

NORTHUMBRIAN WATER LIMITED

ESSEX&SUFFOLK WATER*livi*ng water

PR19 CMA REDETERMINATION

NON CONFIDENTIAL VERSION

CONTENTS

FORE\	NORD FROM HEIDI MOTTRAM, CEO NORTHUMBRIAN WATER	3
1.	INTRODUCTION & KEY QUESTIONS FOR THE CMA	4
PART	A: SUMMARY OF OUR REPLY	ò
2.	ACHIEVING THE RIGHT PACKAGE IN THE ROUND	7
PART	B: KEY QUESTIONS FOR THE CMA'S REDETERMINATION22	2
3.	SHOULD THE TWO RESILIENCE SCHEMES THAT WE HAVE HIGHLIGHTED BE FUNDED AS ENHANCEMENT CASES?	3
4.	IS THE ADDITIONAL 'STRETCH' THAT OFWAT HAS APPLIED APPROPRIATE AND JUSTIFIED?	5
5.	WHAT IS THE APPROPRIATE INCENTIVE STRUCTURE FOR WATER NETWORK PRICE CONTROLS?	5
6.	WHAT IS THE APPROPRIATE ALLOWED RETURN?	4
7.	IS OFWAT'S FD19 FINANCEABLE?102	2
PART	C: OTHER ISSUES	2
8.	WHAT WEIGHT SHOULD BE PLACED ON CUSTOMER ENGAGEMENT EVIDENCE?	3
9.	TAKING ACCOUNT OF NEW INFORMATION128	3
10.	OUR VIEWS ON OFWAT'S RESPONSE133	3
ANNE	X 1: MARS ANALYSIS	I
ANNE	X 2: FINANCEABILITY	2
ANNE	X 3: INDEX OF SUPPORTING DOCUMENTS14	5
ANNE	X 4: LIST OF TABLES	1
	K 5: LIST OF FIGURES	5

FOREWORD FROM HEIDI MOTTRAM, CEO NORTHUMBRIAN WATER

Northumbrian Water remains committed to a redetermination that delivers the right outcomes, at the right cost, for our customers.

As we expressed in our Statement of Case and then subsequently in our presentation to the CMA, our plan was the culmination of several years hard work and thought. It involved the voice of many thousands of customers, rigorous challenge from our Water Forum and other stakeholders, and responded to the strong signals from Defra and Ofwat about what they thought should be addressed in the coming period. The end result was an ambitious and well evidenced package that took us from high performance and amongst the lowest bills in the country, to even higher performance and a sector leading reduction in bills. As we have also said, this resulted in 91% of customers, having understood the package in the round, supporting the plan.¹

Having read Ofwat's Response, our view remains that the interventions Ofwat made to our plan have resulted in a final determination for PR19 that is unbalanced, gives rise to greater risk and fails to address in full the resilience investments that our customers saw as being so crucial.

In responding to our Statement of Case Ofwat has sought to characterise our plan as 'less for more'. This is clearly erroneous. Our plan offers our customers more (enhanced resilience and improved service levels) for less (we have offered sector-leading bill reductions). Ofwat has also included details which appear irrelevant to the substance of the redetermination, made inaccurate links between our case and the issues that feature in the submissions of the other Referring Companies and on occasion talked about issues in unnecessarily emotive terms. Whilst we strongly support robust regulation, and fully expect to be scrupulously challenged during this redetermination process, we also believe in the importance of maintaining a rigorous and objective evidence-based approach which focuses on the facts.

In our Reply we have sought to identify the key points of difference between ourselves and Ofwat and to reiterate why we believe our plan delivers a better outcome, in the round, for our customers, stakeholders, investors and communities. We look forward to further discussion and hearings on these key points, as well as the areas the CMA wishes to explore further to aid its redetermination in due course.

¹ We note that Ofwat has referred to CCWater's research at DD19 which showed 90% support for the plan (Ofwat Response Northumbrian Water, REP022, para. 2.29, p. 23). In its submission to the CMA CCWater states that only 86% of customers found DD19 to be acceptable on an informed basis (CCWater Submission to the CMA – Northumbrian Water Limited's statement of case, "CCWater Submission to the CMA", 11 May 2020, REP080). The CCWater research was only in relation to bills and service levels and did not explain the reduction in resilience investment. This is not, therefore, a like for like comparison to our research.

1. INTRODUCTION & KEY QUESTIONS FOR THE CMA

1.1. INTRODUCTION

- (1) This is Northumbrian Water Limited's (NWL) reply (the Reply) to Ofwat's Response to our Statement of Case (SoC) as submitted to the CMA on 4 May 2020 (Ofwat's Response). Ofwat's Response incorporates not just its views on our SoC, but also its position in relation to the other three companies that have sought a redetermination Anglian Water (AW), Bristol Water (BW) and Yorkshire Water (YW) (collectively, with ourselves, the Referring Companies). These views are expressed in individual papers targeted at each company, as well as a series of papers that address issues Ofwat has presented as common and/or cross-cutting.
- (2) This Reply addresses issues raised across all the documents comprising Ofwat's Response. Where appropriate, it also responds to issues raised in the statements of case submitted by the other Referring Companies as well as other materials received by the CMA in the course of this process to date.
- (3) In this Reply we address the comments and criticisms made by Ofwat in its Response, without repeating the arguments presented in our SoC. As explained below, Ofwat has not set out any evidence or arguments that detract from or counter the grounds that we have advanced before the CMA. We therefore maintain our position on all those grounds.

1.2. KEY QUESTIONS FOR THE CMA REDETERMINATION

- (4) We consider that a redetermination in the round means ensuring that there is an appropriate 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 resilience of our operations, the level of returns and the financeability of our business. Ofwat's FD19 does not achieve that balance.
- (5) In our Reply we highlight **six key questions** that the CMA will need to consider in its redetermination **which underpin our concern about the balance of the package in the round**. We consider that they represent the most material issues for this redetermination:
 - Should the two resilience schemes that we have highlighted be funded as enhancement cases? We maintain that they should, Ofwat maintains that they should not;
 - Is the additional 'stretch' that Ofwat has applied appropriate and justified? We maintain that this additional efficiency challenge was unjustified, Ofwat does not;
 - What is the appropriate incentive structure for water price controls? We maintain that the incentive structure in previous control periods in the water sector has delivered significant benefits for customers. Ofwat is seeking to replace that incentive framework with a substantially more asymmetric framework with weaker incentives for outperformance;
 - What should the allowed return be? We maintain that a long-term 'through the cycle' approach is most appropriate. Ofwat disagrees;
 - Is Ofwat's FD19 financeable? We maintain that Ofwat's approach at PR19 is not consistent with a reasonable interpretation of the Financing Duty. Ofwat maintains that FD19 is financeable; and
 - What weight should be placed on customer engagement evidence in a price control setting process? We maintain that more weight could and should have been placed on this evidence in the PR19 process, Ofwat rejects this view.
- (6) **Part A** of this Reply provides a summary of our views on each of these questions and the key points for the CMA's redetermination.
- (7) In **Part B** of this Reply, we address the first five questions in more detail by reference to our position in the SoC and the points raised in Ofwat's Response and provide additional analysis where appropriate.
- (8) In **Part C** of this Reply, we set out:
 - a more detailed response to the sixth question regarding the weight to be placed on customer evidence;
 - an update on the areas of **new information** put forward in our SoC in light of the comments made by Ofwat in its Response; and

our broad views on Ofwat's Response. The picture Ofwat paints of our company in the Response is not accurate. We demonstrate that Ofwat has made statements in its Response which are factually incorrect and mischaracterise our business and the case that we have presented both during the PR19 process and to the CMA. We highlight where Ofwat has been inconsistent and selective in its arguments and use of evidence. We are disappointed that Ofwat has taken this approach, but we will demonstrate to the CMA why it should not be distracted or misled by those comments.

PARTA: SUMMARY OF OUR REPLY

2. ACHIEVING THE RIGHT PACKAGE IN THE ROUND

2.1. ADDRESSING THE IMBALANCE IN THE PACKAGE

- (9) In our SoC we highlighted what we saw as an unbalanced Final Determination (FD19) package. We illustrated this with a diagram² which Ofwat has challenged. The criticism is unwarranted. The purpose was not to suggest that PR19 should be identical to other regulated utility settlements, but rather to illustrate the imbalanced nature of the FD19 package as a whole for customers through broad comparison with other recent determinations. The need to maintain an appropriate balance is an essential feature of the price setting process, as reflected in Ofwat's statutory duties. A balanced determination will:
 - **be stretching**, presenting the company with a challenge to reduce its costs and in parallel improve service levels to customers. It should be tough, but there must be good evidence that it can be met by effective management teams;
 - **find the right balance** between affordability/bill reductions on the one hand and new investment to improve service quality, increase capacity or reduce risk on the other;
 - provide the appropriate return to account for the risk facing the owners and for the capital they have invested, based on a reasonable assessment of market evidence, thereby ensuring that, taking account of allowed returns, incentive impacts and cost challenges overall, the package is financeable and that these businesses, which provide highly essential services to customers, are financially resilient;
 - take appropriate account of the views of customers and the customer fora that have been established under the regulatory framework. Whilst price controls are not referenda there should be acceptance that the regulator may not always be in the best position to understand and effectively determine customer preferences, not least where there has been extensive engagement on key issues; and
 - recognise the past successes of the regulatory framework and the benefits it has driven for customers and the environment by providing appropriate incentives. It will celebrate rather than criticise outperformance, recognising that the resulting benefits are shared with customers and stakeholders quickly and contribute to improving the frontier levels of service and cost efficiency that will be reflected in future settlements across the sector. This is the fundamental basis of the RPI-X regulatory model. Within this framework, the regulator will recognise where returns are driven by this outperformance or other factors that could impact on the legitimacy and trust in the sector.
- (10) Ofwat's Response contends that its FD19 "*strikes an appropriate balance*"³ having "*considered the level of stretch on costs, outcomes, and costs and outcomes individually and in the round*".⁴
- (11) We remain of the view that FD19 cannot reasonably be seen to demonstrate an appropriately balanced package in the round:
 - FD19 takes the significant stretch in costs and service that was plainly visible from our business plan and pushes this materially further in every aspect. In doing so, Ofwat goes well beyond a reasonable and evidence-based approach and moves a long way from regulatory precedent. We have accepted Ofwat's cost models and the stretch they imply and have set ourselves challenging performance targets. Despite our accommodating and challenging approach, we nevertheless find that the accumulation of Ofwat's individual decisions means that we are faced with an operationally undeliverable and unfinanceable settlement. The volume and scale of the individual cuts and stretches is even more unbalanced when viewed in the context of what has previously been deemed to constitute an acceptable level of challenge in a regulated network price control. At every opportunity Ofwat has pushed for more even where the evidence base to support its decisions has been weak. The stretch in the package is unreasonable. No company in the water sector has ever delivered anything close to the scale of service improvement Ofwat is seeking and there is no reasonable evidence to suggest that they will do so within a cost envelope which we show is materially tougher than before;
 - FD19 takes a 15% bill reduction and shifts it to a 24%⁵ bill reduction, well beyond any previous price reduction in the water sector or indeed comparable regulatory or competitive environments. Ofwat's

² SoC, Figure 17, p. 56.

³ Ofwat Response Northumbrian Water, REP022, para. 1.54, p. 13.

⁴ Ofwat Response Northumbrian Water, REP022, para. 1.27, p. 7.

⁵ 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.

framework ignores the obvious relationship between investment and service improvement. Despite the headroom in bills, Ofwat rejects additional investment to support resilience, allowing just under a 1% increase in Total Expenditures (totex) across the sector despite the clear intent of parliament in introducing the Resilience Objective and the strategic policy objectives set by Defra. In our case two resilience schemes are rejected which together would increase bills by no more than £2.18 a year for customers (or an increase in bills of less than 1%). We are fortunate in PR19 to have headroom in our bills. We can make these investments without significant affordability pressures in the 2020-25 period. We therefore have the opportunity to invest in schemes which have been well-justified and are supported by customers and other stakeholders. Given the future pressures of climate change it is our view that these investments should be made now;

- FD19 involves a material reduction in the allowed return. Whilst some drop in the allowed return is in line with market movements, here again we see evidence of Ofwat's selective approach to the evidence and data it puts forward to support its decisions. It takes a very short term approach. The result is a cost of capital that is simply too low. In turn the Weighted Average Cost of Capital (WACC), combined with other aspects of the package, puts significant pressure on financial ratios and FD19 drives a material reduction in credit quality right across the sector.⁶ Ofwat does not appear to have given proper consideration to the clear and material concerns of the independent credit rating agencies and its public statements about the importance of financial resilience are at odds with the clear realities of FD19. Whilst we understand that regulators would not wish to be led entirely by these agencies it is important that their analysis is not disregarded entirely;
- the third party evidence to the CMA does not suggest unequivocal customer and stakeholder support for Ofwat's FD19. As the submissions to the CMA demonstrate, the concerns that customer views have not been adequately reflected in the FD19 settlements has sparked a genuine debate about the role of customer evidence in a price control setting process, the nature of the engagement by which it is derived, and the weight that should be placed upon it in Ofwat's decisions. This is particularly true when looking at some of the decisions made by Ofwat at a more granular level, such as whether or not to fund resilience schemes.⁷ We are concerned that the regulator has suggested that customer and stakeholder groups have been 'captured' rather than accepting that there are wider concerns;
- Ofwat's narrative that these CMA redeterminations are driven by a focus on allowed returns and owners seeking unreasonable and unjustified dividends is incorrect and unwarranted. In our [Redacted] we present a factual account of our historical dividend profile and executive pay for the CMA.⁸ Our dividend payments are not out of line with other regulated network investments when returns are calculated accurately and they reflect the significant investment that the owners have made. Furthermore, the sources of our return arise for the material part from outperformance of our allowed costs and service improvement levels. We have gearing below the sector average and close to the notional company and we want to ensure that this is appropriately represented to the CMA. All of the outperformance from cost and service improvements is already shared with customers at a rate close to 50:50 and we demonstrated in our SoC how that outperformance has pushed the frontier forward for AMP7, delivering over £400m of benefit to sector customers. Our outperformance is hard earned, has not been driven by financial engineering, and benefits customers far more than owners under the repeated nature of incentive-based regulation; and
- finally, FD19 demonstrates how Ofwat has started to move away from the core elements of the incentive based regulatory model that have been so central to the real successes that the sector has delivered since the introduction of economic regulation. Ofwat appears to be moving ever closer to a rate of return model that we do not believe would not serve customers well. The incentive package for FD19 is quite clearly highly asymmetric, much more so than in the past, despite Ofwat's unconvincing adjustments. Indeed a symmetrical incentive is far more difficult to find than an asymmetrical one. Not only does this materially weaken the incentives that have been important in delivering outperformance in the past, but it further drives an unfinanceable package where the mean expected outcome means that we cannot earn our base return.
- (12) We stand by our business plan (BP19), as set out in our SoC. BP19 represents a stretching, ambitious and innovative set of proposals that deliver sector-leading bill reductions alongside high levels of service, efficient operations and important investment in resilience for the future. It achieves an appropriate balance where FD19 does not:

8 [Redacted], REP071.

^{6 &}quot;...the final determination has seen a material reduction in our credit quality, and that of the wider industry, leaving orgging financial resilience at the margins of acceptability. This will leave for the control of the cont

future generations to bear the increased financing costs": Wessex Water Submission to the CMA – Water Redeterminations 2020, "WW CMA Submission", 11 May 2020, REP041.
 CCWater states: "It is reasonable to assume that customers would view the FD on a similar basis [as its DD19 acceptability testing], but taking into account customers' preferences in the company's business plan research, the package could go further in terms of delivering more investment in resilience – though this must be delivered efficiently and be based on sound evidence" (emphasis added) (CCWater Submission to the CMA, REP080, p. 9).

- we did pay heed to Ofwat's methodology and we developed a plan that was stretching in terms of Performance Commitments (PCs) and Outcome Delivery Incentives (ODIs), efficiency targets, costs and enhancements, taking into account the early view cost of capital for the notional company. We adjusted our plan during the process based on Ofwat's feedback, pushing the stretch even further;
- at the same time, we listened carefully to our customers, building a plan that reflected their priorities, preferences and needs. We knew that we would be able to reduce our bills in AMP7 but gave our customers the opportunity to consider the potential trade-offs between short terms reductions and the opportunity to invest in resilience and reduce risk in the long term. As a result, our plan balanced our customers' desire for affordable bills, offering the largest bill reductions in the sector, with investment in resilience for the future;
- in FD19 Ofwat accepted those stretching targets that we had set for ourselves and made them more stretching, reducing our costs and the allowed returns. As Water UK recognises "this stretch is driven by the combination of simultaneous pressure on costs, outcomes, risks and returns. It risks eroding the long term investability of the sector as one with a reasonable prospect of an appropriate balance of risk and returns, potentially resulting in shorter-term perspectives from investors";^e and
- this means that the necessary investments and performance standards have not been funded, which has led to an unbalanced settlement that our Board of Directors (**Board**) is unable to accept.
- (13) Taking the decision to seek a redetermination is difficult and complex given the time and cost implications of such a process. There are many reasons why companies do not seek a redetermination, but it is unprecedented for almost a quarter of all companies in the sector to take that step. Whilst the other companies did accept FD19, that should not be taken as an endorsement of Ofwat's decision or approach, simply a recognition that, on balance, those companies concluded that they did not wish to enter into a CMA process with the cost and uncertainty that this brings. However, the comments they have made reflect some of the themes that emerge from our SoC about the balance between the short and longer-term interests, the excessive nature of some of Ofwat's individual challenges and the lack of evidence for them, as well as the overall lack of balance in the package.¹⁰ The fact that more companies have appealed their determinations than ever before is a more important point than focusing on how many have accepted.
- (14) We also note that over 40 third parties have chosen to make representations to the CMA, many of whom are concerned with the approach to the final determination, particularly with respect to resilience. This is also unprecedented and suggests a level of concern with the final determinations for PR19 which the CMA will need to take into consideration in its redetermination.
- (15) Whilst our SoC and this Reply inevitably focus on some of the details of the PR19 settlement, we would wish the CMA to see them in the context of the unbalanced nature of the package we are faced with. Our detailed proposals are seeking to create the better balance that we and our customers require. We therefore support Ofwat's proposition that the CMA should consider our redetermination in the round.¹¹ As we stated in our SoC, it is important that our price control settlement should 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 resilience of our operations, the level of returns and the financeability of our business.

2.2. SHOULD THE TWO RESILIENCE SCHEMES THAT WE HAVE HIGHLIGHTED BE FUNDED AS ENHANCEMENT CASES?

(16) In order to determine whether our sewer flooding proposals and the Essex Resilience scheme should be funded as enhancement cases the CMA must consider whether we have demonstrated that they satisfy the requisite gateway tests: there is a resilience need; we have selected the most appropriate option; and the costs are efficient. We have demonstrated that each test is satisfied in respect of both schemes. The schemes should, therefore,

⁹ Water UK Submission to the CMA – Water Redeterminations 2020, "Water UK CMA Submission", 11 May 2020, REP050.

⁹ water UK submission to the UMA – water Redeterminations 2020, water UK CWA submission, 11 May 2020, REP030.
10 Wessex Water (WW) notes that whills it its board resolved not to appeal FD19 "despite considerable reservations" it does remain "concerned that PR19 was a missed opportunity which comes at the cost of longer-term operational and financial resilience" and that the "long-term interests of customers and the environment have not been well served by PR19" (WW CMA Submission, REP041). Dwr Cymru Oyfyngedig (Dwr Cymru) acknowledges that "when we made the decision not to ask Ofwat to refer our FD19 to the CMA it was on the basis that it should be taken as a package. There were areas where we considered Ofwat's challenges to be excessive and did not agree with its decisions". In particular, Dwr Cymru notes that a startling feature of PF19 is that "for the first time, Ofwat has relied on a number of leaps of faith' that are more in the way of assertions than reasoned judgement, and cannot be objectively assessed because they are by their nature purely subjective" (Dwr Cymru Welsh Water Submission to the CMA – Water Redeterminations 2020. "Dwr Cymru WW CMA Submission", 11 May 2020, SUCHem Water as a coepting that Ofwat had, in all cases, arrived at the correct balance of costs, outcomes and financeability" (Southern Water Submission to the CMA – Water Redeterminations 2020, SUC CMA Submission to the CMA – Water Redeterminations and financeability" (Southern Water Submission to the CMA – Water Redeterminations 2020, SW CMA Submission to the CMA – Water Redeterminations and financeability" (Southern Water Submission to the CMA – Water Redeterminations 2020, SW CMA Submission to the CMA – Water Redeterminations 2020, SW CMA Submission to the CMA – Water Redeterminations and financeability" (Southern Water Submission to the CMA – Water Redeterminations 2020, SW CMA Submission to the CMA – Water Redeterminations and financeability" (Southern Water Submission to the CMA – Water Redeterminations and financeab

¹¹ Ofwat Response Northumbrian Water, REP022, para. 1.56, p. 13.

be appropriately funded so that they can progress in AMP7 in order to deliver the benefits in a timely manner in accordance with our customers' preferences.

- (17) Ofwat claims that we do not understand resilience. This is an unfounded statement which departs materially from Ofwat's previous feedback to us. Moreover, it risks deflecting attention from the key tests identified above. Assessed by reference to those tests it is clear that each scheme furthers the Resilience Objective, is robust and supported by evidence and is well supported.
- (18) Our resilience proposals for AMP7 reflect the priorities of our customers and the focus of the business on the efficient and sustainable management of risk over the long term. Having requested and been granted the largest amount of resilience funding in the sector (in relative terms to totex)¹² is, we consider, a positive reflection on our approach, rather than the basis for implying that we do not understand the underlying concept or should not be granted more enhancement funding.¹³ In reaching the package that we put forward in our BP19 we took into account the views expressed during our customer engagement alongside a more detailed assessment of the need for the potential investment options. Whilst the scale of our BP19 proposals may, therefore, be reflective of the greater amount of headroom we have in our bills, comparative to other companies, it is also the result of a thoughtful and robust process aimed at furthering the Resilience Objective in the interests of our customers. These issues are considered in more detail in Part B Section 3.3.
- (19) We do not consider that any of the arguments or evidence presented by Ofwat has undermined our enhancement cases. As set out in our SoC, we reiterate our request that the CMA provide an allowance for these schemes to be funded in full as a resilience enhancement investment in its redetermination.
- (20) The combined cost of these two schemes on customer bills amount to £2.18 per customer per annum on average¹⁴ (less than 1% of bills). The bill impacts here are modest and clearly affordable within the overall package, as demonstrated by our BP19 proposals. As the Water Forum noted in its submission to the CMA "a majority [of the customers] surveyed would have accepted a 10% bill reduction" as such the Water Forum "very much welcomed the unprecedented level of bill reductions for customers that NWL's business plan offered; and indeed were very pleased that this could have been delivered in addition to significant investment in increasing resilience".¹⁵ If in future price controls, due to other pressures, there is not sufficient headroom in bills to undertake these investments then we may regret not taking this opportunity to reduce risk to customers in line with their preferences and at such a modest cost. This concern is echoed by the Water Forum:

"not investing in sewer flooding in the North and water resilience issues in the South now does not, in our view, make sense especially when customers have said they support it. We would suggest that if the investment is not made now, the issues risk becoming more acute by the next Price Control round and could, therefore, be more costly to address, affecting future customers."¹⁶

2.2.1. Sewer Flooding Resilience Scheme

- (21) Ofwat has not questioned the need for this scheme and indeed welcomes our proactive approach. This recognises the very real benefits to customers who will, as a result of this programme, be protected from having to go through the experience of having their homes flooded by sewerage. Ofwat considers, however, that this is activity which should be funded from our base cost allowance and, viewed in that context, it considers that we have not satisfied the tests for making an adjustment to that cost allowance.¹⁷ Nor does it consider we have demonstrated the efficiency of our costs.¹⁸
- (22) We have demonstrated that our BP19 proposed two separate and distinct programmes of activity for AMP7 to tackle sewer flooding:
 - the Business-as-usual (BAU) base programme: our BP19 includes a c.£82m programme to meet the common sewer flooding PC, captured in our 7-year rolling capital plan. The base programme seeks to reduce the number of properties flooding in AMP7 by focusing on those that have experienced it previously; and

¹² Ofwat Response Northumbrian Water, REP022, paras 3.3 and 3.96, p. 27 and 52.

¹³ Ofwat Response Northumbrian Water, REP022, para 3. 95, p. 52.

¹⁴ Of the £2.18 increase £1.81 is attributable to the sewer flooding resilience scheme and £0.37 to the Essex Resilience scheme: see NWL analysis, Financial model, FD resilience schemes totex and PAYG changes, REP081.

¹⁵ Northumbrian and Essex and Suffolk Water Forum Submission to the CMA – Water Redeterminations 2020, "Northumbrian and Essex and Suffolk Water Forum CMA Submission", 11 May 2020, REP058.

¹⁶ Northumbrian and Essex and Suffolk Water Forum CMA Submission, REP058 17 Ofwat Response Northumbrian Water, REP022, paras. 3.101-108, pp. 53-54.

¹⁸ Ofwat Response Northumbrian Water, REP022, para 3.109, p. 54.

- the **enhancement programme**: proactive activity to address properties at risk of first-time flooding in the future as a result of climate change and urban creep.
- (23) The c. £82m base programme is a continuation of our AMP6 activity, with a significant uplift in investment reflecting the more challenging performance target and the increasing unit cost of improvement as our base performance improves. We accept that our performance on the sewer flooding PC relative to the rest of the sector needs to improve. We have demonstrated this by accepting Ofwat's PC target and not asking for additional base cost allowances beyond the implicit £82m allowance or challenging Ofwat's base cost models. Ofwat's assertion that we are attempting to use enhancement funding to catch up with the rest of the sector on our common PC is incorrect and unfounded.¹⁹
- (24) Whilst companies will have been addressing some climate change impacts during AMP6, we disagree with Ofwat's belief that its base cost models adequately capture climate change or urban creep as cost drivers.²⁰ In supporting our customers' wishes to reduce future flooding exacerbated by climate change, we are putting in place resilience measures which are reflective of dynamic climate systems and clearly demonstrate that stationary modelling cannot always be relied upon to represent the dynamic fluctuations we are experiencing today.
- (25) Our enhancement programme represents an entirely different list of project interventions from the rolling capital plan with a different nature and focus. The £86m investment figure was built up based on regional unit cost estimates to deliver a 7,400 reduction in the number of properties at risk of sewer flooding. All of the interventions in this programme are expected to relate to proactive hydraulic schemes, reflecting the nature of the enhancement schemes as ones which seek to reduce risks in the future by enhancing the hydraulic capacity of the wastewater network. The cost efficiency of our programme has been independently substantiated by third party analysis.²¹
- (26) We consider, therefore, that our sewer flooding resilience scheme should be **funded in full as a resilience enhancement investment.** To the extent, however, that the CMA does agree with Ofwat that this should be base activity, we note that Ofwat has accepted that if we are correct that £82m has been implicitly included in our base cost forecasts for base activities then there will be insufficient funding from base costs to cover the full extent of our proposed enhancement scheme.²² This confirms that there is insufficient funding in our current base cost allowance to fund both programmes.
- (27) With regard to our bespoke sewer flooding PC that was designed to accompany the enhancement case, we note Ofwat's comments regarding the low incentive rate. Whilst we consider this was designed to be properly reflective of customer views, and Ofwat has not raised these concerns previously, if the CMA concludes that this activity should be funded as enhancement then we would be open to moving to an alternative ODI, perhaps focused upon the unit costs of the scheme.
- (28) These issues are considered in more detail in Part B Section 3.4.

2.2.2. Essex Resilience Scheme

- (29) Ofwat has questioned the need for this scheme.²³ In doing so it relies on
 - the current degree of integration in our supply network and the existence of a supply surplus;
 - the supposed overlap with the funded Layer Dissolve Air Flotation (DAF) scheme; and
 - our ability to make better use of the existing resilience within the network, such as the Ely to Ouse Essex Transfer Scheme (EOETS).²⁴
- (30) We have demonstrated that the need for the scheme is not negated by either the existing level of integration within our raw and potable water supply network, or by having a supply surplus in our Essex Water Resource Zone (WRZ):

¹⁹ Ofwat Response Northumbrian Water, REP022, para. 3.117, p. 56.

²⁰ Ofwat Response Northumbrian Water, REP022, para 3.137, p. 61.

²¹ KPMG and Aqua Consultants, Reducing Property Flood Risk: Cost Assurance Benchmarking Report, March 2020, SOC282.

²² Ofwat Response Northumbrian Water, REP022, para 3.116, p. 56.

²³ Ofwat Response Northumbrian Water, REP022, para. 1.36, p.9. 24 Ofwat Response Northumbrian Water, REP022, paras. 3.125-3.149, pp. 58-62.

²⁷ Owal Response Normannunan Waler, REPUZZ, paras. 3.125-3.149, pp. 58-62.

- having a supply surplus means that we have sufficient quantities of water in the WRZ overall.²⁵ The focus of this scheme is not about increasing the amount of water we have available, but about where it is and how we can move it around;
- whilst we do have a highly integrated network with a large degree of flexibility,²⁶ having an integrated system is only effective if you can move the raw water to where it needs to be in order to take advantage of that integration, particularly at times when stress is placed on the system;
- the Essex Resilience scheme, by enabling the transfer of water from Abberton reservoir to Langford Water Treatment Works (WTW) to meet baseline demand, allows us to divert the water sources that would otherwise have been used at Langford WTW to enable us to refill Hanningfield reservoir. The flexibility to refill the reservoir from these alternatives sources means we can ensure that the levels are maintained to provide the appropriate level of resilience within the system all year round, particularly in the event of a low probability/high impact event.
- (31) We also demonstrate that the resilience of our raw water and potable supply systems is at risk and whilst the funded Layer DAF scheme is complementary, it does not remove the need for the Essex Resilience Scheme:
 - contrary to Ofwat's assertions,²⁷ we have demonstrated that the combination of factors impacting on our raw
 water (including algal blooms, the quality of our raw water, reduced rainfall, population growth, demand
 fluctuations and the availability of third party water sources) leads to unsustainable levels of reliance on the
 Hanningfield reservoir reserves. This creates resilience challenges for our raw and potable water supply
 systems; and
 - the funded Layer DAF scheme will restore the level of resilience currently lost at the Layer WTW by addressing the algal and turbidity outages. As Ofwat itself acknowledges, this is not enough, in and of itself, to sufficiently mitigate the full range of risks that have prompted the proposal for the transfer main;²⁸
 - completion of the Layer DAF works will not have any impact on our ability (or inability) to refill the Hanningfield reservoir to ensure it can provide the appropriate level of resilience.
- (32) Similarly, reliance on the EOETS or other sources of 'existing resilience' is not a substitute for this scheme. The operational failure of the EOETS was a compounding factor in the 2016 outage event.²⁹ The Essex Resilience Scheme is, however, designed to address a much broader range of risks. As such we do not consider that the level of resilience offered by the Essex Resilience scheme could be achieved through control and management interventions with respect to EOETS, or by adopting it ourselves. We do not consider that the other potential sources of resilience as identified in Ofwat's Response³⁰ are genuine alternatives, alone or in combination, to the Essex Resilience scheme.
- (33) We consider, therefore, that this scheme is needed, it is the best option to meet that need, and it will provide many benefits to customers at an efficient cost.³¹ It allows us to maximise the existing infrastructure by making the most of existing treatment capacity, which defers the need for future investment in those works.³² Our customers recognised this, with 89% of customers supporting this proposal. As Water Resources East (WRE) acknowledge "the proposed scheme would appear to be a well-supported, technically appropriate, relatively low cost, 'no regret' option for the county of Essex and beyond".³³
- (34) These points are considered in more detail in Part B Section 3.5.

2.3. IS THE ADDITIONAL 'STRETCH' THAT OFWAT HAS APPLIED APPROPRIATE AND JUSTIFIED?

(35) We consider that the FD19 package for costs is unbalanced and goes beyond the reasonable and achievable stretch challenge put forward in our BP19 in our customers' interests.

²⁵ SoC, para. 693, p. 136. 26 SoC, para. 61, p. 15.

²⁷ Ofwat Response Northumbrian Water, REP022, para. 3,137, p. 63; para. 3.142, p. 62.

²⁸ Ofwat Response Northumbrian Water, REP022, para. 3.136, p. 60.

²⁹ Ofwat Response Northumbrian Water, REP022, para. 3.145, p.62; SoC para. 708, p. 139; Essex Resilience Enhancement Business Case, March 2020, SOC276, Section 4.5, p. 21.

³⁰ Ofwat Response Northumbrian Water, REP022, para. 3.148, p. 63. 31 SoC, paras 694-698, pp. 137-138.

³² SoC, para 694, p. 137; Essex Resilience Enhancement Business Case, SOC276, para. 47, p. 13.

³³ Water Resources East Submission to the CMA - Water redeterminations 2020, "Water Resources East CMA Submission", REP010.

- (36) We reject Ofwat's justification that a 'step change' is needed across the sector because the sector has demonstrated historical systematic outperformance. On the contrary, analysis of the Return on Capital Employed (RoCE), which we demonstrate to be the most appropriate metric,³⁴ shows that returns have been broadly in line with allowances, meaning that there is no evidence of 'substantial, systematic and persistent historical outperformance' in the sector.³⁵ These issues are considered in more detail in Part B Section 4.3.
- (37) We have accepted the challenge to meet the efficiency levels derived by Ofwat's base cost modelling and we have supported Ofwat's choice of base cost modelling consistently throughout the PR19 process. While all statistical models are necessarily imperfect, Ofwat's base cost models are more robust than any alternatives we have had access to to-date.³⁶ Other companies have also confirmed their support for Ofwat's base cost models.³⁷ These issues are considered in more detail in Part B Section 4.2.
- (38) While we have accepted the challenge to meet the benchmarked efficiency level, we have significant concerns with many of Ofwat's post-modelling adjustments. Ofwat has made a series of interventions reducing allowances below the efficient benchmark derived through its modelling without sufficient consideration of the overall collective impact these interventions have. We challenged the logic and evidence supporting the magnitude of the adjustments which result in cost allowances that are not achievable if the company is to maintain service levels. They are also unrelated to the efficient benchmark established through Ofwat's modelling.
- (39) On the catch-up efficiency challenge we demonstrate that the analysis on which Ofwat relied to justify the switch from upper quartile (**UQ**) to the 3rd and 4th company is flawed. The challenge based on a historical UQ is by definition stretching as three quarters of the industry needs to reduce its historical costs to live within their allowances. When the FD19 allowances are compared with initial versions of the business plans, which are arguably a better representation of their true expectations of efficient spend than the August 2019 business plans, only 5 out of 17 companies submitted lower base costs than the FD19 allowances. Even when the August business plan is considered the PR19 efficiency challenge was greater than that seen at PR14. This helps show that the FD19 settlement is not "comfortably achievable".38 Most of the sector would need to make efficiency savings from their original plans and historical levels of costs to meet those allowances. Nor should the assertion that 2018/19 was a "high cost" year mean that the level of challenge should be adjusted.³⁹ The data for both water and wastewater does not support the assertion that 2018/19 was an atypical year: water costs followed the trend from 2016/17 onwards (see Figure 11); and wastewater costs were actually lower than 2016/17 and only 1% higher than the previous year (see Figure 10). Moreover, an examination of the underlying cost elements shows that some elements which would not have been affected by the weather drove part of the overall increase. For these reasons, we do not consider the increase to be abnormal or that similar circumstances could not happen in AMP7. Ofwat's justification that it increased the cost challenge as a result of an atypical year leaving companies without a strong challenge to costs is not credible. Not only is the UQ a strong challenge for the sector, but we also show that Ofwat's incentives drove the sector to reduce their costs below the efficient level. Had the 18/19 year been the same as the previous year, it would still have been the case that many companies' cost forecasts were below the allowances. These issues are considered in more detail in Part B Section 4.4.
- (40) Ofwat restates its view that there is insufficient evidence that a Real Price Effect (RPE) for energy or chemical prices is needed and that to do so would weaken incentives on companies to manage those costs and create the potential for negative impacts on customers.⁴⁰ Like labour costs⁴¹ the prices of inputs are determined by market forces. We have a degree of management control, but there isn't scope for significant improvements beyond the 1.1% already captured by the frontier shift challenge. We demonstrate that we have already taken many steps to reduce these costs where possible, meaning we have less scope to make future savings and are more exposed to any price increases. Ofwat does not adduce any evidence to demonstrate that the cost management strategies it identifies may be used to achieve efficiency gains in excess of the 1.1% frontier shift. We further show a weak relationship between oil prices and power prices which suggests that, at

³⁴ Economic Insight, Measuring profitability in the water industry, A report for Northumbrian Water's response to Ofwat, "Economic Insight Appendix", 22 May 2020, REP067. 35 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.6.

³⁶ Base Costs Appendix, REP066.

³⁷ See, for example: United Utilities Submission to the CMA – Water Redeterminations 2020, 11 May 2020, REP083.

³⁸ Ofwat Response Northumbrian Water, REP022, para. 3.24, p. 34.

³⁹ Ofwat Response Northumbrian Water, REP022, para. 3.26, p. 34.

⁴⁰ Ofwat Response Northumbrian Water, REP022, paras. 3.47-3.68, pp. 39-45.

⁴¹ Ofwat acknowledges the need for an RPE adjustment for labour costs: SoC, Section 5.5.2, p. 73.

least at this stage, it is far from clear that a drop in oil prices as a result of COVID-19 will result in a corresponding drop in power prices. These issues are considered in more detail in Part B Section 4.5.

- (41) We support Ofwat's approach of including growth enhancement costs in its base cost models. For the most part, modelling growth enhancement with base costs avoids cost allocation issues and Ofwat's FD19 models appear to be robust. However, we disagree with Ofwat that the downward post-modelling adjustment it makes for growth has a clear rationale.⁴² In principle, the differential impact of growth on costs should be captured in the model itself through the scale and population density variables. Also, Ofwat's approach of calculating the adjustment is insufficiently robust it is sensitive to the type of forecast used and the independence of the Office of National Statistics (ONS) forecasts does not mean that they are accurate instead they usually underestimate growth. In any event, Ofwat's 50% discount on our downward adjustment cannot be considered to be generous,⁴³ given that an adjustment is not warranted in the first instance. These issues are considered in more detail in Part B Section 4.6.
- (42) Ofwat's Response restates the grounds on which it considers the application of a frontier shift efficiency challenge to Water Industry National Environment Programme (WINEP) enhancement costs is justified, but does not provide evidence to support its assumptions.⁴⁴ We demonstrate, however, that Ofwat's frontier shift challenge has the effect of double counting the productivity challenge due to the use of companies' forward-looking costs in the econometric models. If companies had not included a productivity challenge to their cost forecasts, the predicted costs from the models would have been higher. This would have resulted in a less challenging benchmark. Also, given that the models are not as robust as Ofwat claims⁴⁵ a catch-up challenge cannot be appropriately applied to WINEP enhancement costs due to a high possibility that the models are unable to predict the frontier costs. These issues are considered in more detail in Part B Section 4.7.
- (43) Ofwat does not accept our suggestion that its 'third model' should be used to assess our phosphorus-removal (P-removal) costs, as it has done for YW. We demonstrate that our specific circumstances, like YW's, mean that the first two models suggest that our costs are less efficient than they actually are. We challenge Ofwat's comparison of our AMP6 and AMP7 costs and demonstrate that its analysis is incorrect and our AMP7 programme is clearly more efficient than our AMP6 programme. Whilst we accept that, unlike YW, we did not raise this concern as part of our DD19 representation, we do not consider that is a sound basis for applying different methods to different companies facing similar scenarios. These issues are considered in more detail in Part B Section 4.7.2.3.
- (44) Ofwat's Response does not address our argument that the proposed reconciliation mechanism is not appropriate for abstraction charges and business rates.⁴⁶ Instead it suggests that we do have some degree of influence over business rates and revaluations⁴⁷ and the reconciliation mechanism ensures we are incentivised to fully engage.⁴⁸ We do not require this incentive to manage our costs where we can, but given the very limited degree of control we have, the real effect of the mechanism is to expose us to an uncontrollable risk of a windfall loss arising from a significant increase in these costs. As we are disproportionately impacted given the magnitude of these costs (our abstraction charges are 8% of totex compared to an industry average below 3%) a 100% pass-through is more appropriate. These issues are considered in more detail in Part B Section 4.7.2.3.
- (45) Ofwat restates its support for a 1.1% frontier shift challenge in light of the range put forward by the Referring Companies, as well as the scope of costs to which it was applied at FD19. We have not contested the 1.1%, having already accepted a 1.5% challenge in BP19, but we demonstrate that Ofwat's FD19 changes did not increase our allowance, as it did for most of the sector, but in fact tightened our settlement by £5m. Having considered Ofwat's comments on performance and productivity in comparator competitive sectors,⁴⁹ it remains our position that Ofwat's approach will require water companies to improve productivity faster than those competitive sectors in order to operate within their regulatory allowances. This is not sustainable in the long run and demonstrates the overall stretch in the PR19 settlement. In any event, we reiterate that abstraction charges and business rates do not represent inputs, meaning it would be erroneous to apply a productivity trend

- 45 SoC, Section 5.7.3.1, p. 88.
- 46 SoC, Section 5.8, p. 93.

⁴² Ofwat Response Northumbrian Water, REP022, para. 3.70, p. 45.

⁴³ Ofwat Response Northumbrian Water, REP022, para. 3.72, p. 46. 44 Ofwat Response Northumbrian Water, REP022, paras. 3.75-3.79, pp. 46-47.

⁴⁷ Ofwat Response Northumbrian Water, REP022, para. 3.152, p. 66.

⁴⁸ Ofwat Response Northumbrian Water, REP022, para. 3.155, p. 66.

⁴⁹ Ofwat Response Northumbrian Water, REP022, paras. 3.37-3.46, pp.36-39; Ofwat Response Cost Efficiency, REP024, Chapter 7, pp.79-106.

to these items, and they are not within our control. Whilst our preferred approach is for these costs to be recovered through a pass-through as explained above, **applying frontier shift results in unjustifiable reductions to efficient costs which can't be recovered by productivity improvements**. These issues are considered in more detail in Part B Section 4.8.

2.4. WHAT IS THE APPROPRIATE INCENTIVE STRUCTURE FOR WATER PRICE CONTROLS?

- (46) In Ofwat's approach to outcome incentives we observe an increased focus on the rate of returns while limiting the scope for rewards, within distortive asymmetric incentive mechanisms. We question whether this approach meets the Better Regulation principles of consistency and transparency. We want to improve our performance for our customers. However, we expect our regulator to be consistent in its application of regulation to a long term problem and transparent in the way that it calculates the metric. We believe that Ofwat's choices do not reflect these principles, in this instance. As part of its redetermination, we ask the CMA to consider the precedent set by Ofwat's design of incentive mechanisms, given their threat to future improvements.
- (47) In relation to leakage we demonstrate that Ofwat's proposed use of actual leakage as a baseline for this PC50 disincentivises improvement activity at the end of a regulatory period and is therefore not in customers' interests. Improving leakage requires continual engineering and investment and regulatory incentives represent the only benefit to the company from leakage reduction. If those incentives are not effective, less investment will pass the cost-benefit calculation and leakage performance will not improve as quickly as it might otherwise. We do not consider that Ofwat has put forward any arguments or evidence to disprove this.
- (48) Whilst we have made significant improvements in AMP6 and outperformed our leakage target, our actual performance at AMP6 does not exceed any of the proposed AMP7 targets. To earn additional rewards in AMP7 we must improve leakage performance beyond current or projected performance at the end of AMP6. As such, there is no risk of us being rewarded twice.⁵¹ These issues relating to leakage are considered in more detail in Part B Section 5.2.
- (49) In relation to cost sharing rates, Ofwat disagrees with the position that a 50:50 sharing rate is more appropriate⁵² but has not engaged with the arguments and evidence contained in our SoC.⁵³ We question whether this approach meets the Better Regulation principles of *proportionality*. We maintain that setting skewed incentive rates are not a proportional response to our business plan, given the lost potential incentive for cost improvements, which we demonstrate has been the case in the past. Those points should be given due consideration by the CMA in our redetermination.
- (50) We demonstrate that Ofwat's asymmetric cost sharing rates incentivise companies to submit 'low' rather than 'efficient' costs. This does not address concerns about information asymmetry, but it distorts focus in business plans from reflecting customer needs and priorities; distorts cost benchmarking as it becomes more difficult to distinguish genuine views of efficient costs from lower costs submitted in response to the incentive; and dissuades stakeholder engagement as this becomes less relevant to the planning process.
- (51) A 50:50 sharing rate remains more appropriate as a measure to incentivise efficient business plans. Further, we show that the cost sharing rate is an important factor in driving efficiency improvements in regulated utility sectors. Weakening this incentive is likely to lead to a reduction in cost efficiency for customers. These issues are considered in more detail in Part B Section 5.3.
- (52) Finally, the **complex picture of different caps for ODIs** presented by Ofwat appears **poorly focused and arbitrary**. We question whether this approach meets the Better Regulation principle of *targeting*. Ofwat's approach does not target to achieve its policy aim and distorts the appropriate incentives within the ODI framework. Specifically:
 - the arguments have centred around whether a cap on ODIs should be set on a gross basis (i.e. limiting the reward payment for each ODI separately, without reference to other ODIs) or on a net basis (i.e. limiting the bill impact of a reward payment from the total ODI collection). This leads to **confusion about the policy**

⁵⁰ Ofwat Response Northumbrian Water, REP022, para 4.16. p. 77. 51 Ofwat Response Northumbrian Water, REP022, para 4.16. p. 77.

⁵¹ Otwat Response Northumbrian Water, REP022, para 4.16. p. 77.

⁵² Ofwat Response Northumbrian Water, REP022, para 6.72, p. 128. 53 SoC, Section 6.4, p. 103.

objectives behind the incentive cap – we believed it was to limit the impact on bills from ODI payments, but Ofwat has now suggested the aim is to limit outperformance from individual ODIs, which cuts across the balance in the ODI framework, which was included in the FD and was calculated based on customer research to find their willingness to pay for different outcomes;

- further, we are concerned that Ofwat cites a new 1% cap, which Ofwat will ask companies to adhere to, for deferring outperformance payments, but this does not appear in the price control, so has not been subject to the same level of scrutiny, but is equivalent to a price control policy in its operation; and
- the effect of a gross cap will be to limit the incentive to continue to improve in a successful area, which distorts the customer research-led ODI balance so cannot reflect customer interests.
- (53) In the circumstances, a 2% of RoRE net cap meets the right objective to limit the overall net effect of ODIs on bills, while preventing the distortion on the ODI framework. These issues are considered in more detail in Part B Section 5.4.

2.5. WHAT SHOULD THE ALLOWED RETURN BE?

- (54) In our SoC, we explained how Ofwat erred in calculating the WACC and setting it at the level of 1.92% which does not reflect customers' long-term best interests. Our view draws on market-based evidence and independent expert evidence which supports the WACC being set at a higher level. We acknowledged their range but did not specify a level.⁵⁴ Instead we set out a series of tests for the CMA to consider.⁵⁵ In summary, we were concerned that Ofwat's approach to setting the allowed return:
 - departs substantially from regulatory precedent and recognised good practice with respect to methodology and evidence bases;
 - takes a selective, partial and inconsistent view of the evidence base, particularly in relation to beta and the Risk Free Rate (RFR); and
 - takes unduly short-term perspectives on key parameters, notably in the RFR, adding further scope for instability in allowed returns across successive control periods.
- (55) In its Response Ofwat does not engage with many of the arguments in relation to the individual parameters of the allowed return. Instead it cross-refers to the CMA's NATS (En Route) (NERL) Provisional Findings (NERL PFs)⁵⁶ alongside previous evidence and analysis supporting FD19. We are aware that for some of the key cost of equity parameters in particular there is a relevant read-across to the CMA's NERL redetermination a copy of our response to the NERL PFs is attached to this Reply.⁵⁷
- (56) Our detailed views on the WACC parameters are set out in Part B Section 6. We ask the CMA to carry out a full review of the WACC in light of this framework.
- (57) Ofwat's suggestion that Market-to-Asset Ratio (**MARs**) imply the WACC is generous is selective and incorrect.⁵⁸ Aside from the point that it is clearly inappropriate to draw conclusions for all 17 companies in the sector from just two listed stocks (especially when those stocks were both fast-tracked companies), we show that over time there are many factors influencing the MARs and some that are not controlled for by Ofwat. For example, the recent election, which reduced perceived nationalisation risk, had a significant impact. We also show that taking a broader range of evidence into account and adjusting for some of these company-specific factors, notably the financing outperformance, non-regulated revenue streams and fast track status, **the MARs premium is negative on the lower bound, with a central estimate that is close to 1x.** These issues are considered in more detail in Part B Section 6.3.
- (58) The beta estimate should be based on a robust approach and reliable data. In the Beta Academic Paper, Professor Alan Gregory, Professor Richard Harris and Dr Rajesh Tharyan⁵⁹ have considered the appropriate approach to estimating regulatory betas and estimate an equity beta for PR19. The Beta Academic Paper explains that for regulatory price control purposes, betas should be estimated using Ordinary Least Squares (OLS) over the longest time window since the last structural break. Such an approach will estimate the

⁵⁴ SoC, para. 31, p. 7. 55 SoC, Section 8.4.5, p. 149.

⁵⁶ Northumbrian Water Submission to the CMA on the NATS CMA Provisional Findings, "NWL NERL PFs Submission", 15 April 2020, REP044.

⁵⁷ NWL NERL PFs Submission, 15 April 2020, REP044.

⁵⁸ Ofwat Response Risk & Return, REP026, para. 1.20, p. 6.

⁵⁹ Alan Gregory, Richard Harris and Rajesh Tharyan, A Report on the Estimation of Beta, Prepared for Anglian Water Services Ltd, GHT 2020 - Beta Appendix, 4 January 2020, REP068.

unconditional beta. The authors run statistical tests demonstrating that structural breaks took place in 2014 and March 2020, hence a 63-65 month time horizon (i.e. just over 5 years) from 2014 to February 2020 should be adopted. With regards to the sampling frequency, the Beta Academic Paper finds that **weekly betas are particularly subject to reference day risk and so are not appropriate**. The authors estimate both daily and monthly betas, with the monthly estimates alleviating any concerns regarding downward bias in the daily data. Consistent with the KPMG/AGRF Report,⁶⁰ The Beta Academic Paper adopts a Vasicek adjustment. We note that, in its 2017 PR19 report, EE also explores the use of the Vasicek adjustment and dismissed it solely on the basis of materiality and not on the basis of the underlying theory.⁶¹ The Beta Academic Paper concludes that "taken in the round, our minimum estimate of beta is around 0.67 and the maximum is around 0.78. A reasonable central estimate would appear to be around 0.72." More broadly, **we provide comparative analysis of different Beta estimates and demonstrate that it is difficult to reach Ofwat's estimate using a broad range of analyses**. These issues are considered in more detail in Part B Section 6.4.3.

- (59) **Changes to notional gearing are not necessary.** The use of the de-gearing/re-gearing formula only results in a counterintuitive result that the WACC increases with gearing because of the parameters used by the CMA, which are based on assumptions that are inconsistent with the relevant theory. In any event, this should not have a material impact provided the ratio of embedded to new debt increases proportionately. Fundamentally, listed utilities are not an appropriate comparator for the industry, and we consider notional gearing should therefore broadly be in line with sector gearing. Moreover, the impact on financeability is negligible. These issues are considered in more detail in Part B Section 6.5.
- (60) The selective evidence provided by Ofwat fails to support its conclusion that the outperformance wedge should be increased. Ofwat incorrectly points to recent debt issuances in support of its conclusion, ignoring the fact that any wedge is driven by tenor and is immaterial at tenors of 15-20 years. These issues are considered in more detail in Part B Section 6.6.

2.6. IS OFWAT'S FD19 FINANCEABLE?

- (61) In its Response, Ofwat claims that its decision-making on financeability has been guided by its Financing Duty. However, at the core of the Financing Duty, **Ofwat must ensure that the FD19 package is financeable and it** has not undertaken a robust financeability assessment.
- (62) The analysis in our SoC using various supporting expert input clearly demonstrates that FD19 is unbalanced and <u>not</u> financeable. Specifically, we argued that:
 - 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: 1) expect to earn a reasonable level of return in the base case on a mean expected basis, 2) achieve
 an investment grade rating of Baa1 (consistent with that assumed in the cost of debt allowance), and 3) have
 sufficient headroom to be resilient to plausible downside shocks; and
 - Ofwat's approach to addressing the financeability problem through adjusting regulatory levers, such as
 PAYG rates is not appropriate because: 1) such adjustments are ignored by rating agencies, 2) the cash
 flows 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 3) 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.
- (63) In order to accept Ofwat's analysis of financeability of FD19, recognising the need to ensure that FD19 is financeable, it is necessary to rely on a host of unreasonable assumptions and/or adjustments. These include:
 - accepting that the PAYG adjustment is an appropriate tool for addressing financeability concerns, noting that this is not recognised by rating agencies;
 - ignoring the rating agency methodologies;
 - ignoring the 1.5x threshold on AICR in order to maintain an investment grade rating that is two notches above the minimum investment grade;

⁶⁰ KPMG, Estimating the cost of capital for PR19, March 2020, SOC416.

⁶¹ Europe Economics, PR19 - Initial Assessment of the Cost of Capital, 11 December 2017, REP029.

- ignoring the additional costs that companies would expect to incur on a mean expected basis. (i.e. accepting Ofwat's assertion that an efficient company will be able to deliver on its targets and live within its cost allowances);
- ignoring the likely impacts from downside scenarios, (i.e. accepting there is sufficient headroom to manage the increased risk and asymmetry, including from COVID-19); and
- making adjustments to the proportion of index linked debt / reducing notional gearing / restricting dividends / faster transition to CPIH.
- (64) Ofwat suggests that the financeability challenge is simply due to cash flow issues and is the result of an imbalance between the timing when companies earn their allowed return on capital and the payment of the cash element of debt costs.⁶² Net Present Value (NPV) neutral cash flowing profiling adjustments are therefore applied. We disagree with Ofwat's proposition that revenue advanced through PAYG is the most appropriate approach to address financeability concerns. Ofwat's position does not consider that improving liquidity in the short term is not the same as improving financeability or credit worthiness. If there is evidence to suggest that a company may not be financeable or does not have sufficient headroom to manage downside risks, then the problem cannot be alleviated by transferring cash over time. Ofwat has not distinguished between liquidity and financeability. The need to advance revenues for so many companies at FD19 suggests that the allowed returns may have been set too low. These issues are considered in more detail in Part B Section 7.2.
- (65) Ofwat does not accept that meeting a specific level of AICR specific credit rating is an empirical test of financeability or whether the Financing Duty has been met.⁶³ In our view, a credit rating assessment forms a relevant market based test for assessing financeability. In particular, the test needs to show that the notional company can achieve a credit rating of Baa1 consistent with what is assumed in the cost of debt allowance. We also recognise that Ofwat has adopted an inconsistent approach by (i) implying that the rating agencies' views can be disregarded; and (ii) artificially achieving the result of a 1.5x AICR through the PAYG adjustment. The CMA also stated that it is good regulatory practice to consider the views of rating agencies when assessing financeability.⁶⁴ These issues are considered in more detail in Part B Section 7.3.
- (66) Ofwat asserts that there have been no clear statements made by rating agencies which suggest that we will be downgraded to Baa2 on the basis of FD19.⁶⁵ The evidence very clearly shows, however, that we are on negative watch and there have been a number of negative rating agency comments made regarding the possibility of a downgrade. The rating agencies are now simply awaiting the outcome of the CMA process before acting on those concerns. Ofwat's dismissal of such evidence is not well-founded.
- (67) Ofwat's position assumes that an efficient company will be able to deliver on its targets and live within its cost allowances. As we have outperformed in the past, Ofwat considers that we should be able to do so again in the future, noting that in any event the asymmetry of information means that companies are likely to bid up requested cost allowances. ⁶⁶ We demonstrate that **the past is not necessarily a guide to the future, particularly in circumstances where the benchmark is already stretched and so outperformance cannot be assumed.** In particular we provide more granular evidence of our current operating costs and analysis of ODI performance based on our historical outturns. It is incorrect and unjustified of Ofwat to give negligible weight to companies' views as to their own costs. These issues are considered in more detail in Part B Section 7.4.
- (68) Ofwat suggests that its prescribed downside scenarios (which we use in our downside assessment) were not intended for the notional structure, but to understand how in the actual structure companies would respond to a downside. It is not clear why Ofwat would expect its suggested downside scenarios to only be relevant for the actual company and not the notional company. Regardless, we would expect the notional company to be resilient to these scenarios. Ofwat also argues that we will strongly be incentivised to outperform FD19 and that we have scope to manage downside scenarios.⁶⁷ FD19 is significantly challenging and asymmetric, which exposes the company to materially more downside risk than upside potential. Overall, we are considerably more likely to underperform than outperform. Ofwat has also not considered the impact of factors outside of our control such as cost over-runs and ODI penalties resulting from severe weather events. These issues are considered in more detail in Part B Section 7.5.

⁶² Ofwat Response Risk & Return, REP026, para. 4.15, p. 96.

⁶³ Ofwat Response Risk & Return, REP026, para. 4.45, p. 106. 64 Bristol Water PR14 CMA Decision, SOC336, 11.24.

⁶⁵ Ofwat Response Northumbrian Water, REP022, para. 1.43, p. 11.

⁶⁶ Ofwat Response Risk & Return, REP026, para. 2.64, p. 35.

⁶⁷ Ofwat Response Risk & Return, REP026, para, 4.90, p. 122.

