Price cap regulation and the rachet effect: a generalised index approach	Bottasso, Conti, Price cap regulation and the rachet effect: a generalised index approach (27 May 2009)	N/A
SOC290	The market value of UK dividends from shares with differing entitlements	The market value of UK dividends from shares with differing entitlements (September 2004)	N/A
SOC291	Ofgem TPCR Final Proposals	Ofgem - Transmission Price Control Review Final Proposals, (04 December 2006)	N/A
SOC292	GDCPR Final Proposals	Ofgem, Gas Distribution Price Control Review Final Proposals Document (03 December 2007)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC293	Ofgem Input Price Inflation Forecasts	Ofgem - Update of input price inflation forecasts for DPCR5 (06 November 2009)	N/A
SOC294	Ofgem Electricity Distribution Price Control Review Final Proposals	Ofgem - Electricity Distribution Price Control Review Final Proposals - Allowed revenue - Cost assessment (07 December 2009)	N/A
SOC295	Future water and sewerage charges	Future water and sewerage charges 2010-15 Final Determinations (2009)	N/A
SOC296	Bristol Water PR09 CMA Decision	Bristol Water plc - A reference under section 12(3)(a) of the Water Industry Act 1991 Report, (04 August 2010)	N/A
SOC297	Directive 2010/75/EU	Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (24 November 2010)	N/A
SOC298	Central Ratings List for England 2010	Central Ratings List for England (2010)	N/A
SOC299	Future Impacts on Sewer Systems in England and Wales	Future Impacts on Sewer Systems in England and Wales Summary of a Hydraulic Modelling Exercise Reviewing the Impact of Climate Change, Population and Growth (June 2011)	N/A
SOC300	Investment Implications of RPI to CPI	Pension Corporation, Investment Implications of RPI to CPI (September 2011)	N/A
SOC301	The case for change – reforming water abstraction management in England	Environment Agency and Ofwat report - The case for change – reforming water abstraction management in England, (05 December 2011)	N/A
SOC302	DEFRA - Waste Water Treatment in the UK	DEFRA - Waste Water Treatment in the United Kingdom – 2012 Implementation of the European Union Urban Waste Water Treatment Directive – 91/271/EEC (March 2012)	N/A
SOC303	RIIO-T1 Final Proposals for SP Transmission and Scottish Hydro	RIIO-T1 Final Proposals for SP Transmission Ltd and Scottish Hydro Electric Transmission Ltd, (23 April 2012)	N/A
SOC304	RIIO-GD1: Final Proposals - Finance and uncertainty supporting document	Ofgem, RIIO-GD1: Final Proposals - Finance and uncertainty supporting document (December 2012)	N/A
SOC305	Decision on our methodology for assessing the equity market return for the purpose of setting RIIO-ED1 price controls	Letter from Ofgem to network companies, generators, suppliers, consumers and their representatives and other interested parties, Decision on our methodology for assessing the equity market return for the purpose of setting RIIO-ED1 price controls (17 February 2014)	N/A
SOC306	Consultation on our methodology for assessing the equity market return for the purpose of setting RIIO price controls	Letter from Ofgem to network companies, generators, suppliers, consumers and their representatives and other interested parties, Consultation on our methodology for assessing the equity market return for the purpose of setting RIIO price controls (6 December 2013)	N/A
SOC307	NIE determination Glossary and Appendices	Northern Ireland Electricity Ltd RP5 Competition Commission determination Glossary and Appendices, (2014)	N/A
SOC308	UREGNI Price Control 2015-2021 FD	UREGNI Water & Sewerage Services Price Control 2015-2021 Final determination (December 2014)	N/A
SOC309	Challenging CoC may bring rating stress	Standard and Poor's Ratings Services, Challenging CoC may bring rating stress (07 February 2014)	N/A
SOC310	HoC, ECCC	House of Commons, Energy and Climate Change Committee, Energy Network costs transparent and fair? (23 February 2015)	N/A
SOC311	HoC Economic Regulation of the Water Sector	House of Commons, Committee of Public Accounts, Economic Regulation of the water sector (December 2015)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC312	Soni v. NIAUR	CMA Final Determination, Soni Limited v. Northern Ireland Authority for Utility Regulation (18 November 2017)	N/A
SOC313	WIA 1991	Water Industry Act 1991 (28 September 2018)	N/A
SOC314	Phoenix Natural Gas CC Determination	CC, A Reference under Article 15 of the Gas (Northern Ireland) Order 1996, Phoenix Natural Gas Limited Price Determination (28 November 2018)	N/A
SOC315	RIIO-T1 Final Proposals for National Grid	RIIO-T1 Final Proposals for National Grid Electricity Transmission and National Grid Gas, (17 December 2012)	N/A
SOC316	Ofgem RIIO-GD1 Final Proposals – Overview	Ofgem RIIO-GD1 Final Proposals – Overview, (17 December 2012)	N/A
SOC317	RIIO-T1GD1 Real price effects and ongoing efficiency appendix	RIIO-T1GD1 Real price effects and ongoing efficiency appendix, (17 December 2012)	N/A
SOC318	Ofgem Strategy Decision for the RIIO-ED1 Price Control	Ofgem Strategy Decision for the RIIO-ED1 Price Control, (04 March 2013)	N/A
SOC319	DEFRA - General Duties With Respect To The Water Industry	Department for Environmental Food and Rural Affairs, Updating the general Duties with respect to the water industry to reflect to the UK Government's resilience priorities (April 2013)	N/A
SOC320	Cost of Capital for PR14: Methodological considerations	PWC, Cost of Capital for PR14: Methodological considerations (July 2013)	N/A
SOC321	ORR – FD13 for Network Rail	Office of Rail Regulation – Periodic Review 2013 Final determination of Network Rail's outputs and funding for 2014-19, (October 2013)	N/A
SOC322	Corporate methodology 2013	Standard & Poor's, Corporate methodology, (November 2013)	N/A
SOC323	Civil Aviation Authority - Economic Regulation at Heathrow	Civil Aviation Authority - Economic regulation at Heathrow from April 2014 Final Proposals, (2013)	N/A
SOC324	Hansard WB Volume 571	Hansard - Volume 571 - Water Bill, (25 November 2013)	N/A
SOC325	Hansard WB Volume 751	Hansard - Volume 751 - Water Bill, (27 January 2014)	N/A
SOC326	Ofgem RIIO-ED1 Fast Track Decision Letter	Ofgem RIIO-ED1 Fast Track Decision Letter, (28 February 2014)	N/A
SOC327	Hansard WB Volume 753	Hansard - Volume 753 - Water Bill, (25 March 2014)	N/A
SOC328	Water Act 2014 Explanatory Notes	WIA, S2DA(a); Water Act 2014 Explanatory Notes, (14 May 2014)	N/A
SOC329	RIIO-ED1 DD: Business plan expenditure assessment	RIIO-ED1 Draft determinations for the slow-track electricity distribution companies – Business plan expenditure assessment, (30 July 2014)	N/A
SOC330	NWUL – Thames WTA	NWL - Thames Water Trading Agreement (01 September 2014)	N/A
SOC331	RIIO-ED1 FD: Overview	RIIO-ED1 Final determination for the slow-track electricity distribution companies – Overview (28 November 2014)	N/A
SOC332	Ofgem RIIO-ED1 FD: Supplementary Document	Ofgem RIIO-ED1 Final Determinations for the Slow Track Electricity Distribution Companies - Supplementary Document (28 November 2014)	N/A
SOC333	The Convex Project	The Convex Project, (2015)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC334	CCC Summary of ASC-Commissioned Research Projects	CCC, UK Climate Change Risk Assessment 2017: Summary of ASC-commissioned research projects, (October 2015)	N/A
SOC335	NAO, The Economic Regulation of the Water Sector	National Audit Office, The Economic Regulation of the Water Sector (October 2015)	N/A
SOC336	Bristol Water PR14 CMA Decision	CMA, Final Determination – Bristol Water plc : A reference under section 12(3)(a) of the Water Industry Act 1991, (06 October 2015)	N/A
SOC337	HoC, Economic Regulation of the Water Sector	House of Commons Committee of Public Accounts, Economic Regulation of the Water Sector (16 December 2015)	N/A
SOC338	Indexation of Future Price Controls in the Water Sector	Oxera, Indexation of future price controls in the water sector. Water 2020 programme (31 March 2016)	N/A
SOC339	Computing – Big Data Excellence Awards 2018, 2017 Winners	Computing – Big Data Excellence Awards 2018, 2017 Winners, (17 May 2017)	N/A
SOC340	Econometric Benchmarking in the UK Postal Sector	Deloitte - Econometric Benchmarking in the UK Postal Sector, Final report, (24 May 2016)	N/A
SOC341	Canal & River Trust v TWUL High Court Decision	Canal & River Trust v Thames Water Utilities Ltd, [2016] EWHC 1547 (Ch) (29 June 2016)	N/A
SOC342	Assessing the Impact of Quality of Service on the productivity of Water Industry	Maziotis, Molinos-Senante, Sala-Garrido, Assessing the Impact of Quality of Service on the productivity of Water Industry: A Malmquist-Luenberger Approach for England and Wales (June 2016)	N/A
SOC343	Water Resources Long-Term Planning Framework	Water UK, Water Resources Long-Term Planning Framework, (July 2016)	N/A
SOC344	Firmus Energy (Distribution) Limited v NIAUR	Firmus Energy (Distribution) Limited v Northern Ireland Authority for Utility Regulation, CMA Final Determination, (26 June 2017)	N/A
SOC345	Refining the Balance of incentives for PR19	PWC Economics, Refining the Balance of incentives for PR19 (June 2017)	N/A
SOC346	ICF, Defining and applying 'triangulation' in the water sector	ICF, Defining and applying 'triangulation' in the water sector - How Water companies can use different sources of customer evidence in business planning, (07 July 2017)	N/A
SOC347	A review of Ofwat's proposed approach to total market returns	KPMG, A review of Ofwat's proposed approach to total market returns (August 2017)	N/A
SOC348	Utility Week Awards winner case study	Utility Week, Utility Week Awards winner case study: Utility of the Year 2017, (September 2017)	N/A
SOC349	SPS	DEFRA, The government's strategic priorities and objectives for Ofwat, (September 2017)	N/A
SOC350	Central Rating List for England 2017	Central Rating List for England (2017)	N/A
SOC351	Productivity Improvement in the Water and Sewerage Industry in England	Frontier Economics - Productivity Improvement in the Water and Sewerage Industry in England Since Privatisation, (December 2017)	N/A
SOC352	Canal & River Trust v TWUL - Court of Appeal Decision	Canal & River Trust v Thames Water Ultilities Ltd. - [2018] EWCA Civ 342 (2 March 2018)	N/A
SOC353	Estimating the cost of capital for implementation of price controls by UK Regulators	Estimating the cost of capital for implementation of price controls by UK Regulators, UK Regulators Network, (March 2018)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC354	Innovation and efficiency gains from the totex and outcomes framework	KPMG and aqua consultants – Innovation and efficiency gains from the totex and outcomes framework, (March 2018)	N/A
SOC355	Award Joy for NWL	News Guardian, Award joy for Northumbrian Water, (08 April 2018)	N/A
SOC356	Deed of Variation of Water Trading Agreement between NWL and TWUL	Deed of Variation of Water Trading Agreement between Northumbrian Water Limited and Thames Water Utilities Limited (24 April 2018)	N/A
SOC357	Preparing for a drier future	NIC, Preparing for a drier future: England's water infrastructure needs, (26 April 2018)	N/A