- (69) Ofwat states that the CMA could consider the following remedies if it identifies a financeability constraint: 1) reduction in the notional gearing; 2) increasing the proportion of index linked debt; 3) restricting dividend payments; and 4) a faster transition to CPIH. We provide several arguments setting out why we disagree with Ofwat's position. As set out in our SoC, we consider that the CMA should assess the cost of capital, cost allowances and PCs in the first instance. These issues are considered in more detail in Part B Section 7.6.
- (70) Ofwat's position leading up to PR19 was that companies must take steps to address financial resilience. However, by its own design, Ofwat has presented a challenging and asymmetric package which exposes us to downside risk and consequently poses financeability challenges for companies. Given the evolving circumstances of COVID-19, it is even more crucial for the CMA to make the adjustments needed to achieve a financeable package.
- (71) In summary, Ofwat has not conducted detailed analysis regarding the above, but also recognises that Moody's minimum guidance threshold of 1.5x AICR (to achieve a Baa1 rating) will not be met by several Water and Sewerage Companies (WaSCs). We do not believe that the PAYG adjustment is a suitable solution to address this issue. One of Ofwat's key arguments was that it has satisfied its Financing Duty by ensuring that companies' allowed revenues relative to efficient costs were sufficient for an efficient company to finance its investment on reasonable terms. ⁶⁸ As set out in our SoC and below, we do not consider this to be case. The CMA is required to conduct the redetermination, taking Ofwat's duties in the round into account, including the Financing Duty. If, having conducted its financeability assessment, the CMA determines that there is a financeability concern, the CMA should, in the first instance seek to assess the building blocks of the determination to address the financeability constraint.
- (72) By adjusting the assumed notional structure and openly disregarding rating agency methodologies (which are a relevant market test for debt financeability and credit quality), Ofwat is undermining the Financing Duty as a cross-check on the price control.
- (73) These issues are considered in more detail in Part B Section 7.

2.7. TAKING ACCOUNT OF NEW INFORMATION

- (74) Our review of Ofwat's Response suggests that there are certain areas where the positions of Ofwat and NWL are either aligned or very close to alignment. In particular, Ofwat has accepted that the corporation tax rate should change based on the new information we have supplied. Ofwat also seems to have accepted, in principle, the appropriateness of reflecting new information on: (i) Kielder Transfer Scheme (**KTS**) and increase in abstraction charges; and (ii) Business rates overstatement, albeit with certain caveats. In respect of Thames Water (**TW**) bulk supply abstraction costs, we note that Ofwat is suggesting further substantiation on the stated nature of costs and change in charges and further evidence and assurance from us before making any adjustment to the allowance in the redetermination. We are willing to provide more detail to substantiate these costs if the CMA requires it. As we set out to the CMA in correspondence, in the interests of streamlining the issues to be considered during the redetermination, we would be happy to explore whether these matters might be dealt with in correspondence outside of the hearings.⁶⁹
- (75) In the SoC, we provided the CMA with new information about compliance costs related to the Industrial Emissions Directive (IED), which Ofwat subsequently dismissed in its Response. While the policy and its application to our assets is still to be decided, we understand that the Environment Agency (EA) has confirmed that the likely compliance cost will be significant, albeit currently with a range of estimates that reflects uncertainty about the issue. We ask the CMA for a revised cost allowance and mechanism to provide symmetrical protection for this uncertainty. These issues are considered in more detail in Part C Section 9.

⁶⁸ Ofwat Response Risk and Return, REP026, para 4.45, p.106.

⁶⁹ Northumbrian Water submission to the CMA – CMA Redetermination, Impact of Covid-19, 12 May 2020, REP012.

2.8. WHAT WEIGHT SHOULD BE PLACED ON CUSTOMER ENGAGEMENT EVIDENCE IN A PRICE CONTROL SETTING PROCESS?

- (76) PR19 represented a positive development of the PR14 framework for customer engagement, including the retention of the Customer Challenge Groups (CCGs) to hold companies to account on the quality of that engagement. Despite reassurance that some of the deficiencies in the PR14 process would be corrected, once again Ofwat has not accorded customers' views the weight that companies, customers and the CCGs anticipated.
- (77) Ofwat has reiterated its view that it stepped in to protect customers' interests and that in doing so it was "not required to (and indeed could not) treat [customer views] as constraining our discretion".⁷⁰ We are not suggesting that customer evidence should be determinative in and of itself or that it should be a fetter on Ofwat's discretion. We do not consider, nor have we argued, that customer support removes the need to demonstrate need or efficiency, or that it should prevent regulatory scrutiny. We are not seeking certain additional costs in this redetermination in sole reliance upon an expression of customer support.
- (78) Our concern is that Ofwat has attached insufficient weight to customer evidence in reaching FD19, resulting in outcomes that do not properly reflect our customers' needs, priorities and preferences (see Part C Section Error! Reference source not found.).
- (79) There are no regulatory barriers to Ofwat placing greater weight on customer evidence whilst still ensuring that their interests are protected. Other regulators have demonstrated that it is possible to truly place customers at the heart of the process, such as the Water Industry Commission for Scotland (WICS) in its adoption of a negotiated settlement for Scottish Water's price controls. Leaving aside the broader debate about the best regulatory model, this does show that there is scope for customers' views to play a greater role than simply shaping company business plans (see Part C Section 8.1).
- (80) Whilst Ofwat did preserve its ability to be the final adjudicator, it has gone too far in substituting its views for the clearly stated preferences of customers, thereby undermining the stated intention to place customers at the heart of decision making. Customer views must also be an appropriately weighted factor in Ofwat's determinations and not summarily dismissed on the premise that Ofwat knows better than the customers themselves what would be in their interests. It also appears to have damaged trust in the price setting process amongst CCGs who are concerned that their independence has been called into question (see Part C Section 8.2).
- (81) We are concerned that the huge gains made by companies in the sector in driving forward ever deeper engagement with their customers may be lost. Customers and CCGs must believe that their time, effort and energy is being well spent in contributing to this process. If their views are not given the weight that they deserve, this will weaken their incentives to engage effectively. Such an outcome would be a significant step backwards for the sector (see Part C Section 8.3).

2.9. COVID-19 AND STREAMLINING THE CMA PROCESS

2.9.1. COVID-19

- (82) The COVID-19 pandemic is having a substantial and evolving impact on the macro and micro economic climate and has been felt strongly by customers and companies across the water sector. There is much that we still do not know about COVID-19 and there is much uncertainty regarding how it will develop, whether there will be a 'second' peak, how the UK Government will respond to an increasing number of cases and how the UK economy will be affected. All parties to the CMA redetermination agree that there is currently too much uncertainty to be able to identify all of the impacts of COVID-19, but we have set out in the COVID-19 Appendix some of the potential impacts on FD19 and the redetermination for the CMA's consideration.⁷¹
- (83) We consider it paramount to be at the forefront of understanding the COVID-19 developments as circumstances evolve and bring forth new challenges for the water sector to confront. Through Water UK, we are collaborating

⁷⁰ Ofwat Response Overall Stretch, REP019, para. 3.117, p. 44.

⁷¹ Covid-19 Appendix REP065.

with other water companies to ensure continuity in the provision of our critical services. We are working hard to support our customers and partners through this difficult time. Our C-19 pledge, whereby we are already making £1 million worth of support available, is only one example of our approach in supporting our customers in this unprecedented time.⁷²

- (84) In the COVID-19 Appendix, we have attempted to provide a comprehensive and clear view of potential impacts so that the CMA understands our views on a subject that has materially changed the economic landscape and the context in which the CMA will conduct its redetermination. As such, we set out:
 - a brief analysis of the epidemiological and economic impacts of COVID-19;
 - brief summaries of the research carried out by various third parties and their analyses on the impacts of COVID-19 in the sector and the wider economy;
 - potential impacts of COVID-19 on FD19 and the redetermination; and
 - potential timescales for the provision of further evidence to the CMA and remedies for the CMA to consider.
- (85) Although we provide our current views on COVID-19, we support suggestions that the Referring Companies should have the opportunity to make further submissions to the CMA at various points in the administrative timetable as the need arises. There is very little predictability as regards COVID-19 and in the hopes of aiding the CMA to conduct a robust and equitable redetermination, the parties should have the opportunity to respond to changing circumstances and developing impacts.

2.9.2. Streamlining the CMA process

(86) Unfortunately, it is difficult to see practically how the CMA process could be streamlined at this time.⁷³ However, we remain committed to discussing any opportunities to do so. In this vein, after reviewing Ofwat's Response to our SoC, we have suggested some areas where there does not seem to be material disagreement between us and Ofwat and perhaps these issues could be agreed separately (see Section 2.7 above). Helpfully, our case is already focussed on a small number of issues. Contrary to Ofwat's Response this is a strength, not a weakness of our case.

⁷² Northumbrian Water C-19 Pledge, "C-19 Pledge", REP017.

⁷³ Northumbrian Water submission to the CMA – CMA Redetermination, Impact of Covid-19, 12 May 2020, REP012.

PART B: KEY QUESTIONS FOR THE CMA'S REDETERMINATION

3. SHOULD THE TWO RESILIENCE SCHEMES THAT WE HAVE HIGHLIGHTED BE FUNDED AS ENHANCEMENT CASES?

3.1. SUMMARY OF OUR CASE

Table 1: Summary of key arguments

Ofwat	Summary of our response
Understanding resilience: Ofwat suggests that we have a poor understanding of resilience and notes that we have already been granted more funding than any other company relative to its totex.	This is the first time Ofwat has raised this concern. Our assessment at IAP placed us 'in the pack' of companies reviewed and this feedback is not consistent with those assessments. The scale of our programme is irrelevant. Unsurprisingly, given the 'headroom' available to us driven by the bill reduction we were offering, our customer wanted to see more investment in this area. These points are a distraction from the key resilience questions – whether the two resilience schemes rejected at FD19 further the Resilience Objective and whether the supporting investment cases are robust and well-evidenced with respect to the need and cost efficiency of the schemes.
Sewer flooding resilience: Ofwat has rejected our sewer flooding enhancement case, claiming that the activity should instead be funded through base costs. Ofwat suggests that we needed to show that the past is not a good guide to the future or that we are different from others and we have not done so. Ofwat suggests that the distinction between proactive and reactive activities to be irrelevant. It speculates that we are seeking this investment to catch-up with the rest of the sector. The £82m investment for our base programme is queried by Ofwat but it recognises that if we do intend to spend £82m meeting our base PC, we would not have sufficient funding from base costs for both programmes.	We continue to consider that our sewer flooding resilience programme is well justified. We show through new rainfall analysis that the base model period does not adequately reflect the increases in rainfall intensity that we are experiencing and in our SoC we showed that the base models do not reflect climate change and urban creep as cost drivers. We also show there are two distinct programmes of activity proposed for PR19: a base programme to meet the (stretching) PC target set by Ofwat in FD19 focused on properties on the flooding register that have flooded in the past; and the sewer flooding register that have flooded in the past; and the sewer flooding resilience programme to target properties that have not flooded in the past but are at risk in the future as a result of climate change and urban creep. These two programmes involve different investments to deliver different service levels. In its previous submissions to the CMA Ofwat argues that there is an 'implicit allowance' in the base cost which is sufficient to deliver these investments. Given the scale of investment required across these two programmes, regardless of the weaknesses of Ofwat's 'implicit allowance' calculation there is now no way that the base funding provided in FD19 is sufficient for both schemes. We are pleased that Ofwat has accepted this point in its Response.
Essex Resilience : Ofwat rejected our Essex Resilience scheme suggesting that it is not necessary to enhance resilience in the Essex water resource zone. Ofwat relies on our WRMP which states that the supply network is highly integrated and flexible. It does not consider that the significant drawdown risk to Hanningfield reservoir, or the risk to potable supplies, has been adequately demonstrated, and reiterates its view that those risks are sufficiently mitigated by the investment in the Layer DAF scheme. Ofwat considers that climate change impacts will already be captured in base cost allowances. Ofwat also suggests that we should take better advantage of the Ely/Ouse transfer scheme.	We continue to consider that we have adequately evidenced the need for this scheme. It provides greater resilience to our raw water supply network in the face of a range of risks and will facilitate the refill of Hanningfield reservoir ensuring greater resilience for our potable supplies. We have never suggested that the scheme was designed to address a supply demand balance constraint in the region. Reliance on the Ely/Ouse transfer scheme is not a substitute for this scheme, just as Layer DAF is complementary but does not replace the need to build the transfer main. We also note the response by Water Resources East that the scheme could deliver additional regional resilience benefits. This is an efficient and 'no-regrets' investment that should be taken forward now given the headroom we have in bills.

Ofwat	Summary of our response
Unplanned outage : Ofwat defends retaining the new unplanned outage PC, maintaining that this is an important reporting area which is in the interests of customers. Moreover, it claims to have taken mitigating steps when assessing the PC to reflect that it was a new measure.	We agree that asset health in the context of resilience is an important area for reporting. However, the proposed PC is not fit for purpose. The concerns we raised in our SoC over the nature of this PC remain - it is a poor measure of asset health and resilience. While we agree that concessions were made by Ofwat in FD19 Ofwat has still applied a financial incentive and devised a metric which is too novel for comparative benchmarking. Ultimately, as explained in our SoC, better data is required for Ofwat to be capable of calculating a viable financial incentive in this area.

3.2. INTRODUCTION

- (87) In the SoC, we argued that Ofwat has failed to meet its duty to further the resilience objective.⁷⁴ In particular, its decisions in relation to our sewer flooding proposals and the Essex Resilience Scheme were unjustified and impair our ability to deliver the type and degree of resilience investment expected and required by our customers. We consider that we have presented well-evidenced cases for both of these schemes. Following Ofwat's Response, we note that:
 - in justifying the decision to disallow our costs for these schemes, Ofwat cites the fact that we requested (and were granted in relative terms to its totex) the largest amount of resilience funding.⁷⁵ But the key consideration is whether there is sufficient evidence in support of schemes which further long-term resilience of our network supported by our customers. (see Section 3.3 below).;
 - in relation to our sewer flooding case, we consider that these activities are over and above our programme that is funded from our base allowance, but Ofwat does not agree.⁷⁶ We set out below the distinction between our base activities and the proposed enhancement programme, which is intended to cover a different set of properties with a different risk profile (see Section 3.4 below);
 - we also continue to dispute Ofwat's decision to retain the corresponding bespoke sewer flooding PC,⁷⁷ while disallowing the enhancement funding required to deliver such performance. Ofwat has, for the first time throughout the PR19 process, raised concerns over the ODI that we included in relation to this scheme. This ODI was developed following the IAP using Ofwat's own guidance and the low penalty rate is reflective of the customer valuation evidence we undertook. However, reflecting Ofwat's reasonable concerns, we consider an alternative ODI, perhaps focused upon the unit costs of the scheme, could be appropriate. We would have accepted an alternative ODI had Ofwat raised this concern during PR19;
 - Ofwat has continued to reject the necessity of our Essex Resilience scheme, despite the provision of
 additional evidence showing that this scheme is justified, delivers multiple benefits and is efficient. While we
 welcome the fact that Ofwat has acknowledged that this scheme has a distinct needs case to the
 funded Layer WTW scheme, we still dispute its interpretation of the resilience benefit to be gained from the
 efficient 'no regrets' scheme (see Section 3.5 below); and
 - Ofwat has retained the unplanned outage PC, claiming that this is a key reporting area in the interests of customers, and that mitigating steps were taken to reflect the novelty of the measure.⁷⁸ We do not dispute this is an important area for reporting but we do not believe that the quality of the data is of a standard required to implement a financial incentive, nor do we accept the argument that this is a strong asset health metric. (see Section 3.6 below).

3.3. UNDERSTANDING RESILIENCE

(88) Ofwat's statement in the Response that we have a "poor understanding of resilience" is not evidenced and is at odds with previous Ofwat feedback.⁷⁹ We do not accept this characterisation and consider it to be highly surprising based on previous evaluations by Ofwat of our resilience plans. Ofwat also refers to the fact that we have already been granted a substantial amount of resilience funding in support for disallowing the two schemes.⁸⁰ Ultimately, we consider these two points to be a distraction from the key resilience questions for the CMA –

⁷⁴ SoC, Section 7.4.

⁷⁵ Ofwat Response Northumbrian Water, REP022, paras 3.3 and 3.96, p. 27 and 52.

Ofwat Response Northumbrian Water, REP022, paras 3.115 to 3.118, p.55/6.
 Ofwat Response Northumbrian Water, REP022, para 4.50, p.85.

 ⁷⁷ Ofwat Response Northumbrian Water, REP022, para 4.56, p.65.
 78 Ofwat Response Northumbrian Water, REP022, para 5.54, p. 86.

⁷⁹ Ofwat Response Northumbrian Water, REP022, para 1.32, p. 9.

⁸⁰ Ofwat Response Northumbrian Water, REP022, para. 1.32, p. 9.

whether or not our two resilience schemes are needed to further the Resilience Objective and whether the investment cases for them are robust and supported by the evidence.

3.3.1. Resilience throughout the PR19 process

- (89) We developed a framework for assessing the ongoing resilience of our business as part of the development of our business plan.⁸¹ BP19 also explains how we applied that framework to identify the resilience interventions that we included in our business plan. These interventions were driven by the key resilience risks facing us and that customers wanted to see addressed.
- (90) These **resilience assessments were new for all companies** and, in their IAP feedback, Ofwat did not consider that any company had really met its test for developing an actually resilient business plan, based on its assessment of 'resilience in the round'.⁸² No company scored an 'A' in Ofwat's assessment. We scored a 'C' in this area, **in line with all other appellants and most of the sector** (10 companies in total).⁸³
- (91) Indeed, in FD19, Ofwat points out that we provide evidence of positive resilience aspects relating to:
 - consideration of a broad range of options to deliver operational resilience;
 - sufficient evidence of partnership working to co-create solutions; and
 - customer engagement on resilience.⁸⁴
- (92) While Ofwat noted in FD19 we "along with the sector, has further work to do to implement a fully integrated resilience framework",⁸⁵ it is not appropriate to equate that observation to a lack of understanding generally as regards resilience.⁸⁶
- (93) In any event our understanding of resilience is not the central question in front of the CMA. Ofwat has tied this claim to its reasons for disallowing our resilience enhancement schemes, saying that it considered our investments "despite" this alleged lack of understanding.⁸⁷ However, the task for the CMA is to consider whether these specific schemes further the Resilience Objective and whether our investment cases are robust to justify those investments.

3.3.2. Ofwat's understanding of the Resilience Objective

- (94) As we have set out in our SoC, **the Resilience Objective is clear and prescriptive**.⁸⁸ It is clear what Parliament's intention was for that duty; Ofwat's own interpretation of that duty in FD19 and its Response is not consistent with that. Ofwat's claim that the creation of the duty arose out of Parliament's concern with "companies' short-term focus at the expense of long-term planning"⁸⁹ is not the full picture. Instead, Hansard discussions show that **the duty seeks to address short-termism in the water sector as a whole (including from Ofwat)**: The primary resilience duty is on Ofwat "to take account of environmental pressures, population growth and demand on our essential services...People want Ofwat and water companies to address longer-term challenges and deliver a better deal for customers and the environment."⁹⁰ Similarly, DEFRA indicated at the time, that the Resilience Objective was designed to secure the long-term resilience of systems and address concerns with the price review cycle discouraging investment in longer-term approaches: "It also requires Ofwat to ensure that the companies take action to meet the long-term needs of consumers, by promoting appropriate long-term planning and investment, and by taking any and all relevant measures to manage water resources, whether in the network or in the environment".⁹¹
- (95) Therefore, Ofwat's interpretation that the Resilience Objective does not support our well evidenced schemes, which clearly address long-term needs of our networks and customers, is wrong and inconsistent with the rationale behind the introduction of this duty. Similarly, whilst the Resilience Objective does capture "obligations that

⁸¹ Section 3.3 of BP19 (ed 08.19), SoC129; SOC Section 4.4.1.3, pp. 47 – 49.

Ofwat Initial Assessment of Plans – Overview of company categorization, SOC346, p. 6.
 Ofwat PR19 Initial Assessment of Plans – summary of test area assessment, SOC271, p. 4.

Orwat PR 19 Initial Assessment of Plans – summary of test area assess
 PR19 – Northumbrian Water Final Determination, SoC183, Section 2.3

⁸⁵ PR19 – Northumbrian Water Final Determination, SoC183, p. 30.

⁸⁶ Ofwat Response Northumbrian Water, REP022, para 3.95, p.52.

⁸⁷ Ofwat Response Northumbrian Water, REP022, para. 1.33, p.9.

⁸⁸ SoC, paras 139 – 146, p. 34.
89 Ofwat Response Overall Stre

⁸⁹ Ofwat Response Overall Stretch, REP019, para 3.53, p. 32 90 House of Commons (November 2013), Owen Paterson, SoC324

House of Commons (November 2013), Owen Paterson, SoC324.
 Department for Environment, Food and Rural Affairs, Water Bill, Sustainable Development and Resilience Duties, January 2014, REP018, para 20, p.5.

properly sit with the companies themselves, including the need for them to find efficient solutions to long-term problems of demand⁹⁹² this does not change the fact that the Resilience Objective as a duty is expressly applicable to Ofwat in the carrying out of its functions as the regulator.

- (96) Ofwat has rebutted our claim that it has failed to discharge its statutory duty by reference to its own "general 'resilience thinking", claiming that the resilience issue was already implicit in the functions objective and has always been an important consideration in Ofwat's decision making.⁹³ It has also quoted David Black, its Senior Director of Water 2020 explaining that Ofwat looks at "resilience in the round, which includes operational, financial and corporate resilience."⁹⁴ These reflect a much broader concept of the Resilience Objective than intended by Parliament, which never referred to financial resilience, for example. It also goes beyond the wording in the WIA (and the Water Act 2014) which do not refer to financial resilience.⁹⁵
- (97) By Ofwat's own admission, the strict legal definition is in conflict with the concept of resilience that Ofwat uses and has pursued in the PR19 process. It has previously recognised that it was stretching its interpretation of the duty: "We recognise the 'resilience duty' has specific legal meaning as set out above. But...we see the broader concept of resilience as providing useful insights into how we deliver our strategy and move towards our shared vision of trust and confidence."96
- (98) The CMA should **consider our two enhancement cases on their merits**, including the evidence supporting their need and support for the longer-term sustainability of our network and services to our customers, **against the Resilience Objective as set out in the WIA**, not Ofwat's interpretation of it.

3.3.3. The amount of resilience funding granted to us is not a central consideration

- (99) Ofwat states that "relative to company size our final determination for Northumbrian Water included the highest amount of investment for resilience proposals of all water companies".⁹⁷ Increasing resilience is fundamentally about risk reduction in an efficient manner rather than the absolute or relative amounts needed to achieve such risk reduction.⁹⁸
- (100) In some instances, interventions may be essential to reduce risk but in a sector like water with very long asset lives, interventions will often be discretionary and where those interventions require investment (as in the two cases we highlight) there will therefore be a trade-off between increasing resilience now and affordability albeit that capital investment will tend to increase bills far less in the short term than operating cost solutions.
- (101) This trade-off between investment and bills was recognised by Ofwat's Chairman previously, with Jonson Cox noting that companies had material choices: "*as between further investment, service improvement, and well-earned price reductions to customers*".⁹⁹ Despite Ofwat's attempt to suggest that our claims for resilience cases are disproportionate or excessive, we offered the greatest bill reduction compared to any other company and there was a substantial gap between us and the rest of the sector.¹⁰⁰ Fundamentally we have had a greater opportunity to consider resilience investments than other companies because of that bill reduction. Ofwat encouraged us to do so in its methodology and public statements and we explicitly sought input and support from our customers in relation to any investments that we considered including in our plan. It is not surprising given our ability to reduce bills in AMP7 that we have aimed to do more in light of the resilience challenges that the sector is facing, such as climate change, or that our customers supported that.
- (102) Table 2 below shows resilience investments against overall totex by company based on Ofwat's FD19. We note that our FD19 resilience expenditure actually wasn't quite the biggest (Severn Trent (SVT) was slightly higher in absolute terms) and Thames Water (TMS) also received more resilience funding in the FD subject to a gateway review process (£30m plus £180m subject to a gateway review) but ours was the highest by % of all totex. The four companies with the highest proportion of resilience spend NWL, BW, South West Water (SWW) and Sutton & East Surrey Water (SES) all had higher than average bill reductions compared to others in the sector. Ofwat

98 SoC, paras. 575 – 578, p. 120.

⁹² Ofwat Response Overall Stretch, REP019, para 3.58, p. 31.

Ofwat Response Overall Stretch, REP019, para 3.50, p. 31.
 Ofwat Response Overall Stretch, REP019, para 3.31, p. 26.

Orwat Response Overall Stretch, RE
 Section 2(2DA) WIA 1991, SoC313.

⁹⁶ Ofwat, Towards resilience: how we will embed resilience in our work, December 2015, SOC245, p.5.

⁹⁷ Ofwat Response Northumbrian Water, REP022, para. 2.11, p.19.

⁹⁹ Ofwat, Water UK City Conference 2017, Jonson Cox – Chair, Ofwat Regulatory Keynote Speech, 9 March 2017, REP011, p. 10.

reports to have funded c.£13bn of investment to support resilience.¹⁰¹ We have not been able to reconcile this figure as the total enhancement package for FD19 was only £8.3bn.¹⁰² If we were to include other enhancement elements such as WINEP and supply demand balance investment then our enhancement expenditure as a proportion of totex is actually below the industry average (12% of totex versus 17% for the industry see Table 2).

(103) Resilience investment is not a quota system. It is striking just how little additional investment the sector was funded for under the new Resilience Objective with all the emphasis placed on it by Ofwat in its PR19 methodology and narrative. Less than 1% of industry totex was related to resilience against an average bill reduction of 13%. In our SoC we also highlighted that Ofwat in fact applied a greater efficiency challenge to these costs above any other enhancement element.¹⁰³

Company	Resilience investment (£m)	Overall totex (£m)	Proportion of totex accounted for by resilience (%)	Proportion of totex accounted for by enhancement (%)	FD bill reduction (%)
NES	103.6	2,933	3.53%	12%	-26%
SWW	42.5	1,994	2.13%	16%	-20%
SOU	0	3,501	0.00%	24%	-18%
SES	6.4	271	2.36%	14%	-15%
BRL	8.1	462	1.75%	6%	-15%
UU	78.6	5,814	1.35%	14%	-14%
WSX	3.4	2,198	0.15%	23%	-13%
ANH	32.2	5,553	0.58%	26%	-10%
SSC	1.9	616	0.31%	18%	-10%
WSH	22.6	3,077	0.73%	19%	-10%
YKS	0	4,442	0.00%	20%	-9%
SVT	107.2	6,463	1.66%	13%	-9%
SEW	10.9	987	1.10%	17%	-7%
TMS	30.2	9,440	0.32%	10%	-7%
AFW	13.6	1,500	0.91%	18%	-6%
PRT	1.2	204	0.59%	9%	-5%
HDD	0.5	166	0.30%	10%	-3%
Industry totals	462.9	49,621	0.93%	17%	-13%

Source: Our analysis of Ofwat's FD19

- (104) As we have previously highlighted,¹⁰⁴ all our resilience investments were supported by customers consistent with feedback from Ofwat representatives that "development of business plan should be framed around strong understanding of customer priorities".¹⁰⁵ The trade-off between lower bills and reducing risk is one area where we consider Ofwat should have placed more weight on the customer evidence, as customers' views are a highly relevant and important piece of evidence in the choices available to companies between offering resilience or risk reduction and lower bills (see Part C Section 8 below). Instead, Ofwat seems to focus on cross company benchmarks and use them to consider that we have 'had enough' funding for resilience.¹⁰⁶ We do not think this is the right approach to furthering resilience. We also note that support for long-term resilience improvements to drought and floods (and for our two resilience schemes in particular) has been reiterated by various third parties, including our Water Forum, WRE, and Water UK, in their submissions to the CMA.¹⁰⁷
- (105) Finally, Ofwat argues multiple times that neither the Resilience Objective nor customer support provides companies with a "*blank cheque*" and that they do not obviate the requirement to demonstrate efficient costs.¹⁰⁸ We agree with this and are confident, as set out below, that the needs and costs case of our two schemes are properly evidenced. In the same vein, **the Resilience Objective cannot be discharged by Ofwat through a quota system**, whereby once funding for each company has hit a certain threshold Ofwat can safely say that a sufficient number of resilience risks have been resolved. On that basis, the total amount of expenditure we have received for other resilience projects is simply not relevant to whether these two schemes are justified.

¹⁰¹ Ofwat, PR19 Final Determinations: Overview of companies' final determinations, SOC185, p. 10.

¹⁰² Ofwat, PR19 Final Determinations, Securing Cost Efficiency Technical Appendix, December 2019, SOC417, Table A1.3.

¹⁰³ SoC, Table 36, para 595, p. 123.

¹⁰⁴ SoC, paras 599 – 607, p. 124; para 691, p. 135.

¹⁰⁵ David Black, Wastewater 2018 Conference, 30 January 2018, REP038.

Ofwat Response Northumbrian Water, REP022, para 3.95, p. 52.
 Water UK CMA Submission, REP050; Water Resources East CMA Submission, REP010.

¹⁰⁸ Ofwat Response Overall Stretch, REP019, para 3.59, p. 32; Ofwat Response Northumbrian Water, para. 2.26, p. 23.

3.4. SEWER FLOODING RESILIENCE

(106) We detailed our sewer flooding resilience case and Ofwat's FD19 in Section 7.5 of the SoC. This was supported by an updated enhancement case¹⁰⁹ and a cost benchmarking report from Aqua Consultants (**Aqua**).¹¹⁰

3.4.1. Ofwat said:

- (107) Based on Ofwat's Response, the key area of disagreement is whether the costs for these enhancement investments are covered by our base cost allowance. In particular, Ofwat argues:
 - we needed to show that the past is not a good guide to the future or that we are different from others and we have not done so;¹¹¹
 - the distinction we have made between reactive and proactive resilience investment is irrelevant;¹¹²
 - we require this investment to catch up with the industry best performance on sewer flooding;¹¹³
 - there are doubts about the £82m figure we state is implicitly included in our base cost forecasts for base
 activities (although it accepts that if this figure is correct then there will not be enough funding from base
 costs to cover our proposed enhancement scheme);¹¹⁴ and
 - water companies have been addressing climate change throughout the modelled period and so it should be covered in base allowance.¹¹⁵
- (108) In FD19 Ofwat challenged whether the costs of the scheme are efficient. Ofwat does not comment on the robustness of our external cost benchmarking in its Response but does express doubts that the costs are likely to be at the upper end of the range due to easier and lower cost schemes being reflected in the base programme.¹¹⁶
- (109) Ofwat has also supported the retention of the sewer flooding bespoke PC,¹¹⁷ which will be impossible to meet without the associated funding that Ofwat claims should be disallowed. It also comments on the penalty rate associated with the ODI.¹¹⁸
- (110) Ofwat does, however, acknowledge that we have "*demonstrated significant stakeholder support for the investment, including support by customers and local authorities in the region*" which influenced its decision to retain the bespoke PC.¹¹⁹

3.4.2. Our Reply:

- (111) Contrary to the position put forward by Ofwat, and as we demonstrate in the following sections:
 - these enhancement case activities are distinct from our base activities the sector has historically been focussed on reducing flooding in properties that have flooded before, these properties have been commonly captured on 'sewer flooding registers' across companies and programmes of work have been focussed on these properties. Our reactive and proactive programmes target different service levels and we are not aware of any widespread proactive programme targeting modelled climate risk having been undertaken by the sector before (see Section 3.4.2.1);
 - new analysis of sewer flooding storm return periods shows that we are facing increased rainfall volatility in the future, meaning that the period reflected by Ofwat's base cost models is not a good guide to the future (see Section 3.4.2.2);
 - we have accepted Ofwat's common sewer flooding target and have a programme in place to deliver it (see Section 3.4.2.3);
 - our enhancement sewer flooding programme is a different and additional programme of activity with different corresponding service targets (see Section 3.4.2.4); and

¹⁰⁹ Wastewater Reduce Flooding Risk for Properties Enhancement Business Case, March 2020, SOC278.

¹¹⁰ KPMG and Aqua Consultants, Reducing Property Flood Risk: Cost Assurance Benchmarking Report, March 2020, SOC282.

¹¹¹ Ofwat Response Northumbrian Water, REP022, para 3.105 – 3.106, p. 53 - 54.

¹¹² Ofwat Response Northumbrian Water, REP022, para 3.115, p. 56. 113 Ofwat Response Northumbrian Water, REP022, para 3.117, p. 57.

¹¹³ Ofwat Response Northumbrian Water, REP022, para 3.111, p. 51. 114 Ofwat Response Northumbrian Water, REP022, para 3.111 – 3.116, pp. 55 – 56.

¹¹⁵ Ofwat Response Northumbrian Water, REP022, para 3.117 – 5.110, pp. 55 – 5 115 Ofwat Response Northumbrian Water, REP022, para 3.107, p. 54.

¹¹⁶ Ofwat Response Northumbrian Water, REP022, paras 3.111-3.114, p. 55.

¹¹⁷ Ofwat Response Northumbrian Water, REP022, paras. 4.37 – 4.41, p. 83.

¹¹⁸ Ofwat Response Northumbrian Water, REP022, para. 4.46, p. 84. 119 Ofwat Response Northumbrian Water, REP022, para, 4.42, p. 83.

[.] то отна пеоропое поппинилан water, кст022, para, 4.42, р. 83.

- given the clarity of our c.£82m base cost programme, Ofwat appears to have accepted that this work cannot be funded from base costs (see Section 3.4.2.5).
- (112) As a general comment, we note that the criteria by which Ofwat suggests this enhancement case should be assessed (the past is not a good predictor of the future; exceptional pressures relative to the rest of the industry)¹²⁰ are the criteria to be applied to cost adjustment claims. This is the context in which Ofwat has made its criticism of our proposed scheme. We are not suggesting, however, that this should be funded as an adjustment to our base cost allowance. We instead consider that it should be assessed by the CMA with respect to the criteria for enhancement cases: need; options and cost efficiency. We have addressed each of these in our SoC and the Enhancement Business Case.¹²¹ For the sake of completeness, however, we have dealt with the specific criticisms made by Ofwat with regard to the cost adjustment criteria in this Reply.

3.4.2.1. There are two distinct base and enhancement programmes

- (113)The enhancement case activities are distinct from our base activities - we are not aware of any other company seeking to undertake a widespread proactive sewer flooding programme targeting modelled climate risk like this before and the reactive and proactive programmes target different service levels and properties. We chose to include these activities in our plan because: a) it was identified as an area of weakness in our resilience assessment in the future particularly given climate change; b) it was an issue of significant concern to customers; and c) we considered that we could accommodate this modest investment within our plan whilst still retaining a very affordable programme for customers.
- (114)We do not agree with Ofwat's suggestion that we are asking for funding to catch up with the rest of the sector on past underperformance. While there have always been significant programmes within wastewater companies to reduce the number of customers experiencing sewer flooding, programmes have always focussed on properties that have already flooded before and hence are at risk of flooding again. As also recognised by Ofwat: "Regulation can be slow and inflexible and if companies wait to be told what to do by Government or us, progress on important social and environmental issues will also be slow and fall behind people's expectations."122 We have not waited to be told what to do; we are seeking to progress this issue for our customers' sake.
- (115)This resilience programme is about proactive activity to address new properties at risk of flooding as a result of climate change and urban creep. There is a clear distinction between risk of flooding based upon historical events (base flooding) and the risk of flooding from predictive climate change induced flooding. This widespread programme based upon our hydraulic models amended for climate change and urban creep has never been undertaken before and certainly not as a base expenditure item. It also represents a different service that we are delivering for our customers. The base programme seeks to reduce the number of properties flooding in AMP7 whilst the resilience programme seeks to reduce the risk to properties from flooding in the future. Fundamentally this is important because it is not a continuation of old activity for us or the sector and therefore should meet Ofwat's 'past is not a good guide to the future' test.
- Ofwat also argues that we do not know which properties will flood.¹²³ While this may be true at an individual (116)property level and we obviously cannot predict exactly the weather we will experience, we do know which properties have flooded before. If we combine this with regional analysis and hydraulic modelling it provides a strong indication of the potential impact of climate change and urban creep on future flooding. We have a strong understanding of the risk of flooding at a regional level and risk assessments provide a clear picture of the number of properties in different risk categories. This is set out in our enhancement case.¹²⁴ As Ofwat's CEO recently recognised: "Companies are in a much better position than we are to spot where things are going wrong or see the opportunities to make things better."125
- (117)Using existing hydraulic models and applying an independently verified methodology applying conservative values for climate and urban creep uplift, we have determined that 7,400 properties have the potential to flood. It is important to reiterate that they have no history of flooding and therefore differ from the existing database of properties that have a risk of flooding based upon previous flooding events. These properties represent those at highest risk of flooding as determined by our hydraulic models amended to reflect climate change and urban

¹²⁰ Ofwat Response Northumbrian Water, REP022, para, 3,105, p. 53.

¹²¹ SoC Section 7.5; Wastewater Reduce Flooding Risk for Properties Enhancement Business Case, March 2020, SOC278

¹²² Rachel Fletcher, Beesley Lecture - Regulators and the social contract, 16 October 2019, REP039. 123 Ofwat Response Northumbrian Water, REP022, para 3.115, p. 55.

¹²⁴ Wastewater Reduce Flooding Risk for Properties Enhancement Business Case, March 2020, SOC278.

¹²⁵ Rachel Fletcher, Beesley Lecture - Regulators and the social contract, 16 October 2019, REP039

creep. These are properties which our model indicates would suffer from internal sewer flooding in the main and properties that are likely to suffer significant curtilage flooding.

(118) These 7,400 properties are entirely distinct from those that have flooded before. Properties with an existing history of flooding would be targeted under our base programme.

3.4.2.2. Increased rainfall volatility means that the past is not a good guide to the future

- (119) Ofwat argues that companies have been mitigating against the effects of climate change for years and it would therefore be reflected in the base costs models.¹²⁶ As we highlight in our SoC, **the base models do not include climate change or urban creep as cost drivers**.¹²⁷
- (120) We have looked more broadly across the water industry to see how other organisations are looking to deal with climate change and protecting the public from flooding. The EA has a £2.5billion capital investment programme to reduce flooding (from rivers, the sea, surface water and groundwater) to more than 300,000 homes in the UK. The EA's partnership funding calculator (March 2020) now includes eligibility for flood and coastal risk management grant-in-aid to be claimed for additional householders at risk, up to 2040 so that they are better projected against flooding as a result of climate change.¹²⁸
- (121) In many instances, extreme flood events (with statistically long return duration periods) now appear to be happening in quick succession. It is therefore entirely understandable that those affected are sceptical that such events have occurred purely by chance so close together. Indeed, such events have occurred in our area, amongst others being properties in Haltwhistle which have flooded twice in within a matter of six years with >1:50yr events.
- (122) This question prompted the EA to commission research to better represent the public view. This work was looking into alternatives to stationary probability modelling (such as Flood Estimation Handbook 2013 or FEH 2013) which assumes that river flood data remains unchanged and is stable allowing a good prediction of the future. JBA Consulting undertook new probability modelling using non-stationary techniques (which use a covariate such as time, annual rainfall, daily rainfall, catchment population, urban extent). Their research showed that there was a 55% increase in present day river gauge flow estimates using non-stationary modelling compared with stationary estimates. Consequently, schemes in Cumbria are piloting the application of non-stationary techniques where there is evidence for it. The conclusions drawn by the research chime with our own customers' views:

"It is difficult to convince people in Cumbria who have been flooded out of their home for the second or even third time in recent years that they have experienced nothing more than a run of bad luck. Communities who have experienced multiple floods are understandably sceptical about decisions made about investment in flood protection on the basis of an assumption that there has been no change in the probability of flooding. Their suspicions are in line with projections of the impacts of climate change. Although there may be a cyclical element to the recent upsurge in floods across nearly a quarter of river flow gauges in Great Britain, it would be unwise, in the face of a warming climate, to gamble on the likelihood of the trends reversing in the near future.

Non - stationary methods of flood frequency analysis are widespread in research settings. Although they may not yet have reached maturity, they are capable of practical application and can give answers that are more believable and more readily justified to stakeholders. Results can potentially be different enough to justify investment in a flood scheme where present industry - standard methods of flood estimation may lead to a decision not to invest.

It is recommended that, where trend is apparent, non - stationary analysis is adopted alongside conventional methods and the uncertainty of the results is incorporated in the process of deciding a preferred approach.^{*7*129}

(123) Following this research, we commissioned JBA to undertake the same type of analysis of rainfall patterns in our region over time on a range of storm durations relevant to sewer flooding.¹³⁰

¹²⁶ Ofwat Response Northumbrian Water, REP022, para 3.137, p. 61.

¹²⁷ SoC, para 711, p. 140. 128 Environment Agency Calculate grant-in-aid funding for flood and coastal erosion risk management projects, 17 April 2020, REP049.

¹²⁹ Faulkner D, Warren S, Spencer P, Sharkey P, Can we still predict the future from the past? Implementing non-stationary flood frequency analysis in the UK, J Flood Risk Management; Volume 12: Issue 1, March 2020, REP034.

(124) Ofwat Guidance¹³¹ for reporting sewer flooding requires assessment of sewer flooding using the FEH 2013 to estimate storm return frequency. FEH 2013 is based on past data which is assumed to be stable and therefore representative of current conditions under a 'stationary' modelling approach. Ofwat's base cost allowances will reflect this 'stationary' approach but, with climate change, this is no longer necessarily reflective of actual conditions. Re-assessing data using non-stationary statistical models indicates that design rainfall depths based upon an assumption of stationarity (as made in FEH 2013) can underrepresent storm magnitudes. JBA's research has indicated that using data from two rain gauge locations in the North East, non-stationary modelling provides a better representation of the increasing frequency of storm events. Other rain gauge data suggests a mix of stationary and non-stationary modelling. However, in assessing all six North East rain gauge sites, the data indicates an upward trend in storm rainfall depths for most storm durations.

 Table 3: Direction of changes in mean at change points detected by the Pettitt test for the AMAX series for each duration at each gauge. The values that are significant at a 5% level are highlighted

	Change points			Duration		
		15 min	30 min	1 hour	3 hours	6 hours
	Catcleugh Nursery	Positive	Positive	Positive	Positive	Positive
	Easby	Positive	Positive	Positive	Positive	Positive
auge	Font Reservoir	Positive	Positive	Positive	Negative	Negative
	Linbriggs	Positive	Positive	Positive	Positive	Positive
	Jesmond Dene	Positive	Positive	Positive	Negative	Negative
0	Lartington	Positive	Positive	Positive	Negative	Negative

Source: JBA Consulting Report¹³²

(125) Figure 1 below shows that the relationship between rainfall and return period differs between each statistical model. In the case of this rainfall gauge for this particular 1 hour rainfall duration period, the non-stationary curve indicates that at higher storm return periods (greater than 1:25) greater rainfall would be predicted to return a similar return period for stationary modelling. This suggests that in these circumstances the data is showing an increase in this type of event.

Figure 1: Comparison of rainfall frequency curves at Linbriggs: duration 1 hour



Source: JBA Consulting Report¹³³

(126) Whilst this shows that we are experiencing more extreme weather events than we have in the past and that the recent period represents a deviation from what may have been a more stable past, it does not represent a unique position for our customers in the North East. It is not our contention that we should demonstrate that the impact of climate change is unique to us. The research undertaken using just six rain gauge locations does prove that the current view of the past using stationary modelling cannot be an absolute predictor of the future.

¹³¹ Ofwat Reporting guidance - Sewer flooding: Final reporting guidance for PR19, 27 March 2018, REP036.

¹³² JBA Rainfall Appendix, REP072.

¹³³ JBA Rainfall Appendix, REP072.

Further research countrywide using different modelling techniques following the EA's lead would provide better insight into more appropriate modelling techniques. It clearly indicates that reliance upon one modelling technique for the whole country that is predicated on data prior to 2012 is not a sustainable position.

- (127) In seeking to support our customers' wishes to reduce future flooding exacerbated by climate change, we are putting in place resilience measures which are reflective of dynamic climate systems and clearly demonstrate that stationary modelling cannot always be relied upon to represent the dynamic fluctuations we are experiencing today.
- (128) This analysis clearly shows that the historical periods, including the period covered by the data used in the base cost models adopted by Ofwat does not adequately reflect the impacts of climate change going forward.
- 3.4.2.3. We have accepted Ofwat's common sewer flooding target and have a programme in place to deliver it
- (129) We accept that our performance on sewer flooding relative to the rest of the sector needs to improve. We have demonstrated this by accepting Ofwat's PC target and not asking for additional base cost allowances or challenging Ofwat's base cost models. Ofwat's assertion that we are attempting to use enhancement funding to catch up with the rest of the sector on our common PC is incorrect and unfounded.¹³⁴
- (130) We have a programme to meet the common sewer flooding PC of c.£82m of investment. This is summarised in Table 4 below. This indicates the intended benefits in terms of the numbers of flooding incidents avoided. We note that in AMP6, we invested c.£65m of funding to address sewer flooding risks and hence the AMP7 programme represents a **significant uplift in investment and activity**, reflecting the improvement required from AMP6 and the increasing unit cost of improvement as our base performance improves.

Activity type	Description	Number of schemes	Total cost	Total benefits (flooding internals avoided)
Hydraulic Incapacity	Projects to improve the capacity of the sewerage network. Solutions will range from traditional solutions such as sewer upsizing and/or storage tanks and sustainable solutions.	29	£13.9m	179
Sewer Rehab	Schemes to maintain the existing network and address flooding other causes risk. This investment includes both planned and reactive rehabilitation of sewers.	6	£37.7m	95
Tactical Plan	A range of improvement interventions to make a step change to performance in year 1 and 2 of AMP7.	10	£5.2m	1,030
Tactical Plan - Find & Fix	Proactive, targeted and comprehensive CCTV investigation and rectification of issues, prioritised towards areas with a flooding history, with the aim of improving flooding other cause performance.	1	£25.6m	470
		45	£82.4m	1,774

Table 4: List of base sewer flooding programme activities and costs by category

Source: NWL analysis from the wastewater rolling capital plan, May 2020.

- (131) We use a 7-year rolling capital plan as a live planning and delivery tool. The rolling plan contains data from projects currently in delivery and projects in a planning stage. It is updated with the latest numbers from our project accounting system on a monthly basis in the form of year to date investment and forecast investment for projects. Required investment for future projects is updated on a daily basis, when appropriate. This live picture of all planned investment, alongside projects in a delivery phase enables us to plan over a longer period of time, identify efficient delivery opportunities, manage planned investment on a live month by month basis, and maintain flexibility to change when issues/risks emerge at an asset or PC performance level. The rolling plan also gives foresight and commitment to our internal asset owners and operators, as well as to our delivery partners.
- (132) These activities have been identified from a long list of potential project interventions from the capital plan. The projects with the highest Benefit Cost Ratio are identified from the long list to maximise the benefit from the investment and ensure efficient delivery for customers. The £82m investment figure is based on a prioritisation exercise across the whole wastewater operation to identify and optimise the FD19 cost allowances, balancing the

¹³⁴ Ofwat Response Northumbrian Water, REP022, para. 3.117, p. 56.

need for reductions in sewer flooding with other customer priorities. The precise programmes adopted are subject to change as part of this rolling ongoing optimisation exercise.

(133) In Figure 2 below, we present the base PC target for internal and external sewer flooding and plot our assessment of performance under our current base sewer flooding programme against them. In doing so, we are using modelling which tries to provide a realistic prediction of managing an aging asset base and our asset investment which targets flooding reduction. However, there are a number of factors that create a degree of uncertainty, in particular the variability of our weather since the impact of severe weather storm events are no longer excluded from our reported flooding numbers. Consequently, there are upper and lower ranges to our assessment which are shown in each of the graphs which try to consider this variability. In reality, not every year of the AMP will have higher than normal "very significant storms" (producing lower reduction in flooding incidents – brown line below) and not every year will have fewer than normal (dark blue line below). If weather conditions are reasonable then we believe that there is a small gap between the external sewer flooding benefits and our assessment that deterioration may occur within AMP7. Clearly these assessments are merely projections and the outturn position remains uncertain.





Source: NWL analysis.

(134) We have always expected to have to fund the common PC target from our base cost allowances and have always been consistent about the nature of the enhancement. The distinction between reactive and proactive investment is not a new argument from the SoC but was always explained to Ofwat during PR19.¹³⁵

¹³⁵ BP19 (ed.08.19), SOC129, p. 133; NWL Response to Ofwat DD19, Appendix 3.3.1 Reducing Property Flooding Risk, SOC132, p.3.

3.4.2.4. Our enhancement sewer flooding programme is a different and additional programme of activity with different corresponding service targets

(135) As we demonstrate in this section, our sewer flooding resilience case represents an entirely different programme of activity focussed around an entirely different service improvement target. This programme involves a different list of project interventions from the rolling capital plan with a different nature and focus, since these interventions are targeted not at properties that have flooded before but those which are expected to flood in the future. All of the interventions in this programme are expected to relate to proactive hydraulic schemes. This reflects the nature of the enhancement schemes as one which seeks to reduce risk reduction in the future by enhancing the hydraulic capacity of the wastewater network. As we are currently operating under FD19 during the redetermination process, the current rolling plan assumes that investment begins in year 2 (2021-22).

Table 5	Current rolling	nlan for so	ver flooding	rosilionco	investment	cost i	or annum
able 5	. Current ronning	plan for sev	wer noounig	resilience	investment,	COSL	Jer annum

2020/21	2021/22	2022/23	2023/24	2024/25	Total
£0	£10.7m	£14.6m	£32.4m	£28.3m	£86m

Source: NWL analysis from the wastewater rolling capital plan, May 2020

- (136) The £86m investment figure was built up based on regional unit cost estimates to deliver a 7,400 reduction in the number of properties at risk of sewer flooding. Within our 7-year rolling plan, we have a number of projects where we have completed pre-feasibility and have prioritised cost and benefits determined.
- (137) The nature of the rolling plan allows us to continually update our programme as we develop certainty on project scope and definition. As this is a new area and we have less certainty around whether costs are likely to be at the bottom or the upper end of the range, we will be undertaking further feasibility (investigate and define I&D) to confirm our exact approach and develop the most appropriate and efficient intervention to reduce the risks identified, which we will use to update the plan with certainty around the final costs and benefits.
- (138) In Figure 3 below, we present the sewer flooding resilience PC target (two scenarios showing the potential outturn positions) of the programme depending on its potential effectiveness. As this is a new area we have less certainty around whether costs are likely to be at the bottom or the upper end of the range. The enhanced performance line is indicative of the potential best outturn position. This would need to be updated to reflect a four year programme should the CMA decide to allow this investment. At this stage we consider that it should be possible to still hit the 7,400 properties target over four versus five years.

Figure 3: Projected properties at risk of sewer flooding with and without climate change and urban creep and projected performance under different scenarios



Source: Our analysis from the wastewater rolling capital plan, May 2020

- (139) As explained in our SoC, Ofwat's decision to disallow our enhancement case whilst retaining the corresponding sewer flooding bespoke PC means that we will not have any funding to meet the PC.¹³⁶ Ofwat has sought to explain the inclusion by arguing that it is not directly related to the enhancement scheme and should be met out of base costs.137
- (140) Ofwat has also pointed to the £100 penalty figure of the bespoke PC/ODI as a reason why it cannot be linked to the enhancement expenditure, or it must be incorrectly formulated.¹³⁸ The £100 penalty figure was arrived at using Willingess-to-pay (WTP) customer engagement based on Ofwat's PR19 guidance. As the properties which would be subject to the PC are not those that have flooded but could flood in the future, customers generally do support the investment but at a lower WTP than others, which is the origin of the lower incentive rate. We note that this rate has existed throughout PR19 process, yet Ofwat is only raising this issue now for the first time. However, reflecting Ofwat's reasonable concerns, if the CMA accepts that this programme should be funded as enhancement expenditure, we would be happy to consider an alternative ODI, perhaps focused upon the unit costs of the scheme.
- 3.4.2.5. Given the clarity of our c.£82m base cost programme, Ofwat appears to have accepted that its 'implicit allowance' calculation is wrong and this work cannot be funded from base costs
- (141)In FD19 Ofwat highlighted that, based on a range of calculations from its base cost models when removing what it considered to be relevant cost lines, there was an 'implicit allowance' that would have enabled us to undertake this programme.¹³⁹ In our SoC, we highlighted some material flaws in these calculations.¹⁴⁰
- (142) We are pleased that Ofwat has recognised some of the weaknesses of its 'implicit allowance' calculations.¹⁴¹ It further accepts that the £82m figure in base costs does suggest that even under the flawed implicit allowance calculation¹⁴² we would not have sufficient funding in our base allowances to take forward both programmes.

Additional evidence of efficient costs 3.4.2.6.

Ofwat has queried our inclusion of the Aqua report in our SoC.¹⁴³ In its report Aqua undertook benchmarking (143)analysis of the project costs for the scheme based on similar projects and presented a range of potential costings. Agua suggested that the efficient cost was more likely to be focused on the top of this range. This is because the active programme of investment will look at a large number of properties in each zone and so it is likely that the proactive programme will have to include some more expensive projects on a unit cost basis. We note that Ofwat has not challenged that report but has queried why the cost estimates should be from the top of the range.144

3.4.3. Conclusions

- (144)We have demonstrated that:
 - there are two distinct programmes of activity proposed for PR19 a base programme to meet the (stretching) PC target set by Ofwat in FD19 and the sewer flooding resilience programme to target properties that have not flooded in the past;
 - these two programmes involve different activities, target different properties, involve different investments and target different service levels;
 - the drivers of Ofwat's base models do not include climate change or urban creep on which the enhancement case is driven and separate rainfall intensity analysis shows that the past period is not a good guide to climate change impacts in the future as reflected under Ofwat's models; and
 - given these two programmes, there is no way that the funding is provided for in base costs, regardless of whether the CMA chooses to put weight on the implicit allowance calculation.

¹³⁶ SoC, para 666, p. 132. This is recognised by the Water Forums: "if the FD is upheld, the bespoke PC would have to be removed from the suite of performance commitments, as it is unique to the funded enhancement" - Northumbrian and Essex and Suffolk Water Forum CMA Submission, REP058. 137 Ofwat Response Northumbrian Water, REP022, paras 4.40 and 4.42, p. 83.

¹³⁸ Ofwat Response Northumbrian Water, REP022, para 4.44, p. 84.

¹³⁹ FD19, SOC183, p.38,

¹⁴⁰ SoC, paras. 638 - 649, p.129 - 130.

¹⁴¹ Ofwat Response Northumbrian Water, REP022, para 3.116, p. 55. 142 Ofwat Response Northumbrian Water, REP022, para 3.116, p. 55.

¹⁴³ Ofwat Response Northumbrian Water, REP022, para 3.114, p. 55. 144 Ofwat Response Northumbrian Water, REP022, para 3.114, p.55.

(145) None of the arguments or evidence presented by Ofwat has caused us to revisit our enhancement case. As set out in our SoC, we reiterate our request that the CMA provide an allowance for the scheme to be funded in full as a resilience enhancement investment in its redetermination.

3.5. ESSEX RESILIENCE SCHEME

(146) In FD19, Ofwat rejected the Essex Resilience scheme on the basis that the need had not been justified. In its Response, Ofwat concluded that the need test had still not been met, despite the additional evidence that we provided. We maintain that the need test has been satisfied, that we have selected the right option and that the costs are efficient. As such, we reiterate our request for the CMA to consider funding the scheme in full.

3.5.1. Ofwat said:

- (147) Ofwat considers that this scheme is "not necessary to enhance resilience in the Essex water resource zones":145
 - our WRMP states that the supply network in Essex is highly integrated and flexible;
 - the funded Layer DAF scheme mitigates the same principal risks as the Essex Resilience scheme and insufficient evidence has been provided to dispel that view;
 - the existence of a significant drawdown risk to Hanningfield or to potable supplies in the Essex supply area has not been adequately demonstrated once the new DAF treatment process at Layer comes online – at that point the remaining "water quality and supply issues were not significant enough to justify the additional expenditure";¹⁴⁶
 - the EOETS is available to help address this risk and we could take better advantage and/or control of it; and
 - climate change impacts are "*inherently captured in our base model allowances*"¹⁴⁷ but will not, in any event, create a risk for resources in the region given our ability to trade with neighbours and have a greater surplus when the TW trade agreement comes to an end.
- (148) As a general comment, we note that Ofwat refers to the existence of water resource zones (multiple) in our Essex region. Our Essex supply region constitutes a single WRZ. Whilst our WRMP refers to the integration of our system in general terms, our potable supply system is more integrated than our raw water system a point that our proposed Essex Resilience scheme seeks to address. There is limited inter connectivity between raw WRZ to areas beyond our Essex WRZ within the broader geographical region. The TW trade agreement permits more raw water to Chigwell WTW but this does not change Chigwell's deployable output (**DO**). The Chigwell WTW supply zone provides no wider benefit to the Essex supply zone. The EOETS arrangement can be used throughout the year in line with the EOETS manual and supplies water to Abberton and Hanningfield complex.

3.5.2. Operation of our Essex Water Resource Zone

(149) Hanningfield WTW supplies around 40% of the Essex WRZ customer demand. The WTW is essential for both its connectivity to the wider treated water network (see Figure 4 below) and its ability to rapidly ramp up water production process given that it utilises physico/chemical treatments. This enables the WTW to make up any outage (planned or unplanned) from one or more of the other works connected to the treated water network and distribute treated water to wherever required. Hanningfield WTW is the largest in Essex with a DO of 210 Ml/d. It routinely operates between 120-140 Ml/d and therefore has significant redundancy available for resilient water supplies; the base-load is supplied from our four other WTW in the WRZ.