SOC358	Regulator's Proposals Undermine the Stability and Predictability of the Regime	Moody's, Regulator's proposals undermine the stability and predictability of the regime (28 May 2018).	N/A
SOC359	DEFRA - The National Adaptation Programme	DEFRA, The National Adaptation Programme; making the country resilient to a changing climate, (July 2018)	N/A
SOC360	Wessex Water Appendix 8.9.A-Claim WSX05	Wessex Water Appendix 8.9.A-Claim WSX05 – Flooding Programme, (September 2018)	N/A
SOC361	Yorkshire Water PR19 Business Plan	Yorkshire Water Business Plan Submission Document, (September 2018)	N/A
SOC362	Yorkshire Water PR19 Business Plan Appendix 8m ii. Ofwat Evidence	Yorkshire Water PR19 Submission Appendix 8m ii. Ofwat Evidence, (September 2018)	N/A
SOC363	Severn Trent Water - A8	Severn Trent Water - A8 Securing cost efficiency and enhancement spend, (03 September 2018)	N/A
SOC364	HD, PR19 Business Plan	Hafren Dyfrdwy, PR19 Business Plan (03 September 2018)	N/A
SOC365	PWL, PR19 Business Plan	Postmouth Water Limited, Business Plan 2020-25 (03 September 2018)	N/A
SOC366	Bristol Water PR19 Business Plan	Bristol Water, Bristol – Water for All: Our Plan to deliver excellent water experiences (September 2018)	N/A
SOC367	Severn Trent Water A3	Severn Trent Water A3 (September 2018)	N/A
SOC368	DWR Cymru, PR19 Outcome Delivery Incentives	DWR Cymru, PR19 Outcome Delivery Incentives (September 2018)	N/A
SOC369	South West Water and Bournemouth Water – Elements of the Plan	South West Water and Bournemouth Water – Elements of the Plan Securing Cost Efficiency (03 September 2018)	N/A
SOC370	BEIS 2018 Updated Energy & Emissions Projections	DEFRA, BEIS 2018 Updated Energy & Emissions Projections (2018)	N/A
SOC371	BEIS 2018 Updated Energy & Emissions Projections Annex M	DEFRA, BEIS 2018 Updated Energy & Emissions Projections Annex M. Growth Assumptions and Prices (2018)	N/A
SOC372	Estimating the cost of capital for implementation of price controls by the UK Regulators	S. Wright, P. Burns, R. Mason and D. Pickford, Estimating the cost of capital for implementation of price controls by the UK Regulators (2018)	N/A
SOC373	Vivid Economics - Fair Rate of Return For The Regulated Water Industry	Vivid Economics - Fair rate of return for the regulated water industry in England and Wales Report prepared for Defra, (2018)	N/A
SOC374	Newcastle's 'digital twin' to help city plan for disasters	The Guardian – Newcastle's 'digital twin' to help city plan for disasters, (December 2018)	N/A
SOC375	BEIS 2019 fuel price indices	BEIS fuel price indices, (2019)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC376	UK Climate Projections 2018	Met Office, UK Climate Projections 2018 (UKCP18) Science Overview Executive Summary, (January 2019)	N/A
SOC377	Measuring Inflation	House of Lords. Measuring Inflation (January 2019)	N/A
SOC378	NERA - Assessing Ofwat's leakage reduction targets	NERA, Assessing Ofwat's funding and incentive targets for leakage reduction, (22 March 2019)	N/A
SOC379	Yorkshire Water IAP Response	Yorkshire Water IAP response document, (1 April 2019)	N/A
SOC380	Dwr Cymru Welsh Water - Ref B2.20.WSH.CE.A1	Dwr Cymru Welsh Water - Ref B2.20.WSH.CE.A1 Improving drought resilience in the Vowchurch water resources zone IAP response, (01 April 2019)	N/A
SOC381	Map of Underground Pipes and Cables	Map of underground pipes and cables designed to save lives and prevent major disruption, (25 April 2019)	N/A
SOC382	Anglian Water – PR19 Wastewater Data Tables Commentary	Anglian Water – PR19 Wastewater Data Tables Commentary, (April 2019)	N/A
SOC383	S&P Corporate Methodology Ratios and Adjustments	S&P Corporate Methodology Ratios and Adjustments (01 April 2019)	N/A
SOC384	Providing Appropriate Regulatory Funding For Capital Maintenance Activity	First Economics, Providing appropriate regulatory funding for capital maintenance activity: Ensuring capital sustainability and service resilience, (August 2019)	N/A
SOC385	Environment Agency's Annual Environmental Performance Report	Environment Agency's Annual Environmental Performance Report, Summary: environmental performance of the water and sewerage companies in 2018, (10 July 2019)	N/A
SOC386	Environment Agency and Ofwat report - The Case for Change	Environment Agency and Ofwat report - The case for change – reforming water abstraction manage (July 2019)	N/A
SOC387	UUWL - Update to Claim Combination of Exogenous Factors Impacting Surface Water Runoff	United Utilities Water Limited, D003a – Update to claim Combination of exogenous factors impacting surface water runoff, (July 2019)	N/A
SOC388	EA Letter to English WaSCs and DCWW	Environment Agency. Letter to each English WaSCs and DCWW, (08 July 2019)	N/A
SOC389	Moody's - Ofwat Tightens The Screws	Moody's, Ofwat tightens the screws further (26 July 2019)	N/A
SOC390	Ofwat Price Review Intensifies Pressure on UK Water Sector	Fitch, Ofwat Price Review Intensifies Pressure on UK Water Sector, (July 2019)	N/A
SOC391	TWL Response to Ofwat's DD	Thames Water Response to Ofwat's PR19 Draft Determination, (August 2019)	N/A
SOC392	Forecasts for the UK economy a comparison of independent forecasts	HM Treasury, Forecasts for the UK economy a comparison of independent forecasts, (August 2019)	N/A
SOC393	Moody's - Rock of Low Returns Meets Hard Place of Covenants	Moody's, Rock of low returns meets hard place of covenants, (08 October 2019)	N/A
SOC394	WWT – Northumbrian Water launches global innovation platform	WWT – Northumbrian Water launches global innovation platform, (04 December 2019)	N/A
SOC395	Potential PR19 Water References	Letter from CMA to WASCs on Potential PR19 Water Reference(s) (06 November 2019)	N/A
SOC396	Real Price Effects and Frontier Shift	Europe Economics, Real Price Effects and Frontier Shift – Final Assessment and Response to Company Representations, (07 December 2019)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC397	NG ESO Business Plan	National Grid ESO – Facilitating the transition to a flexible, low carbon energy system: The Electricity System Operator RIIO-2 Business Plan 2021-23, (9 December 2019)	N/A
SOC398	Fuel Price Indices for the Industrial Sector	DEFRA, Fuel Price Indices for the Industrial Sector, (19 December 2019)	N/A
SOC399	Moody's Reviews Northumbrians Baa1 Rating	Moody's reviews Northumbrians Baa1 rating for-downgrade, (20 December 2019)	N/A
SOC400	Moody's Reviews 12 UK Water Groups for Downgrade	Moody's, Moody's Reviews 12 UK Water Groups for Downgrade, (20 December 2019)	N/A
SOC401	Moody's - Regulator's decision will cause sharp reduction in credit quality	Moody's - Regulator's decision will cause sharp reduction in credit quality (December 2019)	N/A
SOC402	ORR – FD19 of HS1	Office of Rail Regulation - 2019 periodic review of HS1 Ltd (PR19) Final determination – decision document, (07 January 2020)	N/A
SOC403	Financial Monitoring Report 2018-19 Charts and Underlying Data	Financial Monitoring Report 2018-19 Charts and Underlying Data, (13 January 2020)	N/A
SOC404	Environment Agency Charge Proposals: Kielder Reservoir and Transfer Scheme Consultation	Environment Agency. "Environment Agency charge proposals: Kielder Reservoir and transfer scheme Consultation". (28 January 2020)	N/A
SOC405	The 50 Best Places to Work in the North East for 2019	ChronicleLive - Here are the 50 Best Places to Work in the North East for 2019, (1 February 2020)	N/A
SOC406	Ofwat Transcript 11.02.20	CMA Water Regulatory Appeals – Transcript, (11 February 2020)	N/A
SOC407	Office NS CPIH Index	Office for National Statistics, CPIH INDEX 00: ALL ITEMS 2015=100, (19 February 2020).	N/A
SOC408	Water UK IED Workshop – Notes	Water UK IED Workshop – Notes (20 February 2020)	N/A
SOC409	Forecasts for the UK economy a comparison of independent forecasts	HM Treasury, Forecasts for the UK economy a comparison of independent forecasts, (February 2020)	N/A
SOC410	A Review of Ofwat's PR19 Approach to Estimating Frontier Shift	John Earwaker, A Review of Ofwat's PR19 FD Approach to Estimating Frontier Shift (20 February 2020)	N/A
SOC411	S&P's downgrades four of the final determination acceptors	Standard & Poor's downgrades four of the final determination acceptors (01 March 2020)	N/A
SOC412	Budget Speech 2020	Budget Speech 2020 (11 March 2020)	N/A
SOC413	Top Down Analysis of the Financeability of the Notionally Efficient Firm	Economic Insight, Top-Down Analysis Of The Financeability Of The Notionally Efficient Firm, A follow on report for Anglian Water; Northumbrian Water; and Yorkshire Water (20 March 2020)	N/A
SOC414	Strategic Review of Charges 2021-27	Water Industry Commission Scotland, Strategic Review of Charges 2021-27 Final decision paper (2020)	N/A
SOC415	CMA Transcript on Water Regulatory Appeals	CMA Water Regulatory Appeals, Notes of a Hearing with Ofwat on 4th of February 2020 (March 2020)	N/A
SOC416	KPMG - Estimating the cost of capital for PR19	Estimating the cost of capital for PR19, KPMG, (March 2020)	Yes
SOC417	PR19 FD Securing Cost Efficiency Technical Appendix	Ofwat, PR19 Final Determinations, Securing Cost Efficiency Technical Appendix (December 2019)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC418	Letter from the Rt Hon Philip Hammond MP - Chancellor of the Exchequer to the Chairman	Letter from the Rt Hon Philip Hammond MP - Chancellor of the Exchequer to the Chairman, (27 June 2019)	N/A
SOC419	Letter from Sir David Norgrove - Chair of the UK Statistics Authority to the Chairman	Letter from Sir David Norgrove - Chair of the UK Statistics Authority to the Chairman, (04 September 2019)	N/A
SOC420	Letter from Sir David Norgrove, Chair of the UK Statistics Authority to the Chair	Letter from Sir David Norgrove, Chair of the UK Statistics Authority to the Chair, (13 January 2020)	N/A
SOC421	Letter from the Rt Hon Sajid Javid MP - Chancellor of the Exchequer to the Chair	Letter from the Rt Hon Sajid Javid MP - Chancellor of the Exchequer to the Chair, (13 January 2020)	N/A
SOC422	Letter from the Rt Hon Sajid Javid MP - Chancellor of the Exchequer to the Chairman	Letter from the Rt Hon Sajid Javid MP - Chancellor of the Exchequer to the Chairman, (04 September 2019)	N/A
SOC423	Citizens Advice - Energy networks making £7.5bn in unjustified profit over 8 years	Citizens Advice - Energy networks making £7.5bn in unjustified profit over 8 years (12 July 2017)	N/A
SOC424	Ofwat – Delivering Water 2020 Our final methodology for the 2019 price review	Ofwat – Delivering Water 2020 Our final methodology for the 2019 price review, (13 December 2017)	N/A
SOC425	Portsmouth Water LTD – PR19 Business Plan (Final)-	Portsmouth Water LTD – PR19 Business Plan (Final)- (September 2018)	N/A
SOC426	A study into certain Aspects of the Costs of Capital for Regulated Utilities in the UK	S. Wright, R. Mason, D. Miles, A study into certain Aspects of the Costs of Capital for Regulated Utilities in the UK (February 2013)	N/A
SOC427	Hafren Dyfrdwy – PR19 Business Plan – Executive Summary	Hafren Dyfrdwy – PR19 Business Plan Executive Summary (September 2018)	N/A