¹⁴⁵ Ofwat Response Northumbrian Water, REP022, para 1.36, p.9 146 Ofwat Response Northumbrian Water, REP022, para 3.129, p.59

¹⁴⁷ Ofwat Response Northumbrian Water, REP022, para 3.138, p.61.
Figure 4: Essex Distribution Schematic



Source: NWL

- (150) Layer WTW is the second largest works in the Essex WRZ with a DO of 145 MI/d. The treatment process at Layer is primary roughing Rapid Gravity Filters (**RGF**) and secondary Slow Sand Filters (**SSF**). RGF are a physical process, capturing solids whilst SSF are biological where the treatment is carried out by a layer of biomass:
 - RGF require backwashing to remove the captured material. This is an automated process that takes less
 than 1 hour and has only a small impact on the output from the filter; and the SSF process must be operated
 slowly and carefully to ensure the biological activity, which treats the water to make it safe, is not
 compromised. The SSF have a cyclical operation whereby there is a ripening period, a production period
 and a cleaning period. These processes occur until the dirt penetration or filter bed depth reach a certain
 level. At this point the filter is removed from service, the sand is physically dug out and washed before being
 returned and the process starts again.
 - The typical duration of the ripening, production and cleaning periods of SSFs are one to three weeks, 15 weeks and one week respectively. This cyclical process and the biological nature require careful management to maintain a stable supply into the network. In comparison to a physico/chemical process the SSF process has little capability to rapidly ramp up to meet an increase in demand, irrespective of whether the demand is caused by customers or an outage (planned or unplanned) at another WTW site.
- (151) Layer WTW has 20 SSF and operates to a schedule to limit the number of filters that are being serviced. Should SSF receive a high load, such as during an algal bloom, a number of the filters could require cleaning at the same time, limiting the capacity of the WTW.
- (152) Hanningfield WTW with its physical location in the treated water network, and with the capability of the process to rapidly meet changes in demand, is ideally placed to offer significant critical resilience to the Essex WRZ. This is dependent, however, on it having access to sufficient raw water to process. That raw water is stored in Hanningfield reservoir.
- (153) By creating a new pipeline to transfer water from Abberton Reservoir to Langford WTW, water that would otherwise be abstracted from the rivers Blackwater and Chelmer to service Langford WTW to meet baseline demand is instead available to transfer through our existing equipment to Hanningfield reservoir. This will enable us to ensure that Hanningfield reservoir is kept filled at a suitable level to offer the appropriate level of resilience. This maximises the raw water we have available as well as our existing supply and treatment infrastructure.

3.5.3. Our Reply:

- (154) Despite Ofwat's claims to the contrary, we have consistently and adequately evidenced the need for the scheme in our BP19, our SoC and the supporting enhancement case. As we set out in the following sections:
 - having a supply surplus in the region does not negate the need for the scheme (see Section 3.5.3.1);
 - the existing level of integration within our raw and potable water supply network does not negate the need for the scheme (see Section 3.5.3.2);
 - Layer DAF is complementary but does not replace the need to build the transfer main (see Section 3.5.3.3);
 - the scheme provides greater resilience for our raw water supply network which in turn ensures greater resilience for our potable supplies (see Section 3.5.3.4);
 - reliance on the EOETS or other sources of 'existing resilience' is not a substitute for this scheme (see Section 3.5.3.5); and
 - the scheme will deliver additional regional resilience benefits (see Section 3.5.3.6).

3.5.3.1. Having a surplus supply does not negate the need for the scheme

- (155) We do have a surplus of water in our Essex WRZ with sufficient raw water supplies to meet demand in a 1 in 200-year drought.¹⁴⁸ Ofwat is incorrect to suggest that this scheme was required "to tackle supposed potable water demand issues in Essex".¹⁴⁹ This scheme is about the ability to move the raw water to the treatment plant that has sufficient headroom to treat it, Hanningfield WTW.¹⁵⁰ An option to increase the DO from Layer WTW to above the current 145 MI/d DO was considered, but the pipeline scheme had a higher Benefit Cost Ratio (BCR).¹⁵¹ To increase the capacity of Layer WTW would have decreased the volume that would have needed to be treated at our other WTW, as there is no increase in potable water demand in the WRZ. The transfer scheme is designed to make the raw water system more resilient and enable Hanningfield WTW to respond efficiently to outages and demand peaks within the network.
- (156) Having a surplus of raw water within the Essex WRZ does not remove the need for the Essex Resilience scheme. As Figure 1 in the Enhancement Case¹⁵² demonstrates, our infrastructure within that WRZ supports customers in different geographic locations. The focus of this scheme is on our ability to move that raw water around within the WRZ to ensure that we can maintain sufficient reserves in our Hanningfield reservoir to provide system-wide resilience for our customers, particularly in the event of a low probability/high impact event.
- (157) Given that this scheme is not about the volume of water available it was misleading for Ofwat to draw attention to that and the categorisation of the scheme as 'discretionary' rather than 'mandatory' under the WRMP classifications as part of its explanation for rejecting the scheme.¹⁵³ Similarly, Ofwat's suggestion that we could simply source water through trades with neighbours is not an appropriate alternative to this proposed scheme.
- 3.5.3.2. The existing level of integration within our raw and potable water supply network does not negate the need for the scheme
 - (158) As we acknowledge in our SoC we do have a highly integrated network with a large degree of flexibility for moving raw and potable water around.¹⁵⁴ We are not suggesting that we are not currently able to transport significant volumes of raw and potable water. That does not mean, however, that the additional resilience this scheme will deliver for our customers is not necessary.
 - (159) Within our Essex WRZ almost all of the water we treat and deliver to our customers is abstracted from three rivers: the Stour, Blackwater and Chelmer. Chigwell is supplied from King George Fifth and William Girling Reservoirs. We also have two pumped storage raw water reservoirs, Abberton and Hanningfield. These are designed to be drawn down during the summer's drier months and refilled from the rivers during the wetter winter period. Prior to supply, that raw water is treated at our Chigwell, Langford, Langham and Layer WTW which produce our baseload of water. Our Hanningfield WTW provides the flexibility to increase/decrease output quickly to match demand

152 Essex Resilience Enhancement Business Case, March 2020, SOC276, p.5.

¹⁴⁸ SoC, para. 693, p. 136.

¹⁴⁹ Ofwat Response Northumbrian Water, REP022, para. 3.125, p. 58.

^{150 &}quot;We do not have raw water resource deficit or treatment constraints which will prevent us from meeting current and future customer demand in the Essex region. Rather, we lack raw water transfer capability to fully utilise the water stored at Abberton across the wider Essex region." SOC134 Appendix 3.3.2 to NWL Response, p. 3.

¹⁵¹ Option 1, NWL Response to Ofwat DD19, Appendix 3.3.2 Essex Resilience - Abberton to Hanningfield Transfer Main, July 2019, SoC134, p. 16.

¹⁵³ Ofwat Response Northumbrian Water, REP022, para. 3,134, p. 60.

¹⁵⁴ SoC, para. 61, p. 15

relative to the base-load for the whole Essex system. As demand fluctuates overall, that change must be met by supplies from Hanningfield. This is demonstrated in Figure 1 in the Enhancement Case¹⁵⁵ and in Table 6 below which shows our water supply zones within the Essex WRZ and the approximate average percentage of supply from each of our WTW. The percentage received at any given moment can vary due to the demand across the system and amount of total demand. The integration of our system is shown diagrammatically above in Figure 4.

•							
Motor System Zone (MISZ)	Customers (Nr		Water Tr	reatment Wo	orks ¹⁵⁶		
water System Zone (wSZ)	of Properties)	Chigwell	Hanningfield	Langford	Langham	Layer	Total
North Essex System Zone	18,469				25%	75%	100%
Chelmsford System Zone	65,901		*		25%	75%	100%
Langford System Zone	29,746		*	100%			100%
Southend East System Zone∞	93,844		59%	41%	**	**	100%
Southend West System Zone∞	118,945		100%		**	**	100%
Herongate∞	152,534		34%		21%	42%	97%†
Chigwell Systems Zone	166,622	69%	10%		6%	12%	97% [†]

Table 6: Water System Zones and their WTW Supplies - typical annual distribution of potable water into our network

Predominant supply

*Under normal operation, this WSZ is not supplied by Hanningfield WTW, emergency supplies only

† Typically also supplied by small groundwater well sources which make up 2% of the WRZ (3% to this supply zone)

∞ Number of customers benefitting from the Essex Resilience, 365,323 used in the BCR calculation

Source: NWL

- (160) Table 6 shows, over half of our water supply zones are permanently supplied by more than one of our WTW which provides an initial level of resilience. If there is an issue with the distribution input (DI) from a WTW or prolonged outage, our Emergency Outage Plans provide for supply from a secondary source, which is almost always Hanningfield WTW. This is why we need Hanningfield WTW to have resilient access to raw water.
- Hanningfield WTW directly feeds 365,323 customers (see Table 6). This was reflected in our BCR calculation for (161)this scheme.¹⁵⁷ These customers will also have a more secure secondary source of supply as a result of implementing the Layer DAF project.¹⁵⁸ The Layer DAF project directly benefits over 100,000 customers.
- (162) Figure 4 above demonstrates the integration within our Essex distribution system which allows most WTW to support the wider network. Despite that integration, as we have shown above, reduced output from any of our WTW in the Essex WRZ will increase demand on the Hanningfield WTW, and in turn on the Hanningfield reservoir reserves, as this is used to vary DI in order to meet the demand placed on the network.
- (163)In any event, our ability to move raw water around that system is limited in time, governed by the control curves set out in the EOETS Operating Manual and dependent on rainfall, to the wetter months of the year. ¹⁵⁹ This necessarily curtails the 'refill period' during which we are able to ensure that Hanningfield reservoir has been filled to the level necessary to provide the required degree of resilience. Given the trends towards reduced rainfall and drier winters, that window will become increasingly shorter. This scheme mitigates that risk by removing that limitation to support the transfer of water to Hanningfield reservoir beyond the end of the normal refill period, delivering the necessary level of resilience in any season.

3.5.3.3. Layer DAF is complementary but does not remove the need for the scheme

(164) We are pleased to see that, although Ofwat still considers that this scheme "mitigated the same principal risks"¹⁶⁰ as Layer DAF, Ofwat does acknowledge that "the Layer water treatment works scheme may not address

Zones can be fed from other WTW after operational adjustment

¹⁵⁵ Essex Resilience Enhancement Business Case, SOC276, p. 5.

¹⁵⁶ At any point in time the percentage of water received from any particular WTW will vary due to the demand placed on the network, the figures represent an annual distribution based on customer numbers.

¹⁵⁷ BP19 (ed. 08,19) Appendix 3.3.2 Essex Resilience – Abberton to Hanninafield Transfer Main, July 2019, SOC134, p.19

¹⁵⁸ Draft Final Water Resources Management Plan 2019, p. 33

¹⁵⁹ Essex Resilience Enhancement Business Case, SOC276, Table 2 - Summary of existing Essex WRZ water sources. 160 Ofwat Response Northumbrian Water, REP022, para 3.127, p.58.

the full extent of the issues that the transfer scheme aims to address^{"161}. However, Ofwat is wrong to assert that the Layer scheme is "*a major factor in reducing the residual risk to the reliability of water supply across the Essex supply zones*".¹⁶² The 2016 period highlights our reliance on the EOETS to supply raw water and the transfer pipeline scheme increases the resilience of the water supply system in Essex. Outages do occur at our WTW, as Figure 5 shows. These can occur at any time and could coincide, placing an increased dependency on Hanningfield WTW and Reservoir.



Figure 5: Outage due to algae at SSF WTW in our Essex WRZ

Source: NWL.

- (165) The Layer DAF scheme, as demonstrated in Table 6 above supports a significant proportion of the Essex region, which will benefit from restoring the level of resilience currently lost at the Layer WTW by addressing the algal and turbidity outages. We still require the Essex Resilience scheme to support the wider Essex supply zone. The transfer pipeline also mitigates against the need to:
 - increase the capacity/DO of Layer WTW until 2045 or beyond;
 - increase the capacity of the potable water transfers mains that would be required to transfer water to the South of the WRZ;
 - install ultra-violet (UV) disinfection to treat cryptosporidium oocyst at Langford;
 - install of means to control high nitrate level at Langford WTW;
 - install a DAF process at Chigwell WTW for algal blooms; and
 - install a DAF process at Langham WTW for algal blooms.¹⁶³
- (166) The purpose of the scheme is to provide resilience to the WRZ by ensuring reliable and efficient supply to customers, even during increased demand periods and outages at our other WTW. Outages caused by algae are not unique to Layer. Figure 6 shows how the proportion of outage caused by algae at all WTW is largely consistent in the years Layer experiences most outages caused by algae. In 2016 the percentage of outage caused by algae at Layer was lower than at Langford, Langham and Chigwell WTW. Installing the pipeline between Abberton and Langford will **allow us to fully utilise existing treatment capacity at Hanningfield WTW**; this will provide further benefits than simply improving algal resilience at all WTW. Instead it will provide resilience in the event of outages at other WTW caused by water quality deterioration outside our control and will cost less than it would to improve algal treatment at all WTW.

162 Ofwat Response Northumbrian Water, REP022, para 3.136, p.61. We note that CCWater questions Ofwat's rationale for this decision: "It is unclear whether the improvements to Layer Treatment Works offer the level of protection from risks of supply interruption and water quality that the transfer main scheme offers. As customers support the transfer main scheme, the CMA's redetermination should assess whether Ofwat's decision was correct" (CCWater Submission to the CMA, REP080).

163 Essex Resilience Enhancement Business Case, SOC276, paragraph 47, p. 13 & 14

¹⁶¹ Ofwat Response Northumbrian Water, REP022, para 3.136, p.61.

3.5.3.4. The resilience of our raw water and potable supply systems is at risk

- (167) In any event, contrary to Ofwat's assertions,¹⁶⁴ we have demonstrated that the combination of factors impacting on our raw water (including algal blooms, the quality of our raw water, reduced rainfall, population growth, demand fluctuations and the availability of third-party water sources) leads to unsustainable levels of reliance on the Hanningfield reservoir reserves. This creates resilience challenges for our raw and potable water supply systems. These remain significant risks even once the Layer DAF works have been completed.
- (168) In the event that our Hanningfield Reservoir is drawn down to emergency storage levels, we would only have 30 days of storage. In such a scenario we would need to implement more stringent drought actions,¹⁶⁵ including Level 3 drought orders and eventually Level 4 system wide pressure reduction. If the Hanningfield Reservoir fully drew down to dead storage, the output from the Hanningfield WTW would cease which would reduce the DO within the Essex WRZ to 342 Ml/d.¹⁶⁶ This is less than our average Essex demand of c.384Ml/d.¹⁶⁷ This would have an immediate impact on our customers with low pressure or eventual loss of supply.
- (169) The impact of algae and nitrates on our WTW can be seen in Figure 6 and Figure 7, which results in loss of DI. These show how events that are outside of management control affect the DI from our WTW. We have stated in the Essex Resilience Enhancement Business Case what additional process units could be required to treat the deteriorating water quality at a number of our WTW.





Source: NWL.

¹⁶⁴ Ofwat Response Northumbrian Water, REP022, para. 3,137, p. 63; para. 3.142, p. 62.

¹⁶⁵ As defined in ESW Drought Plan 2018, p. 4-7, levels of service are grouped into the following categories: Level 1 (Appeal for restraint), Level 2 (Temporary Use Ban), Level 3 (Drought Order Ban), Level 4 (Reduced supply at customer tap).

¹⁶⁶ Essex Resilience Enhancement Business Case, SOC276, Table 1.



Figure 7: Outage due to nitrate at Langford WTW

Source: NWL

- (170) Ofwat asserts that we already have: "an existing level of resilience even under unprecedented conditions" based upon the premise that even in 2016 and 2018 "there was no recorded adverse impact, such as low pressure or supply interruptions, to customers across the Essex supply area".¹⁶⁸ We consider that it should not take an adverse impact on customers to demonstrate a lack of resilience and a justification for a scheme to proceed; long-term planning to avoid such events is precisely what the resilience duty was designed to promote.
- (171) There are events such as Beast from the East that are documented where companies will intervene outside of BAU to guarantee supplies.¹⁶⁹ These interventions might not be sustainable or efficient interventions, but such management actions will overcome the problems of the event. **The proposed pipeline enables us to provide resilience as part of our BAU, being a more efficient means to provide supplies to our customers during challenging circumstances.** Customers supported the investment and the risk reduction it brings versus further short-term bill reductions,¹⁷⁰ a sentiment which has been reemphasised by the Water Forum in their recent submission to the CMA.¹⁷¹
- 3.5.3.5. Reliance on the Ely-Ouse to Essex Transfer System or other sources of 'existing resilience' is not a substitute for the scheme
- (172) As Ofwat acknowledges, the EOETS can provide up to 35% of our water resource requirements in a dry year.¹⁷² The flexibility of EOETS is limited, however, by the Operation Manual. Raw water can only be transferred when there is sufficient water in the rivers to protect the environment; the levels (shown by the zones A, B and C) are shown in Figure 8 below.

170 Water Forum DD Response, SOC263, p.2.

¹⁶⁸ Ofwat Response Northumbrian Water, REP022, para 3.144, p.62.

¹⁶⁹ Ofwat, Out in the cold, water companies' response to the 'Beast from the East', 19 June 2018, SOC225.

¹⁷¹ Northumbrian and Essex and Suffolk Water Forum CMA Submission, REP058, p.4.

¹⁷² Essex Resilience Enhancement Business Case, SOC276, para. 13, p. 5.

Figure 8: EOETS Operating and Control Levels



Source: NWI

- (173) Ofwat asserts that our concerns about reliability of the EOETS source are not supported by evidence, and that it would be prudent for us to demonstrate whether working more closely with the EA to ensure "*better control of the system*" would allow the EOETS to "*play an important and more cost-effective role in addressing any inter-connectivity risks*".¹⁷³
- (174) We already actively manage the EOETS and have a good working arrangement with the EA. Control and management of the EOETS is carried out by the EA in accordance with the EOETS Operating Manual. We attend quarterly meetings of the Ely Ouse Operators Group, which is chaired by the EA. The standing agenda items in these meetings include a forecast of the need for the EOETS to support the Essex reservoirs, as well as planned outage for maintenance of both our assets and also the EOETS assets, including the EA's Kennett and Wixoe Pumping Stations.
- (175) The EOETS management control system cannot prevent the occurrence of low probability/high impact events which would impact on our ability to transfer water to our Hanningfield Reservoir. For example, as with all river intakes, there is a risk of pollution which might require the Kennett or Wixoe Pumping Stations to be stopped for a period. Similarly, a fire in a motor control centre would prevent pump operation. As such we do not consider that the level of resilience offered by the Essex Resilience scheme could be achieved through control and management interventions with respect to EOETS.
- (176) Ofwat also identifies other alternative sources of "existing, built-in resilience already available in the Essex system"¹⁷⁴ which it considers we do not adequately account for. Ofwat's 'alternative sources of built-in resilience' are addressed in Table 7 below where we explain how each element does not address the resilience issues that would be captured by the pipeline scheme.

¹⁷³ Ofwat Response Northumbrian Water, REP022, paras. 3.125-3.149, pp. 58-62.

¹⁷⁴ Ofwat Response Northumbrian Water, REP022, para 3.148, p. 63.

	Table 7: Accounting	for other pote	ntial sources of	f resilience to	meet demand
--	---------------------	----------------	------------------	-----------------	-------------

Source identified by Ofwat	How we account for it
Other water treatment works	The loss of Hanningfield WTW DI cannot be wholly overcome by the other WTW.
More raw water from EOETS	The amount of water that is available for transfer to Hanningfield Reservoir is
	limited by rainfall, river levels and the time of the year as detailed in the EOETS
	Operating Manual.
	The proposed pipeline can provide water to Hanningfield or Langford at any time of
	the year and is not subject to the same capacity constraints.
Additional raw water supply from	Chelmsford sewage works via the Langford Recycling Plant (LRP) has a capacity
the Chelmsford sewage works	of 20 Ml/d. While this is a significant flow it is a small part of the 455 Ml/d
recycling scheme	implement capacity that would have been available for transfer by the Kennett
	Pumping Station, at the start of the EOETS.
Additional raw water supply from	The EA's groundwater river support scheme comprises of two systems on the
the EA's groundwater river	Great Ouse and Stour rivers. During the loss of the EOETS in 2016 we could not
support scheme	transport water from the Great Ouse Groundwater Scheme (GOGS) as these
	borehole pumps support the river from which the EA's failed Kennet Pumping
	Station (PS) abstract water. Only two of the Stour Augmentation Groundwater
	Scheme (SAGS) support the river flow before water is abstracted at the Wixoe
	Pumping Station for transfer to Hanningfield Reservoir. The SAGS only provides
	around one fifth of the flow that can be delivered by the Kennett PS for subsequent
	transfer to our reservoirs.
Treated water storage across the	Treated water storage cannot provide the long-term resilience that our water
Essex water resource zones	treatment capacity can, treated water is constantly used and replenished by our
	WTW. Treated water capacity is measured in hours, not the weeks and months
	that can be supplied by the proposed transfer pipeline.
	In our Essex WRZ we have approximately 40 hours of treated water storage.

3.5.3.6. The scheme will deliver additional regional resilience benefits

- (177) The submission to the CMA by WRE considers the potential regional resilience benefits of the Essex Resilience scheme. WRE suggest that this scheme will "enhance the operability and resilience of these two crucial strategic reservoirs and potentially take pressure off water resources in the South East and London, which the work on the National Framework shows to have the largest challenge of any region".¹⁷⁵
- (178) WRE notes that it is, therefore, "keen to stimulate active trading of water within and between sectors in our region. While there is further work to do to develop our approach, having the flexibility to move water around a county such as Essex may open up opportunities in the shorter term for trading, which may offset the need for other infrastructure development elsewhere in the region". ¹⁷⁶
- (179) These benefits are not captured in our current enhancement case.

3.5.4. Conclusions

- (180) We agree with Ofwat that achieving resilience is "vital". Contrary to Ofwat's characterisation of this scheme, however, we consider that it will provide many benefits to customers at an efficient cost. It allows us to maximise the existing infrastructure by making the most of existing treatment capacity, which defers the need for future investment in those works and is therefore a vital resilience project. Our customers recognised this, with 89% of customers supporting this proposal.
- (181) WRE has questioned Ofwat's intervention and states that "Our view is that the proposed scheme would appear to be a well-supported, technically appropriate, relatively low cost, 'no regret' option for the county of Essex and beyond."¹⁷⁷
- (182) We do not consider that any of the arguments or evidence presented by Ofwat has undermined our enhancement case. As set out in our SoC, we reiterate our request that the CMA provide an allowance for the scheme to be funded in full as a resilience enhancement investment in its redetermination.

¹⁷⁵ Water Resources East CMA Submission, REP010, p.3.

¹⁷⁶ Water Resources East CMA Submission, REP010, para 15.

¹⁷⁷ Water Resources East CMA Submission, REP010.

3.6. UNPLANNED OUTAGE

(183) In our SoC, we argued that Ofwat's introduction of a PC for '*unplanned outages*' represents a poor metric for driving resilience improvements and supporting asset health. We argued the measure is too novel for comparative assessment, given the early stage of development of measurement techniques. We asked the CMA to remove the metric and the associated financial incentives from our collection of PCs/ODIs.¹⁷⁸

3.6.1. Ofwat said:

(184) Ofwat defends the new unplanned outage PC, claiming that asset health, as revealed by this metric, is an important reporting area that is in the interests of customers.¹⁷⁹ Moreover, Ofwat claims to have taken mitigating steps when assessing the PC to reflect its early development.¹⁸⁰

3.6.2. Our Reply:

- (185) We agree with Ofwat's assertion that asset health in the context of resilience is an important area for reporting. However, that does not mean that the proposed PC is fit for purpose. As explained in our SoC, there is no direct link between an unplanned outage and asset health, and different companies do not assess and measure these things in the same way.¹⁸¹ We have met all of its asset health metrics in AMP6as we highlighted in our SoC.¹⁸²
- (186) While we agree that concessions were made by Ofwat in the FD, **Ofwat has still applied a financial incentive and devised a** metric **which is too novel for comparative benchmarking.** This was reflected in a report by Jacobs and KPMG for Ofwat and Water UK, which concluded that the measure is still at a very early stage and that meaningful comparative assessment is not currently possible, recommending a period of shadow reporting and noting that the metric required further development.¹⁸³ Ultimately, as explained in our SoC, **better data is required for Ofwat to be capable of calculating a viable financial incentive in this area.**¹⁸⁴
- (187) We do not agree with Ofwat's assertion that we have not provided a relevant alternative metric to understand asset health of water treatment works.¹⁸⁵ In our SoC, we explained why unplanned outage is a poor metric¹⁸⁶ and offered the use of the Security of Supply Index (SOSI) as an alternative, which does not have the same poor incentive properties and has been reported for a long time in the sector, so it is consistent and comparable.¹⁸⁷
- (188) Ultimately, we maintain that the CMA should consider and comment on whether the unplanned outage approach remains a sensible asset health metric. We ask the CMA to either introduce a new metric (such as SOSI) or remove the financial incentive attached to the current PC.¹⁸⁸

179 Ofwat Response Northumbrian Water, REP022, paras 4.69-4.70, p. 91.

¹⁷⁸ SoC, Section 7.7, p. 140-145.

¹⁸⁰ Ofwat Response Northumbrian Water, REP022, paras 4.53-4.54, p. 86 181 SoC, para 740, p. 143.

¹⁸² SoC, para 102, p.23.

¹⁸³ SoC para 744, p. 143; Ofwat and WaterUK - Targeted review of common performance commitments, 19 December 2017, SOC219, pp. 4-5.

¹⁸⁴ SoC, para 747, p. 145.

¹⁸⁵ Ofwat Response Northumbrian Water, REP022, para 4.54, p. 86. 186 SoC, Section 7.7.2, p. 142-143.

¹⁸⁷ SoC, para 733, p. 142; para 750, p. 145.

¹⁸⁸ SoC, para 750, p. 145.

4. IS THE ADDITIONAL 'STRETCH' THAT OFWAT HAS APPLIED APPROPRIATE AND JUSTIFIED?

4.1. SUMMARY OF OUR CASE

Table 8: Summary of key arguments

Ofwat	Summary of our response
Systematic outperformance and the 'step change': Ofwat presents updated RoRE data to show that the sector has outperformed in AMP6 in contrast to analysis in our SoC including updates to the published data. It argues that RoRE is the appropriate measure of performance. However, it states that this outperformance is not the reason for its 'step change' but that it has informed its assessment of the level of stretch in the package.	We reaffirm our justification for a RoCE basis to assess outperformance and profitability. On the RoCE basis the modest increase in AMP6 sectoral outperformance in no way justifies the additional 'stretch' that has been applied at PR19 .
Base Model: We have not challenged Ofwat's base cost models.	We broadly support Ofwat's base models. We provide further analysis to assess the robustness of Ofwat's base models in light of the submissions of other Referring Companies. We do not support models that include service quality or growth but recognize that intuitively the cost/service disconnect is a weakness in Ofwat's methodology.
Catch up efficiency challenge : Ofwat used the 3 rd and 4 th ranked company to define the efficiency challenge applied to all other companies in FD19. This efficiency challenge was set at a " <i>comfortably achievable</i> " level, with 8 of 17 companies forecasting more efficient costs than the benchmark after the inclusion of the 18/19 atypical year (showing clear scope for outperformance). There was clear evidence that the UQ efficiency challenge no longer provided a sufficient challenge to companies' base costs.	 We provide evidence against Ofwat's policy choice to shift away from the historical UQ standard for setting the catch-up efficiency challenge. In particular: Ofwat's did not consult companies on its policy choice; the companies' forward-looking BP19 cost claims do not infer efficiency; the updated information available at FD19 did not imply that UQ stretch was easier to achieve; this policy change appears arbitrary and Ofwat has not tested its achievability; and this policy choice has serious consequences. An adjustment should be made to reflect RPEs for experiences.
a real price effect for energy prices or chemical prices is required and that an adjustment will weaken company incentives to manage these costs. COVID-19 further supports the rationale for not including an RPE allowance for energy and chemicals.	 energy and chemicals, for the following reasons: including an RPE for energy and chemicals does not weaken company incentives to manage costs – this is about how an overall allowance is set within which the company has the incentive to manage all its costs; there is limited scope for offsetting above average productivity gains for energy and chemicals costs; the most relevant evidence points toward a wedge between CPIH and input prices for energy and chemicals; and there is no evidence that the impact of COVID-19 will affect prices in the way assumed by Ofwat.
Growth : Ofwat considers that its growth adjustment has a clear rationale and intuition (given that its wholesale models lack a cost driver to capture growth intensity). We have already benefitted from its conservative approach of discounting the negative adjustment by 50%.	We disagree with the negative adjustment. The differential impact of growth on costs should be captured in the model itself. A 50% discount cannot therefore be considered to be generous, given that an adjustment is not warranted in the first instance.
WINEP: Ofwat allowed funding for all WINEP schemes, challenging efficiency where necessary. Applying frontier shift efficiency to WINEP enhancement costs is the correct approach. Ofwat does not accept our challenge to its phosphorus removal modelling approach.	Applying frontier shift to WINEP schemes is inappropriate given that most companies included frontier assumptions in their business plans. We continue to believe that the third model used for YW is needed to provide us with the appropriate funding for phosphorus removal, given that we are in a comparable position to YW.

Ofwat	Summary of our response
Abstraction charges and business rates: although companies have limited control over business rates and revaluations, they have some degree of influence. Ofwat allowed further protection for companies and customers through a reconciliation mechanism at the end of the 2020- 25 period, with special sharing rates for business rates and abstraction charges.	The proposed reconciliation mechanism is not appropriate for these cost items, given the lack of management control and variability. Ofwat's approach exposes us to an uncontrollable risk of a loss arising from a significant increase in these costs. This is more significant for us than other companies given our greater exposure to abstraction costs. We reject the implication that a £15.2 million exposure for increased abstraction costs is not material.
Frontier shift : the frontier shift of 1.1% is less than the 1.5% we assumed in our business plan and is in line with regulatory precedent. The frontier shift estimate is based on performance of competitive sectors and so accounts for the potential impact of catchup. It is also based on productivity growth of all costs in comparator competitive sectors. Ofwat therefore considers that it should be applied to all Base Expenditure (Botex) and to enhancement costs.	Ofwat's comments do not appear to relate to our case. We do not contest the 1.1% frontier shift figure – we argue that its application to business rates and abstraction charges is inappropriate. We note that the 1.5% assumed in our business case applied only to modelled costs; whereas the 1.1% used by Ofwat applies to all costs. This results in a reduction to our overall cost allowance. We do not consider that the frontier shift was based on all costs in comparator industries. Given management cannot control these expenses, to apply frontier shift to business rates and abstraction charges would make unjustifiable reductions to efficient costs which cannot be recovered by productivity improvements.

- (189) In our SoC, we argued that the FD19 package for costs was unbalanced and went beyond the reasonable and achievable stretch challenge put forward in our BP19 in our customers' interests. We rejected Ofwat's justification that a 'step change' is needed across the sector because the sector has demonstrated historical systematic outperformance.
- (190) Unlike other Referring Companies, we have accepted the challenge to meet the efficiency levels derived by Ofwat's base cost modelling (as opposed to the subsequent excessive post-modelling adjustments), taking on board the measures required to meet the benchmarked levels of base costs. Therefore, we have supported Ofwat's choice of base cost modelling consistently throughout the PR19 process. We have carried out additional analysis in support of this Reply which demonstrates that, while all statistical models are necessarily imperfect, Ofwat's base cost models are more robust than the alternatives proposed by other Referring Companies. Similarly, we are supportive of Ofwat's decision not to include quality variables in the base cost models (see Section 4.2 below).
- (191) While we have accepted the challenge to meet the benchmarked efficiency level, in this Reply, we continue to have significant concerns with many of Ofwat's post-modelling adjustments. In our SoC, we challenged the logic and evidence supporting the magnitude of the adjustments as they result in cost allowances that are not achievable, if we are to maintain service levels. They are also unrelated to the efficient benchmark established through Ofwat's modelling. In this sense, FD19 represents a series of adjustments whose combined effect is unachievable and we reject Ofwat's assertions that the level of stretch is "comfortably achievable" and "particularly achievable for Northumbrian Water".¹⁸⁹
- (192) In particular, we are concerned that:
 - Ofwat's overall efficiency challenge is not reasonable and fails to reflect the cost pressures that companies are facing;
 - Ofwat has gone beyond the UQ in its efficiency challenge from the cost models and it applies an unjustified challenge to our WINEP programme;
 - Ofwat fails to make adequate allowances for RPEs that we are facing or provide pass through for costs that
 are clearly outside of management control;
 - Ofwat's cost allowances in some instances do not appropriately reflect the cost drivers:
 - its post-modelling adjustments on growth are not justified, the drivers relating to these factors are already in the base cost models; and
 - its P-removal models are poor and Ofwat has applied an additional model selectively to YW and not us triangulation of the model outputs would make them more robust.

¹⁸⁹ Ofwat Response Northumbrian Water, REP022, para 1.26.

- (193) In its Response, Ofwat has defended its FD19 post-modelling adjustments, with limited new data or information. Ofwat's Response concludes that, having reviewed the cost and engineering arguments in our SoC, "we do not consider that a change in final allowance is required [for] the majority of its issues (overall efficiency challenge, real price effects, growth, WINEP, resilience, abstraction and business rates, leakage, industrial emissions directive, and grants and contributions)."¹⁹⁰
- (194) Rather than repeat our SoC, in the sections below we have set out our response to the main points raised by Ofwat in its Response (noting that Ofwat has not responded to several of the points that we raised in our SoC). Based on the evidence presented in our SoC and our response to Ofwat's points made to the CMA, we ask the CMA to fully investigate these areas as part of its re-determination.
- (195) There are a number of cost measures which are discussed in other Sections. In Part B Section 9, we discuss Ofwat's approach to items raised in our SoC that related to information that was not available at the time of the FD19.

4.2. OFWAT'S BASE COST MODELS

4.2.1. Ofwat said:

- (196) Ofwat's Response notes our general support for the base cost models.¹⁹¹ In this Section, we outline our concerns with some of the proposals put forward by other companies. In particular:
 - AW's proposal to use alternative models for modelling growth expenditure; and
 - other Referring Companies' arguments to reflect service quality in the models.

4.2.2. Our Reply:

- (197) Robust base cost models are needed to undertake regulatory cost assessment. Models should identify the key cost drivers with the strongest economic and engineering rationale, particularly given relatively limited data. Given that Ofwat has consulted on this topic since the start of the price control review and has developed models that match our robustness criteria, we broadly support Ofwat's choice of base cost models. Contrary to Ofwat's statement that the four Referring Companies submitted their preferred cost models in March 2018,¹⁹² we have consistently supported Ofwat's base models. Our concerns relate to the inappropriate post-modelling adjustments that Ofwat has made. In this Section we have included some observations on Ofwat's base cost models in light of the submissions of other Referring Companies.
- (198) In response to the alternative base cost models proposed by other Referring Companies, we have undertaken further sensitivity analysis to assess the robustness of Ofwat's econometric models. This analysis is set out in the Base Costs Appendix.¹⁹³ In summary, our analysis demonstrates that Ofwat's base cost models perform well statistically against our robustness and stability checks. Ofwat's base cost models are generally not significantly affected by the removal of data relating to a particular year or a specific company. This demonstrates that the modelled relationships are stable over time and are not highly sensitive to the data of a particular company. The efficiency scores produced by the models also show similar results to reinforce the overall robustness and stability.
- (199) As the CMA will be aware, Ofwat's base cost models seek to control for cost differences relating to exogenous factors (i.e. factors outside of a company's control) including scale, treatment complexity and the density of the network. However, Ofwat's base cost models do not control for differences in service quality. It is obvious that improvements in service quality and maintaining high service quality incurs costs. We note that the absence of service metrics as drivers in Ofwat's base cost models has been highlighted as a potential weakness by the other Referring Companies in their SoCs.
- (200) Our analysis suggests that in practice **the alternative models proposed by the Referring Companies have worse statistical performance than Ofwat's base cost models**, with some variables not being statistically significant, which indicates that there is not a strong relationship with costs.

¹⁹⁰ Ofwat Response Northumbrian Water, REP022, para 3.177. 191 Ofwat Response Northumbrian Water, REP022, para 3.11.

¹⁹¹ Otwat Response Northumbrian Water, REP022, para 3. 192 Ofwat Response Cost Efficiency, REP024, para 3.37.

¹⁹³ Base Costs Appendix, REP066.

- (201) We note that service metrics included in the base cost models may appear to be an intuitive improvement and that the step up in service performance required by Ofwat is one of the more material challenges of PR19 versus previous determinations. However, the relationship between quality and costs is complex and multifaceted (i.e. quality is not always measurable and higher quality is not always related to lower or higher costs). We agree with the CMA's reasoning at the BW PR14 appeal - given the challenges of appropriately including service quality drivers in the models, we do not think that the base cost models would be improved by including quality metrics and would compromise the ability of the models to identify relative efficiency. We therefore remain supportive of the FD19 base cost models over the proposed alternative models which include service drivers.
- (202) Finally, we have assessed the other Referring Companies' proposals for the assessment of growth costs. These proposals involve the separate modelling of growth costs and the inclusion of additional cost drivers to explain costs. We have concerns over the robustness of these models.
- (203) First, we agree with Ofwat's rationale for including growth costs within its base cost models - it is necessary to overcome cost allocation issues relating to how different companies report costs. The inclusion of growth costs is therefore necessary to ensure like for like comparisons between companies. Indeed, companies have adopted very different approaches to reporting growth, e.g. four companies report zero expenditure for water connections which indicates the costs are reported elsewhere which would not be accounted for in a more disaggregated analysis. Our concerns regarding growth allowances (see Section 4.6) concentrate on Ofwat's subsequent postmodelling adjustment for growth, rather than the base models themselves.
- (204) Second, our analysis suggests that the explanatory power of the alternative approaches proposed to date is statistically less significant than Ofwat's FD19 approach. On this basis, we consider that Ofwat's base cost models, which incorporate growth, represent the most accurate approach that is currently available.
- (205) We acknowledge that there may be differences between the operations of the Referring Companies compared to the national average. This means that Referring Companies may be able to point to exceptional factors which drive aspects of their costs. While these exceptions have been classed as inefficiencies within Ofwat's interpretation of the models, Ofwat's rejection of the vast majority of cost adjustment claims from across the industry¹⁹⁴ has made the ability for individual firms to claim for base cost differences very challenging. Therefore, while we support Ofwat base cost models on the basis that they generally provide a suitable fit across the country, we consider that Ofwat's policy choices with respect to cost adjustment claims may have prevented differences between individual companies from being adequately reflected. If the CMA supports our approach to retain the base cost models, then there are range of different approaches it could pursue to reflect service improvement costs including a further downward adjustment to the overall efficiency challenge to better reflect the step up in service or additional allowances outside of the cost models. Whichever approach is adopted it should be fairly applied across all the Referring Companies for consistency.
- (206)These issues are discussed in further detail in the Base Costs Appendix.¹⁹⁵

SYSTEMATIC OUTPERFORMANCE AND THE 'STEP CHANGE' 4.3.

4.3.1. Ofwat said:

(207)Ofwat states that its "proposal for a step change [in industry efficiency] is not based on whether there has been historical outperformance" but that the latter is "informative on how companies respond to the challenges that we set". 196 Instead, Ofwat states that the step change policy is a response to "stagnating performance on cost efficiency and outcome performance over recent years; the significant improvements made by some companies and the step change proposed and accepted by others; and our view that the sector can do much more to improve performance".197

¹⁹⁴ Out of 62 claims made by companies Ofwat fully accepted five claims, rejecting 43 and partially accepting 15. Overall over 70% of cost adjustment claims were rejected by Ofwat, See Ofwat PR19 Final Determination, Securing cost efficiency technical appendix, 16 December 2019, REP074, Annex 5.

¹⁹⁵ Base Costs Appendix, REP066

¹⁹⁶ Ofwat Response Northumbrian Water, REP022, para. 1.27, p. 7. 197 Ofwat Response Northumbrian Water, REP022, para. 5.22, p. 99.

- (208) Ofwat goes on to provide analysis that shows that on a RoRE basis, using the most up to date information, the sector has outperformed in AMP6, but only modestly in aggregate.¹⁹⁸
- (209) Finally, Ofwat refers to concerns expressed by the National Audit Office (**NAO**) and Citizens Advice regarding *"windfall gains"*.¹⁹⁹

4.3.2. Our reply:

- (210) Substantial systematic outperformance over time is indicative of excess profits. We challenge Ofwat's analysis that reached that conclusion and specifically, the weight placed on its RoRE analysis by Ofwat.
- (211) The amendments to the data on RoRE that Ofwat includes in its analysis demonstrates only a modest increase in sector outperformance in AMP6. In contrast, the level of challenge applied at PR19 is materially higher than at PR14, even at FD19 stage, after companies had reduced their business plans. Table 9 below shows that the net efficiency challenge across water and waste water was c.£0.5bn at PR14 and c.£6.5bn at PR19.

T	abla	٥.	Totox	aballandar	DD10 vo	DD4 4200
l	able	э.	TOLEX	chanenge.	LU2 A2	FK14

	FD allowance (£m)	Original Business Plan	Challenge	Challenge (%)
PR14 Water	£20.00bn	£19.94bn	-£0.06bn	-0.3%
PR14 Wastewater	£20.36bn	£20.97bn	£0.61bn	2.9%
PR19 Water	£23.07bn	£26.65bn	£3.58bn	13.4%
PR19 Wastewater	£22.70bn	£25.54bn	£2.84bn	11.1%

Source: PR14 and PR19 Securing cost efficiency appendices

- (212) In our SoC, we included profitability analysis, based on both RoRE and RoCE.²⁰¹ 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.²⁰² EI found that over the 2006-2019 period, the industry on average had marginally outperformed the average vanilla WACC by 0.1 percentage points.²⁰³
- (213) Broken down by price control, the industry on average performed in line with the real vanilla WACC after PR04, marginally outperformed by 0.2 percentage points after PR09 and outperformed by 0.4 percentage points after PR14 (see Figure 9 below). El also found an even split of companies who had, on average, out or underperformed regulatory determinations and that the identities of companies that out or underperformed varied across the price control periods, which suggests that there is no systematic and persistent outperformance across the sector.²⁰⁴

¹⁹⁸ Ofwat Response Northumbrian Water, REP022, para. 5.23-5.28, pp. 99-100; Ofwat Response Overall Stretch, REP019, Chapter 6.

¹⁹⁹ Ofwat Response Northumbrian Water, REP022, para. 5.24, p.100.

²⁰⁰ This table compares totex allowances (base costs and enhancements) to the requests in the original business plans at each review. This shows the level of the overall challenge applied by Ofwat across all categories of expenditure.

²⁰¹ SoC, Sections 5.2.3 and 6.6.

 ²⁰² 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.
 203 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

²⁰³ 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%.² 204 Economic Insight 2020, SOC413, pg. 7.



Figure 9: Industry average RoCE performance against the real vanilla WACC in each price review period

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

- (214) Ofwat asserts that RoRE is the more appropriate measure for use in profitability analysis. An analysis based on RoCE using the most up to date information has been restated by EI, which still shows that the sector has not materially and systematically outperformed historically.²⁰⁵ The same report also highlights that the RoCE measure is preferable to the RoRE measure the water sector is capital intensive, with long asset lives and is heavily debt financed. This is particularly important, because: "In the water industry, where there is significant debt finance, return on equity metrics, such as RoRE, are simply not...measures of economic profit". In particular: "Given that over two thirds of the investments made in the industry have been debt financed, it is inappropriate to measure the economic profit without capturing the opportunity cost of debt".²⁰⁶
- (215) Further, EI recognised that the WIA specifically refers to the requirement that companies can earn "*reasonable returns on their capital*".²⁰⁷ Consistent with this, Ofwat sets allowed revenues, and hence profitability, on a RoCE/WACC basis, rather than on the basis of RoRE.
- (216) The CMA's own guidance on market investigations would support the use of the approach of RoCE within profitability analysis, instead of RoRE as the appropriate metric. For example, the CMA's approach to profitability analysis in the 2014 energy market investigation said: *"in the case of energy generation, we observe that the capital-intensive nature of the industry means that the most relevant profitability benchmark is likely to be return on capital"*.²⁰⁸
- (217) Finally, Ofwat references reports from the NAO and Citizens Advice.²⁰⁹ While these two reports raise concerns around windfall gains, Ofwat does not explain the nature of their concerns or how the regulatory framework for PR19 addresses the risks highlighted.
- (218) The NAO report²¹⁰ raises concerns principally around how, during the 2010-15 period, companies were able to earn additional returns from Ofwat's approach to setting the cost of debt in a 'lower for longer' falling interest rate environment, variations in corporation tax versus the allowances set at the time of the price controls and also raises concerns around the 'upward bias' of RPI as a measure of inflation.
- (219) Firstly, we would highlight that the issues raised in the NAO report relate to the allocation of risk between companies and their owners and customers, had these issues led to companies and their owners incurring significant risks and costs they would have been subject to 'windfall losses'. This point is recognised in the NAO report:

²⁰⁵ Economic Insight, Measuring profitability in the water industry, A report for Northumbrian Water's response to Ofwat, Economic Insight Appendix, 22 May 2020, REP067. 206 Economic Insight Appendix, REP067, p. 7.

²⁰⁷ Water Industry Act 1991, 28 September 2018, SOC313, 2A

²⁰⁸ CMA, Energy Market Investigation, Approach to financial and profitability analysis, 8 December 2014, REP047, p. 10.

²⁰⁹ Ofwat Response Northumbrian Water, REP022, para. 5.24, p.100.

²¹⁰ National Audit Office, The Economic Regulation of the Water Sector, October 2015, SOC335.

"[C]ompanies currently bear several risks associated with factors outside of their control. As a result, we estimate that companies made net gains of at least £800 million between 2010 and 2015 because of unexpected falls in borrowing costs and the corporation tax rate. Customers would have benefitted if they rather than the companies had borne these risks, though they could have lost out if borrowing costs or tax rates had risen."211

- (220) In its Response, Ofwat fails to recognise that its policy choices for PR19 have already reallocated these risks in response to the NAO report. These policy choices mean that these issues could not be repeated during 2020-25. However, these changes are not referenced by Ofwat. In particular at PR19 Ofwat has:
 - introduced a debt indexation mechanism for new debt- which removes the risk that companies can outperform the allowed cost of debt in a falling interest rate environment;
 - shifted from RPI to CPIH indexation- which removes the risk of any real or perceived upward bias in RPI as an index; and
 - introduced a true-up mechanism for tax- which also removes the risk that companies can outperform their allowances for tax.
- (221) We are not disputing these changes.
- The Citizens Advice report is one of a series²¹² that focusses in particular on different elements of the cost of (222) capital and setting the allowed return. Some of this work has focussed on the energy sector which, as we highlighted in our SoC, has shown more systematic outperformance than the water sector.²¹³ It references the work by UK Regulators Network (UKRN)214 and provides stylised analysis of the impacts of alternative choices of the allowed WACC and their value for consumers. It notes that the water sector impacts are large because of the very large asset base of the sector, larger than the other sectors considered.²¹⁵ We note the very significant drop in the WACC that Ofwat provided in its 'early view' and which we accepted in our business plan package and would simply draw the CMA's attention to the evidence we have submitted as part of our SoC and this Reply. We do not dispute that small adjustments to the cost of capital parameters can have material impacts for customers, or that hindsight may suggest that some of these decisions may not have favoured customers, but the key question for the CMA is how the parameters should be set for the 2020-25 period.
- (223) We maintain that the sector has not demonstrated systematic outperformance over the long run and the scale of Ofwat's adjustments are unjustified. ROCE is the most appropriate metric and at a sector level this does not show systematic outperformance. Even using Ofwat's preferred metric of RoRE, the reported outperformance in AMP6 in aggregate is modest and this limited effect does not justify the scale of Ofwat's 'step change' in AMP7 with material changes to service targets, costs and the allowed return. The two external references that Ofwat highlights either refer to a concern that has already been addressed by Ofwat in its methodology for PR19 and so cannot be repeated or involve alternative retrospective hypothetical adjustments to the allowed return. While the latter analysis is interesting and makes an important point, it does not tell us what these parameters should be for AMP7, for which we refer the CMA to the evidence set out in our SoC and this Reply.²¹⁶

4.4. CATCH-UP EFFICIENCY CHALLENGE

- (224) During PR19 Ofwat conducted careful econometric benchmarking of companies' actual costs to calculate the efficient benchmarked level of costs, taking into account all of the information about companies' actual costs incurred. Companies are expected to adhere to this efficient benchmark - and we have accepted this challenge.
- (225)Ofwat then applied a further stretch in the form of the 'catch-up efficiency challenge', which aimed to cut cost allowances below the efficient benchmark level, to act as a further cost challenge. Ofwat's PR19 methodology and DD policy choice was for the catch-up challenge to be set with reference to the UQ company performance.
- (226)However, without prior analysis or consultation Ofwat's FD19 set its benchmark based on the third ranked company in wastewater and the fourth ranked company in water as ranked based on companies' updated forward-

²¹¹ National Audit Office, The Economic Regulation of the Water Sector, October 2015, SOC335, p. 10.

²¹² Citizens Advice, Energy Consumers' Missing Billions Report, July 2017, REP075, Citizens Advice, Monopoly Money Report: How consumers overpaid by billions, May 2019, REP076.

²¹³ Citizens Advice, Energy Consumers' Missing Billions Report, REP075; SoC, paras 277 – 279, pp.61 – 62.

²¹⁴ Estimating the cost of capital for implementation of price controls by the UK Regulators, SOC372

²¹⁵ Citizens Advice, Monopoly Money Report: How consumers overpaid by billions, REP076, p.17. 216 SoC, Section 8; See this Reply Part B Section 6.

looking business plans, produced in August 2019. These policy choices represented a significant change in approach from DD19, which applied an UQ.²¹⁷

- (227) Our SoC argued that the move from UQ to the new benchmarks was neither theoretically sound nor supported by sufficient evidence. Specifically, we argued that:
 - considering the appropriate framework for the selection of an efficiency benchmark, Ofwat's approach means that the benchmark risks being set at a level that cannot reliably be ascribed to differences in efficiency;²¹⁸
 - Ofwat has used companies which operate in unique circumstances to set the benchmark (in particular large and complex WaSCs, which should not be compared to smaller Water Only Companies (WoC) due to fundamental structural differences in their cost base) and this further risks the setting of too demanding a benchmark beyond the UQ;²¹⁹
 - the rationale for the change in benchmark from DD19 to FD19 (namely smaller differences is unexplained costs) is not robust;²²⁰
 - the choice of benchmark risks setting an efficiency challenge that is disproportionate, without evidence that the cost targets are achievable;²²¹ and
 - regulatory precedent does not support a challenge that is more demanding than UQ.²²²

4.4.1. Ofwat said:

- (228) In its Response, Ofwat made the following 12 individual points in defence of its policy choice:
 - 2018/19 cost data, which was added to the econometric models was an atypically high cost year;²²³
 - non-section 185 diversion costs were removed from the base cost models;²²⁴
 - companies reduced their requested forecast costs in response to DD19 (August business plans);²²⁵
 - the requested forecast costs were lower than the modelled base cost allowance for 12 out of 17 companies;²²⁶
 - the level of historical UQ challenge decreased from the IAP to DD19;²²⁷
 - only TW challenged the policy in response to DD19;²²⁸
 - although the FD19 catch up challenge was set at a more stringent level, it was lower than that applied at DD19, compared to requested forecast costs;²²⁹
 - the challenge was set at a comfortably achievable level, compared to the requested forecast costs;²³⁰
 - the range of efficiency scores narrowed between DD19 and FD19 indicating better performance of the cost models;²³¹
 - Ofwat made one-sided adjustments to increase allowances;²³²
 - Ofwat cited regulatory precedents for using benchmarks more stretching than UQ;²³³ and
 - benchmarks retain a credible set of smaller and larger companies.²³⁴

4.4.2. Our Reply:

(229) In reply, we want to point out the following five concerns:

- Ofwat's did not consult companies on its policy choice;
- the companies' forward-looking BP19 cost claims do not infer efficiency;
- the updated information available at FD19 did not imply that UQ stretch was easier to achieve;
- · this policy change appears arbitrary and Ofwat has not tested its achievability; and

- 227 Ofwat Response Cost Efficiency, REP024, para 6.20. 228 Ofwat Response Cost Efficiency, REP024, para 6.26.
- 229 Ofwat Response Cost Efficiency, REP024, para 6.26. 229 Ofwat Response Cost Efficiency, REP024, para 6.28.

- 231 Ofwat Response Cost Efficiency, REP024, para 6.34. 232 Ofwat Response Cost Efficiency, REP024, para 6.11.
- 233 Ofwat Response Cost Efficiency, REP024, para 6.39.

²¹⁷ Ofwat, PR19 draft determinations: Overview of companies' draft determinations, "Ofwat DD19", July 2019, SOC228, p. 12.

²¹⁸ SoC, para 309. 219 SoC, para 307.

²²⁰ SoC, paras 315-317

²²¹ SoC, paras 318-326.

²²² SoC, paras 372-335.

²²³ Ofwat Response Cost Efficiency, REP024, para 6.18. 224 Ofwat Response Cost Efficiency, REP024, para 6.13.

²²⁵ Ofwat Response Cost Efficiency, REP024, para 6.13.

²²⁶ Ofwat Response Cost Efficiency, REP024, para 6.17.

²³⁰ Ofwat Response Cost Efficiency, REP024, para 6.27

²³⁴ Ofwat Response Cost Efficiency, REP024, para 6.55.

- this policy choice has serious consequences.
- (230) We make a number of points in our SoC that have not been addressed by Ofwat's Response. Given the extensive material written on this topic, we do not reproduce those points, but focus on core arguments in this Reply. We ask the CMA to consider the points made in the SoC in its redetermination.

4.4.2.1. Ofwat did not consult companies on its policy choice

- (231) Ofwat's catch-up efficiency stretch policy was calculated at DD19, at the UQ level of the actual historical cost benchmark data from the industry. Ofwat's policy by the FD had changed radically, to set the challenge based on the BP19 (ed. 08.19) forward-looking cost claims from the companies; while instead of choosing the UQ standard, Ofwat chose to move this to the 4th ranked company for water and the 3rd ranked company for wastewater.²³⁵
- (232) Ofwat had not consulted companies on this policy change. Given that this policy was chosen at the final stage in PR19, there was no opportunity to point out the flaws in the choice particularly, the choice to move the basis of comparison from actual historical costs to the forward-looking cost claims. We do not believe that this is a reasonable action for a regulator to take on such a significant issue.
- (233) Our first opportunity to raise concerns with the decision was in the SoC. In its Response, Ofwat has cited 12 individual justifications for this policy choice. We note that the majority of these points were not raised in FD19 (either in the relevant section or the detailed appendix). As a result, we are concerned that this policy did not undergo reasonable consultation and scrutiny.

4.4.2.2. The companies' forward-looking BP19 cost claims do not infer efficiency

- (234) We do not agree with Ofwat's inference that Ofwat's PR19 regulatory model, with the punitive cost sharing mechanism, has incentivised companies to reveal efficient costs during the PR19 review (see Section 5.3 below).²³⁶ In summary, we maintain that this mechanism within the PR19 process has perversely incentivised companies to bid low costs, in order to salvage cost allowances and avoid punitive cost sharing rates, rather than reveal efficient costs. Given the strength of Ofwat's reliance on this mechanism, we believe that the CMA needs to make the incentives in this mechanism a particular focus of the redetermination, in order to prevent a poor regulatory tool from becoming established as precedent.
- (235) Given that companies were incentivised to bid low and not reveal their true efficient costs, Ofwat's reliance on these bids to enforce a more binding catch-up challenge is problematic. Ofwat claims that: "12 out of 17 [companies] were already outperforming the modelled base cost allowances under the historical upper quartile"²³⁷ and hence this justified moving to a harsher catch-up challenge. However, it is important to remember that these 12 companies were only bidding lower than the modelled base cost allowance in their August BP19 submissions they were not achieving this level of costs or even revealing this level as their efficient forward-looking costs.
- (236) Ofwat appears to recognise that the uncertainty that underlies its justification, conceding in its Response that "there could have been different reasons for the reductions in companies' requested costs".²³⁸ Nevertheless, we are concerned that Ofwat has proceeded to treat BP19 (ed. 08.19) bids as evidence of much lower forwardlooking costs and used it to justify tightening the catch-up challenge.

4.4.2.3. The updated information available at FD19 did not imply that UQ stretch was easier to achieve

(237) In addition to relying on lower cost bids from BP19 (ed. 08.19), Ofwat has also claimed that when 2018/19 data was added to the econometric base modelling, an: "atypically high cost year...significantly increased cost allowances", thereby justifying additional stretch to correct for this atypical distortion.²³⁹ However, cost data for that year demonstrates that 2018/19 was not atypically high. Figure 10 below shows that total industry wastewater base costs were much higher in 2016/17 than in 2018/19, while Figure 11 below shows only a 3%

²³⁵ Ofwat DD19, SOC228, p. 29.

²³⁶ Ofwat Response Cost Efficiency, REP024, para 6.20, p.70.

²³⁷ Ofwat Response Northumbrian Water, REP022, para. 3.20, p.33. 238 Ofwat Response Northumbrian Water, REP022, para. 3.18, p.33.

²³⁸ Ofwat Response Northumbrian Water, REP022, para. 3. 18, p.33. 239 Ofwat Response Northumbrian Water, REP022, para 3.17, p.32.

increase in water base costs in 2018/19, compared with 2017/18. Given that 2018/19 was not atypical, we do not believe that this is a suitable reason to justify tightening the catch-up challenge.





Source: Ofwat final determination models, https://www.ofwat.gov.uk/final-determinations-models/



Figure 11: Total industry water sector base costs 2011/12 - 2018/19 (£m)

Source: Ofwat final determination models, https://www.ofwat.gov.uk/final-determinations-models/

- (238) We note that the increase in costs in 2018/19 across the industry reflected justifiable trends, for example, where the costs of growth (new developments and new connections) increased by 15% p.a. on average between 2015/16 and 2018/19. These cost types are related to providing a service to new customers. Given these trends, we believe that this evidence of actual spending needs to be taken into account, rather than used as a justification for further cuts.
- (239) Our water operation faced an increase in non-infrastructure maintenance costs by 42% between the years 2017 and 2019.²⁴⁰ This rise was driven by the cost for the refurbishment of Horsley WTW. Capital maintenance costs are not affected by weather, and this cost could have occurred in any year of the price control. Hence, we argue that 2018-19 is not a particularly atypical year from this perspective.
- (240) The impact of including 2018/19 data into the cost models appears to have been exaggerated. If Ofwat had updated its cost modelling to include the updated extra year at the same level of costs as 2017/18, then this would only have had less than 0.5 percentage point smaller impact on the average costs across the eight year benchmarking. This demonstrates that between the DD19 and FD19 modelling, there was not a significant rise in average costs caused by the new information.
- (241) The level of cost challenge increased during the PR19 process contrary to Ofwat's presentation of the issue. In its Response, Ofwat presents a table that showed diminishing challenge from its first IAP to its last FD price control decisions and used this to justify additional stretch in the form of the catch-up challenge. However,

²⁴⁰ Ofwat Final Determinations Feeder model 2 - Final determinations model

Ofwat's table is misleading and compares its tightening price control decision against the reducing business plan bids. This instead reflects the incentive that Ofwat had set for companies to chase the shifting goalposts to avoid punitive cost sharing rates, rather than a diminishing challenge. Table 10 compares the reducing business plan bids from companies through the PR19 process against the FD19 cost allowance figure. This shows that the total base cost challenge in FD19 compared with the original business plans from the companies was significant, at 7.4% for water, and 9.1% for waste. The fact that companies reduced their business plans through the process did not ease the level of efficiency that they would need to find between the end of AMP6 and AMP7, it merely internalises more of the challenge in the reducing business plans, and away from Ofwat's price control tools.