SOC428	Ofwat - Involving customers in price setting – Ofwat's customer engagement policy statement	Ofwat - Involving customers in price setting – Ofwat's customer engagement policy statement (11 August 2011)	N/A
SOC429	Ofwat FD19 Delivering outcomes for customers policy appendix	Ofwat FD19 Delivering outcomes for customers policy appendix, (16 December 2019)	N/A
SOC430	Alto consulting – C-MeX Pilot for PR19	Alto consulting – C-MeX Pilot for PR19 (Redacted version), (31 January 2019)	N/A
SOC431	Ofwat PR19 Financial Model (Corporation tax rates change)	Ofwat PR19 Financial Model (Corporation tax rates change) (16 December 2019)	N/A
SOC432	Ofwat DD19 Securing cost efficiency technical appendix	Ofwat DD19 Securing cost efficiency technical appendix (July 2019)	N/A
SOC433	Discretionary Projects Research Report (Phase two)	Discretionary Projects Research Report (Phase two) – (May 2018)	N/A
SOC434	Speech by Sir James Bevan, Chief Executive of the Environment Agency Aldersgate Group	Speech by Sir James Bevan, Chief Executive of the Environment Agency Aldersgate Group, London, “It’s the climate emergency, stupid?” (25 June 2019)	N/A
SOC435	Council to declare “Climate Emergency”	Northumberland Country Council, Council to declare “Climate Emergency” (04 June 2019)	N/A
SOC436	Reducing flooding risk for properties	Reducing flooding risk for properties (10 October 2019)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC437	Reducing flooding risk for properties - Spreadsheet	Reducing flooding risk for properties – Spreadsheet (10 October 2019)	N/A
SOC438	Ofwat Wholesale Water Model	Ofwat Wholesale Water Model 1 Master Data, (16 December 2019)	N/A
SOC439	**Note: Intentionally left blank**		
SOC440	Appendix 12A – Water Resilience Yorkshire	Yorkshire Water BP19, Appendix 12A – Water Resilience (August 2018)	N/A
SOC441	DCWW, PR19 Wastewater Network Plus Business Plan	DWR Cymru Welsh Water, PR19 Wastewater Network Plus Business Plan (September 2018)	N/A
SOC442	Combination of Exogenous Factors Impacting Surface Water Runoff - Spreadsheet	UUW, Combination of Exogenous Factors Impacting Surface Water Runoff - Spreadsheet (December 2019)	N/A
SOC443	Enhancement expenditure: setting expectations for well evidenced proposals and clarifying interaction with cost adjustment claims	Ofwat, Enhancement expenditure: setting expectations for well evidenced proposals and clarifying interaction with cost adjustment claims (June 2018)	N/A
SOC444	NWL - PR19 BSG - Reduce flooding risk to properties business	NWL - PR19 BSG - Reduce flooding risk to properties business (June 2019)	N/A
SOC445	Climate Change Scenarios for the UK	UKCIP, Climate Change Scenarios for the UK (April 2002)	N/A
SOC446	Adapting to climate change	UK Climate Project, Adapting to Climate Project (June 2009)	N/A
SOC447	UKCP18 Science Overview Report	UKCP18 Science Overview Report (November 2018)	N/A
SOC448	Rainfall Intensity for Sewer Design Guidance to Water Companies	Guided for Water Companies, Rainfall Intensity for Sewer Design Guidance to Water Companies (2015)	N/A
SOC449	Gardening Matters: Urban Gardens	Royal Horticultural Society, Gardening Matters: Urban Gardens	N/A
SOC450	Urban Flood Rising and integrated Drainage	Pilot Project Report of Newcastle City Council on creeping impermeability, Urban Flood Rising and integrated Drainage (March 2008)	N/A
SOC451	Impact of Urban Creep on Sewerage Systems	Impact of Urban Creep on Sewerage Systems (2009)	N/A
SOC452	High Heaton Urban Creep Analysis	High Heaton Urban Creep Analysis (2019)	N/A
SOC453	Urban Creep in the Ouse-Burn at Crag Hall catchment	Urban Creep in the Ouse-Burn at Crag Hall catchment	N/A
SOC454	Rainfall Intensity for Sewer Design Guidance to Water Companies – Stage 2	Guidance for Water Companies, Rainfall Intensity for Sewer Design Guidance to Water Companies – Stage 2 (2017)	N/A
SOC455	Rainfall runoff management for developments	DEFRA and EA, Delivering Benefits through Evidence, Rainfall runoff management for developments (October 2013)	N/A
SOC456	Urban Drainage Group, Code of Practice for the Hydraulic Modelling of Urban Drainage System	CIWEM, Urban Drainage Group, Code of Practice for the Hydraulic Modelling of Urban Drainage System (version 01) – (November 2017)	N/A
SOC457	A summary of the analysis of waste water flooding events and rainfall in the Northumbrian Water Region	Met Office, A summary of the analysis of waste water flooding events and rainfall in the Northumbrian Water Region (June 2019)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC458	Can we still predict the future from the past? Implementing non-stationary flood frequency in the UK	CIWEM, Can we still predict the future from the past? Implementing non-stationary flood frequency in the UK (November 2019)	N/A
SOC459	Developing and Trialling Wastewater Resilience Metrics	Atkins, Developing and Trialling Wastewater Resilience Metrics (Final Report for Water UK), (November 2017)	N/A
SOC460	Flood resistance and resilience solutions: An R&D scoping study	Joint DEFRA/EA and Coastal Erosion, Flood resistance and resilience solutions: An R&D scoping study (May 2007)	N/A
SOC461	PR19 Enhancements Programme Assurance – Resilience and WINEP Programme	Macdonald, PR19 Enhancements Programme Assurance – Resilience and WINEP Programme (19 February 2018)	N/A
SOC462	EA Flooding Partnership Calculator	EA Flooding Partnership Calculator	N/A
SOC463	EA Flooding Partnership Calculator - Spreadsheet	EA Flooding Partnership Calculator - Spreadsheet	N/A