-								
	Water				Wastewater			
	Ofwat's FD	Successive Company Business Plans	Efficiency challenge compared to FD allowance	Efficiency challenge (%)	Ofwat's FD	Successive Company Business Plans	Efficiency challenge compared to FD allowance	Efficiency challenge (%)
Ofwat's FD	£19.36bn				£18.12bn			
IAP		£20.90bn	£1.54bn	7.4%		£19.94bn	£1.82bn	9.1%
DD		£19.79bn	£0.43bn	2.2%		£19.00bn	£0.88bn	4.6%
FD		£19.12bn	-£0.24bn	-1.2%		£18.43bn	£0.31bn	1.7%

Table 10: Companies' botex cost submissions and allowance at IAP, DD and FD, compared with the FD (5 year basis)

Source: Ofwat Securing Cost Efficiency Technical Appendix

- (242) Finally, we are confused about Ofwat's assertion that "the historical upper quartile challenge no longer provided a suitable challenge".²⁴¹ At DD19, Ofwat's econometric benchmarking revealed best practice from across the industry, using actual historical data – and through applying an UQ challenge, gave three quarters of the industry the challenge to improve to the position of the best quarter. We struggle to see how this could have changed by FD19, where an UQ challenge would still mean that three quarters of the industry would need to reach actual best practice, revealed by the top quartile companies.
- (243) In fact, Ofwat's claim that the efficiency challenge eased through the price control process does not stand up to scrutiny. The 2018/19 data, which was added to the econometric benchmarking, was not atypical – this means that data towards the end of AMP6 accurately reflects the industry's cost base. The challenge that company managers will face to find efficiencies from actual costs at the end of AMP6 to AMP7 has not diminished – merely, that companies have internalised more of Ofwat's challenge in their reducing business plans to avoid punitive cost sharing rates. While to say that an UQ challenge can diminish, when three quarters of the companies remain under challenge, based on actual industry data, appears illogical. Therefore, we do not agree with Ofwat's justification of its catch-up challenge tightening.

4.4.2.4. This policy change appears arbitrary and Ofwat has not tested its achievability

- (244) Further, we cannot see that Ofwat has conducted analysis of the achievability of the tightening of the catch-up challenge. Ofwat's econometric benchmarking reflects many months of complex work to find the efficient benchmarked level of actual historical costs. In this Section, we discuss why Ofwat's DD19 choice of using the UQ standard was supported by regulatory precedent and, conversely, why Ofwat's change from the UQ appears to be arbitrary and was not assessed for achievability.
- (245) Ofwat's response acknowledges that both Ofwat and Ofgem adopted an UQ efficiency challenge at PR14 and RIIO-1. However, it notes that other regulators have used a more stretching baseline: "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."²⁴² We note that these examples are taken from historical occasions without any contextual justification from Ofwat, rather than from more directly comparable precedents. The circumstances of these usages were different and are not directly comparable to the water sector, for the following reasons:
 - **Postcomm Royal Mail:**²⁴³ Postcomm commissioned a study²⁴⁴ that made within-company comparisons for Royal Mail. First, the data was of a higher consistency because it was sourced within a single company,

²⁴¹ Ofwat Response Northumbrian Water, REP022, para 3.22, p. 33.

²⁴² Ofwat Response Northumbrian Water, REP022, para 3.29, p.35.

²⁴³ Postcomm Royal Mail Price and Service Quality Review – Final proposals for consultation

²⁴⁴ LECG, Future Efficient Costs of Royal Mail's Regulated Mail Activities, 2005

between operating units. Second, the study's model provides a higher level of accuracy due to larger sample sizes – it used data covering 1,108 delivery offices and 70 mail centres as opposed to 10 - 17 companies. Third, while the study used the upper decile this was the target assumed for the end of the regulatory period. In other words, it was not to be imposed from the outset of the price control, and Royal Mail would have been given time to catch up. Fourth, the study did not propose a frontier shift in addition to a catch-up challenge. Finally, owing to the better data and use of other regulatory tools, the study proposed to use the upperdecile, but we note that even then a further reduction was made to the efficiency challenge by 20 percent to account for errors in the underlying data. Ultimately, Ofcom decided to rely on other information including bottom up analysis to set the final regulatory assumption. This is clearly therefore not a comparable precedent for Ofwat's PR19 choices;

- Ofcom British Telecommunications (BT): Ofcom compared BT Openreach to US telecoms operators when setting charges. However, when reviewing its approach to the regulation of BT Openreach, Ofcom acknowledged that: "The mid point of the wide range of possible results from the analysis would put, BT's around the top decile of US LECs ranked by efficiency. The range was a construct of the need to significantly alter the range of services provided by Openreach in order to undertake a comparison with the US LECs. The artificiality of this process combined with the very wide range of possible results it produced does not allow a robust conclusion to be drawn (there is no reason to suppose that the mid-point of the range is particularly meaningful).²²⁴⁵ The decision by Ofcom to use the upper guartile seems to reflect the unique circumstances being considered in that case where BT was already operating at the level of the benchmark (i.e. no catch-up required) and the comparisons themselves were very difficult to make. Ofcom itself acknowledged that the analysis did not allow robust conclusions to be drawn and this is therefore not a comparable precedent for PR19;
- Northern Ireland Electricity (NIE): The NIE price control highlighted by Ofwat used a less demanding benchmark than the UQ. As stated by NIE: "The upper quartile, or the 75th percentile, is equivalent to the 3.75 placed company. We have rounded this up to the 4th placed company for simplicity."246 Accordingly, we do not believe that this precedent supports using a benchmark more demanding than the UQ; and
- Monitor Healthcare providers: Monitor did not rely on an upper decile benchmark for their 2015/16 national tariff. Monitor's decision includes a 3.8% efficiency factor²⁴⁷. From the underlying evidence we find that this factor includes both a frontier shift and catch up efficiency. Monitor further stated: "In our judgement, the estimates in Table 1 indicate that a range of 2–4% efficiency gains in a single year is supported by historical evidence on the frontier shift and on the scope for catch-up."248 When taking the mid-point for the estimates of frontier shift and catch-up relied upon by Monitor, the final efficiency factor chosen aligns with a 70th percentile efficiency challenge, which is less demanding than the UQ. Hence, we do not consider this precedent provides any evidence in support of an efficiency challenge in excess of the UQ.
- (246) Ofwat argues that "it would not be appropriate, or in the best interest of customers, to be constrained by what other regulators have done or what we have done in the past as a reason not to apply a more stretching challenge". 249 However, the WIA instructs Ofwat, when conducting its price review, to "have regard to the principles of best regulatory practice (including the principles under which regulatory activities shall be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed (emphasis added)."250
- (247) Given that Ofwat has departed from the most comparable regulatory precedents (Ofwat and Ofgem) and also from its proposed approach at DD19 in moving from an UQ efficiency challenge, this change needs to be particularly well-justified.251 In contrast with the careful analysis that Ofwat conducted to form the econometric cost models, we have not seen Ofwat analysis about the magnitude of the additional stretch in the FD or its achievability. Holding aside the justification for additional stretch, we maintain that the choice to move from the regulatory precedent of using an UQ to the 3rd and 4th company should have reflected impact analysis as to whether the companies could achieve the stretch, in addition to the other regulatory tools that form the total challenge to reduce costs from the end of AMP6 to AMP7. Without this analysis, this policy appears to reflect an arbitrary application of Ofwat's desire to tighten the challenge.

250 Section 2(4) WIA 1991, SOC313.

²⁴⁵ Ofcom, a New pricing framework for openreach, para A8.15 p.77.

²⁴⁶ Utility Regulator, NIE Networks T&D 6th price control final determination (RP6), June 2017, REP078

²⁴⁷ Monitor and NHS England, 2015/16 National Tariff Payment System: A consultation notice, "2015/16 National Tariff Payment System Consultation Notice", 26 November 2014, REP048, p. 151

^{248 2015/16} National Tariff Payment System Consultation Notice, REP048, Table 1: Summary of Deloitte's estimates of the efficiency factor for 2015/16. 249 Ofwat Response Northumbrian Water, REP022, para 3.31.

²⁵¹ In Bristol Water (2010), the CC found that significant changes to the regulatory framework or approach require greater justification, observing that "differences that arise due to change approach need to be particularly well justified, as there are benefits to a stable and well understood regulatory framework". Bristol Water PR09 CMA Decision, SOC296, para 9.21, p.66.

4425 This policy choice has serious consequences

- (248) Finally, we are concerned that, irrespective of the reasons used by Ofwat to justify the tightening of the catch-up challenge, Ofwat has not assessed the achievability of this additional challenge. This extra stretch has serious consequences and should not be ignored by the CMA. We have accepted a significant challenge through the PR19 process. We have accepted the cost modelling benchmark of efficient costs; we have also accepted most of the additional stretch to out PC outcomes. Both of these additional challenges reflect best practice in the industry and are in the interests of our customers. However, where Ofwat introduces a further cut to costs (which we consider to be unjustified and arbitrary) then our ability to achieve all of the range of outcomes is challenged – which is not in our customers' interests.
- (249) We ask the CMA to re-consider the catch-up challenge, based on actual data that reflects best practice in the industry, and set a fair level of challenge that takes into account regulatory precedent and assesses the achievability of further cuts. In this context, we continue to believe that the DD19 policy of a UQ challenge, based on actual historical data represents a fair and evidenced basis for the catch-up challenge.

4.5. REAL PRICE EFFECTS

- (250)RPE allowances adjust regulatory cost allowances to account for input costs which vary at a different rate than CPIH inflation. This ensures that the final revenue allowances set for water companies accurately cover the costs faced by the companies.
- (251) Our SoC argued that Ofwat's approach to RPEs was inconsistent across input cost items and that there was no reasonable basis not to account for energy and chemical costs inflation.252

4.5.1. Ofwat said:

- (252) Ofwat considers that there is insufficient evidence that an RPE for energy or chemicals costs is required and said that an adjustment will weaken company incentives to manage these costs:253
 - overestimating RPEs can have significant negative impacts on customers (as evidenced in the case of the RIIO-1 price controls);254
 - management control is an important way to mitigate the impact of real input price inflation;²⁵⁵
 - EE provides a structured framework for the assessment of management control;²⁵⁶
 - energy prices are within management control, there is no clear historical wedge between energy prices and CPIH, with some energy costs reflected within CPIH, and no link between energy costs and productivity growth;257 and
 - regarding chemical costs there has historically been no statistically significant wedge, there is wide variation in company forecasts, and a lack of independent forecasts.²⁵⁸
- (253) Ofwat's Response notes that the case for not including a real price adjustment for energy and chemicals has, if anything, grown stronger since the final determinations following the recent fall in oil prices due to COVID-19.

4.5.2. **Our Reply:**

(254) As an initial point, it should be noted that prior to this PR19 control cost allowances and revenues were indexed by Real Price Index (RPI) rather than CPIH which is being used for PR19. Given that RPI inflation is typically higher than CPIH, we are concerned that Ofwat has not accepted more RPEs within PR19 than in PR14. We are only seeking RPEs in 2 areas in addition to labour costs – energy and chemicals, which together account for 10% of our totex. These are two areas where we have seen significant recent input price inflation and we see no reason why this will not continue into AMP7.

²⁵² SoC. para 482

²⁵³ Ofwat Response Northumbrian Water, REP022, para 1.29.

²⁵⁴ Ofwat Response Northumbrian Water, REP022, para 3.50, p.40. 255 Ofwat Response Northumbrian Water, REP022, paras 3.54 - 3.56, p.41.

²⁵⁶ Ofwat Response Northumbrian Water, REP022, para 3.54 – 3.56, p.41.

²⁵⁷ Ofwar Response Northumbrian Water, REP022, paras 3.57 – 3.64, pp. 42 – 44 in which Ofwat cites the argument previously presented in FD19, SOC183 and Europe Economics, Real Price Effects and Frontier Shift – Final Assessment and Response to Company Representations, 07 December 2019, SOC396.

²⁵⁸ Ofwat Response Northumbrian Water, REP022, para 3.66.

(255) In this Section, we argue that:

- the most relevant evidence points toward a wedge between CPIH and input prices in this area;
- there is no scope for above average productivity gains related to these costs; and
- the impact of COVID-19 and the fall to oil prices does not reduce the need for RPE adjustments.

4.5.2.1. The most relevant evidence points toward a wedge between CPIH and input prices in this area

- (256) For both energy and chemicals costs, we consider that forward-looking, independent forecasts and recent experience are more relevant than older historical data for forecasting potential price changes over the AMP7 period. For example, the UK's energy mix has changed significantly in recent years as industries have decarbonised. In light of these recent pressures, we expect recent data to be more relevant than data from 20 years ago (which reflects a very different generation mix and energy policy framework).
- (257) The chemicals industry structure has changed in recent years, with domestic production of certain chemicals falling, while demand has increased significantly for others. This has necessitated the purchase of chemicals from suppliers where the raw materials are imported and the chemical manufactured as a product of first intent rather than a by-product of another industrial process. The price of these products is connected to the levels of market activity for those particular industries, as that determines the volume of the product produced and therefore the price.
- (258) This can be evidenced by changes in the coagulant market, the production of low bromate sodium hypochlorite (a high-quality product used for disinfection) and the volatility of caustic soda prices. Examples are provided below:
 - Ferric Sulphate: This chemical is now produced from iron ore and sulphuric acid. It was previously produced using a waste product of the titanium dioxide industry but this is no longer available in any significant volume. Demand for the chemical in the water sector is also forecast to double during AMP7²⁵⁹, for use on phosphate removal schemes on wastewater sites;
 - **Sodium Hypochlorite:** This chemical has also seen disruption to its supply chain, with the closure of one of only two production sites in the UK. This has also coincided with growth in demand for the product.
 - **Caustic Soda:** This chemical is produced in equal volume when Chlorine is manufactured. The demand for Chorine by industry does vary which has meant that caustic soda price is often volatile, supply has also become tighter due to increased demand and as a consequence prices are increasing.
- (259) Our SoC presented compound annual growth rates versus CPIH, covering different periods up to the most recent data available in 2017 for BEIS electricity data and 2018 for our chemicals.²⁶⁰ This analysis shows consistent positive RPE wedges regardless of how far back the averages are calculated.
- (260) For chemicals costs, we consider that Ofwat has placed too much weight on inappropriate indices. The ONS indices cover a broad range of chemicals that are made using different production processes, and therefore they are affected by different cost pressures. Accordingly, we do not consider this index to be a relevant guide for assessing the inflation wedge between the price of the chemicals that we purchase and CPIH. In contrast, the price information presented in our SoC provides more relevant evidence given that it specifically relates to the chemicals that we purchase.²⁶¹ This evidence points towards a positive RPE wedge. While setting any future cost allowance inevitably carries uncertainty, the best available information should be used to make an informed judgement, otherwise it risks over- or under-funding companies through the price control. In this case, the best available and most pertinent information supports a positive RPE wedge for chemicals.
- (261) For energy costs, we disagree with Ofwat and EE that determining whether or not there is a wedge depends on the weight placed on pre-2010 price data. The more recent data also exhibits evidence of a wedge. Further decarbonisation and net-zero target will have cost implications for energy prices going forward that will reinforce the presence of the wedge, as the increasing costs of these policies feed through to energy prices. This evidence and rationale are consistent with the BEIS energy price cost forecasts, which we consider provide reasonable forecasts based on the information available.²⁶²We do not consider that the inherent uncertainty over future energy

²⁵⁹ Water UK chemicals workstream analysis, 2020, REP138

²⁶⁰ SoC, para 356. 261 SoC, para 357.

²⁶² BEIS 2018 Updated Energy & Emissions Projections Annex M, SOC371.

costs should override the strong evidence from the historical data and the BEIS forecasts that a positive wedge exists for energy costs.

4.5.2.2. There is no scope for above average productivity gains related to these costs

- (262) Although Ofwat's Response lists a range of mechanisms for management to reduce energy costs, it does not adduce any evidence to demonstrate that these strategies may be used to achieve efficiency gains in excess of the 1.1% assumed part of the frontier shift adjustment. We have been subject to efficiency incentives since privatisation and there is no scope for gains in excess of what is achievable elsewhere in the economy.
- (263)In particular, we have taken many steps that we consider put us ahead of other water companies, as set out below. This means that we have less scope for potential improvement going forward as we have exploited the available opportunities.
- (264) With respect to energy costs, we have a best in industry approach to demand flexibility. We run the optimisation system Aquadapt on 109 of our largest electricity supplies. These supplies account for ~50% of our electricity consumption as it includes the large WTW and Water Pumping Stations (WPS).
- (265) Aquadapt responds to the individual site tariff, with the algorithms identifying the lowest possible cost method for satisfying customer demand while ensuring resilience. Figure below shows the average weekday demand at Aquadapt controlled sites over the winter period from November 2019 to February 2020. We have overlaid the prevailing energy tariff for that period. There is a clear step change in energy consumption during the window of evening peak costs.





Source: NWL analysis of its fiscal meter data

- (266)There is little scope for extending our flexible response as the majority of water sites are covered, and such technology is not applicable to sewage sites which must respond to flows as they vary (waste water sites typically consume energy in the peak period due to the diurnal sewage flow patterns).
- (267) The value of peak avoidance may also reduce in the future. Ofgem's targeted charging review will remove the "demand residual" from the charges levied on peak consumption for the use of the electricity transmission network. Instead, the demand residual will be replaced by the transmission and distribution network operators with a fixed charge which we cannot avoid by altering consumption patterns.²⁶³
- (268)In addition to managing our time of use consumption in a proactive manner, we have taken significant steps to reduce our overall net consumption of energy. We treat 100% of our sewage sludge through Advanced Anaerobic Digestion (AAD) and the energy produced reduces our net purchase of energy.²⁶⁴ As a result we have fully exploited our economically viable renewable electricity generation. For example, in 2019/20 we produced over 16.5 million kWh of electricity from biogas CHP.

²⁶³ Ofgern, Targeted charging review: decision and impact assessment, 21 November 2019, REP079. 264 Appendix 6.2 to BP19 (ed. 09.18), SOC052.

- (269) By comparison, the water sector only processes around 50% of its sludge via AAD highlighting why we can be considered best in sector. It also illustrates why we have much lower energy costs compared to the rest of the sector: 6% of totex versus 9% for the sector as a whole as energy is generated from the AAD.²⁶⁵ Given that we process 100% of our sludge, we have much more limited scope than other companies to reduce our energy costs further and are much more exposed to changes in energy prices.
- (270) We also consider our procurement of energy to be highly efficient with limited scope for further efficiencies. Our supply contract is '100% pass through'. This means that we only pay for the wholesale energy and non-commodity elements at the market or regulatory rates. Through a well-run procurement exercise, margins achieved by our electricity suppliers is <0.2% of total contract cost. As complex multi-site customers, the cost to serve WASCs is high, and we therefore consider that to achieve such a low level of supplier margin is extremely good value and further demonstrates our rigorous approach to energy cost management.</p>
- (271) We also consider that there is limited opportunity for management to make significant improvements on our chemicals expenditure. We have a variety of constraints in treating water. In particular, we must meet relevant water quality standards no matter the quality and source of the raw water. We always either dose in accordance with prescribed limits or at an optimised dose to achieve the required water quality standard. Therefore, there is limited scope to reduce the volume of chemicals that we use, as this is highly dependent on the variations in raw water quality. We operate a process of short interval control and we monitor continuously the process to ensure that we achieve the optimum treatment and minimise chemical usage. In turn, this ensures that we minimise not only our chemical costs but also sludge production.
- (272) We procure our chemicals efficiently and they are tendered routinely in accordance with the utilities directives and are one of the most highly controlled and contracted areas within our business (circa 99% is contracted spend).²⁶⁶ Changing chemicals and suppliers is a slow and expensive business. It often requires significant investment required to modify plant and equipment and a significant delay of testing to ensure water quality standards are not compromised. The use of different chemicals can have an impact on dosing points, dosing equipment, batch make up processes and may even involve reconfiguration of the works to achieve different contact times. Therefore, it is not a straightforward operation to change the chemicals that we use, there is a significant cost of change to establish potential benefits and then reconfigure the works and there is always a risk that price changes will occur after a switch negating its value.
- (273) Given that we have already taken proactive actions to be efficient in this area, coupled with the constraints that we operate under and the limited opportunities for further improvement, we do not consider that there is scope to offset input price inflation in these areas beyond the 1.1% already assumed as part of the frontier shift assumption. The wedge between input price inflation for these cost items and CPIH should therefore be funded through the PR19 control.

4.5.2.3. The impact of COVID-19 and the fall to oil prices does not reduce the need for RPE adjustments

- (274) Ofwat's Response notes that the impact of COVID-19 may result in falling real energy costs over the period thereby reducing the case for a positive RPE adjustment for energy costs.²⁶⁷ It makes a similar point with respect to the impact of falling oil prices on the price for chemicals.²⁶⁸
- (275) There is no clear basis for assuming that these events will affect the prices that we must pay for energy and chemicals in the way supposed by Ofwat. This misunderstands how the price mechanisms for these items operate. There has not been a strong link between oil prices and electricity prices for some time. This is evidenced in Figure 13 below which plots growth in electricity prices and the oil price.

265 Northumbrian Water SoC para 930, p. 79.

266 NWL procurement data

267 Ofwat Response Northumbrian Water, REP022, para 3.63, p.44. 268 Ofwat Response Northumbrian Water, REP022, para 3.67, p.45.







Source: NWL analysis, based on energy and oil prices from BEIS.

- (276) Figure 13 shows that there has been a very weak correlation between the oil price and electricity prices for over 10 years. For example, in 2015, oil prices fell by 43% and electricity prices increased by 1%. As a result of the changing energy mix, the decoupling of gas and oil prices and the impact of government energy policy measures, electricity prices no longer follow trends in the oil prices. Indeed, the large drop in oil prices experienced recently has not resulted in a significant fall in electricity prices.
- (277) This is further demonstrated in Figure 14 below, which shows our actual energy costs during AMP6, and a forecast, based on market data received from Mitie Energy (14 May 2020) and Orsted (21 April 2020). The non-commodity forecast for the period 2020-2023 is based on Orsted's budgeting analysis completed by Cornwall energy (conducted independently).
- (278) Figure 14 also includes the impact of Ofgem's Targeted Charging Review (TCR) which will be implemented from April 2022. TCR will remove the "demand residual" that is included in the charging methodologies for distribution and transmission network charging. The revenues for the demand residual will be replaced by a fixed charge to be applied in bandings, based on electrical supply capacity (kVa) and voltage (V).²⁶⁹ This change in charging methodology has a significant impact on our costs transmission charges will increase by £2.15m and distribution charges will reduce by £0.3M.





Source: NWL analysis.

(279) For chemicals, the picture is similar. The vast majority of the chemicals that we purchase are inorganic compounds, whose prices are not related to the oil price. The only chemical that we purchase in bulk that is linked to the petrochemical industry is polyelectrolyte (which contains polyacrylamide in some products, which has a minor relationship with the petrochemical industry). Accordingly, it is unsurprising that the recent fall in the oil price has not manifested in reduction in any of our chemical costs. This was equally true in 2015 when there was also no discernible impact on our chemical costs following the oil price reductions.

²⁶⁹ Ofgem, Targeted charging review: decision and impact assessment, 21 November 2019, REP079.

- (280) However, COVID-19 has put some upward price pressure on some of the chemicals that we purchase. As noted above, some products are produced as by-products of other industries and, as such, are dependent on those industries operating at their normal capacity. With the recent downturn in industrial activity, some of these products are in short supply, and as a consequence we are seeing increases in prices.
- 4.5.2.4. Having a degree of management control does not negate the need for an RPE adjustment for energy and chemical costs
 - (281) Finally, we think it is important to clarify the relevance of management control and its implications for setting price controls in line with regulatory best practice. Ofwat's Response states that management control is an important way to mitigate the impact of real input price inflation and that an adjustment would weaken company incentives to manage these costs.
 - (282) Having a degree of management control over inputs such as energy and chemicals means that there is scope for future productivity improvements. These improvements are captured by the 1.1% frontier shift that Ofwat has included within the price control. We do not dispute that there are actions that we can take across our business that will partially offset increases in input prices - this is precisely what the frontier shift concept captures and it relates to all inputs that we buy whether they need an RPE or not. Just because something has an expected input price inflation above CPIH does not change the relevance of management control.
 - (283)We also think Ofwat's Response fails to recognise how incentives for efficiency and risk sharing are captured by the price control – these items are not undermined by the inclusion of RPEs. Efficiency incentives and risk sharing is managed through the cost sharing rates, which determine how each incremental expenditure or savings are shared between customers and the company. These dynamics are not impacted by whether or not there is an RPE for cost items. To illustrate the point, we can apply Ofwat's reasoning equally to cost items assumed to increase in line with CPIH (i.e. where there is no RPE assumed). The price control still allows for the expected input price increases in these items to be funded, but there is no suggestion (and nor should there be) that doing so undermines incentives to manage costs efficiently or results in an inequitable sharing of risks with customers.
 - (284)In this respect, we see energy and chemical costs as being similar to labour costs where Ofwat acknowledges the need for an RPE adjustment. Therefore, it is appropriate that these cost pressures in excess of CPIH inflation are appropriately reflected in our allowances for the AMP7 period.

GROWTH 4.6.

(285)Our SoC argued that Ofwat's approach to setting allowances for growth-related expenditure is not robust and fails to allow for efficient costs. In particular, the application of a downward adjustment of £26 million to modelled costs for 'growth' was not required. We consider that this ex-post modelling adjustment is inappropriate, given that the existing base cost models are robust and have good statistical performance, which implies that the allowances are already accurately assessed.270

4.6.1. Ofwat said:

- (286) Ofwat's Response asserted that its growth adjustment has a clear rationale and intuition. Insofar as its wholesale models do not contain an explicit cost driver to capture growth intensity, they may fund the historical average growth rate across the industry, overfunding companies with expected growth rates that are lower than the historical industry average and underfunding companies with expected growth rates that are higher than the historical industry average.271
- (287) Ofwat argues that it is important that independent forecasts are used in models and suggests that ONS population growth forecasts are the most reliable available forecast of growth. Ofwat considers that we have already benefitted from its conservative approach of discounting its originally calculated negative adjustment by 50%.272 It argues that while the ONS forecasts may not be a perfect forecast of companies' growth profile in the future,

²⁷⁰ SoC, Section 5.6, pp. 83-86.

²⁷¹ Ofwat Response Northumbrian Water, REP022, Table 3.1. 272 Ofwat Response Northumbrian Water, REP022, Table 3.1.

companies whose outturn growth is higher or lower than what the ONS had forecasted will receive a true-up in PR24 via a developer services reconciliation adjustment (DSRA).

(288) Finally, Ofwat notes that, while we are arguing that the growth adjustment should be removed, the other Referring Companies argued that the adjustment should have been higher.273

4.6.2. **Our Reply:**

- (289)In our SoC, we did not dispute Ofwat's approach of including growth enhancement costs into its base cost models. For the most part, modelling growth enhancement with base costs avoids cost allocation issues. We find that Ofwat's FD models appear to be robust. Given the available data, there is no other model proposed by companies that performs statistically better than Ofwat's FD models, as discussed in Base Costs Appendix.²⁷⁴ However, we disagree with Ofwat that the downward post-modelling adjustment it makes for growth has a clear rationale.
- (290) As a matter of principle, any differential impact of growth on companies' costs should be captured in the model itself. In Ofwat's FD19 models, scale and population density variables to a large extent already capture growth. While they may not fully capture the effects of growth for every company, making sector-wide adjustments after the modelling process reduces the credibility of the models to predict efficient costs and is not an appropriate solution for addressing model limitations. If Ofwat considered that its models were inappropriate for some companies it should have provided separate allowances or amendments to those companies. If it considered that there was a better set of models or an alternative approach across all companies, then it should have consulted on and then adopted that approach.
- (291) We do not consider that Ofwat's contention that it has applied a 50% discount on its downward adjustment demonstrates that we benefit from a conservative approach. This cannot be regarded as a benefit as, for the reasons explained above, an adjustment should not have been made in the first place.

4.7. **WINEP**

- (292) Our SoC argued that Ofwat failed to allow for the efficient costs of delivering the WINEP schemes. This results in underfunding businesses in carrying out their mandatory environmental obligations. In particular, Ofwat's efficiency challenge resulted in our overall modelled cost allowance being reduced by £36 million (or 21% of our proposed WINEP investments in our BP19 (ed. 08.19)).275
- Our SoC highlighted concerns with Ofwat's approach of applying a programme wide, forward looking efficiency (293) challenge:
 - Double counting: First, applying a productivity challenge is inappropriate as most companies have already ٠ included frontier shift assumptions in their business plan forecasts. Therefore, this challenge is effectively double counting the productivity challenge. This position is supported by AW and YW²⁷⁶; and
 - Poor quality evidence: Second, we argued in our SoC that the adoption of an upper quartile challenge was too stretching given the underlying quality of the models and data (e.g. relying on only 10 data points) and the impact of SVT and SWW which stand out as outliers compared to the rest of the sector in terms of the business plan submissions. Therefore, we consider a median challenge to be more appropriate. We also highlighted that a programme wide efficiency challenge at the end did not work, given that costs had already been assessed beforehand.277
- (294)In the SoC²⁷⁸ we also disputed Ofwat's approach to setting allowance for phosphorus removal activities. Ofwat's two models take account of the impacts of scale and treatment complexity on costs. However, they do not take account of the legislative drivers of expenditure. In particular, companies with a large proportion of 'no deterioration' drivers under the Water Framework Directive (WFD) are much less likely to require significant rebuilding of sites than companies required to make improvements under the WFD. We are particularly impacted by this issue as 26 out of 27 of our sites are affected by the WFD improvement driver.

²⁷³ Ofwat Response Northumbrian Water, REP022, para 3.73.

²⁷⁴ Base Costs Appendix, REP066

²⁷⁵ SoC, para 419, p. 90. 276 Anglian Water SoC, REP054, p. 193; Yorkshire Water SoC, REP056, p. 67.

²⁷⁷ SoC, paras 446 - 449, pp. 92 - 93.

(295) To take account of this issue, Ofwat used a third econometric model for YW. We argued that this third model should also be used for us, as we face the same circumstances and the FD19 models do not properly take account of one of the key drivers in P-removal expenditure and therefore give a misleading view of efficiency.

4.7.1. Ofwat said:

- (296) Although Ofwat's Response accepts that: *"there are limitations to the data we had available to us which meant we had a low number of data points for modelling*",²⁷⁹ it considers that it was able to assess the majority of the wastewater WINEP costs using benchmark models which were nevertheless statistically robust.²⁸⁰ The suggestion that the upper quartile value is particularly sensitive to the inclusion of SVT and SWW is not a valid reason to exclude them.²⁸¹
- (297) Ofwat observes that while SVT and SWW are within the upper quartile, it is United Utilities (**UU**) and Dwr Cymru that define the benchmark and there is no evidence that these companies have included a net frontier shift challenge to WINEP enhancement expenditure in their business plans.²⁸²
- (298) Ofwat states that it applied a c. 20% cost challenge to the wastewater investigations programme because we did not present evidence supporting the proposed scope of the investigations and that this therefore does not represent an efficiency challenge.²⁸³
- (299) With respect to P-removal, Ofwat considers that its 2020-25 allowance for us is sufficient for us to meet our WINEP requirements. YW's situation merited a third model because: (i) a 'no deterioration' driver could require very little or no expenditure if it is for a site with an existing phosphorous content; (ii) only YW had no schemes with a 'no deterioration' requirement and (iii) only YW made the case that it was uniquely affected by the legislative driver and therefore its efficient costs were higher.²⁸⁴
- (300) Ofwat has revisited the evidence on the WFD 'no deterioration' schemes that are more likely to involve low or no cost solutions, and have found none, thus casting significant doubt on the premise for the perceived need for the third model.²⁸⁵
- (301) Ofwat could not find evidence that we had low cost sites that did not already have P-removal process in place. It identified three low/no cost schemes in our phosphorus removal programme (at Esh Winning, Bowburn and Browney Sewage Treatment Works (STW)) and claimed that all of these have the WFD 'Improvement' driver. These sites appear to have zero costs, as each already has a phosphorus removal process in place, either funded at a previous price review to meet environmental requirements or as part of a trial of new technology. More generally, Ofwat has not found any instance of where no or unusually low costs have been submitted by a company for a site where the proposed phosphorus consent is linked to this driver.²⁸⁶
- (302) Ofwat also noted that the WFD 'no deterioration' driver tends to be associated with less stringent consent limits. If a third cost model reflects the finding that companies with more WFD 'no deterioration' schemes tend to have lower costs, then such a model may simply be acknowledging the fact that tighter consents drive higher costs. Ofwat argues that one of the two existing models can control for this relationship, through the cost driver: number of sites with a consent <=0.5mg/l.²⁸⁷
- (303) Further, Ofwat notes that:
 - it has compared the efficiency of its AMP6 and AMP7 programmes using the cost models developed at PR19. Ofwat finds that our AMP7 costs are significantly higher than the company submitted for its equivalent programme at PR14; while
 - it has found no evidence that our AMP6 forecast costs were understated.288

²⁷⁹ Ofwat Response Northumbrian Water, REP022, para. 3.76, p. 47.

²⁸⁰ Ofwat Response Northumbrian Water, REP022, para. 3.76, p. 47. 281 Ofwat Response Northumbrian Water, REP022, paras. 3.78-3.79, p. 47.

²⁸² Ofwat Response Cost Efficiency, REP024, para. 7.66, p. 102.

²⁸³ Ofwat Response Northumbrian Water, REP022, paras. 3.77, p. 47.

²⁸⁴ Ofwat Response Northumbrian Water, REP022, paras. 3.85 to 3.87. p. 49. 285 Ofwat Response Northumbrian Water, REP022, paras. 3.85 to 3.89. p. 50.

²⁸⁶ Ofwat Response Northumbrian Water, REP022, paras. 3.85 to 3.89. p. 50.

²⁸⁷ Ofwat Response Northumbrian Water, REP022, paras. 3.91. p. 50.

²⁸⁸ Ofwat Response Northumbrian Water, REP022, para 3.93, p. 50.

4.7.2. Our Reply:

- (304) In this Section, we make the following points:
 - an upper quartile efficiency challenge is not supported by the quality of the information and the process;
 - applying a frontier shift challenge to WINEP costs risks double counting efficiency improvements;
 - the third model is needed to provide us with appropriate funding for P-removal;
 - Ofwat's comparison of our P-removal costs for AMP6 and AMP7 is misleading; and
 - Ofwat has been inconsistent with its assessment of additional sludge processing capacity.

4.7.2.1. An upper quartile efficiency challenge is not supported by the quality of the information and the process

- (305) Ofwat's response does not address the key points we made in our SoC:
 - The programme wide efficiency challenge at the end did not work, given that costs had already been assessed beforehand: We would expect the shallow and deep dive assessments to consider whether costs are efficient and to make adjustments where this was not the case. Therefore, we see the application of an UQ challenge to costs that have already been assessed as risking applying a double challenge to costs which is unnecessary and risk the approach not funding efficient costs; and
 - **Poor quality evidence:** The quality of the benchmarking is low given the sample size (10 companies) and the reliance of forecast data which is less reliable than historical costs and is also affected by distortions from the cost sharing mechanism. The ability of the data to identify a robust efficiency level that is achievable by an efficient company is therefore compromised and the use of an UQ risks underfunding efficient costs as the benchmarking is unable to take account of all of the drivers of costs.
- (306) These points still remain unchallenged. We address some of the specific comments from Ofwat below.
- (307) Ofwat says that: "Where we did not have robust models we carefully reviewed the evidence the companies provided and made an allowance based on the evidence of the robustness of cost estimates. Where appropriate, we applied a catch-up challenge. However, for Northumbrian Water we only applied a challenge to one element of its programme, its wastewater investigations programme (which was only £8.2 million of its £174 million requested WINEP wastewater programme). We applied a 20% cost challenge here because Northumbrian Water did not present evidence supporting the scope of the investigations it proposed to undertake."²⁸⁹ Ofwat then states that this was a scope challenge and therefore, it did not represent a doubling of the later catch-up challenge.²⁹⁰
- (308) This response does not address the concerns that we raised. First, Ofwat acknowledges that it applied catch-up challenges where it identified inefficiencies. From a methodological point of view, Ofwat's application of a second catch-up challenge would result in the overall catch-up challenge being double-counted. Second, in the case of its assessment of our costs, Ofwat did not make a catch-up challenge as part of its initial assessment. It seems reasonable to assume that this was because Ofwat's assessment found our costs to be efficient.²⁹¹ Ofwat's response further reinforces our view that the later catch-up challenge is not required.
- (309) Ofwat suggests that our SoC states that SVT and SWW should be excluded from the models but this is a not accurate. In our SoC, we demonstrated that Ofwat's models are very sensitive to the inclusion of SVT and SWW's data to highlight the point that their econometric models are not as robust as Ofwat claimed them to be. Our SoC did not recommend dropping data from the two companies.²⁹²
- (310) When combined with the underlying quality of the data (small sample sizes and reliance on forecast data) we do not think that the assessment is robust enough to support the identification of an efficient cost level at the upper quartile level for WINEP costs.

4.7.2.2. Applying a frontier shift challenge to WINEP costs risks double counting efficiency improvements

(311) When assessing forecast data, it is crucial to understand what assumptions have been built into those forecasts (e.g. on future efficiency improvements) to ensure the appropriate use of that data. In this instance, companies

²⁸⁹ Ofwat Response Northumbrian Water, REP022, para 3.77. pg. 47.

²⁹⁰ Ofwat Response Northumbrian Water, REP022, para 3.77. pg. 47 291 Ofwat Response Northumbrian Water, REP022, para 3.77. pg. 47.

²⁹² SoC, para 423, p.88.

were asked to submit future efficient costs, which by definition would include future efficiency improvements including frontier shift impacts. To apply an additional frontier shift adjustment on top of costs that already included such an adjustment would double count future efficiency improvements and risk setting allowances that are not achievable by an efficient company. If Ofwat wanted to apply a frontier shift adjustment to future forecasted costs then it should have asked companies to submit data that did not include such improvements - that would have made the analysis internally consistent without any double counting.

- (312) While we acknowledge that SVT and SWW are not the companies that define the upper guartile for WINEP modelling, they nevertheless still impact the model and benchmark, meaning that there is still an element of double counting the productivity challenge.
- (313) These two companies affect the benchmark in two ways. First, we showed in the sensitivity analysis set out in our SoC that SVT and SWW have a significant impact on the coefficients in the model and hence, the cost benchmark that all other companies are held to.293 Second, Ofwat's frontier shift challenge has an effect of double counting the productivity challenge due to the use of companies' forward-looking costs in the econometric models. This is because if the benchmark is based on costs incorporating frontier shift then the resulting benchmark will also include frontier shift. Applying frontier shift on top of already efficient future costs will effectively make the efficiency adjustment twice. In addition, if SVT and SWW had not included a productivity challenge to their cost forecasts, the predicted costs from the models would have been higher. This would have resulted in a less challenging benchmark to which a further efficiency challenge may have been appropriate.
- (314) In Ofwat's Response, it argued that "SVT Water did not apply a net frontier shift adjustment to its WINEP costs. While the company has included a 1% frontier shift efficiency assumption on its plan, this is offset by an equivalent real price effects allowance."294 It is unclear why companies should not include an RPE adjustment for costs that are likely to increase above CPIH that are beyond management control. Just because the two factors may have netted off in this instance it does not mean that the forecast costs do not include frontier shift - they do and a further adjustment is not required.
- (315)For SWW, Ofwat states that: "While the company applies a 5% efficiency challenge on enhancement costs, there is no evidence to suggest that this includes a frontier shift adjustment, rather than value engineering or other cost reduction techniques."295 We do not agree with this reasoning. Ofwat's efficiency challenge comprises the catch up efficiency and frontier shift. Ofwat's models suggest that SWW is a benchmark setting company and so should not be expected to meet further catch-up efficiency, with any remaining efficiencies on the company being as a result of the frontier shift. This indicates that the 5% challenge results from the frontier shift and that to apply a further adjustment would result in double counting.
- (316) For the companies that Ofwat has highlighted as defining the UQ benchmark, UU and Dwr Cymru, we suggest that the CMA contacts them as part of its determination to clarify whether they included a frontier shift assumption. Our understanding is that while UU did not explicitly include a frontier shift assumption in its cost forecasts, it had based their forecasts on future solutions and estimates of efficient costs rather than rolling forward historical costs. While for Dwr Cymru, our understanding is that it had included a 1% per annum efficiency challenge to all of its schemes, including WINEP. Given that the company is a benchmark-setter, any efficiency improvements should be classified as frontier shift.

4.7.2.3. The third model is needed to provide us with appropriate funding for P-removal

- (317) Ofwat does not adequately address our argument that a third model is needed to provide us with the appropriate funding for this activity.
- (318)The fundamental position remains that the FD19 models only take account of scale and treatment complexity. They do not take account of the legislative drivers of expenditure which are very relevant here. Sites with the 'no deterioration' driver are likely to need less investment than sites from the 'Improvement' driver under the WFD. This finding is supported by the further analysis that Ofwat undertook at FD19. At FD19 Ofwat stated "The models show consistently that drivers which are not WFD_IMP drivers appear to have a lower impact on costs, although the U_IMP model is inconclusive."296 This link between legislative drivers and expenditure is therefore supported by the data and was used by Ofwat to make an adjustment for YW. It is also clear that the two models

²⁹³ SoC, paras 424 – 432, pp. 88 – 90. 294 Ofwat Response Cost efficiency, REP024, para. 7.72, pg. 104. 295 Ofwat Response Cost efficiency, REP024, para. 7.71, pg. 104.

²⁹⁶ Ofwat FD Cost Assessment Model Nutrients (Phosphorus removal) enhancement feeder model, 16 December 2019, SOC197.

used by Ofwat to set the FD19 allowances do not take account of this driver as scale and treatment complexity are in no way linked to legislative drivers.

(319) In addition, we are heavily impacted by this issue making the need for an adjustment acute in our case:

- only one of our 27 sites has the 'no improvement' driver meaning that we are less likely to have sites not
 requiring investment than other companies. Table 27 of our SoC helpfully illustrates how only 1% of our
 programme is driven by the 'no deterioration' driver compared to over 50% for some companies. Only Welsh
 and YW have smaller proportions than us. This shows our circumstances to be very similar to YW;
- of our 26 sites with the Improvement driver, only two of these sites had a previous P-removal permit in place. Both of these sites have the majority of infrastructure required for the improvements needed to meet the P limit. The other sites all have new P permits, and that is a big step change and requires much more significant investment due to the infrastructure requirements. Out of the sites that have new P Permits, 2 were used for trialling low P standards / removal, and therefore have some of the infrastructure required. The overall picture is therefore that we are materially affected by the legislative driver;²⁹⁷ and
- we are also heavily affected by the size of the works affected by these legislative drivers. There are
 economies of scale in P-removal so larger sites have lower unit costs. As shown in section 4.7.2.4 our AMP7
 programme is much more focused on these smaller sites. Whilst this driver is not captured by any of Ofwat's
 three models, it highlights that there is further reason to suspect that the FD19 models do not properly take
 account of our circumstances.
- (320) Ofwat's claim that there is no evidence that unusually low costs were submitted against any WFD 'no deterioration' driver does not get to the core of the issue. It is clear from an engineering standpoint that WFD 'Improvement' schemes will likely have higher costs than WFD 'no deterioration' schemes, because a tertiary solids removal process might be required for 'Improvement' schemes leading to higher expected costs. As stated above (see paragraph (318) above), Ofwat's own analysis shows that 'no deterioration' schemes are lower cost than 'Improvement' schemes.
- (321) The three low cost sites (Esh Winning, Bowburn and Browney STW), that Ofwat identified as already having P-removal processes in place, are exceptional cases. We have already explained that the low costs here are due to previous investment at these sites that are not applicable to our other sites (one already had a permit and two were trialling low P standards / removal). There is plenty of evidence that 'no deterioration' schemes cost less, as they generally already have permits in place. By definition, a 'no deterioration' driver is to prevent deterioration but does not require improvement. Where there were both drivers against a scheme, we chose to make an improvement despite the fact that these were amber schemes. This is supported by the EA in its guidelines and considered to be the most appropriate decision to avoid abortive investment for the future.²⁹⁶
- (322) Ofwat argues that the impact of WFD 'no deterioration' driver is already captured in one of the two models used which controls for consent tightness by using as its driver the number of sites with a consent <=0.5mg/l. However, this gives an incomplete picture as the legislative drivers will not be as well correlated with the levels of consents. Moreover, the 0.5mg/l cutoff appears arbitrary as there is a need to include tertiary solids removal for almost any permit for a consent of less than 1mg/l.
- (323) Ofwat argued that we did not make the case in our response to DD19 whereas YW did.²⁹⁹ However, this is not a good reason for applying different methods to different companies. If the argument for using the third model fits one company, it should also fit other companies with a similar situation. We consider that we have demonstrated our circumstances to be equivalent to that of YW and that the two FD19 models used by Ofwat in this area do not appropriately capture the drivers of our costs which the third models helps to better achieve.

4.7.2.4. Ofwat's comparison of our P-removal costs for AMP6 and AMP7 is misleading

(324) Ofwat argues that our AMP7 costs are significantly higher than the company submitted for its equivalent programme at PR14 and it has found no evidence that the AMP6 forecast costs were understated. This section shows that Ofwat's comparison of our AMP6 and AMP7 P-Removal programmes is misleading and cannot support a conclusion that our AMP7 claims are not efficient.

²⁹⁷ SoC, para 439, p.91.

²⁹⁸ Environment Agency, PR19 Planning – Traffic light system for identifying measures for the Water Industry National Environment Programme and managing uncertainty, 17 February 2017, REP150

²⁹⁹ Ofwat Response Northumbrian Water, REP022, para 3.88, p.50.

- (325) In summary, **Ofwat has not compared AMP6 and AMP7 on a like-for-like basis**. In particular, Ofwat's Response does not consider the differences between the AMP6 and AMP7 P-removal programmes:
 - there are a high number of sites in the AMP7 programme with a very tight P-removal consent (of ≤0.6mg/l) compared to none in AMP6;
 - the analysis does not consider the inefficiencies of schemes with a small population equivalent (Cost per PE), which we have subsequently demonstrated with a cost curve; and
 - a more appropriate analysis demonstrates that on a like-for-like basis our AMP7 costs are more efficient than AMP6 for a given P-removal consent range.
- (326) First, Ofwat's analysis (shown in Table 11 below) does not accurately reflect the weighting of the schemes in AMP7 to smaller population equivalent (PE) sites with a tighter P consent (of ≤0.6mg/l), as the range of consents grouped together by Ofwat has purposefully been broad, with a consent limit range of 0.6-2.0mg/l. Therefore, this is not a like-for-like comparison. Their assessment was presented in Table 3.3 of their response.

Table 11: Ofwat - Comparison of Northumbrian Water's AMP6 and AMP7 costings for phosphorus removal

	AMP6 Programme	AMP7 Programme
Range of consent limits	0.6mg/l – 2mg/l	0.6mg/l – 2mg/l
Range of Schemes p.e.	1,217 – 51,152	319 - 20,806
Total p.e.	113,061	50,230
No of STW	10	11
No. of sites with tight consent limits (<=0.5mg/l)	0	0
Requested totex (2017/18 prices)	£23.249m	£31.075m
Modelled totex (PR19 model)	£38.853m	£33.100m
Efficiency score (from PR19 model)	0.60	0.94

Source: Ofwat Response Northumbrian Water, REP022, Table 3.3, p.51

- (327) The AMP7 programme is targeting P-removal at sites that have a smaller PE than compared to AMP6. The PE of a site is an important factor when considering efficiencies in programme delivery. The nature of these smaller sites (being more remote and much less developed than larger sites) often results in an increase in the amount of ancillary works required to support the P-Removal process, such as the inclusion of up-to-date chemical delivery facilities and equipment.
- (328) Secondly, we have broken down the range of schemes into more appropriate consent ranges that are more representative of the P-Removal programme in contrast to Ofwat's overly generic classification. These are consent ranges of 0.25-0.5mg/l, 0.6-0.9mg/l and ≥1mg/l. The AMP6 and AMP7 schemes have been broken down into these ranges in Table 12 below.

Table 12: AMP6 and AMP7 P-Removal by consent limit	
AMP6 Programme	

		AMP6 Programme			AMP7 Programme	
Range of	0.25-0.5mg/l	0.6-0.9mg/l	≥1mg/l	0.25-0.5mg/l	0.6-0.9mg/l	≥1mg/l
Consents	Ū	•	Ū.	· ·		Ū.
Total P-Removal schemes within this consent range	0	1	9	14	6	5

Source: NWL analysis of P-Removal schemes in AMP6 and AMP7.

- (329) As Table 12 shows, the AMP7 programme consists of schemes focusing on sites that have a tighter P-consent. In AMP7, over half of the schemes require a consent limit in the range of 0.25-5mg/l whereas no schemes in AMP6 required this level of consent. This shows that the requirements of the AMP7 program are different to that of AMP6. This aspect has not been appropriately considered in the Ofwat analysis.
- (330) The range presented in the Ofwat analysis does not represent industry practice. The complexity of the solution is increased with the introduction of tighter P consents, as tertiary solids removal will be almost certainly required for limits of ≤0.8mg/l. As the breakdown in Table 12 outlines, whilst we have delivered P-Removal schemes, we have not delivered this type of scope and programme previously making cost comparison with previous AMPs questionable. It should be noted that the only scheme in AMP6 with a consent of ≤1mg/l was for a limit of 0.9mg/l. The inclusion of the range of 0.6mg/l-2.0mg/l in AMP6 by Ofwat means the comparison of AMP6 and AMP7 is misleading.
- (331) To compare the AMP6 and AMP7 programmes for efficiency in a meaningful way, a robust approach compares the cost of the P-removal scheme to the population equivalent for a given P-consent limit. This would compare on a unit cost per PE basis.

(332) In AMP6 most of the schemes targeted a P-consent of ≥1mg/l, therefore it is pragmatic to compare the costs for these schemes to the equivalent in AMP7. The appropriate analysis has been presented below in Figure 15, with a comparison of the cost per PE of the P-Removal schemes targeting a limit of ≥1mg/l for AMP6 and AMP7.



Figure 15: Cost per PE for AMP6 & AMP7 1-2mg/I P-Removal Schemes

(333) The derived trendlines from the plot above are then used to generate curves for cost efficiency by PE for both the AMP6 and AMP7 programmes, for the consent range of ≥1mg/l. This is summarised by PE and AMP in Table 13 below.

	AMP6 Trendline y=2E+07x^-1.321				
AMP7 Trendline y=2E+08x^-1.646					
Cost per PE using Trendline					
1300	£1,539.96	£1,497.89			
1400	£1,396.35	£1,325.88			
1600	£1,170.54	£1,064.26			
2000	£871.70	£737.11			
4500	£298.63	£194.02			
8000	£139.65	£75.26			
12000	£81.74	£38.61			
30000	£24.36	£ 8.54			
50000	£12.41	£ 3.69			

Table 13: AMP6 & AMP7 P-Removal efficiency by population comparison

Source: NWL analysis of P-Removal schemes in AMP6 and AMP7.

(334) The results from Table 13 have been plotted in Figure 16 and Figure 17 below.

Figure 16: Cost efficiency per PE for 10,000-50,000PE for AMP6 & AMP7 P schemes with a ≥1mg/l consent



Source: NWL analysis of P-Removal schemes in AMP6 and AMP7



Figure 17: Cost efficiency per PE <10000PE for AMP6 & AMP7 P schemes with a ≥1mg/l consent

Source: NWL analysis of P-Removal schemes in AMP6 and AMP7

- (335) To accurately represent the analysis of a wide range of PEs across the sites, Figure 16 considers sites of more than 10,000PE and Figure 17 considers sites less than 10,000 PE. Firstly, the curves demonstrate that sites with a lower PE have higher unit costs, with a higher Cost per PE for a given consent limit. Secondly, the figures clearly illustrate that for AMP7 the costs per PE for a given consent range are more efficient than for AMP6 when the two programmes are compared on a like-for-like basis (with a given consent range).
- (336) Therefore, despite Ofwat's claim that it has ensured fairness,³⁰⁰ Table 3.3 in Ofwat's Response represents an overly simplistic comparison and does not substantiate a conclusion that our AMP7 proposals are less efficient than our AMP6 programme. When the differences between the AMP6 and AMP7 schemes are accounted for our analysis demonstrates that we are in fact more efficient in our AMP7 delivery.

4.7.2.5. Ofwat has been inconsistent with its assessment of additional sludge processing capacity

- (337) The addition of metal salts for P-removal contributes significantly to the sludge production of those sites and this further highlights the efficiency of our programme.
- (338) As an illustration, in the YW's FD19 £31m funding has been included to address the processing requirements associated with the additional sludge production. We made no claim for any funding to provide new capacity for this increased sludge generation arising from the increased use of metal salts for P-removal.
- (339) In generating the cost of providing additional sludge processing capability, we have followed the methodology applied by YW and accepted by Ofwat at FD19. Our analysis and the use of bottom-up costing identified the provision of a central dewatering facility at £2.75m. We absorbed this additional expenditure in the efficiencies we included in our plan.
- (340) This is another example where all models utilised in the assessment of WINEP costs, including the third triangulation model, do not capture the full cost of delivering the requirements of the WINEP programme.

4.8. ABSTRACTION CHARGES AND BUSINESS RATES

(341) 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 compared to other costs. Ofwat sets allowances for these costs using alternative 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.

³⁰⁰ Ofwat Response Northumbrian Water, REP022, para 3.92, p.50.

(342) Our SoC argued that the proposed reconciliation mechanism is not appropriate for these cost items, given the lack of management control and the level of potential variability for these costs over the AMP7 period. These cost items do not represent a source of potential inefficiency which should be mitigated through a cost sharing incentive. We proposed that these items should be made a 100% pass through item, or an uncertainty mechanism be included to account for the lack of management control over these costs.³⁰¹

4.8.1. Ofwat said:

- (343) Ofwat's FD19 accepted that companies have limited control over the level of business rates and the effect of revaluations but asserts that they do have some degree of influence. Ofwat therefore provided protection for companies and customers through a reconciliation mechanism at the end of the 2020-25 period.³⁰²
- (344) Ofwat notes that we successfully challenged the rateable value set by the Valuation Office Agency (**VOA**) in 2017, which suggests that we have some degree of influence over these charges.³⁰³

4.8.2. Our Reply:

- (345) Ofwat's Response did not address our argument in the SoC that the cost-sharing mechanism is an inappropriate method of addressing abstraction charges and business rates. As noted in the SoC, cost sharing mechanisms exist to promote innovation and best practice in companies delivering services to customers. However, to have the desired effect regulated companies must have control over the costs covered by the sharing mechanism.
- (346) Ofwat's Response noted that: "although companies have limited control over the level of business rates and the effect of revaluations, they have some degree of influence".³⁰⁴ Ofwat referenced our successful challenge of the rateable value set by the VOA in 2017 in support of this contention. However, this instance only demonstrates that we have the ability to challenge erroneous evaluations in the case of manifest error; it does not imply that we can influence or control these assessments in any normal sense of the word. The methodologies for calculation of abstraction charges and business rates are fixed and we do not have any ability to control or mitigate these assessments. This is explained further in our SoC.³⁰⁵
- (347) Moreover, even if these costs are passed-through as proposed in our SoC, it is clearly incorrect that we would have no incentive to challenge erroneous business rate or abstraction charge calculations where appropriate. Indeed, we would have a clear incentive to challenge an incorrect valuation given: (i) this would give rise to a short-term risk to our cashflow; (ii) we have an obligation to deliver the best value for money for our customers in line with Licence requirements; and (iii) there would be a reputational impact if customer bills were adversely affected where costs were higher than necessary.
- (348) In addition, as emphasised in our SoC,³⁰⁶ there are future risks associated with these costs. Recent decisions regarding these items show that they are volatile and there could be future volatility from a change in approach to business rates or new government policy on abstraction charges. A pass through mechanism addresses these risks which are outside of our control.
- (349) 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. The mechanism proposed in our SoC would only pass our costs through there is no upside/outperformance potential being sought. We consider that this approach to risk sharing is in line with best regulatory practice water companies should only manage the risks they can control.
- (350) In addition, costs associated with business rates and abstraction charges are comparably more significant for us than for other water companies given our greater exposure to abstraction charges. Our abstraction charges are over 8% of totex, compared to an industry average of below 3%.³⁰⁷ While it may arguably therefore be more proportionate for other companies to have a reconciliation mechanism, a pass-through mechanism is warranted

³⁰¹ SoC, Section 5.8.

³⁰² Ofwat Response Northumbrian Water, REP022, para 3.152 - 3.153, p.67.

³⁰³ Ofwat Response Northumbrian Water, REP022, Table 3.4, p. 65.

³⁰⁴ Ofwat Response Northumbrian Water, REP022, Table 3.4, p. 64. 305 SoC, paras 474 – 475, p. 96.

³⁰⁶ SoC, paras 472 – 473, p. 96.

³⁰⁷ SoC, Figure 33, p.96.
for us given that the costs associated with abstraction rates and business rates are comparatively greater (particularly given their potential variability and our limited degree of control over them).