SOC464	Establishing the Effectiveness of Property Flood Protection	JBA Consulting, Establishing the Effectiveness of Property Flood Protection (August 2012)	N/A
SOC465	Abberton Reservoir to Langford	Abberton Reservoir to Langford (November 2017)	N/A
SOC466	NWG's Sensitive Household and Critical Non-Household Customers Database	NWG's Sensitive Household and Critical Non-Household Customers Database (undated)	N/A
SOC467	Water Delivered as % of DI_CMA data - Graphs	Water Delivered as % of DI_CMA data- Graphs (undated)	N/A
SOC468	Dry year 2019	Dry Year 2019 – Graph of count of days >25C against cumulative rainfall (2019)	N/A
SOC469	CAP Costing Tool (V1.0) – Option 1B	NWL, Project Name: Barnard Castle, CAP RA14 Option 1B Costing (September 2017)	N/A
SOC470	CAP Costing Tool (V1.1) – Option 01	NWL, Project Name: Thornfield Road, CAP Costing Tool V1.1 – Option 01 (January 2018)	N/A
SOC471	CAP Costing Tool (V1.0) – Option 1A	NWL, Project Name: Barnard Castle, CAP RA14 Option 1A Costing (September 2017)	N/A
SOC472	CAP Costing Tool (V1.0) – Option 01	NWL, Project Name: Barnard Castle, CAP RA14 Option 01 Costing (September 2017)	N/A
SOC473	CAP Costing Tool (V1.1) – Option 02	NWL, Project Name: Thornfield Road, CAP Costing Tool V1.1 - Option 02 (February 2018)	N/A
SOC474	Wastewater Resilience Enhancement Business Case	NWL, PR19 Business Plan, Wastewater Resilience Enhancement Business Case (June 2016)	N/A
SOC475	Rainwise Sustainable Drainage Solutions – Working with communities to manage rainwater	NWL, Rainwise Sustainable Drainage Solutions – Working with communities to manage rainwater (September 2014)	N/A
SOC476	A new standard for flood resistance and resilience of buildings: new build and retrofit	European Conference on Flood Risk Management, A new standard for flood resistance and resilience of buildings: new build and retrofit (2016)	N/A
SOC477	CAP Costing Tool (V1.1) – Option A	NWL, Project Name: Berwick CAP Rainwise 2-4, CAP Costing Tool V1.1 - Option A (February 2018)	N/A
SOC478	CAP Costing Tool (V1.0) – Option Hartlands	NWL, Project Name: 02-D46 Bedlington CAP, CAP RE37 Option Hartlands, Costing (July 2017)	N/A
SOC479	CAP Costing Tool (V1.0) – Option Westlea	NWL, Project Name: 02-D46 Bedlington CAP , CAP RE37 Option Westlea Costing (July 2017)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC480	CAP Costing Tool (V1.0) – Option Chatsworth Drive	NWL, Project Name: 02-D46 Bedlington CAP CAP RE37 Option Chatsworth Drive, Costing (July 2017)	N/A
SOC481	Darlington – Area 17	MMB and NWL, Darlington North, Risk Area 17, Mayfair Road Option Summary (January 2018)	N/A
SOC482	Darlington – Area 18	MMB and NWL, Darlington North, Risk Area 18, The Leas Options Summary (January 2018)	N/A
SOC483	Darlington – Area 15	MMB and NWL, Darlington North, Risk Area 15, Sandriggs Options Summary (January 2018)	N/A
SOC484	Redcar – Area 3	MMB and NWL, Redcar, Risk Area 3, Castle Road Options Summary (January 2018)	N/A
SOC485	Redcar – Areas 10 and 17	MMB and NWL, Redcar, Risk Areas 10 and 17, Mo Mowlam Memorial Park Options Summary (January 2018)	N/A
SOC486	E&S Final Water Resources Management Plan 2010	Essex and Suffolk Water Resources Management Plan (2010-2035), (January 2010)	N/A
SOC487	North Billingham – Area 16	MMB and NWL, North Billingham, Risk Area 16, Monkseaton Drive Options Summary (February 2018)	N/A
SOC488	North Billingham – Area 20	MMB and NWL, North Billingham, Risk Area 20, Billingham Shopping Centre Options Summary (February 2018)	N/A
SOC489	North Billingham – Area 35	MMB and NWL, North Billingham, Risk Area 35, Halidon Way Options Summary (February 2018)	N/A
SOC490	North Billingham – Area 36	MMB and NWL, North Billingham, Risk Area 36, Hollinside Road Options Summary (February 2018)	N/A
SOC491	North Billingham – Area 44	MMB and NWL, North Billingham, Risk Area 44, Devon Crescent Options Summary (February 2018)	N/A
SOC492	North Billingham – Area 31	MMB and NWL, North Billingham, Risk Area 31, Cleadon Avenue Options Summary (February 2018)	N/A
SOC493	Frontier calculations - Benefit cost ration based on customer valuation of flood risk reduction	Frontier calculations - Benefit cost ration based on customer valuation of flood risk reduction (undated)	N/A
SOC494	CAP Costing Tool (V1.0) – Corbridge Areas 2 & 3 Option 2	NWL, Project Name: Corbridge CAP, CAP QE45 Option Corbridge Areas 2 & 3 Option 2, Costing (July 2017)	N/A
SOC495	CAP Costing Tool (V1.1) – Tyne Dock and Harton CAP, Area 2	NWL, Project Name: Tyne Dock and Harton CAP Costing Tool V1.1 - Option Area 2 (February 2018)	N/A
SOC496	CAP Costing Tool (V1.1) – Tyne Dock and Harton CAP, Area 3	NWL, Project Name: Tyne Dock and Harton CAP Costing Tool V1.1 - Option Area 3 (February 2018)	N/A
SOC497	CAP Costing Tool (V1.1) – Tyne Dock and Harton CAP, Area 4	NWL, Project Name: Tyne Dock and Harton CAP Costing Tool V1.1 - Option Area 4 (March 2018)	N/A
SOC498	CAP Costing Tool (V1.1) Berwick CAP Rainwise 2-4, Option d	NWL, Project Name: Berwick CAP Rainwise 2-4 Costing Tool V1.1 - Option d (February 2018)	N/A
SOC499	CAP Costing Tool (V1.1) Berwick CAP Rainwise 2-4, Option b	NWL, Project Name: Berwick CAP Rainwise 2-4 Costing Tool V1.1 - Option b (February 2018)	N/A
SOC500	The Climate Change Act 2008	The Climate Change Act 2008 (2050 Target Amendment) Order (2019)	N/A
SOC501	CMA-Ofwat teach in slides 04.02.20	CMA-Ofwat slides: 2019 price review - teach in, (4 February 2020)	N/A
SOC502	CMA-Ofwat teach in slides 25.02.20	CMA-Ofwat slides: 2019 price review - teach in, (25 February 2020)	N/A

SOC Reference Number	Short Name	Full Name/Context	Latest Position?
SOC503	Ofgem - RIIO-GD1 2018-19 Annual Report	Ofgem - RIIO-GD1: Network Performance Summary 2018-19, 2019	N/A
SOC504	Ofgem - RIIO-ET1 2018-19 Annual Report	Ofgem - RIIO-ET1: Network Performance Summary 2018-19, 2019	N/A
SOC505	Eurostat - NACE Rev.2 Report	Eurostat - NACE Rev.2: Statistical classification of economic activities in the European Community, 2008	N/A
SOC506	Ofwat FD19: Cost Assessment Model WW3 FD	Ofwat Final Determination Cost Assessment Model WW2 FD Calculation of Forecasts of Cost Drivers, (16 December 2019)	N/A
SOC507	Yorkshire Water – Cost Adjustment Claim Summary Form	Yorkshire Water – Cost Adjustment Claim Summary Form, September 2018	N/A
SOC508	Dwr Cymru Welsh Water Wastewater Resilience Investment Case	Dwr Cymru Welsh Water, IAP Response, Ref B2.21.WSH.CE.A1 Wastewater Resilience Investment Case, 1 April 2019,	N/A
SOC509	Ofwat Wholesale Water Enhancement feeder model: Resilience	Ofwat Wholesale Water Enhancement feeder model: Resilience, 16 December 2019	N/A
SOC510	Ofwat PR19 Financial Model (KPMG amended)	Financial Model_FD_Northumbrian Water. This is a version of SOC200 but with added functionality added by KPMG.	N/A
SOC511	User Guide	User Guide for SOC509	N/A
SOC512	ODI analysis	KPMG ODI analysis	N/A
SOC513	Flood Resistance and Resilience Report	Joint Defra/EA Flood and Coastal Erosion Risk Management R&D Programme: Developing the evidence base for flood resistance and resilience R&D Summary Report (June 2008)	N/A
SOC514	Adapting to Climate Change	Adapting to climate change - Managing the impact at Northumbrian Water (January 2011)	N/A
SOC515	E&S Water Resources Management Plan 2019	Essex & Suffolk Water Final Water Resources Management Plan 2019 (2019)	N/A
SOC516	NWL Feasibility and Conceptual Design Report	NWL - Layer 145 Upgrade: Feasibility and Conceptual Design Report (March 2006)	N/A
SOC517	Abberton Reservoir to Langford – Estimation Detailed Report	Abberton Reservoir to Langford – Estimation Detailed Report (21 September 2019)	N/A
SOC518	NWL's Bill Calculation	NWL's Bill Calculation (31 March 2020)	Yes
SOC519	FD19: NWL cost efficiency appendix	Ofwat PR19 final determinations: Northumbrian Water – Cost efficiency final determination appendix (16 December 2019)	No
SOC520	NWL Scope of the SoC	NWL Scope of the SoC: Elements of FD19 that have not been addressed in the SoC (2 April 2019)	Yes
SOC521	Discover Water	Discover Water: Average annual water and sewerage charges across England and Wales households	N/A
SOC522	CCW Water Mark Assessment	CCW Water Mark assessment of industry performance (2018-19)	N/A

APPENDIX THREE: INDEX OF FIGURES

Figure 1: Our two distinct operating areas 13
Figure 2: Northumbrian Water's North East operating area 14
Figure 3: Essex & Suffolk's operating area 15
Figure 4: NWL PR19 Governance Structure 18
Figure 5: Our historical unit cost efficiency rankings by service and overall (2015-19) 21
Figure 6: Analysis of total allowed base costs at PR19 Final Determinations under Ofwat's cost assessment models versus alternative scenario for our cost performance during 2015-19 23
Figure 7: SIM scores 2011-19 24
Figure 8: Water quality contacts cumulative change over AMP6 (2015-16 to 2018-19) 24
Figure 9: Supply interruptions (minutes per property) 25
Figure 10: Pollution incidents per 10,000km sewer from 2012-13 to 2018-19 25
Figure 11: Our service performance as measured in Ofwat's Service and Delivery report 27
Figure 12: Average combined water and waste bill (2017-18 price base) 27
Figure 13: Average water bills (2017-18 price base) in Essex & Suffolk compared to water-only companies 28
Figure 14: Difference in year-on-year real growth in customer bills and household income 28
Figure 15: NWL engagement programme 2015-18 41
Figure 16: NWL three phases of customer engagement for PR19 44
Figure 17: In the round assessment of the PR19 package 56
Figure 18: Industry average ROCE performance against the real vanilla WACC in each price review period 58
Figure 19: Average annual Return on Regulatory Equity (%, 2015-19) 59
Figure 20: Cumulative TFP growth in the Water and Sewerage Industry and the EU KLEMS comparator group 60
Figure 21: RoRE based on Notional Gearing - RIIO-GD1 period 61
Figure 22: RoRE based on Notional Gearing - RIIO-ET1 period 62
Figure 23: Efficiency rankings for selected companies in water 70
Figure 24: Efficiency scores in water for Northumbrian Water and the industry average 70
Figure 25: BEIS data – industrial electricity price index 76
Figure 26: Growth rates of Chemicals and Chemical Products PPI and CPIH 80
Figure 27: Detailed Structure of NACE Rev. 2 (Chemicals and chemical products) 80
Figure 28: Annual price changes (nominal) for our top 5 chemicals (2010-2020) 81
Figure 29: Average real growth rates in the price of our top 5 chemicals 81
Figure 30: Northumbrian Water's historical and forecast number of connected properties to the water network 86
Figure 31: Company requests/Ofwat's modelled allowance for WINEP in-the-round 89
Figure 32: Our abstraction charges and business rates (2015/16 – 2018/19) 95
Figure 33: Water companies' abstraction charges as a proportion of Totex 96
Figure 34: Improvements in PC targets as set out in the BP19 (ed.09/18) and as specified in the FD 100
Figure 36: Industry improvement and PR19 targets in common performance level measures aggregated 101
Figure 37: Totex overspend by company in AMP6 105
Figure 38: Cost-sharing mechanism for AMP7 105
Figure 39: NWL leakage performance and targets in PR14 and PR19 111
Figure 40: The reward sharing factor at two different ODI positions 113
Figure 41: Indicative ODI position for the company in example 1 114
Figure 42: Indicative ODI position for the company in example 2 115
Figure 43: Percentage change in price or bills across sectors 121