- (351) Further, we have no scope to reduce abstraction charges via management action for the following reasons:
 - EA costs are recovered on a regional basis from the holders of abstraction Licences in each region;
 - we pay for around 98% of the costs levied on abstraction Licence holders in the North East; and
 - this means that, even if we were to give up Licences or reduce Licence volumes, the EA would increase its charges with respect to our remaining Licences. This would negate virtually all the savings that would otherwise accrue from such actions.
- (352) Finally, we note that Ofwat's Response does not address our argument in the SoC that regulatory approaches in sectors other than water has invariably been to allow a 100% pass through of business rates.³⁰⁸ Our preferred position for business rates and abstraction charges is for them to be subject to a pass-through mechanism. However, if the CMA were to decide that an allowance with a cost sharing rate were to be appropriate then it is important that frontier shift is not applied to these costs. Section 5.3 sets out the rationale for this.

4.9. FRONTIER SHIFT

(353) Our SoC did not dispute the level of the 1.1% ongoing efficiency assumption applied by Ofwat but noted the significant stretch that this implied when combined with other assumptions on catch-up. We also argued that Ofwat had incorrectly applied frontier shift to business rates and abstraction charges. Our preference was for these cost items to be handled through a pass-through mechanism, but if an allowance were to be provided then it should not be subject to a frontier shift adjustment.³⁰⁹

4.9.1. Ofwat said:

- (354) In its Response Ofwat sets out why it considers its approach to frontier shift remains appropriate:
 - Ofwat believes that the frontier shift assumption, when combined with the catch up challenge is achievable. The overall challenge to our base costs is relatively small at 0.7%. Ofwat's frontier shift assumption of 1.1% per year is lower than the 1.5% per year used by Northumbrian Water;³¹⁰
 - Ofwat does not consider that it has wrongly reflected total factor productivity from other sectors, as it has only considered competitive comparator sectors in its frontier efficiency assessment;³¹¹
 - its frontier shift number is consistent with previous regulatory decisions and its decision to apply the frontier shift from one year before the price control begins (i.e. from 2019-20) is also supported by evidence from a number of other recent regulatory decisions;³¹²
 - frontier shift can apply to enhancement as well as base costs, in particular to elements of enhancement costs which are more common across companies including WINEP and metering costs; and³¹³
 - frontier shift should apply to all base costs, including unmodelled costs (including business rates, Traffic Management Act (TMA) charges and abstraction charges). Given that the frontier shift estimate was based on all costs in comparator industries (including costs that might be regarded as 'fixed'), Ofwat applied the frontier shift to all wholesale base expenditure. Ofwat further notes that there is scope for companies to reduce unmodelled costs such as TMA costs through the use of innovative or non-invasive ways to make repairs.³¹⁴

4.9.2. Our Reply:

- (355) In this Section, we clarify why:
 - some of the points raised by Ofwat are not in dispute; and
 - frontier shift should not be applied to business rates and abstraction charges.

310 Ofwat Response Northumbrian Water, REP022, para 3.38. p. 36

³⁰⁸ SoC, para. 478, p. 97. 309 SoC, para 478, p. 97.

³¹¹ Ofwat Response Northumbrian Water, REP022, para 3.40. p. 37. 312 Ofwat Response Northumbrian Water, REP022, para. 3.41, p. 37.

³¹³ Ofwat Response Northumbrian Water, REP022, para. 3.41, p. 31. 313 Ofwat Response Northumbrian Water, REP022, para. 3.43, p. 38.

³¹⁴ Ofwat Response Northumbrian Water, REP022, para.3.45, p. 38.

4.9.2.1. Some of the points raised in Ofwat's Response are not in dispute

- (356) As an initial matter, we note that unlike other Referring Companies **our SoC did not contest Ofwat's use of the 1.1% frontier shift figure** (although we did note the significant stretch that this implied when coupled with other aspects of FD19). Rather, we are **contesting the application of this figure to business rates and abstraction charges costs** and its application to WINEP (see Section 4.7.2.2 above).
- (357) The comparison that Ofwat's Response draws between the 1.5% per year improvement figure used in our business plan and the 1.1% frontier shift figure used by Ofwat in FD19 is not meaningful. These figures covered different costs (the 1.5% used in our business plan did not apply to unmodelled costs) and relate to different starting points from where improvements must be made (the totex assumptions in our plan are different those adopted by Ofwat). Ofwat states that "the impact of reducing frontier shift from 1.5% to 1.1% far outweighs the increase in scope of the application of frontier shift to WINEP and unmodelled costs in our final determination."³¹⁵ While this may be correct for other companies, it is incorrect for us. Given our exposure to high abstraction charges in the North East as noted above, this change resulted in a tightening of our settlement by £5m.
- (358) Ofwat's Response notes that its frontier shift range is based on productivity in competitive sectors only and this limits the effect of catch-up on total factor productivity estimates.³¹⁶ We note, however, that it is not correct that all companies in competitive sectors are equally efficient and that there is therefore no scope for catch up within them. The need for less productive firms to 'catch up' is an engine of productivity improvement in competitive sectors less efficient firms will not earn a sufficient return on capital and will exit the market unless they can improve. The market for corporate control is partially driven by these considerations whereby new investors and management teams will take over struggling businesses in competitive sectors where they think they can improve their fortunes by catching up to others in the sector.
- (359) Data for competitive sectors will therefore capture the average for a sector and will include catch-up within the sector and not just frontier shift. If this average improvement is applied as frontier shift with catch up added on top, then the water sector will need to improve productivity faster than these comparator sectors, which is not a sustainable position in the long term. Ofwat point out that "even if there were variations in efficiency across companies, there is no reason for expecting the degree of dispersion to change over time".³¹⁷ This may be true, but it does not undermine our point.
- (360) Frontier companies by definition will have fewer productivity improvement opportunities available than less efficient firms, as they have already implemented ideas that other firms can still replicate. This means that there will typically be less productivity improvement by a frontier company than an averagely efficient company in a sector (assuming equal access to technology etc). This dynamic is another way of saying that catch-up exists companies with lower levels of efficiency will have greater opportunities to make improvements. Some companies may improve quicker than expected and others may fall backwards where initiatives do not go as planned or opportunities are missed.
- (361) Having considered Ofwat's Response, we remain of the view that taking the average level of productivity improvement from other competitive sectors as measured by EU KLEMS will include both catch-up and frontier shift and that therefore adding catch up on top of this assumption will require water companies to improve productivity faster than those competitive sectors in order to operate within their regulatory allowances. We do not think this is sustainable in the long run and demonstrates the overall stretch in the PR19 settlement.
- (362) With respect to the application of frontier shift to enhancement costs, we reiterate that we are not disputing this decision in general. The concern we raise in relation to WINEP, is that Ofwat's approach risks applying frontier shift twice as it uses benchmarking forecasts that already assume future efficiency/productivity improvements.
- (363) Finally, Ofwat's Response notes that "we consider that there is some scope for companies to reduce these costs, in particular Traffic Management Act costs for example through the use of innovative or non-invasive ways to make repairs."³¹⁸ We do not contest that there is some scope for management to make improvements with respect to TMA costs. As stated in the SoC,³¹⁹ our position is that frontier shift should not be applied to business rates and abstraction charges. This is discussed further below.

³¹⁵ Ofwat Response Northumbrian Water, REP022, para 3.46. p. 39.

³¹⁶ Ofwat Response Northumbrian Water, REP022, para 3.40, p. 37. 317 Ofwat Response Northumbrian Water, REP022, para 3.40. p. 37.

³¹⁸ Ofwat Response Northumbrian Water, REP022, para 3.45. p. 38.

³¹⁹ SoC, para 480, p.97.

4.9.2.2. Frontier shift should not be applied to business rates and abstraction charges

- (364) The key point of disagreement with Ofwat is with respect to the application of frontier shift to business rates and abstraction charges. On this point we think that Ofwat' Response confuses cost trends and productivity trends the two are not the same the distinction is important:
 - Unit cost trends can be calculated from the EU KLEMS database measuring how costs have evolved in different sectors of the economy. Inferences can then be made about the trend of future water sector costs if they were to behave in line with these other sectors. These unit costs trends would capture the relevant costs being measured and may include taxes such as business rates or abstractions charges. The cost trends would capture the combined impact of input price inflation and productivity improvements (and changes in any taxes) it would not be appropriate to calculate a unit cost trend, apply to water sector costs and then apply additional RPEs as this would risk double counting RPEs. The EE study that Ofwat relied for setting the 1.1% ongoing efficiency improvement did not calculate a unit cost trend³²⁰; and
 - **Productivity trends** capture how much sectors are able to make improvements that keep output constant (e.g. number of widgets produced) while making reductions to the volume of inputs (capital, labour, energy, materials and services). This measure is all about volumes of inputs and outputs neither of which include taxes such business rates or abstraction charges. That is to say a change in business rates or abstraction charges would not change the measurement of the volume of outputs or inputs in the EU KLEMS database. Productivity trends therefore provide insights into how much business might be able to reduce inputs such as labour and materials over time (and make consequential cost savings) but provide no information about how business rates or abstraction charges might evolve over time. The EE study calculates such productivity trends.³²¹
- (365) Ofwat states that: "Given that the frontier shift estimate was based on all costs in comparator industries (including costs that might be regarded as fixed), we applied the frontier shift to all wholesale base expenditure."³²² This is incorrect in our view. The frontier shift estimate was not based on "all costs in comparator industries". EE looked at productivity measures which consider volumes of inputs and outputs, and not all costs. Business rates and abstraction charges do not represent inputs and are not highly correlated with inputs. It would therefore be erroneous to apply a productivity trend to cost items that do not represent the inputs of the business in question.
- (366) Due to the nature of these cost items (discussed further in Section 4.8), our management does not have any ability to control these costs. Ofwat's Response does not provide any evidence with respect to our ability to control business rate and extraction charges, indeed it notes that its FD19 "recognised that companies have limited control over the level of business rates and the effect of revaluations but some degree of influence."³²³
- (367) In summary, we do not consider it appropriate to apply frontier shift to business rates and abstraction charges. This would make unjustifiable reductions to efficient costs which we're unable to recover by productivity improvements. Ofwat's Response does not adduce any new evidence or argumentation to substantiate its position. As discussed in section 4.8, our preferred approach is for these costs to be recovered through a passthrough mechanism.

³²⁰ Europe Economics, Real Price Effects and Frontier Shift – Final Assessment and Response to Company Representations, SOC396 p.62-63

³²¹ Europe Economics, Real Price Effects and Frontier Shift – Final Assessment and Response to Company Representations, SOC396 p.19.

³²² Ofwat Response Northumbrian Water, REP022, para 7.63. p. 101.

³²³ Ofwat Response Northumbrian Water, REP022, para 3.44, p. 64.

5. WHAT IS THE APPROPRIATE INCENTIVE STRUCTURE FOR WATER NETWORK PRICE CONTROLS?

5.1. SUMMARY OF OUR CASE

(368) This Section sets out our concerns with Ofwat's Response regarding outcome incentives. In particular, we observe an increased focus on the rate of returns while limiting the scope for rewards, within distortive asymmetric incentive mechanisms. As part of its redetermination, we ask the CMA to consider the precedent set by Ofwat's design of incentive mechanisms, in light of the potential threat to future improvements.

Table 14: Summary of key arguments

Ofwat	Summary of our response
Leakage targets: Ofwat continues to believe that the PR19 leakage reduction should be baselined against actual 2019/20 performance, rather than projected performance, in spite of the risk of disincentivising companies from seeking performance improvements in each year of the price control. It believes that this would reward the company twice for the same leakage reduction. Finally, Ofwat states that changing the basis of calculating leakage should not result in a reward purely based on definition change.	Ofwat's Response does not address or disprove our concern that its proposed use of actual leakage as a baseline disincentivises future improvements later in the AMP and is therefore not in customers' interests. We prove that we could not be rewarded twice, because PR19 rewards require a significant reduction in leakage, beyond the level of leakage that earned rewards in PR14. We point out that Ofwat has unfairly changed the definition of leakage and we suggest that reversing this definition would ensure that rewards are not paid purely for definition change.
Cost sharing : Asymmetric cost sharing rates were introduced to simplify the menu incentive applied at PR14, to (i) maintain strong incentives on companies to deliver stretching cost estimates in business plans in the context of asymmetric information and (ii) to provide ongoing incentives for cost efficiency. Asymmetric sharing is a long-standing tool used by Ofwat and in other regulated sectors. Our arguments must be considered taking account of the wider aims of the incentive regime and with consideration of the impacts over the long term.	We continue to believe that a 50:50 sharing rate represents a more appropriate outcome. Ofwat's Response does not engage with the arguments and evidence in our SoC, which demonstrate that the cost-sharing mechanism encourages the submission of " <i>low</i> " rather than " <i>efficient</i> " costs. The approach also disincentivises listening to stakeholder needs. We do not think that concerns over information asymmetry are resolved by introducing a mechanism that has clear perverse incentives.
ODI structure : There are other mechanisms to manage bill volatility and a 3% gross threshold are consistent with bill stability in the 2020-25 period. It is not clear that sharing all outperformance beyond the 3% of regulatory equity gross threshold is detrimental to us compared to our proposed 2% net threshold. Our examples are theoretical and demonstrate that a gross threshold provides appropriate incentives.	Ofwat's policy is confused. ODIs are balanced to incentivise relative performance improvements across the range of targets, based upon careful customer willingness to pay research. A 3% gross cap on rewards arbitrarily distorts the balance in the ODI framework and incentivises the company to minimise ODI penalties, rather than seeking improvements. A gross cap on individual ODI payments does not address the policy aim of limiting the ODI payment impact on bills – which is calculated on a net basis across all ODIs. Therefore, we continue to suggest a 2% net cap on payments is a better tool to achieve the stated aim.

5.2. LEAKAGE

(369) We showed in the SoC that we are penalised for early investment and good performance in AMP6, through the change in methodology to average the leakage calculation across three years, as proposed for AMP7.³²⁴

5.2.1. Ofwat said:

(370) Ofwat has rejected our objections about the perverse incentives within the construction of the leakage PC target.³²⁵ Ofwat has rejected our concern that the incentive to deliver leakage in the final years of the price control is damaged through the use of the actual level of leakage at the end of AMP6, compared with the targeted level at

³²⁴ SoC, Section 6.5, p. 110.

³²⁵ Ofwat Response Northumbrian Water, REP022, paras. 4.14-4.22, pp. 76-78.

that time. Ofwat believes that this would reward the company twice through the incentives.³²⁶ Ofwat claims that changing its proposed new reporting methodology would result in out or underperformance payments generated on the basis of changes in reporting, rather than underlying improvements/deteriorations in performance.³²⁷

5.2.2. Our Reply:

- (371) Ofwat's Response does not recognise our good performance and our focus on customer service improvements. During AMP6, we outperformed our leakage target, and we had started to make progress towards the anticipated target for AMP7. Further, we accepted and incorporated into our BP19 Ofwat's tough new target for leakage reduction for PR19. We are serious about reducing leakage and have accepted challenging targets in our customers' interests – balanced within a wider package of other key outcome focuses, taking account of customers' preferences.
- (372) Ofwat's Response does not address or disprove our case that its proposed use of actual leakage as a baseline disincentivises future improvements later in the AMP. Therefore, the primary point raised in our SoC remains unchallenged that Ofwat's approach disincentivises activity at the end of a regulatory period and is not in consumers' interests.
- (373) The principal concern raised in Ofwat's Response with measuring improvement from the PR14 performance commitment level in 2019-20, is that it could result in rewarding the company twice through the incentives in PR14 and PR19.³²⁸ However, this is not mathematically possible. The scope for double rewarding point would only stand if actual performance at the end of AMP6 is better than any of the proposed levels for the AMP7 targets, which it is not. To earn additional rewards in AMP7, we must improve leakage performance beyond current performance.
- (374) Further, we are concerned about the credibility of the incentive that Ofwat is using in its methodology. Unlike cost efficiency targeting, there is no information asymmetry in leakage reduction, which incentives could reveal to the regulator for re-setting the future price control baseline. Without continual investment, overall leakage will increase, as leaks develop in aging and deteriorating assets this means that the actual leakage achieved does not represent a steady state 'banked' baseline.
- (375) Therefore, improving leakage requires continual engineering and investment; and regulatory incentives represent the only benefit to the company from leakage reduction. For that investment to be beneficial, there needs to be clarity over the incentive reward and penalties that will result from that investment. If the benefits are only likely to be realised over a short-period (i.e. only until the end of a 5-year AMP) then less investment will pass the costbenefit calculation and therefore leakage performance will not improve as quickly as it could have done. In other contexts, for example, regulators have set rolling 5-year incentive mechanisms to allow companies to have a constant incentive to improve throughout the regulatory period without fear that improvements made just before the end of a period will not be able to pay off the investment needed to deliver that improvement.
- (376) In our SoC, we outlined the penalty that is created through Ofwat's change in reporting methodology to a three year rolling average calculation.³²⁹ Ofwat does not address this point. However, Ofwat suggests that changes in the reporting methodology could drive out/under performance artificially.³³⁰ We note that Ofwat proposed the change in methodology and introduced the risk of inconsistency between PR14 and PR19. Therefore, to avoid the risk of unwarranted rewards/penalties, the CMA may consider that consistency between PR14 and PR19 reporting methodology to be beneficial.
- (377) Finally, we are concerned that each of these points conflict with the Better Regulation principles of *consistency* and *transparency*. We want to improve our performance for our customers. However, we expect our regulator to be consistent in its application of regulation to a long term problem and transparent in the way that it calculates the metric. We believe that Ofwat's choices do not reflect these principles, in this instance.

³²⁶ Ofwat Response Northumbrian Water, REP022, para 4.19, p. 77. 327 Ofwat Response Northumbrian Water, REP022, para 4.21. p. 78.

 ³²⁷ Ofwat Response Northumbrian Water, REP022, para 4.21. p. 78.
 328 Ofwat Response Northumbrian Water, REP022, para 4.16, p. 77.

³²⁹ SoC, para 524, p. 108.

³³⁰ Ofwat Response Cost Efficiency, REP024, para 5.33, p. 60.

5.3. COST SHARING RATES

(378) We are concerned about the weakening of the cost sharing rates from PR14 levels. Table 15 below sets out the difference between PR09, PR14 and Ofwat's proposed PR19 cost sharing rates.

•		
	Water	Wastewater
PR09 Outperformance	67%	67%
PR09 Underperformance	67%	67%
PR14 Outperformance	50.35%	50.80%
PR14 Underperformance	50.35%	50.80%
PR19 Outperformance	46.19%	34.40%
PR19 Underperformance	53.81%	65.60%

Table 15: Cost sharing rates at PR09, PR14 and PR19

Source: Ofwat, PR19

Cost Efficiency Technical Appendix, December 2019, SOC417; PR14 cost sharing rates Ofwat national web archive and PR09 rates from CIS True-up 2010-15 model.³³¹

(379) The incentives for totex outperformance have weakened from 67% in AMP5, to 50/51% in AMP6, to 46% for wholesale water and 34% for wholesale wastewater in AMP7. This reduction in incentive rates could have negative impacts on customers by reducing the incentives for outperformance. This is particularly acute for wastewater where the incentive rate has reduced by almost a third. Given our industry-leading performance on wastewater costs delivered the vast majority of the £400m benefits we identified for customers during PR14, this could undermine our ability to generate further such benefits for customers at the PR24 review.

5.3.1. Ofwat said:

- (380) Asymmetric cost sharing rates were introduced to simplify the menu incentive at PR14 to:
 - maintain strong incentives on companies to deliver stretching cost estimates in business plans in the context of asymmetric information; and
 - provide ongoing incentives for cost efficiency.³³²
- (381) Ofwat's approach recognised that companies benefit from an asymmetry of information in preparing business plans and that therefore, it is important to incentivise companies to put forward stretching cost estimates in business plans.³³³ If CMA does revisit this issue, then this could affect future incentives for ambitious plans.

5.3.2. Our Reply:

- (382) We are disappointed that Ofwat's Response did not engage with the arguments and evidence put forward in our SoC. It said: "Northumbrian Water claims our approach to cost sharing rates does not incentivise companies to reveal their expected levels of costs, disincentivises companies from submitting proposals that enhance resilience and undermines the usefulness of information revealed in business plans. We disagree with Northumbrian Water's assertions."³³⁴ However, the text that follows does not respond to any of the analysis or arguments put forward in our SoC. Therefore, we consider that those points still stand and should be considered carefully by the CMA in its decision making.
- (383) Our Reply focuses on perverse incentives and lost benefits from good incentives.

5.3.2.1. Perverse incentives

- (384) Our analysis in the SoC clearly shows how the mechanism financially incentivises companies to put forward low costs rather than "*efficient*" costs. From this finding, all of the other points follow including:
 - incentives distort plans away from customer needs: The incentive to submit low costs will drive companies away from submitting cases for resilience schemes that stakeholders wanted as it may risk a less favourable settlement if Ofwat disagrees with the investment. It is a less risky approach to not listen to stakeholders' needs and instead focus on the bare minimum activities which stand the highest chance of being funded by Ofwat. Such an approach would deliver a more favourable financial outcome for water

Final Determinations. Securing

³³¹ CIS True-up 2010-15, REP151. NB: At PR09 there were separate incentives rates for opex (100%) and capex (30%). We have reported the weighted average based on PR09 FD.

³³² Ofwat Response Northumbrian Water, REP022, Table 6.1. p. 106.

³³³ Ofwat Response Northumbrian Water, REP022, para 1.48, p. 13.

³³⁴ Ofwat Response Northumbrian Water, REP022, para 6.72, p. 128.

companies, but this would not be in the interests of customers and does not promote the relationship between Ofwat, companies, and customers that there should be in furthering the customer objective;

- incentives distort cost benchmarking: The rewarding of low costs rather than efficient also means that less strong inferences can be drawn from the submitted costs. Therefore, Ofwat (and the CMA) are unable to distinguish between a company submitting its genuine view of efficient costs and a company responding to the incentive and submitting costs lower than what it thinks is efficiently possible. This means that the expenditure plans submitted could underestimate the efficient costs required to undertake certain activities and therefore limit their reliability as a robust way to set expenditure allowances;
- **incentives are punitive:** The approach is also asymmetric which is punitive to companies like us. When cost allowances are set appropriately there will be an equal chance of over- and under-spend. However, having asymmetric risk exposures to over- and under-spend means that the company is less likely, on average, to be able to recover its efficient costs this is not in line with the duties in the WIA and does not promote the high levels of service that customers need and expect;
- strong incentives for outperformance produce better long-term results: As argued in the SoC, strong
 incentives for outperformance are also important to encourage future improvements. Our outperformance of
 the PR14 settlement delivered over £400m of consumer benefits at the PR19 review through tougher
 benchmarks than there would otherwise have been. It is important that these strong incentives are
 maintained and a weakening of the cost sharing rates (in particular as seen in wastewater) works against
 this and risks delivering worse future outcomes for consumers; and
- incentives do not address information asymmetry: In response to Ofwat's concerns about information
 asymmetry, we do not think these are resolved by introducing a mechanism that has clear perverse
 incentives. The approach does not address the underlying asymmetry that Ofwat is concerned about as it
 does not incentivise companies to reveal their best information on efficient costs and it also creates different
 problems which are not in customers' interests.
- (385) Ofwat states that "it is important to recognise any decisions the CMA takes that affect the totex cost sharing rates in our final determination could impact on the incentives for submission of efficient business plans in the future. We submit that the CMA should retain the cost sharing rates in our final determination for the disputing companies. We would welcome further engagement with the CMA on this issue."³³⁵
- (386) We think that the point made by Ofwat is not relevant to the CMA's determination. If Ofwat sets fair and reasonable incentives for good business plans as part of future price reviews then companies will respond appropriately. However, in cases where a regulator sets inappropriate incentives then those should be overturned as part of the redetermination in order to ensure: an appropriate outcome for the company and its customers; long term efficiency incentives are maintained to drive efficiency improvements and future benefits for customers; and a good precedent is set for future reviews.

5.3.2.2. Lost benefits from good incentives

- (387) Outperformance of the price control is an important way of sharing benefits with customers within a price control period, as well as generating benefits at the next price control review through the setting of tougher cost benchmarks. Our analysis indicates that our performance during AMP6 generated over £400m of benefits to customers across England and Wales, through our contribution to lower cost efficiency benchmarks for the rest of the industry.³³⁶
- (388) **Company performance is incentivised by the strength of the cost sharing rate.** When totex performance in water and energy price controls is analysed, there is a strong relationship between totex performance and the cost sharing rates that were set as part of the control. We have analysed past price controls across sectors, as shown in Table 16 below.

³³⁵ Ofwat Response Northumbrian Water, REP022, para 6.75, p. 128. 336 SoC, Section 2.6.3, p. 22.

Sector and price control	totex allowances	totex actuals	Cost sharing rate
Water and Sewerage			
PR14	Companies' Annual Performance Reports	Companies' Annual Performance Reports	Populated menu models on Ofwat's National Web Archives
PR09	PR09 Final Determination	2011/12 to 2014/15: Ofwat's PR19 feeder model 1 2010/11: Companies' June returns	Populated menu models on Ofwat's National Web Archives
Electricity distribution			
RIIO-ED1	Final proposals	Ofgem's RFPR	RIIO ED-1 Final Proposals Overview and RIIOED-1 WPD Final Proposals Overview
DPCR5	Final proposals	Close out reports	DPCR 5 Final Proposals Cost Assessment Document
DPCR4	Final proposals	Annual reports	Final proposals
Gas distribution			
RIIO-GD1	Final proposals	Ofgem's RFPR	Final proposals overview
GDPCR1	Final proposals	GDPCR1 close out report	Final proposals
Electricity and gas transmission			
RIIO-T1 and RIIO-GT1	Final proposals	Ofgem's RFPR	RIIO-T1 NGET and NGG Final proposals; RIIO-T1 SHET and SPTL Final proposals
TPCR4	Close out report	Close out report	Final proposals

Table 16: Data on totex performance and cost sharing rates³³⁷

Source: NWL Analysis of Ofwat and Ofgem regulatory publications as stated.

- (389) We analysed this data through an econometric model that seeks to identify the impact of each company's cost sharing rate³³⁸ on totex performance between companies and between price controls. Recognising that there are differences between the sectors we have also included sector "dummy variables"339 to account for structural differences that may influence totex performance (e.g. the number of comparators within a sector). We have aggregated performance by price control period to take account of cost re-profiling within a price control period.
- (390) The model shows a statistically significant relationship between totex performance and the cost sharing rate. This is shown in Table 17 below, which presents the coefficient estimates and their standard errors in parentheses.

Table 17: Econometric model results of impact of cost sharing rate on totex performance³⁴⁰

	<u> </u>		
Variables	Model output		
Electricity Distribution	28.402 (10.06)		
Transmission	19.785 (10.04)		
Gas Distribution	26.296 (10.60)		
Water	30.511 (10.31)		
Wastewater	25.073 (9.99)		
totex cost sharing rate (%)	-0.538*** (0.17)		
No. of observations R-squared	118 0.232		

Source: NWL analysis

- (391) The cost sharing rate variable was found to be statistically significant,³⁴¹ suggesting a strong relationship between the cost sharing rate and totex performance. The coefficient on the cost sharing rate of -0.54 implies that a 1 percentage point reduction in the cost sharing rate has been historically linked a -0.54 percentage point worsening in totex performance. This implies that the 16.4% reduction in the outperformance cost sharing rate could worsen totex performance by 8.8%, based on historical precedent.
- (392) Finally, we are concerned that each of these points conflict with the Better Regulation principle of proportionality. We maintain that setting skewed incentive rates are not a proportional response to our business

³³⁷ For AMP7, we used data up to 2017/18 and for the RIIO-1 price controls we also used data up to 2017/18 and used the forecast data for the remainder of the controls as set out in the RFPR. For the controls before the introduction of the totex regimes (i.e. prior to PR09 and RIIO-1), which had separate incentive rates for opex and capex, we took a weighted average cost sharing rate based on the relative proportions of the different expenditures.

³³⁸ Explanatory variable – cost sharing rate: In order to explore the effects of incentive strength on totex performance, we use the totex cost sharing rate as the explanatory variable of our regression. In our regression, this variable was expressed in percentage terms, e.g. a 50% cost sharing rate is recorded as '50'.

³³⁹ Explanatory variable – sector dummy variable: We include a dummy variable for each sector (water, wastewater, electricity distribution, gas distribution and transmission (covers electricity and gas) in our analysis to control for sector-specific effects.

³⁴⁰ Totex performance is the dependent variable and in measured as a %. . A positive value denotes an overspend and a negative value an underspend 341 The variable is statistically significant at the 1% level. This means that there is less than a 1% chance that the relationship between the cost sharing rate and totex performance is caused by chance.

plan, given the perverse incentives. Therefore, we continue to believe that the 50:50 sharing rate represents a more appropriate and proportional outcome.

5.4. ODI INCENTIVE CAP

(393) We recognise that this topic has become complex. The arguments have centred around whether a cap on ODIs to limit the impact of bills should be set on a gross basis (i.e. limiting the reward payment for each ODI separately, without reference to other ODIs) or on a net basis (i.e. limiting the bill impact of a reward payment from the total ODI collection). In this Section, we aim to distil the rival arguments and positions for the CMA.

5.4.1. Ofwat said:

- (394) Point 1 Purpose of the cap:
 - NWL: Our SoC challenged Ofwat's stated aim for the cap was for "protecting customers in case their ODI payments turn out to be much higher than expected".³⁴² However, we demonstrated that a gross ODI cap acted purely as a stealth cap on the individual ODI, rather than as a holistic capping of all ODI payments on a net basis and hence a capping of the impact on bills,³⁴³ and
 - Ofwat: Its Response confirms that the mechanism did not smooth bills, but limits ODI outperformance. Ofwat cites its expectation that companies would adhere to a 1% *moral cap*, where reward payments would be deferred by company choice, to prevent significant bill increases.³⁴⁴
- (395) Point 2 Incentives from a gross cap:
 - NWL: Our SoC pointed out that a cap on single ODI rewards, but no cap on penalties incentivised companies merely to avoid penalties, rather than nurturing significant improvements, particularly given the downside skew of the overall ODI package;³⁴⁵ and
 - Ofwat: The regulator appears to accept this incentive claiming that it is not in customers' interests for the company to receive large rewards, while other aspects of its service fail. It claims that our customer research did not cover this extreme situation.³⁴⁶
- (396) Point 3 Responding to customer preferences in the ODI:
 - NWL: The balance in the ODI package was set with reference to customer research, including willingness
 to pay analysis, that was aimed at incentivising the right balance of focus on different ODIs. This balance is
 disrupted by the impact of a stealth cap, which overrides the customer research-led construction of the ODI;
 and by the distortion to focus on avoiding penalties created by the incentives within the gross cap; ³⁴⁷ and
 - Ofwat: The regulator claims that the extreme outcome where outperformance is capped and other service aspects fail may indicate the misspecification of an ODI.³⁴⁸
- (397) Point 4 Capping rewards but not penalties:
 - NWL: Our Soc pointed out the asymmetry created by a cap on rewards, but not on penalties, which added to the proposed downside skew of the ODI package. This asymmetry could be solved through a net cap;³⁴⁹ and
 - Ofwat: Given the historical data would have meant no difference between net and gross caps, Ofwat claims
 that the choice has limited significance to the discussion on the asymmetry.³⁵⁰
- (398) Point 5 2% cap:
 - NWL: Our Soc proposed a net cap, set at 2% of RORE, based on customer research; ³⁵¹

³⁴² Ofwat PR19 Initial Assessment of Plans, Technical Appendix 1: Delivering Outcomes for Customers, 31 January 2019, SoC204, p. 21. 343 SoC, para 555.

³⁴⁴ Ofwat Response Northumbrian Water, REP022, para 4.28, p. 79.

³⁴⁵ SoC, paras 558-560.

³⁴⁶ Ofwat Response Northumbrian Water, REP022, para 4.32, p. 81. 347 SoC, para 547.

³⁴⁸ Ofwat Response Northumbrian Water, REP022, para 4.33, p. 81.

³⁴⁹ SoC, para 561.

³⁵⁰ Ofwat Response Northumbrian Water, REP022, para 4.35, p. 82.

³⁵¹ SoC, para 562.

- Ofwat: The regulator claims a 2% net cap would add to asymmetry.³⁵²
- (399) Point 6 No difference between net and gross:
 - Ofwat: The regulator reproduces historical AMP6 data that shows that companies have only generated rewards offset by penalties in lower levels of out and under performance; whereas at the higher levels of out and under performance there was no offsetting. Therefore, a net threshold would be no different from a gross threshold.³⁵³

5.4.2. Our Reply:

- (400) We continue to be confused by Ofwat's policy choice. Ofwat's methodology requested careful customer research to underpin a complex series of PCs and ODIs which are calibrated to balance incentives and focus efforts into areas that matter to customers. The ODIs featured a series of protection mechanisms, such as caps and collars, to limit unintended consequences. These were derived through customer research that tested the willingness to pay for different PC outcomes – at the margin of realistic outcomes – rather than using exaggerated extreme comparisons. Ofwat has commented three times on our ODI proposal through the PR19 process and we can only assume that the ODI package now meets Ofwat's approval.
- (401) Then Ofwat introduced this additional cap. We understood its original purpose Ofwat said in January 2019 that this was to protect customer bills from increasing significantly. This is why we suggested the net cap to match the final outcome from the ODI package that would impact bills. However, it appears now as if Ofwat did not intend primarily for this cap to smooth bills, but to limit outperformance from ODIs. This is concerning, as this new purpose cuts across the protections already agreed for the ODIs which were based on careful customer research.
- (402) Further, we are more concerned that Ofwat has introduced a 1% cap on companies for deferring outperformance payments. This additional cap does not feature in the price control but acts like a price control policy during the AMP but without any of the relevant price control consultation and re-determination protections intended for Ofwat's regime. This complex picture of different caps appears poorly focused and arbitrary.
- (403) Clearly, the CMA needs to consider its position towards the appropriate setting of performance incentives. With the aim of limiting the total impact of ODIs on customer bills, we continue to propose a 2% of RORE net cap because this acts directly on the stated risk to bills. A gross cap does not do this.
- (404) We want the incentives to improve the relevant areas of service subject to PCs and ODIs, to focus on the areas of most customers interest, as derived through our customer research. With the exception of the limited number of PCs discussed in the SoC, we believe that the ODI package is correctly calibrated to incentivise that focus. We agree with Ofwat that there should not be an imbalance in ODIs where some PCs are left to fail. But as we believe that the ODI package is correctly calibrated, we think that the price control incentivises a focus on each of the ODI PCs. However, the distortive effects of an additional gross cap on a particular ODI, would limit the incentive to continue to improve in a successful area; with the risk that the lack of symmetry in this gross cap distorting focus towards lowering penalties. Clearly, this effect distorts the customer research-led ODI balance, and hence cannot represent the customer interest.
- (405) We do not understand Ofwat's comment that a net cap would add to ODI asymmetry. The fact that a net cap symmetrically limits rewards and penalties would appear to be the definition of symmetrical.
- (406) We note Ofwat's worked examples from historical data, which concludes that there is little difference between a gross cap and a net cap. Throughout the PR19 process, Ofwat has stressed the additional stretch in the PR19 PC/ODI package compared to the PR14 equivalent. In this context, there is a risk that the more muted effects of PR14 are not replicated and the distortive effects of a gross cap turn out to be important. Nevertheless, we are confused why Ofwat is arguing against our proposal if it believes that the choice is irrelevant.
- (407) Finally, we are concerned that each of these points conflict with the Better Regulation principle of *targeting*. Ofwat's approach does not target to achieve its policy aim and distorts the appropriate incentives within the ODI framework. We continue to ask the CMA to set the right policy that meets the right objective to limit the overall

³⁵² Ofwat Response Northumbrian Water, REP022, para 4.35, p. 82.

³⁵³ Ofwat Response Northumbrian Water, REP022, para 4.43, p. 83.

net effect of ODIs on bills, while preventing the distortion on the ODI framework – which in our view, is achieved through a 2% of RORE net cap.

6. WHAT IS THE APPROPRIATE ALLOWED RETURN?

6.1. SUMMARY OF OUR CASE

(408) In its Response Ofwat does not engage with many of the arguments in relation to the individual parameters of the allowed return. Instead it cross-refers to the CMA's NERL PFs and previous evidence and analysis supporting FD19. A summary of Ofwat's key arguments and our reply is set out below.

Table 18:	Summary	of key	arguments	- allowed	return

Ofwat:	Summary of our reply
MAR: Evidence of share prices of listed utilities post FD19 supports the conclusion that the allowed return is above market requirements.	MAR: Share prices are affected by many factors. There is no clear premium to the MAR once outperformance has been appropriately accounted for.
Cost of equity (RFR): The correct approach to estimating the RFR (-2.35%) is to use more recent market data on 15-year RPI-linked gilt yields. An estimate using an assumption not observed in market data implies that the market is forecasting incorrectly.	RFR: Short term trailing averages of current yields are volatile and are not likely to reflect the outturn RFR over the regulatory horizon. The CMA should therefore incorporate equilibrium evidence and current market estimates using alternatives to ILG yields.
Cost of equity (TMR): An Estimate (6.50%, real CPI) that is derived using a historical Consumer Price Index (CPI) series is preferred to using RPI. This is because RPI has material flaws, which led to its de-designation as a National	TMR: The TMR needs to be updated for the DMS 2020 Yearbook and the change in the RPI-CPIH wedge to 90bp. Collectively, these increase TMR using Ofwat's own methodology to c.5.7%, real RPI.
Statistic in 2013. No upwards 'Bias Adjustment' is required for ex ante estimates and the Jacquier Kane Markus efficient estimator method (JKM) is more accurate when averaging the ex post data.	Ofwat's concerns with RPI are overstated, while defects in CPI are overlooked. Ofwat's approach incorrectly excludes estimators that do not suffer from the statistical bias that affects the JKM estimator. Not applying the Bias Adjustment to ex ante estimates assumes market are irrational and is inconsistent with CMA precedent. The BoE considers that the cost of equity is higher due to Covid-19, which further highlights the need for caution when reducing TMR by 100 basis points on the basis of poor historical inflation evidence.
Cost of equity (Beta): Ofwat estimates an asset beta of 0.29 (equivalent to an equity beta of 0.63 at 60% notional gearing) based on daily, and weekly estimates across a range of time windows from 1-5-years.	Beta: The beta estimate should be based on a robust approach and reliable data. This supports use of the OLS method and for SVT and UU a time horizon just over five years, being the period since the last structural break. Daily and weekly estimates can suffer from a downward bias and weekly estimates suffer significantly from reference day risk. Analysis of beta using daily and monthly sampling frequencies over the appropriate time window supports an equity beta of 0.72.
Gearing: Ofwat draws on the CMA's provisional findings in NATS that the de-gearing/re-gearing formula may serve to increase WACC, where the notional gearing is above the comparator gearing. To address this concern, Ofwat suggests that notional gearing should be reduced to the level of the listed comparators (i.e. 56%).	Gearing: The circumstances in the NATS appeal, where the CMA lowered gearing are very different to the water sector. A notional gearing assumption of 60% in water is reasonable in light of previous precedent and the gearing of the sector. Nevertheless, if gearing is reduced to the gearing of the listed comparators, the ratio of embedded:new debt should be increased accordingly. Where this is done correctly and the other WACC parameters are calibrated properly (e.g. RFR and debt beta) the vanilla WACC us neutral to the change in gearing being proposed.
Cost of debt (Outperformance wedge): Any sustained outperformance relative to the iBoxx benchmark should attract an adjustment. Whether or not the outperformance is due to a Halo effect is not relevant Recent new issuances and secondary market yields support the conclusion that water companies outperform the iBoxx	Outperformance wedge : An adjustment to the iBoxx should be only be considered to the extent that a Halo exists. However, empirical analysis finds no evidence of a Halo effect (i.e. where credit and tenor are controlled for). Analysis of new issuances over a 20-year period demonstrates that any Outperformance wedge is driven by the tenor at issuance being materially below the 20-year average of the iBoxx.
Inflation : Long term inflation estimates (2.0% CPI) are appropriate and current inflation forecasts are not suitable	Inflation: For long-term investors a WACC estimated using long-term inflation targets is likely to be appropriate. Nevertheless, for consistency with Ofwat's market-based approach elsewhere in the WACC estimate (e.g. RFR), it may be appropriate to use the latest market data.

Ofwat:	Summary of our reply Retail margin adjustment: Beta estimate is inherently imprecise, so it is unlikely that one can accurately isolate the systematic risk of retail activities versus the activities of an integrated supplier.		
Retail margin adjustment: As the retail margin separately provides the allowed return for the retail control, there would be a double recovery without adjusting for this through a deduction from the appointee allowed return.			
GSM: Gearing Sharing Mechanism (GSM) is appropriate and consistent with financial theory, while also including a glidepath	GSM: Capital structures are for companies to determine. There is no one size fits all level of gearing that is optimal for all companies.		

- (409) In our SoC, we explained how Ofwat erred in calculating the WACC and setting it at the level of 1.92% which does not reflect customers' long-term best interests. Our view draws on market-based evidence and independent expert evidence which supports the WACC being set at a higher level; although we did not specify a level and instead set out a series of tests for the CMA to consider. While we do not propose to repeat our SoC arguments, we briefly set out the key points of our arguments in order to assist the CMA. In summary, we said that Ofwat's approach to setting the allowed return:
 - departs substantially from regulatory precedent and recognised good practice with respect to methodology and the evidence base in the WACC calculation;
 - takes a selective, partial and inconsistent view of the evidence base, particularly in relation to beta and the RFR; and
 - takes unduly short-term perspectives on key parameters, notably in the RFR, adding further scope for instability in allowed returns across successive control periods.
- (410) In correcting Ofwat's errors, we proposed a market-based framework for setting allowed return on capital. Our views on the WACC parameters are outlined further below. We ask the CMA to carry out a full review of the WACC in light of this framework. We outline below some key points in response to Ofwat's Response:
 - Ofwat's suggestion that MARs imply the WACC is generous is selective and incorrect: Aside from the obvious point that it is inappropriate to draw conclusions for the sector with 17 companies from just two listed stocks (especially when those stocks were both fast-tracked companies), we show that over time the MARs are clearly affected by lots of other factors that are not controlled for by Ofwat, not least the recent election, which reduced perceived nationalisation risk and that movements in the cost of equity have not always had a similar impact on MARs. In any event, we also show that when the error in EE's calculation for Ofwat is corrected and some of these company-specific factors are taken into account, notably the financing position of the two listed stocks, unregulated revenues and their fast-track premia, the MARs premium Ofwat reports falls close to zero or below in some instances;
 - the beta estimate should be based on a robust approach and reliable data: Professor Alan Gregory, Professor Richard Harris and Dr Rajesh Tharyan have considered the appropriate approach to estimating regulatory betas, and estimate an equity beta for PR19 (the Beta Academic Paper).³⁵⁴ The Beta Academic Paper explains that for regulatory charge control purposes, betas should be estimated using OLS over the longest time window since the last structural break. Such an approach will estimate the unconditional beta. The authors run statistical tests demonstrating that structural breaks took place in 2014 and March 2020, hence a 63-65 month time horizon (i.e. just over 5 years) from 2014 to February 2020 should be adopted. With regards to the sampling frequency, the Beta Academic Paper finds that weekly betas are particularly subject to reference day risk and so are not appropriate. The authors estimate both daily and monthly betas, with the monthly estimates alleviating any concerns regarding downward bias in the daily data. Consistent with the KPMG/AGRF Report,³⁵⁶ the Beta Academic Paper adopts a Vasicek adjustment. We note that, in its 2017 PR19 report,³⁵⁶ EE also explores the use of the Vasicek adjustment and dismisses it solely on the basis of materiality and not on the basis of the underlying theory. The Beta Academic Paper concludes that: "taken in the round, our minimum estimate of beta is around 0.67 and the maximum is around 0.78. A reasonable central estimate would appear to be around 0.72.";³⁵⁷
 - changes to notional gearing are not necessary: The CMA's counterintuitive finding that the WACC increases with gearing as a side-effect of the de-gearing/re-gearing formula may instead be explained more simply by the CMA's use of parameters that are inconsistent with the relevant theory. In any event, this should not have a material impact provided the ratio of embedded to new debt increases proportionately. Fundamentally, the gearing levels of listed utilities are not an appropriate comparator for the industry, and

³⁵⁴ GHT 2020 - Beta Appendix, REP068.

³⁵⁵ KPMG, Estimating the cost of capital for PR19, March 2020, SOC416. 356 Europe Economics, PR19 - Initial Assessment of the Cost of Capital, 11 December 2017, REP029

³⁵⁷ GHT 2020 – Beta Appendix, REP068, p.1.

we consider notional gearing should broadly be in line with sector gearing. The financeability benefits of this change are also immaterial; and

- the selective evidence fails to support Ofwat's conclusion that the outperformance wedge should be increased: Ofwat incorrectly points to recent debt issuances in support of its conclusion, ignoring the fact that empirical analysis of new issuances across a 20 year period demonstrates that there is no evidence to support a Halo effect, and observed outperformance is likely to be driven by tenor related factors.
- (411) We are aware that for some of the key cost of equity parameters in particular, there is a relevant read-across to the NERL CMA appeal that is currently underway. We set out our arguments to those elements in our submission to the CMA on its NERL PFs.³⁵⁸

6.2. OFWAT'S MISINTERPRETATION OF OUR SOC

- (412) Ofwat's Response relies largely on the arguments and evidence it advanced in FD19 and it has provided very little in the way of new information and analysis. In summary, it has argued that:
 - the allowed return set in FD19 of 1.96% (appointee) is a reasonable return for an efficiently-financed company;
 - · its approach to setting the allowed return is balanced and consistent with previous price reviews; and
 - the CMA's provisional determination for NERL is consistent with Ofwat's determination on the relevant components of the allowed return (total market return and risk-free rate) and that its asset beta and debt beta are a balanced reading of the evidence at the time of our determination, though the beta estimate is high on current data.
- (413) We set out our response to Ofwat's arguments below and we expand on the areas where Ofwat has challenged our position. Our starting position remains as set out in the SoC and our NERL submissions and the arguments we raise below are largely intended to supplement and explain our response to Ofwat's arguments.
- (414) In setting out its Response we consider that Ofwat has mischaracterised fundamental parts of our case and where appropriate, we have sought to correct this. We note for instance, that Ofwat has suggested that we have sought opportunistically a materially higher WACC than the level from our BP19.³⁵⁹
- (415) As required by Ofwat, we adopted Ofwat's early view of 2.40% in preparing our BP19. We had concerns about these calculations but believed the package of measures was financeable and offered the largest bill reductions from any company across the sector. Through PR19, we have accepted additional challenges on a range of key metrics as demonstrated by the financeability analysis; this has had unacceptable impacts on our financeability and that the sector.
- (416) In our SoC, we did not request a specific WACC but explained that Ofwat had made a number of errors in its assessment, leading to: "inappropriately calibrated parameter estimates, resulting in the setting of a wholesale allowed return that is below the CoC implied by publicly traded instruments".³⁶⁰ We commissioned an independent expert report³⁶¹ to analyse these errors and examine each of the underlying parameters of the cost of equity and cost of debt. That report ultimately supported a higher range but we are not requesting a "materially" higher WACC than our business plan, rather we commissioned this report to draw the CMA's attention to Ofwat's failure to set the appropriate underlying parameters of the WACC. In contrast, we have put forward our own framework of how the WACC should be assessed, which is based on and supported by our independent expert advisers. However, underpinning this framework and as set out clearly in our SoC was our firm belief that: "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".³⁶² Therefore, the starting point for the CMA's redetermination should be that any package overall, including the WACC set by the CMA should not result in customers faring worse than as set out in our BP19. Therefore, we think it is incorrect to suggest that there has been a material departure from our BP19 position on what constitutes an appropriate allowed return.

³⁵⁸ NWL NERL PFs Submission, 15 April 2020, REP044.

³⁵⁹ Ofwat Response Risk & Return, REP026, para 3.3, p. 44

³⁶⁰ SoC, para 779.

³⁶¹ KPMG, Estimating the cost of capital for PR19, March 2020, SOC416. 362 SoC, para. 775.

6.3. MAR EVIDENCE

6.3.1. Ofwat said:

- (417) Ofwat has stated that since the FD19, the share prices for SVT and UU have implied a premium on enterprise value over the Regulatory Capital Value (**RCV**), with analyst reports pointing to premia of around 20% for UU and well in excess of 20% for SVT. Further, Ofwat states that: "one analyst noted that our allowed return is above their WACC assumption, while another has suggested that these premia indicate that investors see our determinations in a favourable light"³⁶³ and point to comments that this has been a "soft review".³⁶⁴
- (418) Ofwat recognises that: "there are a number of reasons why a positive market to asset premium might exist".³⁶⁵ This could include outperformance (on costs, ODIs, debt), fast track rewards or non-regulated revenues (which would form part of the Market Value (**MV**) of the company but would not be reflected in the RCV). Ofwat commissioned EE to assess the premium to RCV on listed companies. Its decomposition analysis indicated a residual market premium over RCV of 1.04 1.08x in February 2020, once outperformance from factors such as totex, debt finance and ODIs was reflected. On this basis, Ofwat considers that the most plausible explanation for this residual premium is an allowed return on equity which is above market return requirements.³⁶⁶

6.3.2. Our Reply:

- (419) The MV of a company reflects the present value of all future cash flows discounted at the investor's cost of capital, whereas the RCV is used to set the allowed revenues a company would earn based on an allowed return.
- (420) It is hard to draw conclusions from share prices on the basis of two potentially atypical companies out of 17, and in any event there are a myriad of factors affecting share price at any one time, which have not been controlled for by Ofwat, not least the recent election which reduced perceived nationalisation risk.³⁶⁷ Recently, UU raised a potential unknown unknown to investors as a risk to its dividend policy. This caused the share price to fall by 5% on the day and Barclays viewed UU as trading at only a 10% premium to RAB versus the sector at 20%.³⁶⁸ This means that it is meaningless for Ofwat to seek to draw conclusions about the impact of the allowed return on share prices.
- (421) MV of companies are affected by any number of factors such as investor sentiment and general volatility in market and stock prices, which can be driven by various external events – a fact recognised by the CMA who noted that "*in practice, there are a number of reasons why investors may value assets at figure greater than that implied by the RCV*".³⁶⁹ Ofwat's analysis assumes a direct and material correlation between the allowed cost of equity and share prices. Figure 18 below overlays the allowed cost of equity on Ofwat's composite MARs chart. As can be seen, there was a small reduction in the allowed Cost of Equity (**CoE**) between AMP4 and AMP5, but the MAR increased over AMP5. Similarly, there was a bigger reduction allowed in CoE in AMP6, but MARs only started to decrease after 2017, which also coincides with labour announcing its nationalisation agenda. This shows at least that the relationship between the allowed return on equity and the MARs over time is not always strongly correlated and supports the view that there are many other factors at play.

³⁶³ Ofwat, Reference of the determination of price controls for the period from 1 April 2020: Cross cutting issues, March 2020, SOC243, para. 5.13 – 5.14.

³⁶⁴ Ofwat CMA - initial presentation in response to water companies' statements of case, (Ofwat Initial Presentation to CMA May 2020), 20 May 2020, REP027, quoting Professor Dieter Helm, Oxford University, Financial Times, 9 February 2020.

³⁵⁵ Ofwark Reference of the FD19: Cross-cutting issues, March 2020, SOC243, para 5.15. If investors expect the company to perform in line with the regulatory determination (e.g. in terms of costs, incentives and returns) in perpetuity, then the MV of the business will be equal to the RCV, and the MAR would be 1. If investors forecast that the actual performance of the company would be different to the regulatory settlement, then the MAR could be greater than 1 (if investors expect to perform better) or less than 1 (if investors expect to underperform).

³⁶⁷ See e.g. Deutsche Bank – Research Report on UK Water, 13 December 2019, REP014: "UK utilities' share prices are surging on the back of the election result, with the risks of nationalisation and punitive policies towards utilities seeming vastly reduced, at least for the next five years."

³⁶⁸ Barclays, United Utilities: Unknown unknown, 22 May 2020, REP046.

³⁶⁹ CMA, Final Determination - Bristol Water plc: A reference under section 12(3)(a) of the Water Industry Act 1991, 6 October 2015, SOC336, para 10.208.



Figure 18: Premium of Enterprise Value (EV) / RCV for SVT Utilities composite versus allowed cost of equity

Source: Analysis of data from Thomson Reuters Eikon and Ofwat data.

(422) In the figure below, we set out the movements in share prices since FD19 (re-based to 13th December 2019) for Severn Trent and United Utilities against comparable companies. These include companies in the similar sectors, e.g. Water Utilities, Gas Utilities, and Transmission and Distribution companies in other countries. Figure 19 below illustrates the Severn Trent's and UU's share price has performed similarly to that of the compactor companies. In particular, in the run up to February / March 2020, just before Covid-19. This could suggest that there are additional factors, other than Ofwat's FD19, that could be driving share prices.



Figure 19: Share price performance – rebased to 100 at 13th December 2019

Source: Analysis of data from Thomson Reuters Eikon.

(423) A further factor is illustrated in Figure 20 below, this shows the MARs for the two water companies and Labour's lead following up to the general election. The data also shows that following Ofwat's early view on PR19, MARs reduced considerably, which likely reflected investor forecast expectation of the company's performance due to regulatory developments. At the same time, investors and companies considered nationalisation risk to be high (given Labour's lead relative to the Conservative Party). As can be seen from Figure 20, there are a host of different factors influencing the MARs for these companies.



Figure 20: MARs for SVT and UU against polling data, 2017 - 2019

Source: Analysis of data from Thomson Reuters Eikon and polling data.

- (424) As shown above, given the number of factors impacting share prices, the evidence calls into question Ofwat's contention that any uplift in MARs equates to a WACC that has been set too high. However, even if we were to ignore these points, it is far from clear that there is a premium to the MAR of the listed utilities once outperformance has been appropriately accounted for, taking into account all relevant evidence.
- (425) Any decomposition of the premium on MARs requires making adjustments for factors such as forecasted performance on costs and incentives, and the value from non-regulated businesses.³⁷⁰ This process can be inherently uncertain and, as a result, would suggest difficulties with using MARs to assess investor expectations on the cost of capital. For example, it requires:
 - reflecting investors' expectations on the company's performance on factors such as totex and ODIs. However, it is important to consider that there is a degree of uncertainty around assumptions on expected outperformance; and
 - determining the proportion of the MV that is driven by non-regulated and non-wholesale activities since these
 are not reflected in the RCV.

6.3.2.1. Ofwat's evidence on the decomposition of the premium on MARs

- (426) The analysis conducted by EE argues that, once outperformance has been accounted for, the residual premium on the RCV is 1.04 1.08x. However, we have noted the following:
 - for the assumed outperformance assumptions, EE's analysis appears to rely on one analyst report by Barclays from February 2020.³⁷¹ We note that analyst forecasts can (and do) vary, and as such it is appropriate to take into account a broader range of evidence;
 - EE has included a 'Provision' in its EV calculation (specifically on Net Debt), but there is no rationale provided for what this provision is and why it needs to be included in the EV; and
 - EE has only assessed the premium for one of the listed companies, SVT.
- (427) We conduct our own decomposition analysis below, which assesses the premium on both SVT and UU taking into account a broad range of views and forecasts from multiple analyst reports.

³⁷⁰ The CMA identified these among "number of assumptions" associated with the calculation of MARS, CMA, Final Determination - Bristol Water plc: A reference under section 12(3)(a) of the Water Industry Act 1991, "Bristol Water PR14 CMA Decision", 6 October 2015, SOC336, para 10.202.

6.3.2.2. Our evidence on the decomposition of the premium on MARs

- (428) Our analysis looks at the average MAR between February and March 2020. This implies a MAR of 1.27x for SVT and 1.23x for UU, which is consistent with Ofwat's statement that analyst reports point to a MAR of 20% for UU and well in excess of 20% for SVT.³⁷²
- (429) The decomposition analysis below shows that a significant amount of the outperformance can be readily explained, taking into account evidence from several analyst reports. However, given judgment involved, there is a degree of variation in analyst assumptions on outperformance and the proportion of non-regulated and non-wholesale activities. Further detail on these analyst estimates is included at Part C Section 0.



Figure 21: Decomposition of premium on MAR for SVT

Source: See Part C Section 0 MARS analysis.



Figure 22: Decomposition of premium on MAR for UU

Source: See Part C Section 0 MARS analysis.

(430) However, as can be seen from Figure 21 and Figure 22 above, taking all the evidence in the round, the adjusted MAR range for SVT & UU is 0.93 – 1.08%. In light of the above, even if we assume that we can ignore other factors impacting share price and a relationship with the allowed cost of equity, analyst reports demonstrate a range of MAR, some of which suggest a MAR <1 after taking into account adjustments. Therefore, it is far from clear that there is in fact a premium to MAR after outperformance, as Ofwat suggests.</p>

6.4. COST OF EQUITY

6.4.1. RFR

- 6.4.1.1. Ofwat said:
- (431) Ofwat argued that its estimate of the RFR (-2.35%), based on the daily 15-year RPI-linked gilt yields for September 2019, best reflects market data and concludes that it is not necessary to assume a convergence to the Bank of England (**BoE**) equilibrium real interest rate.³⁷³ Ofwat noted that alternatives to the RPI-linked gilts were not appropriate and that negative risk free rates are not necessarily unsustainable.³⁷⁴

³⁷² Ofwat, Reference of the FD19: Cross-cutting issues, March 2020, SOC243, para. 5.13 – 5.14.

³⁷³ Ofwat Response Risk & Return, REP026, para 3.43, pp. 58-9. 374 Ofwat Response Northumbrian Water, REP022, para 6.26, pp. 115-6.

6.4.1.2 **Our Reply:**

- (432) Our position on the RFR was explained in both our SoC and NERL submissions and expert evidence. In our view, Ofwat's Response, as summarised above, fails to adequately address the key flaws we have identified and largely ignores the wealth of evidence which has supported our conclusions. In particular, we draw the CMA's attention to the following:
 - short term trailing averages of current yields are volatile: yields on assets with negligible risk in the UK are volatile, which significantly increases the risk that the outturn RFR will deviate substantially from its estimate on any particular day;³⁷⁵
 - locking in a fixed allowance from a volatile series of current yields runs the risk that the outturn RFR will differ to that used in the allowance, with no expectation that it will reflect the outturn RFR on average. The issue of volatility is made all the more severe due to current COVID-19 uncertainty;
 - in previous price control redeterminations, the CC/CMA has historically set the RFR above the prevailing ILG yields due to distortions in the market for ILGs;
 - the CMA should therefore place weight on both the equilibrium and current market estimates. Ofwat argues that it is not necessary to incorporate an assumption about the speed of convergence towards an 'equilibrium rate' as this would suggest that the market is forecasting incorrectly or not incorporating some information;376
 - the BoE's equilibrium RFR estimate of +0.5% real CPI is consistent with the current rates being in disequilibrium. International evidence provided by US Treasury Inflation-Protected Securities (US TIPS) are consistent with the current rates being in disequilibrium. Further, trend analysis suggests that deviation between UK Gilts and TIPS is driven by exceptional events, being Quantitative Easing (QE) policy deviations and Brexit;
 - giving weight to the equilibrium estimates is not to say that current market evidence is wrong, nor that negative point estimate is necessarily inappropriate. However, current market rates may change and therefore may not be an appropriate fixed allowance for the next AMP; the CMA should be mindful of the risks of locking in a lower RFR in the long-term if current ILG yields do not persist, particularly in the current climate of volatility linked to COVID-19;
 - if a glide path to equilibrium levels is not adopted, we continue to consider that a reconciliation mechanism is required, particularly in light of current uncertainty;
 - indexation would not address the within-AMP equity buffer or the implications for incentivising long-term investment of locking in a current rate that is distorted below equilibrium levels;
 - we note that Ofwat relied on equilibrium evidence in certain aspects of its estimate elsewhere in the WACC assessment, in particular inflation, where Ofwat preferred to use BoE targets, rather than contemporaneous forecasts;
 - the CMA should consider alternatives to ILG yields: Ofwat argued that nominal gilts should be excluded as they include an inflation premium;
 - in the presence of inflation swap markets, it is unlikely that an inflation premium will render (appropriately deflated) nominal gilt yields materially higher than ILG yields, due to the equivalence of cash flows (after hedging). The equivalence of cash flows implies that both nominal and ILGs should attract equal weight when determining the RFR; and
 - more generally, disregarding or not considering other UK assets with negligible risk besides ILGs introduces market- or ILG-specific distortions into estimates of the RFR.

6.4.2. **TMR**

6.4.2.1. **Ofwat said:**

Ofwat argued that its point estimate of the TMR (6.50% in CPIH terms) is based on the same framework for (433) previous CMA cost of capital determinations. Ofwat maintained its view that the BoE's historical CPI series is a better index to estimate historic returns than RPI, that errors in the ONS modelling of CPI data are minor, that RPI has its own data issues. Ofwat considered that it was right to reject an upwards 'bias adjustment' from dividend growth model and to focus on the JKM efficient estimator to estimate 'ex-post' estimates of TMR.377

³⁷⁵ NWL NERL PFs Submission, REP044, p. 5.

³⁷⁶ Ofwat Response Risk & Return, REP026, para 3.44, p. 59. 377 Ofwat Response Risk & Return, REP026, paras 3.29-30, p. 54.

6.4.2.2. Our Reply:

- (434) The TMR is another equity parameter on which we consider that Ofwat has failed to engage with the evidence we have put forward previously. We repeat, for clarity of our position, and respond to additional points raised by Ofwat.
- (435) Ofwat's proposed TMR range is markedly lower than estimates used in previous inquiries and concerns with RPI are overestimated, while defects in CPI are overlooked. The CMA should put more weight on the adjusted RPI series, and at a minimum should point to an estimate for the TMR that sits at the top end of its range:
 - placing 100% weight on the CPI is: (1) inconsistent with ONS advice that the CPI back-cast is 'not intended for official purposes'; and (2) inconsistent with Ofwat's own position that all historical inflation series have issues and that CED/RPI is useful as a cross check;
 - no officially calculated CPI data exists for 1949 1988. Ofwat suggest that the model-implied RPI-CPI wedge seems accurate for the 1989 2011 period where modelled and actual CPI and RPI values are available.³⁷⁸ The CPI back-cast predicts 1989-2011 accurately because the relationships between RPI and CPI are based upon this period; this does not validate its use for the period 1947-1988;
 - Ofwat highlighted grave concerns about RPI's use but fail to recognise that issues with RPI are largely 'recent' in the context of the 1900 – 2019 period and does not impact its suitability for the full historical period. As set out in the response to CMA's provisional findings in NERL, the CMA's own real TMR in 'adjusted' RPI terms is 6.2%;
 - should the CMA agree with Ofwat that historical returns should be deflated using CPI and then the TMR in RPI terms be derived from the forward-looking wedge, this change in the wedge would increase the TMR in real RPI terms by 10bp to 5.6%, real RPI; and
 - if 50:50 weight is placed on CED/RPI and CED/CPI, the CMA's own results support a TMR estimate of 5.9%, real RPI. The KPMG/AGRF Report concluded that most weight should be given to the CED/RPI, which supports a TMR estimate of 6.25%, real RPI.
- (436) Ofwat's approach **incorrectly excludes key factors**: namely, it excludes a range of averaging techniques and does not apply sufficient uplift for the bias adjustment in the ex-ante estimates:
 - Ofwat considered that the JKM efficient estimator is the "most accurate".³⁷⁹ However, while its uncertainty may be smaller, it suffers from bias and so, consistent with CMA precedent, a range of averaging techniques should be used and weight should be placed on the JKM and Blume unbiased estimators. Further, TMR ranges derived for 10-20 year holding periods may be below the expected return. Cooper (1996) notes that an appropriate discount rate will lie above the arithmetic average, not below it, suggesting that the arithmetic average itself should be considered as informing the range; and
 - Ofwat's view that a bias adjustment is unnecessary in today's less volatile markets is at odds with recent experience in markets affected by COVID-19. In assuming no bias adjustment, Ofwat was inconsistent with taking contemporaneous values of dividend yield as their starting point, thereby assuming that (today's) prices are rational. The CMA adopted a bias adjustment at the upper end of the TMR estimates in the NERL PFs, consistent with CC NIE.
- (437) The **CMA should update the ex post returns for the 2019 data**, given that the 2020 DMS Yearbook has now been published. As set out in our response to the NERL PFs, this increases the TMR by approximately 0.1pp, depending on averaging technique.³⁸⁰ Further, the reduction in the RPI-CPIH wedge from 100bp to 90bp means that applying Ofwat's approach to estimating TMR gives rise to a real RPI TMR that is 10bp higher. Collectively, these two empirical data updates increase Ofwat's RPI TMR to c.5.7%.
- (438) The CMA should **place greater weight on regulatory consistency**. It should explicitly consider the long-term costs and benefits of making a material reduction in TMR, on the basis of inherently imprecise evidence. The BoE has recently reported expected returns on equity higher during times of economic uncertainty. This highlights the need for caution, when removing 100bp from TMR, on the basis of poor evidence.

³⁷⁸ Ofwat Response Risk & Return, REP026, para 3.18, p. 51. 379 Ofwat Response Risk & Return, REP026, para 3.25, p. 53. 380 NWL NERL PFs Submission, REP044, p.19.

6.4.3. Beta

6.4.3.1. Ofwat said:

(439) Ofwat seeks to justify a raw equity beta of 0.63 on the basis of: (1) the CMA's approach in the NERL PFs; and (2) the package in the round presented in FD19 which it claims should reduce the risk levels present at PR14. Ofwat's analysis, supported by EE, focuses on short run daily estimates which have a major impact on the selected asset beta and heavy reliance has been placed upon the last two years' data.³⁸¹ Ofwat pursues the argument that the estimates it has used are appropriate and produce the right result.

6.4.3.2. Our Reply:

- (440) Our position on beta is as explained in the summary of our NERL submission. We also rely on the independent expert report produced in the Beta Academic Paper.³⁸² Fundamentally, we continue to question the statistical reliability of the datapoints being used by Ofwat in its calculations. We consider that the conclusion is that unlevered beta is 0.29 is unsupported by the data, on which all key metrics are skewed as explained below, producing an unduly low estimate of the asset beta:
 - Dataset: As a starting point, an estimate of the long run unconditional beta is needed for regulatory purposes. If one is solely interested in estimating the long run beta of a stock, it is not necessary to use a model such as GARCH, even if volatility is time-varying. Moreover, the use of the GARCH/ARCH method is likely to misestimate the long-run beta, despite the model being of time-varying volatility. In contrast, the appropriate technique for estimating that beta is OLS which can be applied to the longest sample of data, thereby increasing the likelihood of the long run beta being free of structural breaks;³⁸³ and
 - Time window: In general terms, in seeking to estimate the long run beta for the industry, a longer dataset will be inherently more reliable, subject to identifying structural breaks (or volatility) in the series or beta comparison. To estimate beta over the chosen forward-looking time horizon, this is widely accepted to be long-term in nature, requiring unconditional estimates, which are not unduly affected by recent volatility in market data.³⁸⁴ This theory is endorsed in the UKRN report, which criticises an approach based on a short observation window "[c]*rucially, there is strong historical evidence that short-term shifts in volatility and correlations do not persist indefinitely. As a result, Robertson and Wright conclude that the most recent rolling beta estimates are very likely to prove temporary*".³⁸⁵ We note that Ofwat rejects the view espoused by the UKRN report here but relies on its views elsewhere (such as in relation to the RFR and TMR). In order to identify the appropriate window for the estimation of long run beta, it is necessary to assess the issue of structural breaks in the time series. For the water sector, there is only data available for SVT and UU and the results of a structural stability test of beta is shown below in Figure 23 and in Figure 24.³⁸⁶



Source: Beta Academic Paper - Beta Appendix, REP068, p. 12.

Source: Beta Academic Paper - Beta Appendix, REP068, p. 13.

- The structural stability test of beta reveals the likely break dates for SVT and UU as:
 - o SVT: 16 Jun 2000, 12 Dec 2003, 13 Jun 2007, 06 Dec 2010 and 06 Jun 2014.
 - 0 UU: 19 Jun 2000, 01 Aug 2006, 12 Oct 2010 and 03 Sep 2014.

- 382 GHT 2020 Beta Appendix, REP068.
- 383 GHT 2020 Beta Appendix, REP068, p. 3.

388 The starting observation (500) corresponds to 19 Dec 1996 and ending observation (6382) corresponds to 02 Apr 2020.

³⁸¹ Ofwat Response Northumbrian Water, REP022, paras 6.26-30, pp. 116.

³⁸⁴ KPMG, Estimating the cost of capital for PR19, SOC416, p. 51.

³⁸⁵ S. Wright, P. Burns, R. Mason and D. Pickford, Estimating the cost of capital for implementation of price controls by the UK Regulators, 2018, SOC372, p. 52.

³⁸⁶ GHT 2020 - Beta Appendix, REP068, pp.12-3.

³⁸⁷ The starting observation (500) corresponds to 19 Dec 1996 and ending observation (6382) corresponds to 02 Apr 2020.

- Both Figures show that there were significant structural breaks around both 2010 and 2014, for both companies. It is possible that the former is linked to events around the aftermath of the global financial crisis. However, the latter date likely coincides with the PR14 Regulatory Review. As such, we have a clear indicator that including data pre-September 2014 may not be appropriate in the case of the water industry. The tests for both companies also show a distinct spike right at the end of the data period, coinciding with the advent of COVID-19. We consider that we have employed a justifiable observation period, roughly beginning at 1 October 2014, but with an end point of three possible dates given the uncertainty due to COVID-19.³⁸⁹ The evidence clearly demonstrates that there is a lack of a structural break during this five year period and, as such, there is no structural break which justified basing beta on just the past two years' data - a longer range of data should be given more weight; and
- Observation frequency: We continue to place weight on daily and monthly betas, with the monthly estimates alleviating any concerns with the daily data being downward bias. With regards to concerns that daily data is downward biased, analysis conducted by EE of two listed utilities, which only tests the impact of a 1-day lag an applies a stringent 1% significance level is insufficient to test this theory, which runs counter to detailed empirical evidence.³⁹⁰ Weekly estimates are particularly subject to reference day risk (i.e. it may be skewed for instance by bank or public holidays) and so are not used.
- (441) We recognise that betas are estimated with error, and suggest the appropriate method for dealing with uncertainty in beta estimation is to employ the Vasicek (1973) model. Ofwat argues that use of this adjustment is not wellevidenced or necessary, relying on a report prepared by Europe Economics.³⁹¹ However, this report concludes that Bayesian adjustments (which is done by using the Vasicek model) have a strong theoretical rationale but notes that these adjustments are not used because: "they are so small that they have no impact at the second significant figure".³⁹² EE's view that the impact is immaterial is not the same as "not being well-evidenced or necessary".³⁹³ Further, EE's view was based on the premise that: "in practice Bayesian adjustments are unlikely to make a material difference if daily data are used in the estimation" (emphasis added).³⁹⁴ However, our position is that monthly betas should be taken into account (meaning that their impact is of course more material).
- (442) Taken in the round, our minimum estimate of raw equity beta is around 0.67 and the maximum is around 0.78, consistent with the evidence presented in the Beta Academic Paper. A reasonable central estimate of the raw equity beta - i.e. beta at SVT's and UU's actual gearing, not Ofwat's 60% notional gearing - is around 0.72. Empirical evidence analysing SVT and UU using various sampling frequencies, concludes that for the period to February 2020 betas across daily and monthly frequencies support a raw equity beta of 0.72.395 It is simply not credible, taking the data in the round, to conclude that 0.63 is an appropriate raw equity beta.
- (443) Given the parties' differences of view appear to focus around: (1) the time window; and (2) the sampling frequency for the two stocks, below we have calculated the equity Beta across 1, 2, 5 and the time period in the Beta Academic Paper and using a frequency of daily, weekly and monthly estimates. All the estimates make the Vasicek adjustment. For the reasons set out above and highlighted in the Beta Academic Paper we consider that the recommended time window with weight put on daily and monthly Betas is the most appropriate but we further note that, taking the evidence in the round, Ofwat's figure of 0.63 for the raw equity beta is only achievable in three out of the nine observations (we recognise that the GHT period is longer but more comparable to the 5 year period). In Table 19 below, we use a cut-off date of 30th September in order to provide a comparison against Ofwat's analysis, which was for September 2019). Indeed, we note that updating the betas to a more recent cutoff date (e.g. February 2020) implies a higher beta estimate.396

Table 19: Results of equity beta calculations- SVT and OO composite (September 2019 Cut-on)						
Frequency	1 year	2 year	5 year	GHT 2020 period		
Daily	0.45	0.58	0.66	0.66		
Weekly	n.a.	0.57	0.69	0.68		
Monthly	n.a.	n.a.	0.70	0.72		

Source: Analysis of Datastream data

³⁸⁹ Our evidence indicates three possible cut-off dates due to the timeline of the global COVID-19 crisis and the uncertainty over when the effects of the crisis began to manifest: the end of December 2019, the end of January 2020, or the end of February 2020.

³⁹⁰ GHT 2020 - Beta Appendix, REP018, pp.14-7.

³⁹¹ Europe Economics, PR19 –Initial Assessment of the Cost of Capital, 11 December 2017, REP029

³⁹² Europe Economics, PR19 — Initial Assessment of the Cost of Capital, 11 December 2017, REP029, p.49

³⁹³ Ofwat Response Risk & Return, REP026, para 3.70, p.68. 394 Europe Economics, PR19 - Initial Assessment of the Cost of Capital, 11 December 2017, REP029, p.50.

³⁹⁵ GHT 2020 - Beta Appendix, REP018, p.17.

³⁹⁶ Return observations for weekly and monthly raw equity beta estimates have been calculated using prices on the last trading day of each period. Beta estimates for the Severn Trent and United Utilities composite are calculated as the average of the estimated betas for both companies separately, weighted by their market capitalisation as of 22 May 2020.

Table 20: Results of equity beta calculations- SVT and UU composite (February 2020 cut-off)

Frequency	1 year	2 year	5 year	GHT 2020 period
Daily	0.72	0.64	0.68	0.68
Weekly	n.a.	0.70	0.75	0.71
Monthly	n.a.	n.a.	0.71	0.69

Source: Analysis of Datastream data.

(444) Table 21 below presents EE's estimates for the unlevered beta at Ofwat's cut-off date (September 2019), and updated for more recent data up to February 2020. We observe an increase in the beta for the 2-year daily estimates consistent with that observed above. While we note that the weekly estimates have also increased, as discussed, these estimates are likely to be affected by the 'reference day' effect. Overall, the evidence points to a higher beta estimate once more recent evidence is taken into account.

Table 21: Europe Economics' Unlevered beta estimates - SVT and UU composite

	September 2019 cut off		February 2	020 cut off
Frequency	1 year	5 year	2 year	5 year
Daily	0.25	0.32	0.28	0.32
Weekly	0.18	0.30	0.27	0.33

Source: Europe Economics (2020), 'Further Advice on the Allowed Return on Capital for the Water Sector at PR19 – Betas and Gearing', May. Table 2.1 and 2.2, REP153

6.5. GEARING

6.5.1. Ofwat said:

(445) Ofwat agrees with the CMA's NERL PFs that there are issues with the de-gearing/re-gearing formula, which may cause the effect of the WACC increasing with increased gearing. Therefore, Ofwat suggests that notional gearing should be reduced to a level that is consistent with the gearing levels on which its beta observations are based (i.e. 56%).³⁹⁷

6.5.2. Our Reply:

- (446) At the outset, it is important to note that the CMA's provisional approach with NERL was driven by a concern that the WACC increases with gearing. However, as set out in our response to the NERL PFs, we consider this concern is unfounded as the CMA's results were based on a combination of assumptions that were implausible and/or not consistent with theory, which led the CMA to question the gearing formula.³⁹⁶
- (447) It is our view that the CMA's issues with the de-gearing/re-gearing formula were largely a function of it not changing debt beta/Cost of Debt (CoD) when flexing gearing and using a very low RFR in the CoE, rather than there having been an issue with the de-gearing/re-gearing formula itself. This is because:
 - debt costs vary with gearing: The provisional analysis conducted by the CMA in NERL assumes flat costs
 of embedded and new debt (though with varying proportion of new debt). WACC estimates at different levels
 of gearing critically depend on the cost of debt schedule, as the cost of debt varies with gearing;
 - **debt beta varies with gearing:** The CMA has not flexed debt beta, with changes in gearing. However, the theory suggests that as debt becomes more 'like equity' at high levels of gearing, the risk of that debt increases;
 - COE and CoD parameters ought to be consistent and set at MV: The Modigliani-Miller theory stipulates how the premia on debt and equity change with gearing at a particular point in time, i.e. under a given set of market conditions, and that they are set at MV. The CMA's provisional analysis in NERL uses inconsistent assumptions on the underlying market parameters for CoE and CoD, e.g. for CoE it uses current RFR (and its view of TMR), combined with the cost of embedded debt. These are based on different assumptions about prevailing market conditions, e.g. RFR (e.g. using a long term RFR removes the implied WACC increase); and
 - vanilla vs post tax WACC needs to be accounted for: Higher levels of gearing generate tax benefits and push post tax WACC down with gearing which the CMA does not take into account. The post-tax WACC is relevant for customers because the benefits of debt tax shields are passed on to customers.

³⁹⁷ Ofwat Response Northumbrian Water, REP022, paras 6.67, pp. 126. 398 NWL NERL PFs Submission, REP044.

- (448) Nevertheless, we recognise that an estimate of the vanilla WACC can be derived by using the gearing of the listed comparators as the notional gearing. Where other parameters in the WACC are calibrated correctly, this should not materially impact the vanilla WACC estimate. Such an approach avoids the need to estimate debt beta (which is difficult to estimate robustly from market data) and avoids using the de-gearing/re-gearing formula.
- (449) As recognised by the CMA in the NATS PFS, it is important to adjust the ratio of embedded to new debt, where a different notional gearing assumption is adopted. Where a notional gearing of 54% is adopted, consistent with the gearing of the listed comparators over the period of beta estimation, the ratio of embedded to new debt changes from approximately 80%:20% to 89%:11%.³⁹⁹ In light of embedded debt being more expensive than new debt, this increase in the portion of embedded debt serves to offset the reduction in the cost of equity due to the reduction in gearing to 54%.
- (450) When these factors are reflected in the estimates, the WACC no longer exhibits a continuous increase. In principle, we therefore do not consider it is necessary for the CMA to change the level of notional gearing to align with that of listed utilities (i.e. from 60% to 56%).

Component	60% notional	54% gearing	
	gearing		
Gearing	60%	54%	
Risk-free rate (RFR)	-1.00%	-1.00%	
Total market return (TMR)	6.00%	6.00%	
Equity risk premium (ERP)	7.00%	7.00%	
Raw equity beta for listed comparators	0.72	0.72	
Gearing for listed comparators	54%	54%	
Asset beta on PR14 basis (no debt beta)	0.33	0.33	
Debt beta	0.100	0.100	
Asset beta on PR19 basis (including debt beta)	0.38	0.38	
Notional equity beta	0.81	0.72	
Cost of equity (including a debt beta)	4.66%	4.01%	
Proportion of embedded debt (as % of total	80%	89%	
debt)			
Cost of new debt	-0.30%	-0.30%	
Cost of embedded debt	1.97%	1.97%	
Issuance and liquidity costs	0.10%	0.10%	
Overall cost of debt	1.62%	1.82%	
Appointee allowed return on capital (vanilla)	2.83%	2.83%	
Retail net margin deduction	0.04%	0.04%	
Wholesale allowed return on capital (vanilla)	<u>2.79%</u>	<u>2.79%</u>	

Table 22: WACC estimates for different gearing

Source: NWL analysis.

(451) In any event, there is a stark contrast between the NERL case and the water sector. NERL's starting RP3 gearing level was broadly in-line with the comparators used for estimating beta, whereas using the comparator's gearing of 56% in the water sector would result in the notional firm having a level of gearing that sits below the bottom of the range of gearing levels for the equity-owned companies. The notional gearing should bear some resemblance to the gearing of the sector, which is illustrated in the figure below. Indeed, even at 60% the notional gearing is still at the lower end of the levels of gearing across the sector as shown in Figure 25 below.

³⁹⁹ Assume the RCV is 100. Under 60% gearing and a ratio of embedded:new of 80:20, embedded debt is 48 and new debt is 12. Flexing the notional gearing to 54% but holding embedded debt constant at 48, the new debt balance would reduce to 6 (54-48). The proportion of embedded:new therefore changes to 89% embedded (48/54) and 11% new (6/54).



Figure 25: Gearing ratios across the water sector

Note: Note: Gearing for all companies is calculated as Net Debt / RCV, whereas revised gearing based on NERL is calculated using the EV for the listed comparators (Net Debt / Net Debt + EV)

Source: NWL analysis of Ofwat, 2019, Financial monitoring report charts and underlying data. 400

- (452)Even if the CMA is minded to adopt a 56% (or 54% being the gearing over the same period as the beta estimation) level of notional gearing, then the ratio of embedded to new debt should increase proportionately as a result. As such, the properly calibrated vanilla WACC would not change materially.
- (453) Nonetheless, the notional gearing for financeability purposes and the gearing assumed in setting the allowed WACC should be consistent and realistic. We discuss the financeability implications of such a change in section 7.6.2 but in summary there would likely be costs of such a change for customers and the financeability benefits would be negligible because of the corresponding impact on the ratio of new to embedded debt - which would introduce an offsetting effect.

6.6. COST OF DEBT

6.6.1. **Debt Outperformance Wedge**

6.6.1.1. **Ofwat said:**

- (454) Ofwat maintains its position that a deduction for outperformance of 25 and 15 basis points to the cost of embedded and new debt respectively, is appropriate. Ofwat considers that controlling for tenor and credit-related factors in the observed sector-wide cost of debt to isolate any systematic benefit of being a regulated water company (i.e. testing for the existence of a Halo Effect) is not relevant. Rather, the question at hand is instead to set an allowance that is reflective of efficient borrowing costs. If there is sustained outperformance relative to the iBoxx benchmark, an adjustment from the iBoxx yields should be made, regardless of whether a Halo Effect exists.⁴⁰¹
- (455)Ofwat also presents new evidence of:402
 - recent bond issuances between January and March 2020 that were issued with coupons beneath the prevailing iBoxx benchmark; and
 - traded yields on water bonds in secondary markets relative to the iBoxx, which Ofwat claims demonstrates outperformance.

⁴⁰⁰ Financial Monitoring Report 2018-19 Charts and Underlying Data, 13 January 2020, SOC403.

⁴⁰¹ Ofwat Response Risk & Return, REP026, para 3.11-3, pp. 83-4. 402 Ofwat Response Risk & Return, REP026, para 3.13, p. 84.

6.6.1.2. Our Reply:

- (456) We have provided evidence alongside our SoC demonstrating that:
 - there is no evidence that a Halo effect exists;⁴⁰³ and
 - the outperformance observed by Ofwat is likely to be due to the decision by water companies to issue debt with an effective maturity that is shorter than the iBoxx weighted average tenor, which typically attract lower yields during normal market conditions.⁴⁰⁴
- (457) This evidence contained in the SoC is not addressed by Ofwat.
- (458) However, while shorter-dated debt issuance may appear less costly and more efficient on an ex post basis, it is likely that there is no increase in efficiency on an ex ante basis. In other words, there is typically no 'free lunch'. Conversely, a company choosing to issue debt with comparably longer tenors may find itself with a more expensive cost of debt under normal market conditions, but less refinancing risk. Hence, simply including an adjustment to reflect all outperformance on an ex post basis, as Ofwat propose, would dilute the incentives for water companies to issue debt at the most efficient tenors. This is because there would be no long-term financial reward for doing so, and no penalty for failing to do so.
- (459) Hence, simply including an adjustment to reflect all outperformance on an ex post basis, as Ofwat propose, would dilute the incentives for water companies to issue debt at the most efficient tenors. This is because there would be no long-term financial reward for doing so, and no penalty for failing to do so.
- (460) For these reasons, we consider that an adjustment to the iBoxx should only be considered to the extent that:
 - a Halo effect exists; or
 - the tenor and credit profile of the iBoxx is materially unrepresentative of the notionally financed firm.
- (461) As there is no long-term evidence to suggest the existence of a Halo effect, and Ofwat assumes that the iBoxx credit and tenor profile is representative of the notionally-financed firm. Therefore, there should not be an outperformance wedge.
- (462) Ofwat provides evidence of outperformance from yields on a sample of bonds issued by water companies that are traded in the secondary market. We consider that this evidence is not informative on a standalone basis for the following reasons:
 - yields are only provided for the bonds that have been issued by a small subset of water companies;
 - the data is taken from a single day during a volatile period (29 April 2020), meaning that any conclusions are subject to material uncertainty; and
 - a significant number of these bonds have less than 10 years to maturity, which Ofwat exclude from their analysis of the outperformance of yields at issuance in FD19.
- (463) Ofwat also provides evidence of outperformance using yields at issuance for three bonds that have recently been issued by water companies. We consider that this evidence is not informative on a standalone basis:
 - a small sample of three bonds is unlikely to reflect the population as a whole. We have provided analysis of the Halo Effect and Outperformance wedge across a large sample of primary issuances over a 20-year period, which Ofwat has not engaged with;
 - the tenor at issuance of these bonds is materially less than the weighted average tenor of the iBoxx, particularly the Dwr Cymru issuances; and
 - since the publication of Ofwat's Response, there have been two further issuances by TW, which have tenors, credit profiles and yields that are more comparable to the iBoxx. These are shown in Table 23 below.

⁴⁰³ SoC, Section 8.11, pp. 161-162. 404 SoC, Section 8.11, pp. 161-162.

Table 23: Fixed-rate nominal water bonds issued between January and May 2020

Company	Date Issued	Principal (£m)	Tenor at issuance (years)	Coupon (%)	Rating	iBoxx A/BBB on day of issue (%)	Spread to iBoxx A/BBB (bps)
TW	12/05/2020	40	30.0	2.44	Baa1	2.45	-1
TW	22/04/2020	350	20.0	2.38	Baa1	2.46	-9
Dwr Cymru	24/02/2020	300	13.1	1.38	A3	2.21	-84
Dwr Cymru	24/02/2020	200	6.1	1.63	Baa2	2.21	-59
UU	10/02/2020	250	18.0	1.75	A3	2.25	-50

Source: NWL analysis of recent market issuances

Notes: Bonds highlighted have been issued since Ofwat published its response.

(464)In summary, we consider that:

- there is no evidence that is provided by primary yields at issue to suggest that halo effect exists;
- any outperformance observed by Ofwat is likely to be a result of tenor-related effects; and •
- Ofwat's evidence provided by secondary market yields is not robust and so cannot be assumed to be . representative of the relevant sector debt population as a whole.
- (465) Therefore, under Ofwat's assumption that the tenor and credit profiles of the iBoxx index are representative of the notionally financed firm, we consider that there should be no outperformance wedge.

6.7. **INFLATION**

6.7.1. Ofwat said:

(466)In setting its inflation assumption, Ofwat argued that the long-term inflation assumptions of 2.0% CPIH and 2.9% RPI are appropriate, based on the Office of Budgetary Responsibility's estimate of the long-term RPI-CPI 'wedge'. Ofwat concluded that current inflation forecasts are not suitable for a long-run investment horizon.405

6.7.2. **Our Reply:**

- (467) We consider that the regulatory problem of determining an allowance that is appropriate over an entire charge control period is best solved using a long-run approach to estimation, and a consistent approach across parameters, where possible. We therefore consider that an updated assumption of 2.0% for CPIH and 2.9% for RPI is appropriate.
- (468)Ofwat's position, which suggests taking a long-run approach to inflation that is equivalent to its assumed investment horizon, appears to contradict its position on other parameters, such as RFR and beta. For parameters such as these, Ofwat proposes that short-run estimates should be used. This highlights Ofwat's inconsistent approach to the estimation of the allowed return in the round.
- (469) It should also be noted that the BoE forecast a significant fall in expected levels of inflation this year to level approaching zero and recent analyst reports: "expect inflation this year to be lowest in recent years, below that of 2009 during the depth of the past recession and 2015".406
- (470) Therefore, it is a realistic outcome that inflation will be at historic lows from the outset of the AMP, with a compounding effect through the regulatory horizon. This means that low inflation downside scenarios are more likely (and potentially more severe) and are set out in more detail in the financeability section.

 ⁴⁰⁵ Ofwat Response Risk & Return, REP026, para 3.128-9, p.90.
 406 UBS Global Rates Strategy, Global Inflation - Linked Monthly, 13 May 2020, REP030.

6.8. RETAIL MARGIN ADJUSTMENT

6.8.1. Ofwat said:

(471) In FD19 Ofwat made a downwards adjustment, of 4bps, to the appointee WACC in order to derive a WACC that would apply to the wholesale controls. Its intention was to avoid any double counting of the return from the retail margin in the wholesale allowed return.⁴⁰⁷ In our SoC, we argued why we don't consider there is a double count of the retail margin in the appointee WACC.⁴⁰⁸ In its Response, Ofwat argues that since the retail margin separately provides the allowed return for the retail control, there would be double recovery without adjusting for this through a deduction in the appointee allowed return.⁴⁰⁹

6.8.2. Our Reply:

- (472) An adjustment to the WACC on the basis that carving out a portion of systematic risk that is driven by the inclusion of retail activities in the comparator firms may be spurious accuracy. This is because estimating betas is inherently imprecise, and it is therefore unlikely that one can accurately isolate the systematic risk of retail activities versus the activities of an integrated supplier.
- (473) As we set in the SoC, while we understand the logic that companies shouldn't be compensated twice for bearing the same risks, we consider that the retail business is exposed to a more complex mix of risks. We consider that the CMA should take into account the complex mix of risk facing water retail activities and consequently margin requirements before determining whether there in any adjustment that needs to be made to the WACC.

6.9. GEARING SHARING MECHANISM

6.9.1. Ofwat said:

(474) Ofwat maintained that the GSM is consistent with the application of the Modigliani-Miller theory in water, while including a glidepath to provide companies time to unwind debt instruments.⁴¹⁰

6.9.2. Our Reply:

- (475) It is uncontroversial that capital structures are a matter for licensees to determine, within the regulatory requirements to maintain an investment grade rating, such that companies bear the risk of their financing decisions. Ofwat claimed that the gearing outperformance mechanism, while a departure from regulatory precedent, does not cut across choices of capital structure, but this is misleading. The GSM would also introduce the risk of reducing companies' incentives to find the most efficient capital structure.
- (476) We also continue to disagree with Ofwat's arguments in relation to the Modigliani-Miller theory. We addressed this in our SoC.
- (477) As set out in more detail in our SoC,⁴¹¹ we continue to believe there is no single level of gearing that is optimal for all companies. Although a comparison can be drawn in the risk profile across companies in the water sector, this does not mean that all companies would be suited to a set level of gearing. Various other factors, such as performance and investment challenges as well as company governance will dictate a company's level of gearing. Evidently, companies will naturally differ in that regard.
- (478) The GSM would also most likely increase customer bills over time, despite any short-term bill reductions. This is because, 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. . This impact on customers conflicts with our own ambitious plan to reduce bills for customers, but also conflicts with Ofwat's customer duty.

⁴⁰⁷ Ofwat Response Risk & Return, para. 3.119, p. 88

⁴⁰⁸ SOC, Section 8.12.

⁴⁰⁹ Ofwat Response Risk & Return, para. 3.120, p. 88. 410 Ofwat Response Risk & Return, REP026, paras 5.28 – 5.29, p.148.

⁴¹¹ SoC, Section 8.14.

- (479) More fundamentally, the GSM represents a departure from long-standing regulatory precedent to optimise financial structures and counters regulatory stability. In addition, Ofwat provided no additional arguments or evidence substantiating its position in designing the mechanisms. With the regulator being the determiner of the capital structure for all water companies, companies bear the risk of the regulator not opting for an appropriate optimal level which is suitable for the individual circumstances of each company.
- (480) The CMA is faced with a stark choice: if the CMA endorses (or refuses to intervene to change) Ofwat's approach, this will significantly depart from its own consistent precedent underpinning incentive-based regulation that companies are allowed to determine their own capital structures. Arguably, the GSM amounts to a 'one size fits all' approach, which is not an appropriate way to catering to the various ways in which companies choose to operate themselves. It simply does not account for company variability. We request the CMA to reconsider the GSM, not least so that other regulators do not feel justified (or indeed forced) to adopt a similar mechanism in different sectors, thereby disseminating and compounding the issue.

7. **IS OFWAT'S FD19 FINANCEABLE?**

7.1. **SUMMARY**

(481) In its Response, Ofwat puts forward its arguments regarding financeability. However, Ofwat has failed to address the majority of our arguments; while for those arguments it engages with, Ofwat has provided little in the way of supporting analysis and evidence. In contrast, we have sought to address all of Ofwat's arguments, whether in this Reply or in the Financeability Annex (see Section 0). The table below summarises Ofwat's key arguments, and our response to these.

Table 24: Summary of key arguments

Summary of Ofwat's arguments	Summary of our responses		
Rating downgrade: There have been no clear statements made by rating agencies which suggest that we will be downgraded to Baa2 on the basis of FD19.	Rating downgrade: We are on negative watch and there have been a number of negative rating agency comments made regarding a downgrade.		
PAYG: The financeability challenge is due to cash flow issues, and are a result of an imbalance between the timing that companies earn their allowed return on capital and the payment of the cash element of debt costs. NPV neutral cash flow profiling adjustments are therefore applied. Revenue advanced through PAYG is the most appropriate approach to address financeability concerns.	PAYG: Improving liquidity in the short term is not the same as improving financeability or credit worthiness. If there is evidence to suggest that a company may not be financeable or does not have sufficient headroom to manage downside risks, then the problem cannot be alleviated by simply transferring cash over time. Ofwat has not distinguished between liquidity and financeability. Moreover, acceleration of cash flows from future periods through use of PAYG is not an efficient market outcome.		
AICR threshold and regard to credit rating agencies: Ofwat states that it does not accept that achieving a specific level of AICR or specific rating from credit rating agencies is an empirical test of financeability or whether it has satisfied its duty. ⁴¹²	AICR threshold and regard to credit rating agencies: In our view, a credit rating assessment forms a relevant market- based test for assessing financeability. In particular, the test needs to show that the notional company can achieve a credit rating of Baa1 consistent with what is assumed in the cost of debt allowance. We recognise that Ofwat has also paid specific attention to the AICR, for example in the FD, it adjusted PAYG rates in order to achieve an AICR of 1.5x (which is consistent with Moody's guidance). Moreover, the CMA has also stated that it is good regulatory practice to consider the views of rating agencies when assessing financeability. ⁴¹³		
An efficient company will be able to live within its cost allowances and deliver on its performance targets: Ofwat states that is has satisfied its Financing Duty by making sure that companies' allowed revenues, relative to efficient costs, were sufficient for an efficient company to finance its investment on reasonable terms and therefore secure that it can properly carry out its functions. ⁴¹⁴	An efficient company will be able to live within its cost allowances and deliver on its performance targets: Ofwat did not consider the additional costs we would expect to incur in the base case on a mean expected basis that we set out in our business plan. While we provided a sufficient explanation in the SoC to justify these costs, we provide further evidence to support our assertion that we are likely to incur additional costs in the base case under the FD.		
Outperformance and asymmetry of information: Ofwat states that we have outperformed in the past and, if efficient, can continue to deliver on our commitments and obligations with the cost allowances, with incentives to outperform. Ofwat argues that there is an asymmetry of information with companies and that companies are likely to bid up requested cost allowances.	Outperformance and asymmetry of information: The past is not necessarily a guide to the future, particularly in circumstances where the benchmark is already stretching and so outperformance cannot be assumed. Ofwat incorrectly gives negligible weight to companies' views of their own costs (who will naturally have more information about their cost base).		

⁴¹² Ofwat Response Risk and Return, REP026, para 4.45. 413 Bristol Water PR14 CMA Decision, SOC336, 11.24. 414 Ofwat Response Risk and Return, REP026, para 4.45.

Summary of Ofwat's arguments	Summary of our responses
Downside scenarios: Ofwat has cautioned the CMA against placing weight on our downside analysis. Ofwat states that its prescribed downside scenarios (on which we run our downside assessment) were not intended for the notional structure, but to understand how in the actual structure	Downside scenarios: It is not clear why Ofwat would expect its suggested downside scenarios to only be relevant for the actual company and not the notional company. Regardless, we would expect the notional company to be resilient to these scenarios.
companies would respond to a downside. Ofwat also argues that we will strongly be incentivised to outperform the FD19 and have scope to manage downside scenarios.	FD19 is significantly challenging and asymmetric, which exposes the company to materially more downside risk than upside potential. Overall, we are considerably more likely to under-perform than outperform. Moreover, Ofwat has not considered the impact of factors outside of our control such as cost over-runs and ODI penalties resulting from severe weather events.
Remedies: Ofwat states that the CMA could consider the following remedies where it identifies a financeability constraint: 1) reduction in the notional gearing; 2) increasing the proportion of index linked debt; 3) restricting dividend payments: and 4) a faster transition to CPIH	Remedies: We provide several arguments setting out why we disagree with Ofwat's position. As set out in our SoC, we consider that the CMA should assess the cost of capital, cost allowances and PCs.

- (482) In our SoC, we presented detailed analysis to demonstrate that **FD19 is unbalanced and not financeable**. Specifically, we argued that:
 - 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: 1) expect to earn a reasonable level of return in the base case on a mean expected basis, 2) achieve
 an investment grade rating of Baa1 (consistent with that assumed in the cost of debt allowance), and 3) have
 sufficient headroom to be resilient to plausible downside shocks;
 - Ofwat's approach to addressing the financeability problem through adjusting regulatory levers, such as PAYG rates is not appropriate because: 1) such adjustments are ignored by rating agencies, and 2) the cash flows 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 3) 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; and
 - Uncertainty mechanisms are not effective in addressing financeability concerns. While these mechanisms
 allow for the price controls to be re-opened under certain circumstances, they require materiality thresholds
 to be breached, which are unlikely to be triggered. Even though reconciliation adjustments in the next price
 control allow companies to share a proportion of any under or out-performance in totex, we would still have
 to fund the additional costs of any under-performance on totex and would incur the financing costs of doing
 so during the AMP, which would impact leverage and coverage ratios. Relatedly, the true-up is exacerbated
 by the asymmetric cost sharing factors.
- (483) Ofwat's position leading up to PR19 was that companies must take steps to address financial resilience. However, by its own design, Ofwat has presented a challenging and asymmetric package which exposes us to downside risk and consequently poses financeability challenges for companies. Given the evolving circumstances of COVID-19, it is even more crucial to ensure that we are financially resilient.
- (484) As set out in our SoC, Ofwat did not conduct a robust financeability assessment. Ofwat made several arguments in response to our SoC challenging our financeability assessment and our conclusions on financeability, which we set out in the table above. One of Ofwat's key arguments was that it has satisfied its Financing Duty by ensuring that companies' allowed revenues relative to efficient costs, were sufficient for an efficient company to finance its investment on reasonable terms.⁴¹⁵As set out in our SoC and below, we do not consider this to be case. We request that the CMA assess the financeability of our package in the round – i.e. consider the appropriate allowed return, allowed costs, and performance targets.
- (485) In order to accept Ofwat's analysis of financeability of FD19, recognising the need to ensure that FD19 is financeable, it is necessary to rely on a host of unreasonable assumptions and/or adjustments. We discuss the following:

⁴¹⁵ Ofwat Response Risk and Return, REP026, para 4.45, p.106.

- **PAYG adjustments to support credit quality:** We are concerned that regulators should not accept that the PAYG adjustment is an appropriate tool for addressing financeability concerns, noting that this is not recognised by rating agencies;
- Relevance of rating agencies' methodology for financeability: We are concerned that Ofwat is ignoring the 1.5x threshold on AICR in order to maintain an investment grade rating that is two notches above the minimum investment grade (i.e. that credit rating agency methodologies are not an empirical test for assessing financeability);
- We will not be able to deliver on our targets and live within our cost allowances: We are concerned that Ofwat is ignoring the additional costs that companies would expect to incur on a mean expected basis (i.e. accepting Ofwat's assertion that an efficient company will be able to deliver on its targets and live within its cost allowances);
- **Downside scenario analysis should be considered:** We are concerned that Ofwat is ignoring the likely impacts from downside scenarios (i.e. accepting there is sufficient headroom to manage the increased risk and asymmetry even under COVID-19); and
- Other adjustments suggested by Ofwat to meet financeability: We outline our position towards other adjustments to the proportion of index linked debt / reducing notional gearing / restricting dividends / faster transition to CPIH.
- (486) By adjusting the assumed notional structure and openly disregarding rating agency methodologies (which are a relevant market test for debt financeability and credit quality), **Ofwat is undermining the Financing Duty as a cross-check on the price control.** These arguments are challenged individually in detail in the following sections.

7.2. PAYG ADJUSTMENTS TO SUPPORT CREDIT QUALITY

7.2.1. Ofwat said:

- (487) Ofwat claims that the financeability challenge created by FD19 is due to cash flow issues (i.e. an imbalance between the timing that companies earn their allowed return on capital and the payment of the cash element of debt costs). Ofwat suggests that advancing revenue through PAYG is NPV-neutral over the long term.⁴¹⁶ As a result, Ofwat concludes that revenue advanced through PAYG is the most appropriate approach for addressing financeability concerns. Further, Ofwat argues that the revenues advanced are not substantial, and as such they do not have an adverse impact on the long-term financial resilience of the sector.⁴¹⁷
- (488) Ofwat commissioned PwC to assess the implications of PAYG on interest and coverage ratios in future periods. In its assessment, PwC's analysis makes forward looking assumptions on RCV growth, run-off rates, PAYG, and expected debt interest costs to test the impact on ratios from unwinding PAYG adjustments.⁴¹⁸ PwC's findings indicate that the revenue advanced by Ofwat has a smaller impact on ratios compared to the underlying longterm rise in the ratios through the transition to CPIH indexation and the expected evolution of the cost of debt. Therefore, it concludes that the use of the RCV run-off and PAYG financeability levers in FD19 has not negatively impacted the long-term financeability of the water sector.⁴¹⁹

7.2.2. Our Reply:

- (489) Ofwat suggests that advancing revenue by shifting cash flows (through PAYG) would address the financeability constraint. However, this does not consider that **improving liquidity in the short term is not the same as improving** financeability or credit worthiness. If there is evidence to suggest that a company may not be financeable or does not have sufficient headroom to manage downside risks, then the problem cannot be alleviated by simply transferring cash over time. Ofwat has not distinguished between liquidity and financeability.
- (490) In relation to Ofwat's view that PAYG is the most appropriate solution to address financeability, we repeat the arguments already provided in the SoC.⁴²⁰ Ofwat advanced more than £500m of future revenue for 12 companies in FD19, in order to solve the notional company credit metrics. However, rating agencies have indicated that they do not consider adjustments to PAYG will improve financeability on a sustainable basis and therefore they strip

⁴¹⁶ Ofwat Response Risk and Return, REP026, para 4.14, 4.15, p.96.

⁴¹⁷ Ofwat Response Risk and Return, REP026, para 4.138, p.137. 418 Ofwat Response Risk and Return, REP026, para 4.104, p.127.

⁴¹⁹ PwC, Long-term financeability trends in the UK water sector, (**PWC Financeability Paper**), May 2020, REP064, p.4.

⁴²⁰ SoC, Section 10.5.

out the excess PAYG adjustment when calculating projected coverage metrics. For us, this results in a projected AICR of 1.43x (consistent with Baa2) across AMP7, before taking into account expected under-performance. FD19 does not meet the target AICR of 1.5x in the base case.

- (491) Additionally, acceleration of cash flows from future periods through use of PAYG is not an efficient market outcome. Rather, it serves to create a mismatch between cost recovery and benefit realisation which will mean an inequitable allocation of costs between current and future customers. Bringing cashflows forwards in the hope of addressing short-term financeability concerns assumes that this will help to create a buffer for risk, which effectively short-changes any future recovery of capital invested.
- (492) PwC's analysis commissioned by Ofwat relies heavily on a reduction in the overall cost of debt in future price controls (effectively through the forecast cost of new debt being lower than embedded debt) to conclude that the adjustment of PAYG rates (and consequent unwinding of this adjustment in future price controls) would not impact the long-term financeability of the sector. PwC recognises that the reduction in debt financing (through embedded debt being replaced by new debt) is the main driver.⁴²¹ However, PwC analysis does not take into account the fact that interest rates over 2020 2025 are highly uncertain, and that attempting to forecast what interest rates will be over the later period between 2025 2030 is subject to an even higher degree of uncertainty. The interest rate projections are a key driver of PwC's conclusions, and it does not appear to have considered the effect of different scenarios on the likely path of interest rates or reduce the effect of this impact^{*422} (i.e. the improvement in headroom on financeability ratios from the change in the overall cost of debt financing).

7.3. RELEVANCE OF RATING AGENCIES' METHODOLOGY FOR FINANCEABILITY

7.3.1. Ofwat said:

(493) Ofwat does not consider that a specific AICR or a specific credit rating of Baa1 from Moody's is an empirical test either of financeability or whether it has satisfied its Financing Duty. It argues that strict adherence to credit rating agency methodology would result in the cost to customers being influenced by rating agencies.⁴²³

7.3.2. Our Reply:

- (494) We recognise that Ofwat has also paid specific attention to the AICR, for example in the FD it adjusted PAYG rates in order to achieve an AICR of 1.5x (which is consistent with Moody's guidance).
- (495) Credit rating agencies provide a market-based test that assesses whether debt financeability has been achieved. In particular, the financeability test needs to show that the notional company can achieve a credit rating of Baa1 consistent with what is assumed in the cost of debt allowance. Moreover, it is well recognised that companies rely on credit ratings to raise finance in debt markets, and that providers of debt capital give sufficient regard to rating agency opinions.
- (496) In the 2015 BW Final Determination, the CMA also recognised the relevance of rating agency methodologies:

*"In assessing financeability, it is good regulatory practice to consider the views of credit rating agencies, and by implication, the financial ratios they partially base their views on.*⁷⁴²⁴

- (497) **Moody's has stated that an AICR of 1.5x is the minimum guidance for a Baa1 rating**. As set out in our SoC,⁴²⁵ while the rating scorecard determines the overall rating and comprises both qualitative factors and leverage and coverage metrics, the AICR is the constraining factor and is calibrated to take into account such factors, and therefore it can be assessed independently of the ratings scorecard.
- (498) The importance of the AICR to Moody's can also be inferred from its assessment of the notional company. Moody's states that the notional company (i.e. cost of debt in line with the allowance, a gearing of 60%, and assuming 33% index linked debt) would achieve an AICR of 1.24x.⁴²⁶ This is below the 1.5x threshold for Baa1

⁴²¹ PWC Financeability Paper, REP064, p.19.

⁴²² PWC Financeability Paper, REP064, p.19. 423 Ofwat Response Risk and Return, REP026, para 4.45, p.106.

⁴²⁴ Bristol Water PR14 CMA Decision, SOC336, para. 11.24.

⁴²⁵ SoC, para. 1008.

⁴²⁶ This assumes the notional company is in line with regulatory cost of debt allowance, assuming 33% of the debt Is inflation linked.

and 1.3x for Baa2, but the gearing level of 60% is below Moody's maximum guidance of 72%. Taken together, this would imply a rating for the notional company possibly in line with Baa2. Ofwat has acknowledged implicitly that the AICR is a primary driver of ratings under Moody's methodology, given that it used the PAYG adjustments as a tool to achieve an average of 1.5x AICR across AMP7. We provide further evidence in the downside scenarios section below (section 7.5) to highlight the emphasis placed on the AICR by Moody's.

(499) In its Response, Ofwat stated that: "in its April 2019 revised business plan, Northumbrian Water quoted threshold guidance for adjusted interest cover as above 1.4x and funds from operations to net debt as circa. 9%. In fact, on the basis of its actual capital structure, Northumbrian Water provided Board assurance that its business plan was financeable with an average funds from operations to net debt ratio of 8.7%".⁴²⁷ We had referenced a previous version of Moody's document.⁴²⁸ In a later version, Moody's had increased the thresholds on AICR from 1.4x to 1.5x.

7.4. WE WILL NOT BE ABLE TO DELIVER ON OUR TARGETS AND LIVE WITHIN OUR COST ALLOWANCES

(500) To accept Ofwat's position, the CMA would have to ignore the additional risk to which we would be exposed, as well as ignoring the additional costs that we would expect to incur on a mean expected basis. This assumption would require accepting Ofwat's assertion that an efficient company will be able to deliver on its targets and live within its cost allowances.

7.4.1. Ofwat said:

- (501) Ofwat states that it has satisfied its Financing Duty by making sure that companies' allowed revenues, relative to efficient costs, were sufficient for an efficient company to finance its investment on reasonable terms and therefore secure that it can properly carry out its functions.⁴²⁹ In carrying out its financeability assessment, Ofwat assumes that an efficient company will be able to meet its obligations and commitments to customers within its cost allowances, such that there would be no out- or under-performance adjustments with respect to the levels of service provided to customers.⁴³⁰
- (502) Ofwat argues that, because we have outperformed in the past, if we remain efficient, we should be able to continue to deliver on our commitments and obligations within the set cost allowances, along with incentives to outperform.⁴³¹ Ofwat states that despite the forecast downward skew at PR14, we received outperformance rewards, on average, in 2015-19.⁴³² Ofwat also points to our own business plan forecasts indicating performance beyond targets set by Ofwat for two PCs, which if achieved, will enable us to receive outperformance payments.⁴³³
- (503) Ofwat claims that companies were aware of its intention to remove cost sharing menus applied at PR14 and introduce a new cost sharing mechanism.⁴³⁴ Ofwat's approach also points to the asymmetry of information, which it believes ensures that only the most efficient companies retain the greatest share of outperformance.⁴³⁵

7.4.2. Our Reply:

- (504) Ofwat is arguing that an efficient company will be able to deliver on its targets and live within its cost allowances. However, we do not consider that this will be achievable for the following reasons:
 - Ofwat has not conducted any detailed risk analysis to support its assertion that an efficient company will be able to deliver the FD (i.e. it has not shown how an efficient company will be able to reasonably incur its allowed costs, meet its performance targets, and perform in line with the regulatory settlement);
 - in our SoC, we explained why the PR19 determination is significantly more challenging relative to PR14. This is due to tougher performance targets, and cost allowances that are not adequate enough to

⁴²⁷ Ofwat Response Northumbrian Water, REP022, para. 6.54, p.122.

⁴²⁸ NES - Living Water: Our Plan 2020-25 and Beyond, September 2018, SOC001. Specifically, NWL references a Moody's document from January 2018. Moody's updated guidance was issued in May 2018.

⁴²⁹ Ofwat Response Risk and Return, REP026, para 4.45, p.106. 430 Ofwat Response Risk and Return, REP026, para 4.38, p.103.

⁴³⁰ Ofwat Response Risk and Return, REP026, para 4.36, p.103. 431 Ofwat Response Northumbrian Water, REP022, para. 1.52, p.13.

⁴³² Ofwat Response Northumbrian Water, REP022, para. 1.32, p.13. 432 Ofwat Response Northumbrian Water, REP022, para. 6.71, p.127.

⁴³³ Ofwat Response Northumbrian Water, REP022, paras. 1.12 and 6.69-6.70

⁴³⁴ Ofwat Response Northumbrian Water, REP022, para 6.73, p.128.

⁴³⁵ Ofwat Response Northumbrian Water, REP022, para 6.74, p.128.

deliver on these targets.⁴³⁶ For example, in our SoC, we showed that the average improvement rate required by Ofwat on four common PCs is more than double that achieved in recent history.⁴³⁷ Economic Insight found that the extent of the challenge for us at PR19 is 2.3x higher than the past, with us ranking third relative to other companies in terms of the overall scale of the challenge;⁴³⁸

- we have set ourselves a stretching business plan, with performance targets considerably more challenging than we have achieved in the past. Between 2017-20 we have achieved an average aggregate improvement rate of 2.4% across 10 of the common PC targets between 2017-20 but in our business plan, we set ourselves a target equivalent to a 17.1% average improvement rate across the 5 year control, this has been increased to 24.6% in Ofwat's FD19 and we have accepted this challenge (apart from the limited issues discussed in our SoC). However, Ofwat's FD19 would need to be delivered under a totex plan that is c.6% lower⁴³⁹ than we set out in our business plan;⁴⁴⁰
- we are already an efficient company performing close to upper quartile relative to the sector.⁴⁴¹ As a
 result, it is significantly more difficult for us to achieve marginal improvements in efficiencies. Moreover, the
 marginal cost of achieving these additional service improvements also increases with performance; and
- the past is not a perfect predictor of the future, particularly in the context of an extremely challenging and stretching settlement. It would not be reasonable to assume automatically that just because a company has outperformed in the past, it will continue to outperform in the future. Previous outperformance cannot be a justification for a settlement which without that outperformance would remain unfinanceable.
- (505) Ofwat argues that our September 2018 business plan forecasts performance beyond the targets set out in the FD19 for two PCs, and if achieved, this performance will enable it to receive outperformance payments (£4m for the pollution incident performance commitment and £7m for water supply interruptions).⁴⁴² However, Ofwat:
 - assumes that the P50 position of forecast performance involves achieving the PC target- given the stretch in the package this is going to be challenging. Indeed, Ofwat is referencing our September 2018 business plan. Achieving a performance level in line with the targets set out in our March 2019 business plan, would indicate no penalty or reward for pollution incidents, and a reward of £10m for supply interruptions;
 - chooses just two PCs from our package of 35 where we may outperform and ignores others where underperformance is much more likely, including where its targets are significantly more stretching than ours. For example, on unplanned outages, we would expect to incur a penalty of £15m under our March 2019 business plan;
 - ignores the link between service performance and investment. While the BP19 target suggests a reward
 for supply interruptions, Ofwat has not taken into account the fact that a disallowance on costs in our
 business plans is likely to have an impact on our ability to meet the PCs we set ourselves, and would
 consequently have an impact on the level of ODI penalties and rewards. This has also been recognised by
 Moody's.

"The final determination also continued to include significant disallowances on enhancement expenditure of around £90 million. While Northumbrian may decide not to spend money on enhancement projects that it has not received funding for it may affect its performance under the outcome delivery incentive mechanism."⁴⁴³ (emphasis added)

- (506) In this next section, we provide further company specific evidence and analysis to help illustrate that under FD19 we are exposed to additional risk and are likely to incur additional costs on a mean expected basis. The following additional pieces of analysis are considered and discussed below:
 - Service performance risks: An assessment of the likely penalties resulting from ODIs on a mean expected basis;
 - **Cost risks:** these includes an assessment of: 1) costs that are materially outside of management control; 2) costs for quality enhancements or growth; and 3) core base costs; and
 - **Case study evidence:** We also provide a case study example where we have experienced increases in costs and service performance impacts during the AMP6 price control from a severe weather event.

⁴³⁶ SoC, section 10.6.1, para 1048. 437 SoC, section 10.6.1, para 1053.

⁴³⁷ SoC, section 10.6.1, para 1053. 438 Economic Insight 2020, SOC413, p.23.

⁴³⁹ Ofwat, PR19 Final Determinations, Securing Cost Efficiency Technical Appendix, December 2019, SOC417, p.165.

⁴⁴⁰ SoC, section 10.6.1.

⁴⁴¹ SoC section 2.6.1.

⁴⁴² Ofwat Response Northumbrian Water, REP022, para. 1.12, p.4.

⁴⁴³ Moody's, Northumbrian Water Ltd - Update following review for downgrade and final determination publications, (Moody's NWL update following review for downgrade and FD publications), 2019, REP028, p.3.

7.4.2.1. Service performance risks

(507) Table 25 below illustrates the difference between Ofwat's FD target and our expected P10 and P90 performance level for 10 key common PCs at DD.⁴⁴⁴ This shows that for most of the PCs, Ofwat's target is closer to the P90 performance level relative to P10 level, which would suggest that we are exposed to incurring a significantly larger penalty than reward. In some cases, e.g. unplanned outage and sewer collapses, there is only downside.