Figure 44: Hanningfield Reservoir storage levels 2016/17 and 2017/18 137
Figure 45: Ofwat's DD19 and FD19 RFR basis IL gilt yields 158
Figure 46: Gearing ratios across the water sector 164
Figure 46: Performance targets set for Leakage and Unplanned Outages are significantly more challenging than AMP6 187
Figure 34: Improvements in PC targets as set out in the BP19 (ed.09/18) and as specified in the FD 188
Figure 36: Industry improvement and PR19 targets in common performance level measures aggregated 188
Figure 49: Penalty and reward rates for common PCs (£/unit) 190
Figure 50: Projected P10 underperformance payments and P90 outperformance payments, 2020 – 2025 (£m) 190
Figure 51: RORE movements from Ofwat's notional FD base case to base case with additional costs 193
Figure 52: AICR movements from Ofwat's notional FD base case to NWL base case with additional costs incurred 195
Figure 53: AICR in CPIH and RPI worlds 203

APPENDIX 4: INDEX OF TABLES

Table 1: Structure of the SoC 9
Table 2: Acorn Categories of NWL customers by region 16
Table 3: Wholesale Water and Wastewater efficiency performance (2014-2019) 20
Table 4: Cumu lative Totex variance from allowance 20
Table 5: Pollution events per 10,000km of sewer, our impact on the upper quartile target 26
Table 6: Total net benefits to customers from our service performance 26
Table 7: Wholesale water models 64
Table 8: Wholesale wastewater models 64
Table 9: Ofwat's wholesale Botex efficiency scores 66
Table 10: Catch-up benchmark (based on 3rd/4th most efficient company) impact for NES and the industry 66
Table 11: Cost allowances from excluding small companies 68
Table 12: Range of efficiency scores in Ofwat's Botex models 69
Table 13: Impact of strengthened catch-up assumptions on required cost reduction 70
Table 14: Approach to efficiency benchmarking in different price controls 71
Table 15: Use of RPEs in past price controls 75
Table 16: Impact of forecast real terms price increase on the PR19 financial models and allowance for NWL 77
Table 17: Top 5 chemicals purchased by NWL 81
Table 18: Wholesale water activities related to population growth 83
Table 19: Wholesale wastewater activities related to population growth 83
Table 20: FD19 Unit cost adjustment for growth 84
Table 21: Ramsey's RESET results for Ofwat's models 86
Table 22: FD19 cost allowance for Northumbrian Water's WINEP investment 88
Table 23: Upper-quartile catch up challenge sensitivity 89
Table 24: P-removal model for Severn Trent and South West Bournemouth 90
Table 25: Range of NWLs modelled Totex for P-removal activities implied by Ofwat's models 90
Table 26: Summary of performance of Ofwat's econometric models for companies P-removal programme 91
Table 27: Proportion of programmes driven by WFD no deterioration drivers 92
Table 28: Northumbrian Water's WINEP allowance after removing the UQ and frontier shift challenges 93
Table 29: Regulatory precedent concerning cost pass throughs 97
Table 30: Total impact on Northumbrian Water's Total Expenditute (Totex) allowance 99
Table 31: Regulatory precedent for cost sharing rates from recent UK price control determinations 104
Table 32: Totex ratios and cost sharing rates for Northumbrian Water 106
Table 33: Payoffs under Ofwat's cost sharing mechanism 106
Table 34: Totex gaps and revised cost sharing rates for Northumbrian Water after correcting for Ofwat's errors 109
Table 35: Cost sharing rates for the four significant scrutiny companies 122
Table 36: Efficiency challenge imposed on companies at FD19 123
Table 37: Analysis of Ofwat's implied allowance (£m) 129
Table 38: Analysis of Ofwat's implied allowance - sewer flooding (£m) 130
Table 39: Flooding Risk Level Bands used to measure bespoke PC on reducing sewer flooding risk 133
Table 40: Summary of flood risk investment requested by other Water Companies in their PR19 business plans 133
Table 41: Our proposed Unplanned Outage position at DD19 142
Table 42: Ofwat's proposed Unplanned Outage PCLs post intervention 142
Table 43: Unplanned outages shadow reporting summary 144
Table 44: Issues with unplanned outages raised by the sector 144
Table 45: Summary of movements in Ofwat's A-CoE 152
Table 46: Effect of new information about Corporation Tax on Ofwat's NWL modelling 167
Table 47: Uplift to appointee total revenues for Corporation Tax new information 167
Table 48: Estimates for one-off capital costs to ensure IED compliance, per NWL site 169
Table 49: Uplift to appointee total revenues for KTS abstraction charges new information 173
Table 50: Modelling correction for G&C double counting 175
Table 51: Net adjustment to appointee total revenues and the RCV for G&C double counting 175
Table 52: Adjustments to gross Totex for new information 175
Table 53: Further adjustments to appointee total allowed revenue for new information 176
Table 54: Increase to the RCV for new information 176
Table 55: Criteria and tests for the financeability assessment 181
Table 56: Ratio thresholds and Red Amber Green (RAG) grid 182
Table 57: Overview of key assumptions – Ofwat's FD and Base case scenario with additional costs 192
Table 58: Projected metrics – Ofwat's FD19 under the notional structure (after removing the PAYG adjustment) 194
Table 59: Projected metrics – FD19 base case with additional costs incurred under the notional structure 195
Table 60: Projected metrics – implications of downside scenarios under Ofwat's FD19 base case (excluding the impact on AICR from adjusted PAYG rates) 197
Table 61: Projected metrics – implications of downside scenarios under the base case including additional costs 198
Table 62: Summary of materiality thresholds on Uncertainty Mechanisms and the implications for scenarios 200
Table 63: Proportion of index-linked debt 203

NORTHUMBRIAN WATER living water

ESSEX&SUFFOLK WATER living water