Table 25: Ofwat FD target versus our P10 and P90 for common PCs

Performance Commitment	NWL P10 (2024/25)	Ofwat target (2024/25)	NWL P90 (2024/25)	Ofwat target minus NWL P10	Ofwat target minus NWL P90
Supply interruptions (Hours:minutes:seconds per property per year)	00:08:20	00:05:00	00:01:48	00:03:20	00:03:12
Internal sewer flooding (Number of incidents per 10,000 sewer connections)	3.35	1.34	1.15	2.01	0.19
Per Capita Consumption (PCC) (Litres per person per day, 3-year average, absolute level)	137.1	136.0	134.8	1.1	1.2
Leakage (NW) (Megalitres per day, 3-year average)	147.1	121.9	111.1	25.2	10.8
Leakage (ESW) (Megalitres per day, 3-year average)	66.1	53.8	47	12.3	6.8
Mains repairs (Number of repairs per 1,000km of mains)	129.8	123.4	112.4	6.4	11.0
Unplanned outage (Percentage of peak week production capacity)	8.25%	2.34%	-	5.91%	-
Sewer collapses (Number of collapses per 1,000km of sewer network)	9.4	8.1	-	1.3	-
Pollution incidents (Number of pollution incidents per 10,000km of the wastewater network)	22.5	19.5	9.3	3.0	10.2

Source: Analysis of NWL Table OC2.1 and Ofwat FD19.

- (508) As we set out in our SoC,⁴⁴⁵ FD19 is asymmetric with respect to ODIs on: 1) the specification of penalty and reward rates on PCs; and 2) the calibration of caps and collars. This asymmetry would imply that for a range of performance outcomes, the penalty on a given level of under-performance below the target is greater than the reward on an equivalent level of out-performance above the target. This would suggest that even if Ofwat's targets were set correctly, we would incur a penalty on a mean expected basis. Moreover, the calibration of caps and collars on performance is set such that upside potential is much smaller than downside loss. This means that there is more exposure on the downside.
- (509) The following analysis illustrates that we are likely to be exposed to additional costs on a mean expected basis. In summary, this is based on a simulation of the likely outcomes on 10 key common PCs which constitute the majority of our ODI exposure based on our historical performance on these PCs. The corresponding ODI penalty or reward is calculated for each of these outcomes, and the average of all the likely outcomes is calculated rather than selecting a small subset of the ODIs as Ofwat has done in its response.
- (510) Specifically, the following analysis is conducted:
 - first, in order to calculate the distribution of the likely performance outcomes for each PC, a simulation was
 run on 10,000 random draws assuming a standard deviation around the mean (our performance target), and
 a normal distribution (which, consistent with Ofwat's assessment, is a very conservative assumption given
 the stretching targets applied and the fact that it is harder to outperform than underperform in AMP7 relative
 to previous AMPs). The variance / volatility is a key factor in determining the likely range of outcomes, and
 was calculated using three different approaches:
 - o the standard deviation of the historical performance on PCs;
 - backing out the implied volatility from our P10 estimate for each PC assuming a normal distribution⁴⁴⁶; and
 - o backing out the implied volatility from our P90 estimate.
 - second, for each of these likely outcomes, the implied penalty/reward was calculated in each year as the difference between the performance target in that year and the outcome implied by the distribution multiplied by the penalty/reward rate;

⁴⁴⁴ These PCs represent all of the common PCs where there is no binary position (e.g. 100% compliance) and also excludes comparative PC/ODIs where future performance cannot yet be determined e.g. CMex and DMex. 445 SoC. Section 10.6.2

⁴⁴⁶ Solving for the standard deviation in the following formula: Critical value = (P10 – P50) / Standard deviation. The critical value at P10 is – 1.65 and +1.65 for P90.
- in calculating the penalty/reward rate, the following is taken into account: 1) the cap and collars; and 2) Ofwat's performance targets; and
- a distribution of the likely financial impacts (both rewards and penalties) for each PC is then presented and the mean expected outcome (average of all the simulated outcomes) is calculated.
- (511) Table 26 below summarises the total mean expected penalty/reward across AMP7 for the common PCs modelled under each of the three volatility assumptions. Overall, the analysis suggests that we are likely to incur penalties on a mean expected basis, which are largely driven by the asymmetry in the calibration of ODIs.

Performance Commitment	Historical SD	P10 implied SD	P90 implied SD
Supply interruptions	9.7	5.8	10.5
Internal sewer flooding	(1.5)	(4.4)	(0.1)
Per Capita Consumption (PCC)	(0.1)	(0.1)	(0.1)
Leakage (NW)	(0.5)	(1)	(0.8)
Leakage (ESW)	(0.2)	(0.9)	(1.1)
Mains repairs	0.9	1.9	2.2
Unplanned outage	(15.8)	(18)	(26.1)
Sewer collapses	(1.2)	(1.0)	(4.5)
Pollution incidents	(2.6)	(0.9)	(1.7)
Total	(10.8)	(18.6)	(21.7)

Table 26: Summary of mean expected ODI (penalty) / reward (£m)

Source: Analysis of 10 comparative PC/ODIs under FD19

- (512) Ofwat's FD19 indicated a relatively symmetric distribution on the combined P10 and P90 ODI levels. We set out in our SoC, why we considered Ofwat's approach to determine the P10 and P90 RoRE range on ODIs to be inconsistent, judgement based, arbitrary, and not a reflection of a robust estimate on the potential outcome across ODIs.⁴⁴⁷
- (513) This risk analysis, based on our real historical performance and business plan data in relation to these metrics, demonstrates therefore that we are likely to be exposed to additional penalties on a mean expected basis in the region of £11 £22m across the AMP. Our base case financeability assessment in the SoC assumed a £12m net penalty across the AMP7 period,⁴⁴⁸ which is close to the bottom of this range.
- (514) In a separate annex to this response, we provide an indication of the potential impacts from COVID-19.449

7.4.2.2. Cost risks

- (515) As set out above, Ofwat expects that we will be able to live within the set cost allowances and indeed outperform our allowances. To understand the credibility of this position, it is necessary to assess our current position on costs, as well as the stretch that is being expected by Ofwat.
- (516) In our original September 2018 business plan, we proposed an overall efficiency challenge that amounted to £314.5m in overall totex or 12.3% of our overall cost base. Through the PR19 process, Ofwat has applied an additional challenge of £284m or a further 9.57%. At the same time, we proposed substantial quality improvements through PCs and ODIs and also environmental and other enhancements, as well as increases in capacity to account for growth. We have accepted £93.3m or 33% of the additional efficiency challenge and most of the additional PC stretch but we cannot accept the further £190m or 67%, as we set out in our SoC,⁴⁵⁰ these efficiency challenges are poorly justified and evidenced by Ofwat and not achievable in the round.
- (517) In considering the risks to our costs, we have looked at our costs in three categories:
 - costs that are materially outside of management control: For example, business rates or abstraction charges, as we highlight in our SoC that these are subject to change and not subject to management control;
 - costs for quality enhancements or growth: For example, the WINEP or growth costs, where we raise
 concerns in our SoC about the efficiency challenges applied to these costs;
 - **core base costs**: These include operating costs and capital maintenance, from which the 'catch-up' efficiency challenge must be found and any RPEs mitigated; and

⁴⁴⁷ SoC, para. 1066 – 1069. 448 SoC, Table 57. 449 COVID-19 Appendix, REP065. 450 SoC, Section 5.

- case study: "Beast from the East": Finally, we outline historical cost shocks that should be anticipated • for the future.
- (518) These groups reflect the core concerns that we articulated in the SoC in relation to Ofwat's cost assessment approach and in particular the efficiency challenge it applied. These cost issues were summarised in our SoC451 with the value of these cost impacts also identified⁴⁵² and the corresponding impacts were assessed under the base case of our financeability assessment.453

7.4.2.3. Costs that are materially outside of management control

- (519) In our SoC we highlighted, inter alia: a) the significant changes to both business rates and abstraction charges in AMP6; b) the efficiency challenge that Ofwat had applied to those costs; and c) that the uncertainty mechanism applied to these costs involving a 75:25 sharing factor was not appropriate and that a pass through mechanism was more in line with regulatory precedent.454
- (520) We highlighted the likely changes to these costs in AMP7⁴⁵⁵ which had been indicated by third parties, which are materially outside of management control. For the financeability assessment we included changes to these costs in our base case assessment.⁴⁵⁶ We continue to believe that this was an appropriate approach.
- (521) We note that we are exposed to significant volatility on business rates and abstraction charges. While Ofwat allows for some sharing on the deviations between outturn costs and the allowances at the end of the price control, we would still have to fund these additional costs and incur the additional financing costs of doing so during the AMP, which would have implications for financeability.
- (522) As illustrated in Table 27 below, there was considerable volatility in business rates and abstraction charges during AMP6, which was a key explanation for overspending on water in AMP6. This amounted to additional Operating Expenditure (opex) of £12m per year on average, which is likely to have a significant impact on interest coverage ratios.

						•
	2015/16	2016/17	2017/18	2018/19	2019/20	AMP6
Abstraction charges						
FD	23.5	23.2	23.0	22.8	22.5	115
Out-turn	23.3	23.2	28.3	27.5	26.8	129.2
Variance	0.1	0.0	(5.3)	(4.7)	(4.3)	(14.2)
Business rates						
FD	24.0	23.8	23.5	23.3	23.1	117.8
Out-turn	24.5	26.1	36.5	36.9	40.4	164.3
Variance	(0.4)	(2.3)	(13.0)	(13.6)	(17.3)	(46.6)
Total	(0.3)	(2.3)	(18.3)	(18.3)	(21.6)	(60.8)

Table 27: Outturn business rates and abstraction charges relative to Ofwat allowances, (£m, 2017/18 prices)

Source: Analysis of NWL actual business rate and abstraction costs versus FD14.

(523) This analysis and the significant variation in costs versus allowances supports the arguments that we have made about the need for a pass-through mechanism. These costs are uncertain and outside of management control. It also supports the approach taken to our base case financeability assessment in the SoC.

7.4.2.4. Costs for quality enhancements or growth

- (524) In our SoC, we highlighted a series of concerns with Ofwat's cost allowances driven either by their cost assessment and efficiency challenge at PR19 or new information that had arisen since the FD19. Among these issues, we highlighted:
 - that Ofwat's allowances for our statutory WINEP programme were insufficient;457 ٠

454 SoC. Section 5.8.

⁴⁵¹ SoC, Section 5. 452 SoC, Table 30 and Table 52.

⁴⁵³ SoC, Table 57.

⁴⁵⁵ SoC, Sections 9.5 (Business rates) and 9.6 (Abstraction charges for KTS).

⁴⁵⁶ SoC, Table 57. 457 SoC, Section 5.7.

- that we were expecting to incur costs associated with the IED that were not reflected in FD19;⁴⁵⁸ and •
- that the allowances for growth costs were insufficient once the post-modelling efficiency adjustment was applied by Ofwat.459
- (525)In the case of the WINEP and IED costs, we have developed bottom-up programme costings for these investments via business cases where those costs have been efficiently benchmarked. We continue to believe that those costs are efficient and the most likely outcome on a mean expected basis is that project costs are in line with those assessed, as shown in Table 28 below.

	FD19 cost gap	SoC position	Financeability assumptions
WINEP	(£36m)	Ofwat's programme wide and frontier shift efficiency challenges are not appropriate. We have provided a detailed enhancement case with robust cost estimates.	Assumes a £25m cost overrun against allowed costs in FD19.
IED	(£33m)	This is a new legal requirement on us and it will incur additional costs in meeting it. The £33m was an early estimate pending further work.	Assumes a £33m cost overrun against allowed costs in FD19. We have prepared a full enhancement business case implying c.£31m of expected costs.
Growth	(£26m)	Ofwat's ex-post modelling adjustment is not justified, Ofwat's models already adequately fund growth costs.	Assumes a £26m cost overrun against allowed costs in FD19.
Total	(£95m)		(£84m)

Table 00: Oasta f d in the ED40 - la 1114.

Source: SoC and FD19

Where these new investments are required and not funded, or not funded sufficiently, we can be expected to (526) incur additional costs. We have included these costs in the financeability assessment that we made as part of our SoC. We note that because these are capital projects, the financeability impacts are more minor.

7.4.2.5. Core base costs

- In our SoC, we raised concerns about the 'catch-up' efficiency challenges set by Ofwat and the allowances (527) provided for power and chemicals. These costs principally relate to opex, and result in a challenge on costs amounting to c. £28m. For our financeability modelling a split was assumed according to the PAYG rate, which amounts to c.£15m opex cost overrun under the base case.
- (528) As illustrated in Figure 26 below, FD19 has imposed a significant efficiency challenge on opex relative to: (1) our actual performance in AMP6; (2) our allowances in AMP6; and (3) our BP19. On average in AMP6, we performed broadly in line with Ofwat's allowances (specifically, we overspent by £7m on opex). This involved a significant underspend at the start of the price control, but significant overspend towards the end. It is clear that not only is the FD19 a significant challenge to our BP19, but our BP19 reflects a significant improvement to AMP6. This efficiency improvement is in addition to the significantly more challenging price control, and higher quality and capacity enhancements.





Source: NWL and Ofwat data.

- (529) We summarise below the efficiency challenge from FD19 opex, relative to our actual opex in AMP6, which is expected to be marginally above the allowances set in PR14:
 - our PR19 business plan opex costs were c.3% lower than we expect to outturn in AMP6;
 - Ofwat's PR19 FD requires a reduction in operating costs relative to our actual operating costs in AMP6 of c.6%; and
 - given our overspend relative to allowances towards the end of the AMP, our actual operating costs in 2018/19
 relative to our 2020/21 FD19 opex represent a reduction of c.7% over two years to reach the average annual
 run rate.
- (530) Figure 27 below compares the opex efficiency improvements set out above to **performance improvements in other sectors where there have been significant structural or regulatory changes**. This is based on analysis and reports from Ofwat's own advisors.⁴⁶⁰ The performance improvements for the comparators represent changes in unit real operating costs over the first five years following a particular structural change event, such as the introduction of competition, privatisation or regulatory changes. Examples of the comparators include: the Openreach separation, formation of Scottish Water, Water privatisation, competition in electricity generation, the formation of Network Rail, and cost shocks for legacy airlines following a collapse in oil prices.
- (531) The efficiency challenge expected by Ofwat is not far off from the upper bound of three of the four ranges from the comparator groups. It is also above the efficiency improvement for the median company in each comparator group. Noting that the efficiency improvements for the comparators are a result of significant structural or regulatory changes, such as the introduction of competition and change of ownership, we consider the efficiency challenge at FD19 to be significantly stretching.

⁴⁶⁰ KPMG LLP and Aqua Consultants LTD, Ofwat - Innovation and efficiency gains from the totex and outcomes framework, June 2018, REP033, p.135.



Figure 27: Real unit cost opex efficiency improvements (%): Comparison to other precedents

Note: The yellow dots represent the median comparator. 'Actual AMP6 to BP' and 'Actual AMP6 to FD' represent improvements over 5 years whilst 'Actual AMP6 to 20/21BP' represents the improvement rate over 2 years. All precedent comparisons represent the first five years after the structural change event. Source: NWL and Ofwat data, and KPMG LLP and Aqua Consultants LTD, Ofwat - Innovation and efficiency gains from the totex and outcomes framework, June 2018, p.135.

- (532) As illustrated in Figure 26 above, Ofwat's FD19 expects us to make a significant reduction in opex relative to current levels and around double the reductions we assumed in BP19. We consider that this will be very difficult to achieve in the first year, and we are likely struggle to catch-up during AMP7 which is likely to result in underperformance relative to the allowances on average.
- (533) Overall, the evidence suggests that the level of challenge that we are faced with over AMP7 is significant. There is a considerable delta in opex and allowances when contrasting AMP6 and AMP7. This indicates a material cost challenge for us. Given the increased costs likely to arise from significantly more challenging service performance targets coupled with a historically low allowance for both opex and capex, it is likely that this level of stretch will result in cost overruns. This is particularly the case in relation to unmodelled costs associated with business rates and abstraction charges. As such, the scenarios we modelled in our SoC are plausible scenarios.

7.4.2.6. Case study: "Beast from the East"

- (534) There have also been examples where we have been exposed to downside risk in the past and incurred additional costs and service performance penalties as a result of an extreme weather event. For example, in February and March 2018, we suffered the impact from the "Beast from the East", which brought unconventionally cold temperatures with heavy snowfall, followed by a very rapid thaw. The summer months also had a prolonged period of unusually hot and dry weather with rainfall being the lowest it had been in the last 100 years.
- (535) Both the Beast from the East and the summer heatwave led to increase in bursts and leakage on Essex & Suffolk Water (ESW) and Northumbrian Water (NW) water networks and on customer-side leaks, with Essex teams reporting a threefold increase in mains bursts compared to the previous year in March. As shown in Table 29 below, across the network, mains failures have seen an unusual increase in larger diameter pipes. Larger main failures attract higher repair costs. These two extreme weather events meant that we incurred additional costs, which were estimated at £3.84m in 2018. This is shown in Table 30.

	• • • •		, , , , , , , , , , , , , , , , , , , ,	
Region	Range	Actual	Budget	Change
NW	6" to 12"	172	145	+19%
NW	>12"	40	27	+48%
ESW	6" to 12"	189	79	+139%
ESW	>12"	21	14	+50%

Table 29:	Bursts on large	diameter pipers	in NW and E	SW YTD (Peri	od 10) agai	inst Budget	2018)
							/

Source: NWL management.

Additional expenditure (£k)	Beast from the East	Heatwave	Weather Total
Overtime/ Call out for CFS	25	187	212
Materials & Contractors in NW	403	841	1,244
Materials & Contractors in ESW	506	1,545	2,051
Network & Customer Services	934	2,573	3,507
Planning & Scheduling	153	179	332
Total	1,088	2,752	3,840

Table 30: Additional expenditure costs resulting from the two extreme weather events (2018)

Source: NWL management.

- (536) The significant increase in bursts over the summer meant that by September 2018, we were performing significantly worse than our 2018/19 leakage targets, particularly in ESW. The additional operating costs for these two extremes weather events were finally estimated at £6.5m against an overall overspend of £7m. Additional cost and ODI penalties in some of the downside scenarios outlined in Table 26 above are therefore far from fanciful and are realistic outcomes for future expectations.
- (537)Following the Freeze Thaw, Ofwat undertook a review of the sector's response to the weather events.⁴⁶¹ Following that review, Ofwat published a report with a series of lessons and actions for the sector. That report required four companies - SVT, South East Water, Southern Water and TW to publish an externally assured action plan setting out how they are addressing the issues identified. In that review Ofwat said:

"Better performing companies, such as Northumbrian Water, United Utilities, Wessex Water and Yorkshire Water, used real time information and monitoring systems to identify and manage the issues."

"Examples of good practice...Affinity Water, Northumbrian Water, South West Water and Yorkshire Water staffed key water treatment works 24 hours a day during the incident period to reduce to reduce the likelihood of loss of production."

(538)Moody's has also recognised the risk of additional spend driven by severe weather events given FD19: "In addition, the calibration of targets and incentive rates means that severe weather events could carry disproportionate downside risk". 462

7.4.3. Our Reply: Asymmetry in the package

- (539)As explained in our SoC and illustrated above, we consider Ofwat's FD19 to be asymmetrical with the implication being 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. As such, it is likely that we would incur a penalty on average and that outperformance on ODIs will be less likely. We also refer back to our SoC where we explained the asymmetrical package.463
- (540) However, Ofwat argues that there was also asymmetry in PR14 and that in its FD it undertook analysis that appears to reduce the asymmetry. It is clear from Table 31 below that the skewness of the FD19 package has materially increased compared to PR14 in a number of areas, including: (1) cost sharing rates; and (2) the overall RoRE ranges. This is true in addition to the extra stretch and 'step change' that Ofwat has applied to the overall package,⁴⁶⁴ which would also materially increase the likelihood of downside risk.

Table 51. Comparison of asymmetry between PICI4 and PICI5						
PR14	PR19					
(50.35% for Water, 50.80% for Wastewater)	(46.19% for Water, 34.40% for Wastewater)					
(50.35% for Water, 50.80% for Wastewater)	(53.81% for Water, 65.60% for Wastewater)					
1.40%	-0.87%					
8.40%	8.46%					
	PR14 (50.35% for Water, 50.80% for Wastewater) (50.35% for Water, 50.80% for Wastewater) 1.40% 8.40%					

Table 31: Comparison of asymmetry between PR14 and PR19

Source: Populated menu models for PR14, Ofwat (2020), 'Securing cost efficiency technical appendix', Table 24

⁴⁶¹ Ofwat. Out in the cold, water companies' response to the 'Beast from the East', 19 June 2018, SOC225,

⁴⁶² Moody's NWL update following review for downgrade and FD publications, REP028, p.3

⁴⁶³ SoC, Section 10.6.2. 464 SoC, Section 5.

(541) Figure 28 below presents a breakdown of the P10 and P90 RoRE impacts at PR19 based on our view versus Ofwat's view. Ofwat's position is considerably more symmetric than ours. Its total lower bound on RoRE is -4.81% and upper bound is +4.52%.⁴⁶⁵ In comparison our lower and upper bounds are -4.66% and +2.80% respectively. Ofwat's ODI range (grey box) and costs range appears to be symmetric despite the asymmetry in penalty and reward rates and caps and collars. We also expect significantly more asymmetry than Ofwat on costs (light blue box). Similarly, Ofwat's range for costs is symmetric despite the asymmetric cost sharing factors.



Figure 28: RORE range, our view versus Ofwat's view

7.5. DOWNSIDE SCENARIO ANALYSIS SHOULD BE CONSIDERED

(542) To agree with Ofwat, the CMA would have to ignore the likely impacts from downside scenarios. Specifically, the CMA would have to agree that there is sufficient headroom to manage the increased risk and asymmetry.

7.5.1. Ofwat said:

- (543) Ofwat argues that the CMA should be cautious about placing weight on our arguments on headroom and downside scenarios, arguing:⁴⁶⁶
 - Ofwat's prescribed downside scenarios were not intended for the notional structure, but to understand how in the actual structure companies would respond to a downside;
 - KPMG adopts a threshold of 1.1x for the minimum investment grade whereas rating agencies have not specified a threshold on AICR for the minimum investment grade;
 - the modelling illustrates that the company appears to maintain Funds from Operations (FFO) / Net Debt and gearing within the investment grade under all scenarios; while adjusted interest cover is weak;
 - we will be strongly incentivised to outperform FD19 in a downside scenario, we have scope to manage costs and can be expected to focus on minimising ODI underperformance adjustments;
 - proportion of totex downside is temporal because companies benefit from reconciliation adjustments in the next AMP; and
 - companies have the option to defer incentive adjustments that exceed +/-1% of notional equity to a subsequent year in the regulatory period.

7.5.2. Our Reply:

(544) Ofwat has placed a lot of emphasis on financial resilience in PR19. For example, in the run up to PR19, it states that: "We expect to see sound, stress-tested capital structures, not just solutions which simply 'scrape by' into

⁴⁶⁵ Ofwat FD –Northumbrian Water, Table 5.1, p.72

⁴⁶⁶ Ofwat Response Risk and Return, REP026, paras 4.81-92, pp.120-3.

AMP7." ⁴⁶⁷ Ofwat's Chief Executive, Rachel Fletcher, has also recognised the importance of financial resilience: "*Water companies must provide resilient services to their customers. To do that, they need to be financially resilient*"⁴⁶⁸ (emphasis added).

- (545) In its FD, Ofwat assessed the headroom available to allow us to continue to meet our interest payments (i.e. the headroom above an AICR of 1.0x) which it compared to its own FD totex and ODI downside of 1% of regulated equity.⁴⁶⁹ We consider that the downside scenario analysis in our SoC, presented a more robust and comprehensive approach to downside testing.⁴⁷⁰ In its Financeability Report, KPMG also presented evidence that downside scenario analysis has been accepted by regulators in the past, as well as by the CMA.⁴⁷¹
- (546) In our financeability assessment, we presented the impact on projected credit metrics under several downside scenarios.⁴⁷² These included Ofwat's prescribed scenarios for all companies set out during PR19 (these are different to totex and ODI scenarios Ofwat used in its FD for us) and our company specific scenarios. Ofwat's apparent view that the prescribed downside scenarios were intended for the actual, rather than notional structure is not justifiable. It is not clear, why Ofwat would prescribe tests for the actual structure that are not relevant for the notional structure. The downside scenarios reflect the risks borne by the company and should not be different whether we assume the notional or actual financing structure. During the PR19 process, Ofwat had asked companies to run their own downsides as well as the Ofwat prescribed scenarios, and we would expect that the notional company should be resilient to such downside scenarios:

"Companies should model their own scenarios based on severe, reasonable and plausible scenarios for key variables to support their assessment, building on the long-term viability statements that are included in Annual Performance Reports. Companies should also model a minimum suite of scenarios that are prescribed by Ofwat."⁴⁷³ (emphasis added).

- (547) In our SoC, we explained the rationale for the 1.1x threshold, and why this is a more appropriate benchmark to adopt than Ofwat's threshold of 1.0x, despite the lack of formal guidance from Moody's.
- (548) Regardless of whether FFO/ Net Debt is maintained, AICR is a key factor from Moody's perspective, and is the constraining ratio. In our credit opinion, for example, Moody's places a lot of emphasis on the AICR and does not allude to our FFO / Net debt ratio. In that opinion, Moody's has outlined several factors that could lead to a downgrade. One of the factors is an AICR that is below 1.5x on a persistent basis. As evidenced in our SoC, and in the previous section, we are likely to incur additional penalties and costs on a mean expected basis under FD19 which would imply an AICR that is below 1.5x.

"In particular, the rating could be downgraded if we concluded that the regulatory settlement was likely to result in (1) the Northumbrian Water Group's consolidated leverage persistently above 100% (net debt/RCV); or (2) Northumbrian's stand-alone net debt (including Kielder) materially exceeding the mid-seventies in percentage terms of the company's RCV, or an Adjusted Interest Coverage Ratio (Adjusted ICR) below 1.5x on a persistent basis."⁴⁷⁴

(549) Ofwat's position is that we will strongly be incentivised to outperform the FD. Even though we will be incentivised to outperform FD19, companies are not as strongly incentivised to outperform as they have been in the past due to cost sharing factors being more asymmetric. Regardless of the incentives to outperform, we will still be exposed to downside scenarios and being incentivised to outperform does not negate the effects of the downside scenarios (and the need to be resilient to them). We explained this above in section 7.4.2 where we discussed that there are factors outside of our control, such as the weather challenges and conditions in 2018 and the impact this had on costs and ODIs. Moreover, as we have discussed, given: 1) the significantly stretching package, 2) the inherent asymmetry in the regulatory framework with regards to ODIs and 3) the disallowance on business plan costs, we are exposed to significantly more downside risk than upside potential. Many of the downside scenarios were either modelled by Ofwat or were provided by us and not addressed by Ofwat. In the latter case, this implies tacit acceptance of such scenarios.

469 FD19, SOC183, p. 78. 470 SoC, Section 10.7.3.

⁴⁶⁷ Ofwat, Water UK City Conference 2017, Jonson Cox – Chair, Ofwat Regulatory Keynote Speech, 9 March 2017, REP011.

⁴⁶⁸ Ofwat, PN 14/19 Ofwat confirms package of measures aimed at strengthening financial resilience in water companies, REP059.

⁴⁷¹ KPMG, Financeability of Northumbrian Water under the PR19 Final Determination, 2020, SOC283, para. 3.2.24.

⁴⁷² SoC, Table 60 and 61.

⁴⁷³ Ofwat, Putting the sector in balance: position statement on PR19 business plans, July 2018, REP060, p. 61.

⁴⁷⁴ Moody's NWL update following review for downgrade and FD publications, REP028, p.2.

- (550) As explained in our SoC, reconciliation adjustments and risk mitigants do not alleviate any exposure to financeability constraints during the price control. We would still have to fund the additional costs and incur the financing costs of doing so during the AMP, which would impact leverage and coverage ratios. Rating agencies also do not account for the fact that there will be a true-up at the end of the price control in their ratings assessments.
- (551) Despite companies having the option to defer incentive adjustments to a subsequent year in the regulatory period, this does not solve the underlying issue as improving liquidity is not the same as improving creditworthiness. Moreover, similar to PAYG adjustments, deferring penalties further in time cannot improve the financial position of a firm on a sustainable basis. The market should be able to provide similar liquidity solutions as long as the company is solvent to begin with, for example through credit facilities arranged. Overall, if there is evidence to suggest that a company may not be financeable or does not have sufficient headroom to manage downside risks, then the problem cannot be alleviated by simply transferring cash over time.

7.5.2.1. COVID-19 specific scenarios

- (552) While the **long-term effects of COVID-19 are as yet unclear**, we consider that it is likely to have important implications for us. In particular, with regards to lower inflation, bad debts, and lower cash collections. These are likely to have an impact on both interest coverage and leverage ratios.
- (553) We set out in an appendix⁴⁷⁵ an initial view on a potential framework for considering impacts from COVID-19. Some of the key emerging impacts from the pandemic and the resulting social distancing restrictions are already becoming clearer but presently we agree with Ofwat that there is a reasonable degree of uncertainty around those impacts. We have developed some early scenarios that we have modelled to inform the CMA on the potential financeability impacts from the pandemic based on the information that we have to date.
- (554) Scenario 1 Low inflation and additional costs:
 - we consider the inflation forecasts under the illustrative scenario in the May 2020 BoE Monetary Policy Report.⁴⁷⁶ This forecasts CPI inflation at: 0.6% in 2020, 0.5% in 2021 and 2% from 2022 onwards;
 - we estimate Bad debt in 2020/21 of £10m;
 - we estimate additional opex in 2020/21 of £5m; and
 - we estimate ODI penalties in 2020/21 of £10m as our mid-case assumption. We forecast significantly higher downside risk with a pessimistic view of £24m, and an optimistic case of £0.6m.
- (555) Scenario 2: Deflation and additional costs:
 - we consider a potential deflation scenario which forecasts CPI inflation at: 0.5% in 2020, 0.5% in 2021 and 2% from 2022 onwards; and
 - same costs as above.
- (556) In addition to the above, we include the impact of a reduction in cash of £52m in 2020/21, from lower cash collections and additional spend, which increases Net Debt and gearing.
- (557) The results from the downside scenario analysis are presented below for the notional structure. There is considerable reduction in the AICR (from 1.43x in the base case) under both scenarios. These imply a rating consistent with Baa2 and Baa3 under scenario 1 and 2 respectively (based on Moody's scorecard rating methodology). We also note that the average AICR in both cases is below 1.3x (the minimum for Baa2) and close to 1.1x (our assumed minimum for Baa3) under scenario 2. The FFO / Net Debt (S&P) is also consistent with a Baa2 rating. It is important to recognise that these downsides have been assessed relative to the FD19 position, and do not include the additional costs we are likely to incur in the base case as set out in our SoC. Including these costs would result in lower ratios.
- (558) We adopt the same ratio thresholds as presented in our SoC.⁴⁷⁷

⁴⁷⁵ COVID-19 Appendix, REP065.

⁴⁷⁶ Bank of England, Monetary Policy Report, May 2020, REP052, p. 7.

Table 32: Ratio thresholds and Red Amber Green (RAG) grid

Ratio thresholds and F grid	RAG						
RAG Grid							
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.

Table 33: Projected metrics – FD19 base case under scenario 1

	2020/21	2021/22	2022/23	2023/24	2024/25	AMP7 average	Target Baa1	Target Baa2
Moody's metrics								
- AICR	0.95x						≥ 1.5	≥ 1.3
- Net debt / RCV	62.0%	61.6%	61.7%	62.0%	61.9%	61.8%	≤ 72%	≤ 80%
- FFO / Net debt	8.3%	9.0%	9.6%	9.5%	9.5%	9.2%	≥ 10%	≥ 9%
- RCF / Net debt	6.3%	7.0%	7.6%	7.6%	7.5%	7.2%	≥6%	≥ 5%
FFO / Net debt (S&P)	7.7%	8.5%	8.6%	8.6%	8.6%	8.4%	≥ 9%	≥8%
Moody's rating	Ba2	Baa3	Baa2	Baa2	Baa2	Baa2		

Source: NWL analysis.

Table 34: Projected metrics – FD19 base case under scenario 2

	2020/21	2021/22	2022/23	2023/24	2024/25	AMP7 average	Target Baa1	Target Baa2
Moody's metrics								
- AICR	0.86x	1.08x	1.23x	1.22x	1.22x	1.12x	≥ 1.5	≥ 1.3
- Net debt / RCV	62.7%	62.9%	63.5%	64.4%	64.9%	63.7%	≤ 72%	≤ 80%
- FFO / Net debt	7.8%	8.4%	8.9%	8.8%	8.7%	8.5%	≥ 10%	≥9%
- RCF / Net debt	5.8%	6.5%	7.0%	6.9%	6.8%	6.6%	≥6%	≥ 5%
FFO / Net debt (S&P)	7.6%	8.3%	8.3%	8.2%	8.1%	8.1%	≥9%	≥8%
Moody's rating	Ba2	Baa3	Baa2	Baa2	Baa2	Baa3		

Source: NWL analysis

(559) The results from the downside scenario analysis are presented below for the actual structure. We observe a similar impact on the AICR, but our Net Debt / RCV and FFO / Net debt ratios are considerably lower than the case estimates (reflecting the higher gearing relative to the notional structure). As above, the downside is assessed relative to FD19, and does not include the additional costs we expect to incur on a mean expected basis. The AICR in the base case under the actual structure is lower than that under the notional structure given the higher level of gearing.

Table 35: Projected metrics - FD19 base case under scenario 1 and scenario 2 (actual structure)

Scenario indicator Case	Name	AICR (Moody s)	Net debt / RCV (Moody s)	FFO / Net debt (S&P)
NWL scenario category Base	Case	1.29x	70.4%	6.9%
NWL COVID-19 scenario category Low in	nflation + costs	1.20x	72.4%	6.7%
NWL COVID-19 scenario category Defla	tion + costs	1.15x	74.0%	6.8%

Source: Analysis using NWL data.

7.6. OTHER ADJUSTMENTS SUGGESTED BY OFWAT TO MEET FINANCEABILITY

7.6.1. Ofwat said:

(560) Ofwat continued to disagree with company claims that revenue advancement, along with the alternative remedies set in FD19, such as equity injection, faster transition to CPIH, and changes to the notional capital structure are not appropriate remedies to address a financeability constraint. As a result, Ofwat stated that the CMA should consider the following:

- reducing notional gearing from 60% to 56%;⁴⁷⁸
- increasing the proportion of index-linked debt;⁴⁷⁹
- restrictions on dividends and equity injections;⁴⁸⁰ and
- faster transition to CPIH.481 482

7.6.2. Our Reply: Reduce notional gearing

- (561) We do not believe that listed companies are appropriate comparators because the listed companies are not representative of the sector. The 56% gearing is calculated using EV rather than RCV. These listed companies are not directly comparable to the notional company since they have achieved outperformance on financing costs, fast tracked business plans, and lower gearing levels. As a result, the EV gearing is not the most appropriate proxy for the sector-wide position. Moreover, the RCV gearing for both companies is above the notional 60% gearing assumption (SVT: 63.7% and UU: 64.8%).
- (562) Ofwat's suggestion also **represents a significant departure from the sector average**. Aiming to depart from the sector average for gearing, while pursuing an approach for the proportion of index-linked debt that is based on the sector average, is inconsistent.
- (563) In addition, for financeability tests to be effective, assumptions about the notional structure need to be achievable in practice. Ofwat did not signal a reduction in notional gearing in FD19, and a reduction from 62.5% to 56% would not be achievable by an efficient company over a short period of time. On a practical level, companies would need to make the necessary arrangements and would need to have been given sufficient time to implement such a reduction. Ofwat has failed to recognise that there would be significant costs associated with any such refinancing exercise, for example break costs, transaction costs and refinancing costs. No allowances have been provided for these costs.
- (564) Further, reducing the notional gearing does not result in a material improvement in credit metrics. This is because reducing the notional gearing would have an impact on the ratio of embedded to new debt (see Part B Section 6.5). This is because any changes to gearing would affect other WACC parameters, including the proportion of embedded to new debt. A higher proportion of embedded/new debt would increase the CoD, and changing the gearing would overall have a small impact on the WACC (as illustrated in the cost of capital section). Overall, re-calculating the AICR in the financial model, indicates that the higher cost of debt and lower gearing would increase the AICR by only 0.03x, which is insufficient to have an impact on the financeability position of the company.
- (565) It is also important to bear in mind that **COVID-19 is likely to increase gearing** as water companies provide liquidity to support retailers and manage increases in bad debts.

7.6.3. Our Reply: Increase the proportion of index-linked debt

(566) Almost all of the Index-Linked Debt (ILD) in the sector is linked to RPI, which was put in place by companies to link debt payments to the RPI linked cash flows in previous price controls. However, in PR19, Ofwat has introduced a phased transition to CPIH, where 50% of the RCV is linked to CPIH and 50% is linked to RPI. Effectively, this means that companies' cash flows would be linked to both CPIH and RPI inflation. However, the significant amounts of RPI linked debt currently in place only provides protection against RPI inflation. This was implicitly recognised by Ofwat in its methodology for the 2019 price review as a reason not to increase the proportion of ILD:

"As at March 2017, nearly half of the sector's debt was index-linked to RPI. However, we continue to consider 33% as a prudent assumption for the testing of financeability, both due to the variation in its percentage share by companies in the sector, and because the regulatory framework is transitioning away from the use of RPI."⁴⁸³ (emphasis added)

⁴⁷⁸ Ofwat Response Risk & Return, REP026, para. 4.125, p.134.

⁴⁷⁹ Ofwat Response Risk & Return, REP026, para. 4.140, pp.137-8. 480 Ofwat Response Risk & Return, REP026, para. 4.119 – 4.121, pp. 131-2.

⁴⁸¹ Ofwat Response Risk & Return, REP026, para. 4.130 – 4.132, pp. 135-6.

⁴⁸² Ofwat Response Risk & Return, REP026, para. 4.110 – 4.115, pp.129-30.

⁴⁸³ Ofwat PR19 Final Determination, Aligning risk and return technical appendix, 16 December 2019, SOC188, p. 83.

- (567) The sector average proportion of ILD has remained broadly stable since 2014 at 55%,⁴⁸⁴ during which the notional assumption was 33%. Ofwat's proposition to increase this is therefore not clear, especially given the view it set out following a transition to CPIH indexation.
- (568) An increase in the proportion of index-linked debt would also undermine the internal consistency of the notional structure and over-estimate the financeability benefit. The inconsistency stems from the fact that revenues are effectively 50% CPIH linked whereas the debt and interest costs are 100% RPI-linked (given that almost all the index linked debt is RPI linked). For modelling purposes, Ofwat has reflected the RPI-real rate in the AICR which is lower than the CPIH equivalent and the assumption is that this approach benefits the AICR. Where a proportion of IL debt is assumed to be CPIH-linked, which is a reasonable assumption given asset-liability matching and the trends in the sector, the benefit of increasing the proportion of index-linked debt would be lower. For example, if we assume a 40% proportion of ILD, and 50% of this is linked CPIH (as opposed to 0% in Ofwat's modelling), the effect is to increase AICR by 0.01x.
- (569) Additionally, given that our proportion of ILD is c.35%,⁴⁸⁵ which is close to the notional assumption of 33%, using the sector average of 55% would not be representative for us. Therefore, it is not reasonable to make sudden changes to the notional structure. A company's actual structure is an outcome of the notional structure, and companies need time to transition to it.

7.6.4. Our Reply: Dividend restrictions and equity injections

- (570) While restricting dividends would alleviate the pressure on debt metrics, it fails to take into account equity financeability. Dividends are key to equity financeability and equity investors expect to earn cash yields from investments in utilities, as has been seen from the listed utilities in the energy and water sectors. A restriction on equity financeability manifested in the lack of dividends or delays in dividend payments would expose investors to longer-term cashflow and time inconsistency risk. As a result, equity investors may not be willing to commit long term capital to the business if dividend payments are constrained. Due to the short-term aspect of Ofwat's approach, the implication is that in the long-term, investors should expect higher returns. Whether or not this is Ofwat's intention, it serves to provide inconsistent results for little upside in the change of process. It is worth noting that we have been effectively injecting equity into the business given that our dividends have progressively declined in the current AMP, and we have paid no dividend for the year ended March 2020.⁴⁸⁶
- (571) As regards MARs, these are not an appropriate indicator of the continued willingness of investors to invest in the water sector. There is also no evidence to suggest that it was the introduction of the FD19, let alone Ofwat's proposal to restrict dividend payments, that caused any trading at a premium. There are **a myriad of factors** that could have driven, or contributed to the trading value, which we explained in Part B Section 6.3 above.

7.6.5. Our Reply: Faster transition to CPIH

- (572) On CPIH, we continue to rely on our SoC arguments given that Ofwat has provided very little evidence to challenge those arguments. In summary, a faster transition to CPIH would risk the reduction of headroom in the future for the sake of improved headroom in the short-term. This would be a significant change to the regulatory regime, result in intergenerational unfairness and increase customer bills in the short term.
- (573) Ofwat states that the CMA should note that other companies requested a faster transition to CPIH at PR19 (including SVT Water and UU).⁴⁸⁷ However, even though SVT and UU have adopted a full transition to CPIH, Moody's treats these cash flows as 'excess fast money' and strips them out of the AICR calculation:

"In its final determination, Ofwat acknowledged financeability constraints for a number of companies. It brought forward a total of £675 million of revenue from future periods into AMP7 by increasing the portion of total spending that companies can receive through revenue (the so-called pay-as-you-go or PAYG ratio) and, in some cases, the depreciation (or RCV run-off) rate... however, unlike an actual increase in allowed returns, this revenue advancement comes at the expense of lower RCV growth and future cash flow. We therefore do not give benefit to these advances in our AICR calculations".⁴⁸⁸

⁴⁸⁴ Ofwat, Monitoring Financial Resilience Report 2018-2019, 9 January 2020, SOC239.

⁴⁸⁵ Ofwat, Monitoring Financial Resilience Report 2018-2019, 9 January 2020, SOC239, p.14.

^{486 [}Redacted] REP071.

⁴⁸⁷ Ofwat Response Risk & Return, REP026, para. 4.130 – 4.132, pp.135-6. 488 Moody's Infrastructure and Project Finance Service, Regulated Water Utilities UK Outlook, Outlook remains negative as price review leads to unprecedented number of appeals, 30 April 2020, REP001.

"UUW has argued, and Ofwat accepted, that its customers would prefer an immediate full transition to CPIH, which would mean higher revenues but lower RCV growth over the AMP7 period. **Rather than increasing the allowed return, Ofwat chose to achieve an equivalent result by increasing the RCV run-off rate by approximately 1% during AMP7**. Ofwat adopted a similar approach for Severn Trent Water (Baa2 stable). While a higher run-off rate will increase the company's cash flow from operations compared to other companies, improving liquidity, we do not view the change as fundamentally improving credit quality because RCV growth, and therefore future returns and cash flow, will be reduced. **To maintain comparability with other water companies during AMP7, we will continue to deduct the full amount of the RCV run-off when calculating our AICR**⁷⁴⁸⁹ (emphasis added).

- (574) The transition to CPIH needs to be NPV neutral. A faster transition to CPIH would exacerbate factors that could result in an NPV negative outcome such as the mismatch between CPIH linked assets and RPI linked liabilities. This is consistent with the rationale Ofwat applied for adopting a phased transition.
- (575) We also point out that Ofwat's argument that the issuance of 6 CPI-linked bonds as of 31 March 2020 at a discount supports the liquidity of the market is flawed⁴⁹⁰ because it does not take into account whether the CPI debt market is large enough for companies to raise the quantum of CPI-debt required to maintain the effectiveness of the hedge. Moreover, companies would likely incur a premium (e.g. through swap costs) on swapping their RPI-linked or nominal bonds to CPI, which have not been allowed by Ofwat.
- (576) Despite a faster transition to CPIH having the same effect as an adjustment to PAYG rates, it is fundamentally different. A faster transition to CPIH would represent a significant change in regulatory approach and would not ameliorate the underlying financeability issue. The faster transition to CPIH would not represent an efficient market outcome to address the underlying financeability issue, which indicates that alternative remedies should be considered to address financeability problems identified.

⁴⁸⁹ Moody's, Credit Opinion, United Utilities Water Limited: Update following PR19 final determination, 4 March 2020, REP061. 491 SoC, Section 4.5, p. 52.

PART C: OTHER ISSUES

8. WHAT WEIGHT SHOULD BE PLACED ON CUSTOMER ENGAGEMENT EVIDENCE?

- (577) A key point of difference with Ofwat (alongside other Referring Companies it seems) is that having expended huge effort and time to engage more actively with their customers, companies are concerned that Ofwat appears to have put very little, if any, weight on this evidence in its determinations.⁴⁹¹ Whilst Ofwat acknowledges that "customer preferences, when estimated through high quality customer research, are an important input into setting performance commitments and their associated ODI rates",⁴⁹² there is no clear indication of customer preferences being given due and proper consideration in relation to the PCs and ODIs, let alone the other building blocks of the price control.
- (578) Rather than engage directly with the challenge we have raised, Ofwat mischaracterises this concern by saying that customer engagement evidence "do(es) not relieve the companies of the need to evidence either the need for or efficiency of their proposed expenditure. Nor does broad customer support immunise company business cases from appropriate regulatory scrutiny and challenge".⁴⁹³ We are not suggesting that customer evidence should be determinative in and of itself or that it should be a fetter on Ofwat's discretion.⁴⁹⁴ We do not consider, nor have we argued, that customer support removes the need to demonstrate need or efficiency, or that it should prevent regulatory scrutiny. We are not seeking certain additional costs in this redetermination in sole reliance upon an expression of customer support.
- (579) Instead, the key question we pose to the CMA is what weight customer engagement evidence should be given in reaching the determination and whether Ofwat gave it that appropriate weight. This is an important question of principle both for this redetermination and future price control reviews. We do consider that understanding customer views is important, for example, in assessing the need for and options to deliver enhancement investments that are designed to address local issues, as well as in identifying objectives and priorities and assessing trade-offs.
- (580) Our concern is that Ofwat has attached insufficient weight to customer evidence in reaching FD19, resulting in outcomes that do not properly reflect our customers' needs, priorities and preferences. We note that the Gray Report 2011 recognised that the final decision in a price control should sit with Ofwat but cautioned that "Ofwat should be careful about substituting its own views for those expressed by or through the consumer representative".⁴⁹⁵ This is particularly the case with respect to the two enhancement cases highlighted in our SoC. In the following sections we demonstrate that:
 - experience from other comparable regulated sectors shows that it is possible for Ofwat to place greater weight on customer evidence and there is nothing about the nature of regulated networks which necessarily restricts the weight that can be placed on it (see Section 8.1);
 - Ofwat's application of the PR19 methodology is inconsistent with its stated intention to encourage companies to engage with their customers and appears to have damaged trust in the price setting process amongst CCGs (see Section 8.2); and
 - by allowing this precedent to stand we are concerned that the huge gains made by companies in the sector in driving forward ever deeper engagement with their customers may be lost if the output is not given appropriate weight in the determinations (see Section 8.3).

8.1. EXPERIENCE FROM OTHER COMPARABLE REGULATED SECTORS SHOWS THAT IT IS POSSIBLE FOR OFWAT TO PLACE GREATER WEIGHT ON THIS EVIDENCE

(581) Consumer engagement has been characterised as "a process of effective dialogue between regulators and consumers that ensures that regulation, and the outcomes it delivers, are designed around consumers' needs".⁴⁹⁶ Others have suggested that "engagement means genuinely influencing decision making. Do not

⁴⁹¹ SoC, Section 4.5, p. 52.

⁴⁹² Ofwat Response Outcomes, para. 5.4, p. 17.

⁴⁹³ Ofwat Response Overall Stretch, REP019, para. 3.118, p. 45.

⁴⁹⁴ Ofwat Response Overall Stretch, REP019, para. 3.119, p. 45.

⁴⁹⁵ David Gray for Defra, Review of Ofwat and consumer representation in the water sector, 2011, "Gray Report 2011", REP0078, p. 78.

⁴⁹⁶ Martin Coppack, Francis Jackson and James Tallack, UKRN, Involving consumers in the development of regulatory policy: A UK Regulators Network Consumer Working Group discussion paper by, July 2014, "UKRN Report 2014", REP009, p.2.

engage if you cannot guarantee that the contribution of consumers or their representatives will make a difference."497

- (582) There are a range of customer engagement approaches used by regulated sectors to inform price control settlements and which influence the degree of weight placed on the views expressed by customers. Whilst Ofgem's approach to customer engagement broadly mirrors Ofwat's approach, the Civil Aviation Authority (CAA) was the first regulator to adopt a constructive engagement approach for the regulation of airports such as Heathrow and Gatwick, as well as NATs (En Route) Limited, the national air traffic control provider that allows a greater role for customers in reaching price control decisions.498 In the US and Canada, negotiated settlement approaches are common.499
- (583) For its 2015-2021 Strategic Review of Charges, WICS established its Customer Forum for Water (CFW). The sector as a whole, including the quality regulators, government and Citizens Advice Scotland, committed to working collaboratively and putting customers and communities at the heart of the water sector, championed by the CFW which was charged with negotiating an agreement with Scottish Water on its business plan for the period. WICS worked closely with the CFW and Scottish Water to ensure the research was appropriate, measured and used to effectively, as well as providing clear parameters for the price control decision set out in regulatory guidance. 14 months of engagement, followed by negotiation resulted in a Minute of Agreement between CFW and Scottish Water capturing the agreed modifications to the Business Plan.⁵⁰⁰ The role of the CFW is being replicated in WICS' methodology for the 2021-2027 price control - it will "act as a conduit for the views of customers and communities in inputting to Scottish Water's Strategic Plan, and will ultimately, agree the price profile".501
- (584) The CFW's review of the process concluded, amongst other things, that "the process amounted to a constructive challenge, whereby all energies were focused on finding acceptable compromises rather than debunking the other party's positions. This created the right conditions for Scottish Water to willingly stretch itself and make the best possible offer of prices and services".⁵⁰² In particular, it achieved this by ensuring that "customer voice, informed by extensive customer research, was given a weight comparable to, if not more important than, that of other stakeholders" meaning that "as long as they did not cut across the statutory and regulatory requirements associated with the environmental, public health or financial dimensions of the service, customer views and preferences were given primary consideration and therefore directly informed the planning of service developments (investments, operations, performance standards)". 503
- (585)These examples demonstrate that it is possible for regulators to adopt approaches that enhance the role played by customers and, as a consequence, the weight that is placed on their views. Customer engagement played a more prominent role at PR14 than it had in previous water price controls, but even so "a majority of companies ended up with what they saw as a regulator-imposed plan for AMP6 and CCGs felt that their views had been overridden without sufficient explanation".⁵⁰⁴ Reviewing that experience and looking forward to PR19 it was noted that "even short of [the WICS] 'negotiated' approach, there is a good deal Ofwat might do to create circumstances where greater weight can be expected to be given to the conclusions of CCG/company discussions".⁵⁰⁵

8.2. OFWAT'S APPROACH WAS INCONSISTENT WITH ITS STATED INTENTION AND APPEARS TO HAVE DAMAGED TRUST IN THE PROCESS

Ofwat's approach to PR19 made it clear that "companies need to understand their customers' preferences and (586)priorities and deliver the outcomes that matter to them over the long term".⁵⁰⁶ To facilitate that, Ofwat stated that

⁴⁹⁷ Sharon Darcy, Roger Darlington, Sebastian Eyre, Cosmo Graham, Eva Heims, Stephen Littlechild, Martin Lodge, Trisha McAuley and Richard Moriarty, Customer engagement in regulation, Centre for Analysis of Risk and Regulation, Discussion Paper No. 82, "CARR Customer Engagement DP.82 2016", February 2016, REP015, p. 12.

⁴⁹⁸ UKRN Consumer engagement in regulatory decisions: A guide to how UK Regulators involve customers, hear their views and take their interests into account, April 2017, "UKRN Customer Engagement 2017", REP005, p. 20; Bush, H. and Earwaker, J. The future role of customer and stakeholder engagement in the water industry. Report ref. no 15/CU/03/3. London: UK Water Industry Research, "Bush & Earwaker 2015", REP008, Section 8.

⁴⁹⁹ Stephen Littlechild, Regulation and Customer Engagement, International Associate for Energy Economics, "Littlechild, Regulation and Customer Engagement 2011", 2011, REP002. 500 The Customer Forum for Water in Scotland: Legacy Report, Lessons learned from customer involvement in the 2015-2021 Strategic Review of Charges, "CFW Legacy Report", February 2015, REP003

⁵⁰¹ Water Industry Commission for Scotland, Strategic Review of Charges 2012-27: Methodology refinements and clarifications, "WICS Methodology 2021-27", November 2018, REP004, p. 35. 502 CFW Legacy Report, REP003, p. 7

⁵⁰³ CFW Legacy Report, REP003, p. 7.

⁵⁰⁴ Bush & Earwaker 2015, REP008, p. 15.

⁵⁰⁵ Bush & Earwaker 2015, REP008, p. 37.

⁵⁰⁶ Ofwat, Delivering Water 2020 Our final methodology for the 2019 price review, SOC424, p. 22.

it would "enable, inform and incentivise good quality customer engagement that puts customers at the heart of decision making".⁵⁰⁷

- (587) Considering the range of issues on which customer views should be sought, Ofwat stated that "aspirations on levels of resilience should be informed by engagement with customers, to help companies understand their customers' expectations on levels of service. This will also help companies understand their customers' appetite for risk and how customer behaviour, in matters such as water efficiency, might influence approaches to resilience".⁵⁰⁸ Ofwat also noted that it was appropriate to involve "customers in the design and delivery of solutions, for example, by seeking their views on alternative options and using this information to drive decision making."⁵⁰⁹
- (588) In terms of its decision making, Ofwat was clear that "customer engagement will be central to our assessment of companies' business plans at PR19, as part of the initial assessment of business plans process", providing "essential evidence for companies' proposals".⁵¹⁰ This was qualified by Ofwat's seventh principle of customer engagement: "The final decision on price limits is entrusted to Ofwat. We will use a risk-based approach to challenge company plans if this is necessary to protect customers' interests".⁵¹¹ Ofwat considers that this made it clear that "customer engagement was not intended to replace either the role or judgement of Ofwat".⁵¹²
- (589) In recognition of the clear commitment to the importance of customer engagement, and the role of the CCGs in providing challenge and assurance, we embraced this as part of our PR19 process.⁵¹³ This led to the development of a business plan that "*in the round meets the needs of [our] customers*"⁵¹⁴ and was accepted by 91% of them. Recognising the importance of demonstrating that our customer engagement was robust, and the results are reliable, we have provided an independent report from Explain Market Research into our customer engagement approach at PR19 in support of this Reply.⁵¹⁵ Explain's report confirms that it "*agree[s] with Ofwat's assessment that the programme is high quality and provides convincing evidence*" and concludes, amongst other things, that overall our research and engagement was "*excellent*". ⁵¹⁶ The quality of our approach and our ability to engage meaningfully is also supported by the observations on one of our deliberative events in CCWater's recent report on customer engagement. ⁵¹⁷
- (590) Despite this, Ofwat's approach at PR19 appears to place less weight on customer engagement evidence than it did at PR14. Whilst Ofwat did assess the strength of customer engagement as part of its IAP categorisation of company plans, there is very little in FD19 to demonstrate that Ofwat took the views of our customers properly into account when deciding where and how to intervene in our BP19 proposals:

"It seems to many companies that despite the significant step up noted above, customer engagement, and the views of CCGs, have again been shown to have played a limited role in final decisions at PR19, with other sources of evidence such as the regulator's comparative assessments given more weight." ⁵¹⁸

- (591) Although Ofwat justifies this as 'stepping-in' in to protect their interests, the specific views of our customers do not appear to have played a material role in this balancing exercise. This means that a question posed in relation to PR14 remains valid for PR19: "how far should [Ofwat] seek to second-guess the willingness of customers to pay for enhancements that conferred clear local benefits?"⁵¹⁹ Other companies have expressed their concern that the "customer voice was not more evident in the final determinations, which in places appeared to substitute what customers have said they actually want, in favour of Ofwat's own view of what they should value".⁵²⁰
- (592) In its presentation to the CMA on 20 May 2020 Ofwat commented that the large divergence between the results of the customer engagement when looked at comparatively across the sector had given it cause for concern about the quality of that engagement. However, as has been noted by Water Resources South East in its submission

⁵⁰⁷ Ofwat's customer engagement policy statement and expectations for PR19, "Ofwat, Customer Engagement Policy Statement", 25 May 2016, SOC216, p. 5.

⁵⁰⁸ Ofwat, Delivering Water 2020 Our final methodology for the 2019 price review, SOC424, Section 2.5, p. 28, resilience planning principle 2 on customer engagement.

⁵⁰⁹ Ofwat, Customer Engagement Policy Statement, SOC216, p. 23.

⁵¹⁰ Ofwat, Delivering Water 2020 Our final methodology for the 2019 price review, SOC424, p. 22. 511 Ofwat, Delivering Water 2020 Our final methodology for the 2019 price review, SOC424, p. 26.

⁵¹¹ Ofwat, Delivering Water 2020 Our man methodology for the 2019 pice review, SOC42 512 Ofwat Response Overall Stretch, REP019, para. 3.114, p. 44.

⁵¹³ SoC, Section 4, p. 38.

⁵¹⁴ Northumbrian and Essex and Suffolk Water Forum CMA Submission, REP058, p. 2.

⁵¹⁵ Explain Market Research Evaluation of NWL's customer engagement, REP070.

⁵¹⁶ Explain Market Research Evaluation of NWL's customer engagement, REP070.

⁵¹⁷ Blue Marble, Engaging water customers for better consumer and business outcomes, Report for CCWater, April 2020, REP082, p. 37 – Example 8 in the table regarding a deliberative event about river quality and associated investments is anonymised but, we believe, relates to the research materials that we submitted to CCWater for use in this research. 518 Water UK CIMA Submission, REP050.

⁵¹⁹ Bush & Earwaker 2015, REP008, p. 10.

⁵²⁰ SW CMA Submission, REP043.

to the CMA "an important role of the customer engagement is to identify where there are regional differences in customer priorities and expectations".⁵²¹ This is echoed by Water UK: "As the challenges faced by companies, and customer views, are not homogenous across England and Wales, regional customer insight into these challenges and how to respond to them is crucial to informing decisions at price reviews". 522

- (593) In its Response Ofwat states that it "expected customer challenge groups to provide independent challenge to companies and independent assurance to us on the quality of a company's customer engagement and the degree to which this is reflected in its business plan" but that it "did not expect CCGs to endorse a company's overall business plan, nor did we expect them to act as a substitute for the views of customers". Ofwat goes on to state that it is "currently considering the future role of CCGs (or equivalent) for PR24, including how to better promote the independence of CCGs from companies".523
- (594)The implication of this statement is that the CCGs were not independent, acted as substitutes for the views of our customers and inappropriately sought to endorse company plans. We do not believe that this is a fair or justified view of our CCG, the Water Forum, or indeed of other CCGs across the sector. The CCGs have themselves refuted these comments and requested that Ofwat corrects "these aspersions" on their independence.524
- (595)Despite Ofwat's very clear statements of intent for PR19, which promised to correct some of the deficiencies of the PR14 process, Ofwat does not appear to have accorded customer views the weight that companies and customers anticipated. We acknowledge that the regulator needs to challenge and, ultimately decide but in making its assessments it is important that it focusses its input on those areas (e.g. efficiency) where it can be expected to have particular expertise, rather than seeking to second guess the preferences and priorities that customers have themselves expressed.

WE ARE CONCERNED THAT THE HUGE GAINS MADE BY COMPANIES IN THE 8.3. SECTOR IN DRIVING FORWARD EVER DEEPER ENGAGEMENT WITH THEIR **CUSTOMERS MAY BE LOST**

- (596) Ofwat states that it wants customers to be "active participant[s] ... in the design, production, delivery, consumption, disposal and enjoyment of water, water services and the water environment in the home, at work and in the community".⁵²⁵ Companies are expected to "demonstrate a clear commitment – across the entire business – to genuinely understanding and responding to the different needs and requirements of their customers" which Ofwat considers to be "key to building legitimacy and trust".526
- (597) Reviews on the success of the PR14 process have noted, however, that Ofwat's questioning of the strength of the customer engagement evidence "resulted in frustration on the part of CCGs and water companies due to the perception that a lot of time and effort had been spent 'for nothing' during the CCG process".527 Interviews with participants across the sector revealed that "participants in England suggested that they would prove less enthusiastic if Ofwat continued to prove so reluctant in delegating competencies". 528
- (598)In its initial comments to the CMA on the PR19 process, the Water Forum has expressed its "concern about the potential risk to customers" arising from FD19 and has reiterated its concerns about aspects of DD19 that were confirmed in FD19, such as its view that "not investing in sewer flooding in the North and water resilience issues in the South now does not, in our view, make sense especially when customers have said they support it".529 We note that the chairs of some of the CCGs for the Referring Companies have also expressed their disappointment that Ofwat makes "almost no reference to the intensive independent scrutiny carried out by our respective CCGs" in its Response.⁵³⁰ There is a very realistic chance, therefore, that the CCGs will have a similar view about PR19 as they had in relation to PR14.

⁵²¹ Water Resources South East Submission to the CMA – Water Redeterminations 2020, REP045.

⁵²² Water UK CMA Submission, REP050.

⁵²³ Ofwat Response Northumbrian Water, REP022, para, 2,21, p. 21.

⁵²⁴ Letter addressed to Ofwat from Independent Chairs of the Yorkshire Forum for Water Customers in response to Statements of Concern made to CMA, "CCG Chairs Letter to Ofwat", May 2020, REP040. 525 Ofwat, Delivering Water 2020 Our final methodology for the 2019 price review, SOC424, Section 2.4, p. 27.

S26 Ofwat, Delivering Water 2020 Our final methodology for the 2019 price review, SOC424, Figure 2.1, p. 27.
 527 Eva Heims and Martin Lodge, Centre for Analysis of Risk and Regulation, Innovation through customer engagement and negotiated settlements in water regulation – towards a transformed regulatory state?, "CARR Customer Engagement DP.83 2016", April 2016, REP006, p. 14.

⁵²⁸ CARR Customer Engagement DP.83 2016, REP006, p. 22.

⁵²⁹ Northumbrian and Essex and Suffolk Water Forum CMA Submission, REP058, p. 2. 530 CCG Chairs Letter to Ofwat, REP040.

- (599) Ofwat's approach at PR19 and its comments in the Response as outlined in the sections above, therefore, raise concerns about the role of, and value to be placed on, customer engagement evidence in future price control reviews. It is not enough for Ofwat to simply assess the quality of our customer engagement and how well their views have been incorporated into our proposals.⁵³¹ Those views must also be an appropriately weighted factor in Ofwat's determinations and not summarily dismissed on the premise that Ofwat knows better than the customers themselves what would be in their interests.
- (600) If customers, and those bodies that ensure their interests are properly assessed (such as the CCGs) feel that their views are not being given the weight they deserve, it creates a real risk of reversing a positive trend across the sector to develop stronger and deeper relationships with customers, building trust and confidence. Such an approach would weaken the incentives on the customers themselves and the CCGs to invest time and effort in the engagement process if the output will be largely disregarded:⁵³²

"Risks for future price reviews include that if different regional customer preferences with respect to service and investment to address long term challenges are disregarded, and if members of CCGs are unclear on whether their inputs into the process will have a meaningful impact on outcomes, then both customers and CCGs can be expected to be less willing to participate in future price reviews – compromising what we believe to have been a key and positive development in the last decade of water sector regulation. When determining the appeals for the referred price determinations, the CMA should place the greatest proportion of weight on the companies' customer engagement and the views of the CCGs." (emphasis added)⁵³³

(601) As other companies have commented, without a "*clear line of sight*" between "*customer views and [Ofwat's] own* sectoral policy objectives ... there is a risk that customers become disenfranchised from these processes".⁵³⁴ Just as Ofwat requires our understanding of customer needs and requirements to "*drive decision making*" by the companies,⁵³⁵ so too should it properly inform Ofwat's decisions. Any other approach undermines Ofwat's aim that customers should be "*at the heart of decision making*".⁵³⁶

8.4. CONCLUSIONS

(602) As we have demonstrated, it is possible with the context of the PR19 framework for greater weight to be placed on customer evidence in the CMA's redetermination than Ofwat has done in reaching its FD19 decisions. Where there is reliable evidence of strong customer support for investment in resilience, as we have obtained, ⁵³⁷ backed up by a robust business case, as we have demonstrated in Part B Section 3 for our sewer flooding and Essex Resilience schemes, the CMA should fund that enhancement expenditure.

⁵³¹ Ofwat, Customer Engagement Policy Statement, SOC216, p. 17.

^{532 &}quot;The quality of the engagement process may itself depend upon the extent to which regulatory attention is likely to be paid to it in the final decision-making process." Bush & Earwaker 2015, REP008, p. 50.

⁵³³ Water UK CMA Submission, REP050. 534 SW CMA Submission, REP043.

⁵³⁵ Ofwat, Customer Engagement Policy Statement, SOC216, p. 3.

⁵³⁶ Ofwat, Customer Engagement Policy Statement, SOC216, p. 5.

⁵³⁷ Explain Market Research Evaluation of NWL's customer engagement, REP070.

9. TAKING ACCOUNT OF NEW INFORMATION

9.1. SUMMARY OF OUR CASE

(603) In our SoC, we set out the relevant cost items where new information available post-FD19 would have been taken into account by Ofwat, had it been available during Ofwat's PR19 process. This included areas in which cost allowances would both increase and decrease; but in none of these areas did we ask for change to Ofwat's methodology or argue that Ofwat's methodology was flawed. This Section replies to the comments in Ofwat's Response and provides a further update on some of the items in light of developments post-SoC.

Table 36: Summary of key arguments – new information

Summary of Ofwat s argument	Summary of our Reply
IED compliance costs: Ofwat rejects our operational assessment of a significant emerging IED compliance requirement. This was based on preliminary email contact with a senior advisor from the EA.	IED compliance costs: After further engagement, the EA has confirmed its view that IED compliance costs are likely to be significant for our two large waste sites. We have conducted more analysis and have provided an enhancement case. This case, together with preliminary estimates from the EA, indicates a current compliance cost range between £12m to £20m and £31m totex. We continue to ask for an uplift to cost allowances, amounting to £20m, together with a two-sided mechanism to account for the acknowledged uncertainty.
Business rates overstatement: Ofwat has accepted that the overstatement of business rates should reduce allowances in the CMA's decision and that it would have changed its FD19 allowance if we had revised the forecast.	Business rates overstatement: Ofwat has accepted the position in our SoC. We would welcome the CMA's confirmation that its redetermination will take this new information into account. We note that this is an instance where we proactively identified a reduction in our FD19 allowance.
KTS - Impact on abstraction charges resulting from business rates: Ofwat has recognised the CMA's ability to take this information into account in its redetermination.	KTS - Impact on abstraction charges resulting from business rates: We would welcome the CMA's confirmation that its redetermination will take this new information into account.
Thames bulk supply abstraction costs: Ofwat has claimed that such abstraction costs have been reported previously as bulk supply costs and as such they have been included in base costs, which are accounted for in the econometric models, and as such this would not require an adjustment to allowances. But Ofwat asks the CMA to seek assurance before making an allowance adjustment.	Thames bulk supply abstraction costs: We confirm that abstraction costs from this source were reported in BP19 as abstraction costs, rather than as generic base costs, following Ofwat's methodology. We welcome Ofwat's request for assurance before making an allowance adjustment.
Grants and Contributions: Ofwat challenges the accuracy of our data and asks the CMA not to make changes.	Grants and Contributions : Ofwat has assessed the quality of our data through its Company Monitoring Framework, which granted us the second best score category at its last assessment. We note that Ofwat does not claim that this error is not an error. Therefore, we believe it would be unwarranted for the CMA to maintain an error in its decision.
Corporation tax: Ofwat has accepted that the redetermination should reflect the latest position on corporation tax (increase from 17% to 19%).	Corporation tax: We would welcome the CMA's confirmation that its redetermination will take this new information into account.

(604) As Table 36 indicates, the positions of Ofwat and Northumbrian Water are either aligned or very close to alignment on most of these issues. As we set out to the CMA in correspondence, in the interests of streamlining the issues to be considered during the redetermination, we would be happy to explore whether these matters might be dealt with in correspondence outside of the hearings.⁵³⁸

⁵³⁸ Northumbrian Water submission to the CMA – CMA Redetermination, Impact of Covid-19, 12 May 2020, REP012.

9.2. INDUSTRIAL EMISSIONS DIRECTIVE

(605) In our SoC we described the emerging IED compliance requirement on our wastewater operation that emerged after FD19 had been set.⁵³⁹ This is a significant requirement for the business, which would have been taken into account in FD19, had it been apparent at the time. We acknowledged the high level of uncertainty about how the EA would apply its final policy to our sites.⁵⁴⁰ We offered compliance cost estimates, given best information available at the time, which came from a WaterUK/UU assessment.⁵⁴¹ Given this uncertainty, we asked for an allowance uplift to cover the estimate for compliance at our two large waste sites at Howdon and Bran Sands, totalling £33m totex, together with 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.

9.2.1. Ofwat said:

(606) In its Response, Ofwat rejects our operational assessment of a significant emerging IED compliance requirement and suggests that we have significantly exaggerated our expenditure requirements.⁵⁴² This was based on preliminary email contact with an EA senior advisor.⁵⁴³

9.2.2. Our Reply:

- (607) Since the SoC was published we have developed our understanding of the likely IED compliance costs and developed an enhancement case for these activities.⁵⁴⁴ Our revised cost estimate of £31m totex is based on our current understanding of the scope of activities implied by IED compliance which apply to the two large waste sites. This is broadly consistent with our view expressed in the SoC but reflects our updated understanding that the EA will not require compliance activities at other sites.
- (608) In its Response Ofwat advised the CMA to neither make a cost allowance nor to create an uncertainty mechanism.⁵⁴⁵ Ofwat's position relies upon email communication with an EA senior advisor. The industry is still awaiting the EA's final policy position on the IED setting out its interpretation of the compliance requirements. We were concerned that the EA's email may have been taken out of context by Ofwat, given that Ofwat was treating this communication as the EA's final policy position. We have spoken to the EA and we understand that the EA is updating its advice to the CMA and Ofwat to confirm that we are likely to face a significant compliance cost.
- (609) Specifically, we understand that the EA believes that:
 - IED compliance is likely to incur significant costs;
 - the EA's final compliance ruling for permitting at the relevant sites may offer *alternative opportunities* to make cost savings against this compliance cost; and
 - without conducting the permitting study to understand the final compliance cost, the EA indicates that these
 opportunities could reduce the compliance cost to between £12m and £20m plus on costs (although it does
 confirm the uncertainty about the availability of those opportunities). Clearly, without a detailed engineering
 assessment such opportunities would need to be studied and confirmed by the EA.
- (610) We welcome the frank engagement from the EA, which cuts through its normal process to finalise its position, given the timing requirements of the CMA redetermination process. We acknowledge the significant uncertainty that still remains about the scope of final compliance activity specific to the relevant sites. We would also welcome the opportunity to explore the *alternative opportunities* to reduce the scope of compliance work; although we would defer to YW's current experience in securing an updated IED-compliant permit, which may suggest that such opportunities may be limited. At this point in time, therefore, there is a range of compliance cost estimates from our current £31m totex estimate to the EA's initial estimate of between £12m to £20m plus on costs.
- (611) Given better information, plus our initial engagement with the EA, we want to update our request to the CMA. We acknowledge that the CMA will want to take an appropriately conservative position towards cost allowances. Therefore, we want to reduce our request for a cost allowance from £33m to £20m totex, to reflect the range of estimates available. However, given the uncertainty about these estimates, we continue to request an uncertainty

541 Water UK IED Workshop Notes, 20 February 2020, SOC408.

⁵³⁹ SoC, Section 9.4, p. 167.

⁵⁴⁰ SoC, Section 9.4.3, p. 169.

⁵⁴² Ofwat Response Northumbrian Water, REP022, paras. 3.156-3.162, pp. 66-68. 543 Ofwat Response Northumbrian Water, REP022, para. 3.158, p. 67.

⁵⁴⁴ IED Enhancement Case Appendix, REP069.

⁵⁴⁵ Ofwat Response Northumbrian Water, REP022, para. 3.162, p. 68.

mechanism that would correct at the end of AMP7, with an adjustment to the RCV, over and under-recovery of IED compliance costs.

- (612) Briefly, we want to address the remaining Ofwat points raised in its Response, which are mostly out-of-date:
 - IED costs were already included in business plans that were considered in PR19:546 The IED has been in place since 2011; however, the new information provided to the CMA reflects the application of the IED to new facilities and activities, following EA clarification in 2019.547 This timing means that we would not have been able to include these costs in our September 2018 PR19 business plan;
 - New IED compliance costs related only to two plants, which already have environmental permits:548 We understand from discussions with the EA, that its current view is that compliance will only be required at our two very large waste sites. These sites do not have permits compliant with the new IED requirements. The process of obtaining a permit will be the EA's opportunity to fully study the requirements on site and hence to identify the scope of remedial work (i.e. permitting is not a paper-based exercise); and
 - Our sites should be compliant already because of the 2012 floods:549 The IED requirements exceed the . impact of the 2012 floods, or other current normal operational capability, particularly for biosolid storage. Therefore, further work to obtain the IED compliant permit will be additional activity that would not have been expected to deal with routine risk.

9.3. **BUSINESS RATES OVERSTATEMENT**

As we set out in our SoC, the Valuation Office has reduced our rateable value from £85m to £77.5m.550 The (613) subsequent reduction in our business rates expense was not reflected in FD19, and so FD19 overstates the annual business rates charge by £11.74m p.a. We asked the CMA to reduce the appointee total revenues across 2020-2025.

9.3.1. Ofwat said:

(614) Ofwat has accepted that the overstatement of business rates should reduce allowances in the CMA's decision and Ofwat would have changed allowances if we had revised forecasts. Ofwat also notes that companies are likely to reveal where costs are going up but not where costs are coming down.551

9.3.2. **Our Reply:**

(615) We have been balanced in our presentation of new information that the CMA should take into account, with fairness to our customers being at the core of approach. It is not true that we have only asked for increases to allowances, because this item will act to reduce our allowance.

9.4. KTS: IMPACT ON ABSTRACTION CHARGES RESULTING FROM BUSINESS RATES

(616)As set out in our SoC, in January 2020, the EA accepted liability for the business rates charges as operating costs covered by the Kielder Operating Agreement.552 The EA wishes to recover these costs by increasing our abstraction charges. FD19 does not account for the increase in abstraction charges and we asked the CMA to uplift the appointee total revenues across 2020-2025 by £60.88m in total.

9.4.1. Ofwat said:

- Ofwat has recognised the CMA's ability to take this information into account in setting its re-determination.553 (617)
- (618) In acknowledging the risk of higher abstraction charges, Ofwat highlights to the CMA that its price control includes an uncertainty mechanism which corrects most of the higher abstraction charges, compared to the forecast that

⁵⁴⁶ Ofwat Response Northumbrian Water, REP022, para. 3.156, p. 66.

⁵⁴⁷ See the IED Enhancement Case Appendix, REP069, for further details. 548 Ofwat Response Northumbrian Water, REP022, para. 3.159, p. 67.

⁵⁴⁹ Ofwat Response Northumbrian Water, REP022, para. 3.161, p. 67.

⁵⁵⁰ SoC, Section 9.5, p. 171. 551 See, for instance, Ofwat Response Northumbrian Water, REP022, para. 3.170, p. 68.

⁵⁵² SoC. Section 9.6. p. 171.

⁵⁵³ Ofwat Response Northumbrian Water, REP022, para. 3.167, p. 68

was available in setting the FD19. In this instance, Ofwat suggests that we would bear "only £15.2m" of the new forecasted charges.

9.4.2. Our Reply:

- (619) We would welcome the CMA's confirmation that its analysis will take into account this new information and stand ready to provide further information, where required.
- (620) We are concerned at the suggestion made by Ofwat that an uncertainty mechanism could be used in the CMA's decision, without an adjustment for this risk. Such a mechanism is designed to account for changes to actual abstraction charges, compared to the forecast known at the setting of the price control. Given that the uplift will be known when the redetermination is decided and it is clearly outside of management control, it would appear unwarranted not to set allowances based on known information. £15.2m is a significant amount which we need to improve our service to current and future customers through AMP7, as planned.

9.5. THAMES BULK SUPPLY ABSTRACTION COSTS

(621) From April 2020, we will be liable to pay increased abstraction charges relating to our bulk supply agreement with Thames Water, to receive water at Chigwell in Essex. Thames Water raised this liability with us in November 2019 and so it is not reflected in the FD19. We asked the CMA to uplift the appointee total revenues across 2020-2025 by £2.5m.⁵⁵⁴

9.5.1. Ofwat said:

(622) Ofwat has claimed that such abstraction costs have been reported previously as bulk supply costs and as such they have been included in base costs, which are accounted for in the econometric models. As such this would not require an adjustment to allowances.⁵⁵⁵ Whilst Ofwat concedes that this information was not available at FD19, it suggests that if the adjustment was not made, then the cost sharing rates would mean that we would only bear £1.35m.⁵⁵⁶ Ofwat recommends that the CMA seeks further evidence and assurance before making any adjustment.⁵⁵⁷

9.5.2. Our Reply:

- (623) We can confirm that abstraction costs from this source in our BP19 were reported as abstraction costs, rather than as more generic base costs, following Ofwat's methodology. This is consistent with our reporting of this new information in our SoC. This means that this cost item does not fall within and has not and should not be benchmarked as part of the econometric base cost models.
- (624) We restate our SoC request that this be treated as a pass-through item with an uplift to total appointee revenue. We stand ready to provide further data to the CMA, as required.
- (625) As with the KTS abstraction charges, we are concerned about Ofwat's attitude towards the level of costs that we should bear, when such costs are known before the setting of the price control and are clearly outside of management control. Additional cost burdens put at risk our plans to improve our service to our customers, which we believe are in their interest.

9.6. GRANTS AND CONTRIBUTIONS

(626) In our SoC we pointed to an error in Ofwat's FD19 modelling for Grants and Contributions. We asked the CMA to correct this error.⁵⁵⁸

⁵⁵⁴ SoC, Section 9.7, p. 173.

⁵⁵⁵ Ofwat Response Northumbrian Water, REP022, para. 3.169, p. 69.

⁵⁵⁶ Ofwat Response Northumbrian Water, REP022, para. 3.170, p. 69.

⁵⁵⁷ Ofwat Response Northumbrian Water, REP022, para. 3.171, p. 69. 558 SoC, Section 9.8, p. 174.

9.6.1. Ofwat said:

(627) Ofwat has focused on whether we could have raised this point earlier in the process.⁵⁵⁹ Ofwat argues that our reporting in BP19 led it to assume that the expenditure was not captured in grants and contributions and that this assumption was made clear earlier in the process.⁵⁶⁰ Ofwat claims that this is an immaterial issue.⁵⁶¹ Ofwat refers to its lack of confidence in our data and recommends that the CMA does not make an adjustment for this error.⁵⁶²

9.6.2. Our Reply:

- (628) This is a technical error in Ofwat's models. We do not believe that Ofwat is contesting that this is an error. These models are highly complex and feature detailed inputs and outputs and we understand that errors occur. That complexity also limits our ability to scrutinise every number and calculation, within a short window granted to comment. We believe that repeating the error in the CMA's modelling, for a material financial effect, would appear strangely punitive and unwarranted, when all parties know (and apparently agree) that this is an error.
- (629) As we have set out in Part C Section 10.6 we consider that Ofwat's comments with regard the accuracy of our data to be unfounded and misleading. We believe that in reporting this error, we have demonstrated our ability to recognise points of detail and raise them in a measured way. We ask the CMA to ensure that this technical error is not included in its final decision.

⁵⁵⁹ Ofwat Response Northumbrian Water, REP022, para. 3.173, p. 70. 560 Ofwat Response Northumbrian Water, REP022, para. 3.174, p. 70. 561 Ofwat Response Northumbrian Water, REP022, para. 3.176, p. 70. 562 Ofwat Response Northumbrian Water, REP022, para. 3.176, p. 70.

10 **OUR VIEWS ON OFWAT'S RESPONSE**

- (630)In this section we set out our broad views regarding Ofwat's Response. The picture Ofwat paints of our company in the Response is not accurate. To support this picture, Ofwat has made statements in its Response which are factually incorrect and mischaracterise our business and the case that we have presented during the PR19 process and to the CMA. Ofwat has been inconsistent and selective in its arguments and use of evidence, and it has changed its position on various issues. We believe it is important that the CMA is not distracted or misled by those comments and will demonstrate why this is the case.
- (631) This section sets out some broad themes arising from Ofwat's Response. It is supported by an Appendix which sets out the arguments that have been incorrectly attributed to ourselves in Ofwat's Response in its grouping of issues as 'common' or 'cross-cutting'.563

10.1. FOCUS ON SHORT TERM BILL REDUCTIONS

- (632) Ofwat approached the PR19 price control process with the aim of ensuring that customers across the sector benefited from bill reductions. This view is shared by the other Referring Companies and some of those that chose to accept FD19.564 The interventions it has made across all of the building blocks to reduce expenditure and returns during AMP7 contributed significantly to average bill reductions for our customers of 26% in FD19. Whilst Ofwat asserts that bill reductions are simply "the consequence of application of our PR19 methodology"565 it is also clear that the decisions that we have challenged are "the result of an exercise of regulatory discretion" "taken in the light of all of the circumstances (including our experience of the water sector and the evidence submitted to us), and as part of the balance that we struck between various interests and policy considerations".566
- (633)We continue to maintain that on balance, when considering the range of interventions, decisions and trade-offs made by Ofwat in reaching FD19 there was a systematic bias towards supporting bill reductions. Figure 29 shows that the bill reduction of -26%⁵⁶⁷ imposed on us in FD19 against some other comparators including previous price controls for the sector and other comparative sectors. This unprecedented level of reduction must be seen in the context of a BP19 that itself proposed a bill reduction for our customers of 15% based on our calculation. Our proposal was clearly an affordable package, comparable with the largest previous bill reductions in the sector ever, greater than other competitive sectors that regulation is seeking to 'mimic' and yet Ofwat has pushed for even more. Ofwat states that bills will be around flat in nominal terms but we note that this is clearly not the case for us. Furthermore the bill profile is comparable to other competitive sectors cited, which are shown in real terms.
- (634) Ofwat maintains that the level of bill reduction throughout the price review is comparable to previous controls and for ourselves.⁵⁶⁸ However, our BP19 did not offer a reduction anything like at the level which was offered at PR19 in any of these previous controls, so the comparison is not relevant.

⁵⁶³ Incorrectly Attributed Arguments Appendix, REP073. 564 WW CMA Submission, REP041: "We understand the political context that led the PR19 design to be focused on achieving reduced bills, and of course we also recognise the contribution that some parts of the industry had made in creating such a climate. Notwithstanding this unhelpful background, we do not believe PR19 delivers long-term value for customers and the environment."

⁵⁶⁵ Ofwat Response Northumbrian Water, REP022, para. 2.9, p. 20.

⁵⁶⁶ Ofwat Response Northumbrian Water, REP022, para. 2.7, p. 18.

⁵⁶⁷ This figure is based on Ofwat's calculation of the average bill reductions envisaged by FD19 (see Footnote Error! Bookmark not defined.)

⁵⁶⁸ Ofwat Response Northumbrian Water, REP022, para. 2.41, p. 26.



Figure 29: 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.

- (635) In its Response Ofwat provides a waterfall chart showing the drivers of bill reductions between 2019-20 and 2024-25.⁵⁶⁹ The chart splits the bill drivers down into no less than twelve different elements. Ofwat concludes that the key drivers of these reductions are a) a decrease in the natural PAYG rate as a result of higher capital expenditure and lower operating expenditure during the AMP, b) a lower allowed cost of capital and c) a reduction in tax the company expects to pay.⁵⁷⁰
- (636) We make a number of observations in relation to Ofwat's bills analysis:
 - the bill values used in the Waterfall model are misleading. Ofwat's models try to combine separate Northumbrian (combined water and wastewater) and Essex and Suffolk bills (water only) into a single bill, which is misleading. For this reason, we proposed separating the bills between the regions to aid customers understanding. Ofwat added an additional tab to the financial model with the results included⁵⁷¹ which showed a more accurate bill reduction: £95 for Northumbrian combined and £45 for Essex and Suffolk;
 - the natural PAYG component requires further explanation. To calculate the PAYG component, Ofwat compares our 2019/20 PAYG rate to the 2024/25 rate (71% versus 55%). The 71% PAYG rate is very high compared to PR19 levels (typically 50-60% across the industry). This is due to two factors. The first is that the PAYG rate in PR14 was used to smooth bills over PR14. As such, the unsmoothed PAYG rate was 68.9%. The second is due to the different treatment of infrastructure renewals expenditure (IRE) between the PR14 and PR19. In PR14, the PAYG rate was set to include IRE, whilst capitalised IRE was excluded in PR19. If we simply used the opex from PR14, the PR14 PAYG rate would be 56.2%. Thus, the Waterfall calculation represents the impact of modelling decisions rather than any underlying change in costs; and
 - the Waterfall model 'nets off' some important bill drivers, such as the impact of totex on depreciation and of totex efficiency versus totex growth.
- (637) We have re-analysed the building block cost drivers and simplified some of the drivers. This analysis is presented in Figure 30 below.

⁵⁶⁹ Ofwat Response Northumbrian Water, REP022, Figure 2.1, p. 26. 570 Ofwat Response Northumbrian Water, REP022, para 2.39, p. 25. 571 Ofwat PR19 Financial Model, SOC200, Table 6.1a.



Figure 30: Bill movement between PR14 and PR19

Source: NWL analysis using PR19 financial model for NWL Note: 'Increase in totex' represents RCV growth

- (638) None of this analysis materially disputes Ofwat's suggestions about the sources of bill reductions. The largest sources of bill reductions are the reduced WACC and PAYG changes but other significant sources of bill reductions are totex efficiencies (including for example reductions in retail costs and opex efficiencies) and the removal of revenue adjustments applied at PR14 for the AMP6 period for the under recovery of revenues during AMP 5 and for service performance, which we also show separately in Figure 29.
- (639) However, none of this serves to provide any evidence that Ofwat's focus has not been on bill reductions at the expense of other factors. We note that:
 - Ofwat has rejected two well evidenced resilience schemes which collectively would have resulted in upward pressure on bills of c.£2.18 for customers or less than 1% of bills, and at a sector level has allowed just under 1% of totex investment to support resilience;
 - as we highlight in Section 4, Ofwat has applied a number of poorly justified efficiency challenges, including
 inter alia applying frontier efficiency challenges to cost elements outside of management control, setting a
 catch-up challenge beyond the level that three quarters of the sector have achieved in the past and
 introducing other unjustified challenges to our WINEP programme. All of these elements reduce bills in the
 short term; and
 - Ofwat has set an extremely low cost of capital in its 'early view' and then made further unjustified reductions to this.
- (640) In this respect Ofwat's assertion that bill reductions are simply an outcome of the application of its methodology is not convincing. It is the policy choices that Ofwat has made throughout PR19 that reveal its focus on bill reductions and it is therefore circular to suggest that bill reductions are simply an outcome of the methodology.

10.2. OFWAT MISCHARACTERISES OUR CONCERNS AROUND CUSTOMER EVIDENCE

(641) Ofwat presents our position as suggesting that customer evidence alone is sufficient to justify our plans.⁵⁷² That is not the case. Our SoC was clear that our concern was around the **level of weight** placed by Ofwat on the customer evidence⁵⁷³ rather than a suggestion that customer evidence should override all other considerations or "*immunise company business cases from appropriate regulatory scrutiny*".⁵⁷⁴ As demonstrated by the enhancement cases we provided as part of BP19 and updated for our SoC, this was not our intent. In those cases we set out detailed assessments of the problems the enhancements were designed to meet and the options

⁵⁷² Ofwat Response Northumbrian Water, REP022, para. 2.26, p. 23.

⁵⁷³ SoC, Section 4.5, p. 52. 574 Ofwat Response Northumbrian Water, REP022, para. 2.26, p. 23

we considered. Ultimately Ofwat does not appear to have given adequate weight to the resilience objectives that informed our customers' and the company's approaches. In taking this approach Ofwat has not fairly or accurately reflected our position, has down-played the importance of the customer voice in the process and has failed to engage with our key concern (see Part C Section 8).

10.3. OFWAT MISCHARACTERISES OUR PERFORMANCE

- (642) Ofwat states that we are "broadly delivering average levels of performance to its customers, in comparison with other companies" but asserts that our "relative performance has deteriorated recently".⁵⁷⁵ Ofwat also suggests that its interventions will protect our customers against "poor performance".⁵⁷⁶ In the same Response, however, Ofwat also refers to our strong performance on costs and ODIs as positive examples of outperformance for the other Referring Companies and suggests that we are "well-placed not only to achieve its targeted levels of performance commitment but to out-perform".⁵⁷⁷ These statements are clearly inconsistent and the criticisms of our performance are misleading. As we have demonstrated to the CMA in our SoC, we are a high performing company and there are several areas where our performance is above average or indeed at the frontier.⁵⁷⁸
- (643) Ofwat also refers to the EA's statement that wastewater company environmental performance in 2018 was 'simply unacceptable'.⁵⁷⁹ We note that this fails to acknowledge the remainder of the EA's statement which goes on to identify ourselves as the "one exception" to that assessment, noting that we have "shown that it can be done" as "the only company to achieve the highest rating and the only company to improve its performance".⁵⁸⁰

10.4. OFWAT MISCHARACTERISES OUR ENGAGEMENT WITH THE PR19 PROCESS

(644) Ofwat contends that we had "significant opportunity through the PR19 process to convince [it] of the need for all the costs requested in [our] business plan" but that we "failed to do" so.⁵⁸¹ This contention is wholly unfair. It fails to address the reality that many of the cost efficiency adjustments that we have challenged before the CMA were only introduced by Ofwat at FD19 itself without prior consultation.⁵⁸² We therefore could not have raised our concerns in relation to these adjustments at an earlier stage.

10.5. OFWAT MISCHARACTERISES OUR UNDERSTANDING OF RESILIENCE

(645) As explained in Part B Section 3.3 above, Ofwat's representation of our understanding of resilience is misleading. We also note that this concern was not raised with us by Ofwat at any point prior to this process.

10.6. OFWAT MISCHARACTERISES THE QUALITY OF OUR DATA AND OUR REPORTING

(646) Ofwat has suggested that there have been several instances where we have "failed to report data accurately and/or in line with other companies"⁵⁸³ and also claims that on wastewater we "revised data more than other companies during the PR19 process". ⁵⁸⁴ Ofwat suggests that this "undermines [its] confidence in [our] business plan." ⁵⁸⁵ This is the first time that Ofwat has raised this concern. We have worked carefully since the PR19 review started in 2017, to ensure that our plans and submissions to Ofwat has been accurate. Key submissions have been assured through Board processes, as required by Ofwat. At the IAP April 2019 we received a 'B' rating for our data quality.⁵⁸⁶ During AMP6 we were one of only five companies to be given 'self-assured' status by Ofwat under the Company Monitoring Framework.⁵⁸⁷ Our data quality is good by Ofwat's own assessment. As the CMA will be aware, PR19 is potentially the most complex price control framework experienced in the UK or

⁵⁷⁵ Ofwat Response Northumbrian Water, REP022, para. 1.17, p. 5.

⁵⁷⁶ Ofwat Response Northumbrian Water, REP022, para. 1.54, p. 13. 577 Ofwat Response Northumbrian Water, REP022, para. 1.54, p. 13.

⁵⁷⁸ SoC, Section 2.6.

⁵⁷⁹ Ofwat Response Overall Stretch, REP019, para. 5.16

⁵⁸⁰ SOC385 Environment Agency's Annual Environmental Performance Report, pp. 1-2.

⁵⁸¹ Ofwat Response Northumbrian Water, REP022, para. 1.49, p. 13.

⁵⁸² Ofwat a) moved past the UQ in its catch-up challenge, b) changed its frontier shift assumption and applied it to unmodelled costs, c) made a post modelling adjustment for growth, d) altered the allowed return and e) made its PAYG financeability adjustment all without consultation at the FD. These issues represent a material part of our case.

⁵⁸³ Ofwat Response Northumbrian Water, REP022, para. 3.175, p. 70. 584 Ofwat Response Northumbrian Water, REP022, para. 3.123, p. 57.

⁵⁸⁵ Ofwat Response Northumbrian Water, REP022, para. 3.175, p. 70.

^{586]} Ofwat, PR19 initial assessment of plans:

Summary of test area assessment, January 2019, REPX, Figure 12.1 question CA5.

elsewhere and was subject to various evolutions and methodological changes. Unsurprisingly, Ofwat itself made a number of errors during the process, including in the FD19 itself which it has recently corrected.588

OFWAT FAILS TO ACKNOWLEDGE THE STRETCH AND AMBITION IN OUR 10.7. **BUSINESS PLAN**

- (647) Ofwat claims that "the majority of the increase in affordability of customers' bills is due to a reduction in the allowed cost of capital in our final determination and a change in the natural pay as you go rates, which means a larger proportion of costs are recovered from future customers".589 As we explained in our SoC our ability to offer industry leading average bill reductions of 15%, alongside above average and some frontier levels of service was enabled by "our strong efficiency performance" which allowed us to build in significant stretch to BP19.590
- (648) The PAYG adjustment referred to by Ofwat represents a shift from opex to capex, hence overall our opex is falling significantly whilst our capital programme is increasing (see Section 10.1 above). At the same time no credit is given for the very stretching service improvement targets we set ourselves in BP19 or the fact that we have accepted the base cost allowances and are not challenging the PC/ODIs. This is simply not addressed in Ofwat's Response.

10.8. **OFWAT MISCHARACTERISES THE FURTHER STRETCH IT HAS APPLIED AT PR19 ON US AND THE SECTOR**

(649)In various places Ofwat implies that the package it imposed on us was not terribly stretching.⁵⁹¹ Ofwat presents partial analysis implying that the efficiency challenge between DD19 and FD19 was low and that many companies were already forecasting costs below the allowances.⁵⁹² This analysis excludes and is entirely silent about the (very substantial) costs that companies had already taken out of their plans throughout the PR19 process, driven by the inappropriate cost sharing and other incentives Ofwat applied to the sector to drive down costs and reduce bills. It also excludes the cost efficiencies within company plans. Comparing the business plans and FD's of PR14 and PR19 shows the real picture for the CMA, PR19 represents a materially tougher challenge to total costs.⁵⁹³

Table 37: Totex challenge: PR19 vs PR14594

	FD allowance (£m)	Original Business Plan	Challenge	Challenge (%)
PR14 Water	£20.00bn	£19.94bn	-£0.06bn	-0.3%
PR14 Wastewater	£20.36bn	£20.97bn	£0.61bn	2.9%
PR19 Water	£23.07bn	£26.65bn	£3.58bn	13.4%
PR19 Wastewater	£22.70bn	£25.54bn	£2.84bn	11.1%

Source: PR14 and PR19 Securing cost efficiency appendices.

(650)At the same time Ofwat, acknowledging now that we do perform well on some service measures, suggests that we are likely to outperform the package of service metrics based on selecting two example metrics, pollutions and supply interruptions.⁵⁹⁵ We agree that we have some scope to outperform these metrics but we have 35 financial ODIs in the settlement. We have undertaken further risk analysis on a much fuller suite of metrics, considering our historical performance and examining the volatility of that performance, to inform the likely overall rewards and penalties that we could incur. This confirms the position taken in the SoC and is discussed in detail in Part B Section 7.4. We also explained in our SoC that the level of improvement required by Ofwat is materially higher in AMP7 than it has been previously - across four of the key measures for which historical information is available Ofwat is seeking a performance improvement rate which is more than double what the sector has achieved in the past.596

592 Ofwat Response Northumbrian Water, REP022, para, 3.20, p. 33.

⁵⁸⁸ Ofwat has published a number of corrigenda for its FD19 documents, including company-specific corrections. These are all published on Ofwat's website

⁵⁸⁹ Ofwat Response Northumbrian Water, REP022, para. 1.26, p. 7.

[.] 590 SoC, para. 119, p. 27.

⁵⁹¹ See, for example, Ofwat Response Northumbrian Water, REP022, para. 1.26, p. 7.

⁵⁹³ We note that Ofwat has suggested that we have alluded "to the potential generosity of prior price review settlements" (Ofwat Response Northumbrian Water, para. 2.17, p. 20). For the avoidance of doubt, our comments in the SoC to which Ofwat refers (SoC paras. 138 and 282) are not allusions to the potential generosity of past price controls, per se, but to the criticism to which Ofwat has been subject and the possibility that this might have been a factor that influenced Ofwat's approach to PR19.

⁵⁹⁴ This table compares totex allowances (base costs and enhancements) to the requests in the original business plans at each review. This shows the level of the overall challenge applied by Ofwat across all categories of expenditure.

⁵⁹⁵ See, for example, Ofwat Response Northumbrian Water, REP022, para. 1.12, p. 4. 596 SoC, Section 10.6.1 and Figure 48, p. 188.

OFWAT INCORRECTLY REFERENCES OUR DIVIDEND PROFILE AND ARGUMENTS 10.9. **AROUND THE WACC**

- Ofwat suggests that we have opportunistically used the redetermination process to seek a WACC that is materially (651) higher than our BP19 by virtue of our reference to the range presented by KPMG in its expert report.⁵⁹⁷ In our SoC, however, whilst we have relied on that report to demonstrate the errors in Ofwat's methodology and assessment, we did not identify a specific number, instead suggesting that the CMA should reach its decision on WACC by reference to certain criteria.⁵⁹⁸ We were also clear that "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".599
- (652) Ofwat goes further to question our level of dividends and to suggest that our gearing is inappropriately high.600 Clearly these issues have limited relevance to a forward looking redetermination exercise. However, Ofwat's presentation of our dividend profile, and the inference that this is an issue specifically related to our ownership and financial structure is both misleading and incorrect.
- (653) For the sake of clarity, therefore, in the [Redacted] we have set out our dividends in the referenced period to demonstrate factually that they have not exceeded our profits.⁶⁰¹ We provide analysis to show that the percentages referred to by Ofwat are erroneous and detail the sources of our returns in AMP6 using information already reported to Ofwat.⁶⁰² Whilst our gearing is above the notional level of 60% (66.8% as at 31 March 2019) we do not agree with Ofwat's characterisation that we are a highly geared company.603 In fact our gearing is modest compared to the structures observed across the sector and below the average.⁶⁰⁴ Our gearing level has a small impact on our returns, which in AMP6 are driven principally by inflation on our asset base and real outperformance of the efficient cost allowances and service targets set by Ofwat in AMP6 and in previous determinations.⁶⁰⁵ Our outperformance elements are clearly higher than the average across other companies whilst gearing clearly contributes less.
- Ofwat has also expressed concerns about executive remuneration.⁶⁰⁶ As we demonstrate in our [Redacted] our (654)executive pay is substantially lower than average executive pay of the listed, fast-tracked companies, and in 2019 was the 2nd lowest of all WASCs (excluding the not-for-profit Dwr Cymru).607

10.10. **OFWAT MISCHARACTERISES OUTPERFORMANCE OF THE REGULATORY** SETTLEMENT

- (655) Ofwat has previously recognised the benefits for customers of outperformance: "Some companies have stepped up to the PR14 efficiency challenge in an impressive way. In the first two years of this AMP period more than half of companies outperformed their innovative TOTEX allowances which were set at PR14. Customers benefit in the short term because our incentive regime means cost savings are shared. They benefit in the future because the current best levels of efficiency will set the standard for all in the next period and will contribute to prices falling - in real terms - for a decade."608
- (656) In its Response, however, Ofwat has characterised outperformance as simply 'underspending'609 and it has tied this firmly to the topic of shareholder returns. Ofwat also fails to identify whether it considers each instance of underspend to be efficient or inefficient. This narrow characterisation which infers that all underspend is inefficient does not give adequate weight to the crucial aspects of how the regulatory framework benefits customers through the repeated nature of incentive-based regulation. In our SoC we show that the incentive based regime and the repeated nature of regulation has delivered significant benefits to customers.610 For PR19, as well as our customers benefiting from industry leading bill reductions, our cost efficiency performance in AMP6 has generated

601 [Redacted], REP071. 602 [Redacted], REP071.

604 [Redacted], REP071, Slide 9.

609 Ofwat Response Northumbrian Water, REP022, para. 5.26, p. 100. 610 SoC, Section 2.6.3, p. 22.

⁵⁹⁷ Ofwat Response Northumbrian Water, REP022, para. 6.7, p. 109

[.] 598 SoC, Section 8.4.5, p. 149.

⁵⁹⁹ SoC, para. 775, p. 149. 600 Ofwat Response Northumbrian Water, REP022, para. 1.19, p. 5 and para. 1.44, p. 11.

⁶⁰³ Ofwat Response Northumbrian Water, REP022, para. 1.19, p. 5.

^{605 [}Redacted], REP071, Slide 8.

⁶⁰⁶ Ofwat Response Overall Stretch, REP019, para. 5.4, p. 54.

^{607 [}Redacted], REP071, Slide 16,

⁶⁰⁸ Jonson Cox speech at Water Industry City Conference, 1 March 2018, REP062.

over £400m in benefit for customers across the sector.⁶¹¹ These benefits far outweigh the dividends paid beyond the base return. This should not be surprising given that, at least during PR14, benefits were shared with customers in these areas on a broadly 50:50 basis.

(657) Ofwat concludes that "*it is not appropriate that customers should incur increased costs to provide additional headroom under the actual capital structure or to continue to meet high dividend payments.*"⁶¹² We totally agree with this statement, but it is wholly inconsistent with our reasons for requesting a redetermination. Whilst we appreciate that it is important for Ofwat and the CMA to ensure that the interests of customers are protected with regards to the financial and structural decisions made by companies, we do not consider that our BP19 proposals raise any such concerns. As we explain in the [Redacted] outperformance in the previous AMP, operating outperformance and financing outperformance are key contributors to our dividends – gearing contributes far less than the average for other WaSCs. We have committed to industry leading bill reductions of 15% on average alongside stretching performance targets and the delivery of significant resilience investment. Our plan was developed in conjunction with, and widely supported by, our customers. The focus of our decision to seek a redetermination is to try to return to that plan that customers supported so strongly.

10.11. THIS STORY IS APPLIED TO OTHERS TOO

(658) Ofwat's narrative of poor performance, exploited customers and excessive returns has been applied to all four companies with relatively little differentiation or acknowledgement of the important differences between the companies, their plans, and the grounds on which they have sought the redeterminations. It appears that Ofwat has simply applied 'stock' language across the four company-specific papers, in an attempt to cast the requests for redetermination in a generally pejorative light.

10.12. OUR RELIANCE ON NEW INFORMATION IS PRESENTED AS OPPORTUNISTIC AND INCORRECTLY DESCRIBED AS ONE-SIDED

- (659) We are surprised at Ofwat's inference that the presentation of new and updated information to the CMA is somehow problematic, or to be discouraged.⁶¹³ New information will come to light during the course of any regulatory process, as Ofwat itself acknowledges. Just as Ofwat chose to take account of new information in FD19 that was not available at DD19,⁶¹⁴ and also to present new evidence in its Response,⁶¹⁵ so too is it appropriate for us to reflect the new information and understanding that we have post-FD19. In seeking to bring this price control settlement to a new audience, the CMA, it is sensible and prudent to undertake additional analysis, in light of the entirety of the PR19 process and the FD19 in particular, in order to explain and demonstrate why Ofwat's decision needs to be revised. Such an approach accords fully with the CMA's desire to make its redeterminations on the basis of the most up-to-date information available.⁶¹⁶ Ofwat itself acknowledges as much in its Response: "As part of its wider approach to new information available since the final determination, the CMA is able to take this information into account in setting its redetermination".⁶¹⁷
- (660) As a general matter, however, the position that we have presented to the CMA on the key areas of disagreement remains fundamentally the same as the position we advocated to Ofwat in our response to DD19. Inevitably, certain issues have been developed or updated since PR19, in the light of the new information or to reflect matters raised by Ofwat at a late stage of the process.
- (661) For the avoidance of doubt, the "*new information*" which Ofwat notes was provided by us on 28 April 2020⁶¹⁸ is not 'new' in the sense Ofwat suggests. Instead, we were simply providing all parties with the databooks that support the information already set out in our SoC.

⁶¹¹ SoC, para. 100, p. 22 and Figure 6, p. 101.

⁶¹² Ofwat Response Northumbrian Water, REP022, para. 1.44, p. 11.

⁶¹³ Ofwat Response Northumbrian Water, REP022, paras. 1.6-1.7, p. 3. We note that in other parts of its Response, Ofwat makes the opposite criticisms of our SoC: "In many cases, the arguments and evidence that the disputing companies present mirror their submissions during the PR19 process, all of which we thoroughly reviewed in making our final determinations" (Ofwat Response Overall Stretch para. 1.2): "In most cases, the disputing companies did not present significant new evidence relating to the stretch across costs and outcomes in their statements of case" (Ofwat Response Overall Stretch para. 2.18).

⁶¹⁴ Ofwat Response Northumbrian Water, REP022, para. 3.17, p. 32.

⁶¹⁵ E.g. the updated RoRE outperformance tables that reflect the latest year's data: Ofwat Response Northumbrian Water, REP022, para. 5.23-5.28, p. 99-100; Ofwat Response Overall Stretch, REP019, Chapter 6.

⁶¹⁶ NATS En-route Limited (NERL) Price Determination CMA Provisional Findings, 24 March 2020, REP063, para. 3.23: "We have also used the best and most accurate data available to us. This means that in some cases we used data that had been updated since the CAA reached its RP3 Decision to fulfil our duty to set the appropriate level of the price control for RP3."
617 Ofwat Response Northumbrian Water, REP022, Table 3.4, Kielder transfer scheme and abstraction charges, p. 65.

⁶¹⁸ Ofwat Response Northumbrian Water, REP022, para. 1.8, p.3.

NWL PR19 CMA REDETERMINATION

(662) Ofwat expresses its concern that "*companies can provide evidence to draw attention to areas where they deserve an allowance, but they do not have an incentive to draw attention to aspects of their service which are lower cost than our allowance*".⁶¹⁹ Whilst this represents a theoretical risk, it is clear that our own case includes both new information that would reduce allowances as well new information that would increase them.⁶²⁰ We have sought to balance both downside and upside elements when considering the provision of new information and, in line with taking a focused approach, have presented that to the CMA in all instances where we consider the impacts to be material, regardless of whether they are positive or negative. We also note that both the CMA and Ofwat has extensive information gathering powers and any company failing to disclose these issues would be taking a considerable risk.

⁶¹⁹ Ofwat Response Northumbrian Water, REP022, para. 3.6, p.30. 620 E.g. SoC, Section 9.5, p. 171.

ANNEX 1: MARS ANALYSIS

The data obtained from analyst reports is summarised below. This includes: analyst estimates of outperformance; analyst estimates of the value of non-regulated and non-wholesale activities; and analyst estimates of pension deficits.

Table 38: Analyst estimates of outperformance

Date of report	SVT	UU
23 April 2020		9%
07 April 2020	20%	12%
01 April 2020		16%
31 March 2020	20%	
05 March 2020	25%	
05 March 2020	26%	
04 March 2020		18%
03 March 2020		16%
28 Feb 2020		8%
07 Oct 2019	16%	
	Date of report 23 April 2020 07 April 2020 01 April 2020 31 March 2020 05 March 2020 05 March 2020 04 March 2020 03 March 2020 28 Feb 2020 07 Oct 2019	Date of report SVT 23 April 2020 20% 07 April 2020 20% 01 April 2020 20% 31 March 2020 20% 05 March 2020 25% 05 March 2020 26% 04 March 2020 26% 28 Feb 2020 16%

Range of estimates

16 – 26% 8 – 18%

Source: Analyst reports: Credit Suisse (23 April 2020), RBC (07 April 2020), JP Morgan (01 April 2020), Morgan Stanley (31 March 2020), Investec (05 March 2020), Credit Suisse (05 March 2020), Jefferies (04 March 2020), Investec (03 March 2020), Credit Suisse (28 Feb 2020), RBC (07 Oct 2019)

Table 39: Analyst estimates of the value of non-regulated and non-wholesale activities

Analyst report	Date	S	VT	U	U
		Non-regulated	Non-wholesale	Non-regulated	Non-wholesale
Credit Suisse	23 April 2020			1.2%	
RBC	07 April 2020	5.1%	5.1%	0.8%	2.3%
Deutsche Bank	17 March 2020			0.6%	
Investec	05 March 2020	3.9%			
Jefferies	04 March 2020			0.6%	
Investec	03 March 2020			0.7%	
Credit Suisse	28 Feb 2020			1.1%	
RBC	07 Oct 2019	5.2%	4.5%	0.8%	1.6%

Range of estimates	8.4% – 10.3%	2.8 – 3.5%

Source: Analyst reports: Credit Suisse (23 April 2020), RBC (07 April 2020), Deutsche Bank (17 March 2020), Investec (05 March 2020), Jefferies (04 March 2020), Investec (03 March 2020), Credit Suisse (28 Feb 2020), RBC (07 Oct 2019)

Table 40: Analyst estimates of Pension deficits

Analyst report	Date of report	SVT	UU
Credit Suisse	23 April 2020		3.9%
RBC	07 April 2020	-3.2%	3.5%
Deutsche Bank	17 March 2020		3.4%
Investec	05 March 2020	-3.1%	
Jefferies	04 March 2020		3.9%
Investec	03 March 2020		4.9%
Credit Suisse	28 Feb 2020		3.9%
RBC	07 Oct 2019	-4.1%	
Range of estimates		-4.1 – -3.1%	3.4 - 4.9%

Source: Analyst reports: Credit Suisse (23 April 2020), RBC (07 April 2020), Deutsche Bank (17 March 2020), Investec (05 March 2020), Jefferies (04 March 2020), Investec (03 March 2020), Credit Suisse (28 Feb 2020), RBC (07 Oct 2019)

ANNEX 2: FINANCEABILITY

10.13. GRANULAR RESPONSE TO OFWAT'S ARGUMENTS

10.13.1. Ofwat said: there are no clear statements made by rating agencies which suggest that we will be downgraded to Baa2 solely on the basis of FD19

- (663) Ofwat argues there are no clear statements made by credit rating agencies suggesting that we will be downgraded to Baa2 solely on the basis of FD19.⁶²¹ In that regard, Ofwat argued:
 - Moody's extended the review for downgrade for our credit rating on 9 March 2020 upon the CMA reference of the final determination;⁶²²
 - Moody's credit opinion, updated in March 2020 following the extension of review for downgrade, states other factors that could lead to a downgrade;⁶²³ and
 - on 25 February 2020, Standard and Poor's placed our BBB+ credit rating on CreditWatch negative reflecting that it would lower the ratings for the company if there is no significant improvement in operating conditions over the next regulatory period.⁶²⁴

10.13.2. Our response:

- (664) Moody's credit opinion report for us on 23 December 2019 states that following publication of Ofwat's FD19, it has placed our Baa1 rating on review for downgrade. The rating actions take into account:⁶²⁵
 - our exposure to a significant cut in allowed wholesale returns to ca. 2.42% real in cash terms from 2020 on a 50:50 blended inflation basis, compared with 3.6% in the current period;
 - a reduction in total expenditure allowances compared with the company's requests; and
 - challenging performance targets, which we expect could lead to financial penalties for most companies, including historically strong performers like ourselves.
- (665) Moody's further states that:

"Specifically, the rating review reflects the anticipated pressure on the company's financial metrics, particularly interest coverage, absent a more favourable determination following a referral to the Competition and Markets Authority (CMA), material credit strengthening measures or significant outperformance."⁶²⁶

(666) Moody's has outlined several factors that could lead to a downgrade as outlined below. One of the factors is an AICR that is below 1.5x on a persistent basis. As evidenced in our SoC, and in the previous section, we are likely to incur additional costs on a mean expected basis under FD19 which would imply an AICR that is below 1.5x. Putting aside these additional costs, excluding Ofwat's PAYG adjustment (which Moody's would do) would also imply an AICR that is persistently below 1.5x. Specifically, Moody's states:

"In particular, the rating could be downgraded if we concluded that the regulatory settlement was likely to result in (1) the Northumbrian Water Group's consolidated leverage persistently above 100% (net debt/RCV); or (2) Northumbrian's stand-alone net debt (including Kielder) materially exceeding the mid-seventies in percentage terms of the company's RCV, or an Adjusted Interest Coverage Ratio (Adjusted ICR) below 1.5x on a persistent basis" (emphasis added).⁶²⁷

(667) On 1 March 2020, S&P placed our ratings (as well as AW) at Creditwatch negative "as the outcome of the appeal remains uncertain and the current final determination indicated increased financial pressure." (emphasis added).⁶²⁸

⁶²¹ Ofwat Response Risk & Return, REP026, para.2.28;

⁶²² Ofwat Response Northumbrian Water, REP022, paras. 1.43. and 6.41. 623 Ofwat Response Northumbrian Water, REP022, paras. 1.43 and 6.39.

⁶²³ Ofwat Response Northumbrian Water, REP022, paras. 1.4 624 Ofwat Response Risk & Return, REP026, para.2.27.

⁶²⁵ Moody's NWL update following review for downgrade and FD publications, REP028, p.3.

⁶²⁶ Moody's NWL update following review for downgrade and FD publications, REP028, p.3.

⁶²⁷ Moody's NWL update following review for downgrade and FD publications, REP028, p.2.

⁶²⁸ Standard & Poor's downgrades four of the final determination acceptors, 1 March 2020, SOC411.

(668) We consider that it is likely that Moody's and S&P could downgrade us on the basis of FD19 as both consider FD19 to be credit negative. We also note that approximately 70% of the sector was placed on review for downgrade by Moody's following FD19, taking into account allowed returns and expected performance.629

"Moody's Investors Service (Moody's) has today placed on review for downgrade 12 UK-based regulated water companies and two high-yield holding companies.

The rating actions follow publication by the Water Services Regulation Authority (Ofwat), the economic regulator for water companies in England and Wales, of its final determination for the forthcoming regulatory period. The determination includes a significant cut in allowed returns which, in conjunction with challenging performance targets and gaps between allowed and requested expenditure, will weigh on credit quality." (emphasis added).

10.13.3. Ofwat said: Disagree that decoupling the notional financeability test from the CoC

- (669) Ofwat disagrees that decoupling the notional financeability test from the CoC undermines the notional financeability test as a key cross-check on the calibration of allowed returns. In that regard, Ofwat:
 - disagrees with the allowed return should be uplifted to meet target levels of financial ratios, stating that it has set the allowed return at a level that fairly rewarded for the risk associated with their investment;630
 - states that it's allowed return is consistent with market evidence. If it were to uplift the allowed return to target a specified level for a key financial ratio, it would be inconsistent with the application of all of its duties and it would call into question the legitimacy of the final determinations because it would facilitate companies earning returns that exceed the level required as evidenced by market data;631 and
 - argues that increasing the allowed return to address a financeability constraint would not protect the interests of customers.632

10.13.4. Our response:

- (670) The financeability test is in place to assess whether the company can finance itself under the regulatory determination and, in essence, whether FD19 has been set correctly with regards to: the cost of capital, cost allowances and performance targets. If the financeability test indicates a financeability problem, e.g. through not meeting specific ratio targets, then this could indicate that other parts of the price control may have not been set correctly.633
- (671) Ofwat's position is that the cost of capital has been set correctly, and therefore concludes that it is not appropriate to increase the cost of capital to address financeability constraints. As discussed in the WACC section, we believe that the cost of capital has not been set based on market evidence. We have also presented evidence why consider that we will be exposed to additional costs in the base case. We consider that the CMA assess the package in the round, i.e. whether the cost of capital, cost allowances and performance targets have been set correctly.

10.13.5. Ofwat said: Companies with capital structures that are similar to our notional level are capable of maintaining a Baa1 credit rating

- (672) In our SoC, we set out that the notional company would not be able to achieve a credit rating of Baa1, consistent with the assumed in the cost of debt allowance.634
- (673) In its response, Ofwat disagrees that efficient companies cannot maintain a credit rating with two notches headroom to the minimum investment grade. It states that it presented evidence in its introduction to the CMA which suggests that companies with capital structures that are similar to the notional level are capable of maintaining a credit rating that is at least two notches above the minimum of the investment grade, and that this

⁶²⁹ Moody's, Moody's Reviews 12 UK Water Groups for Downgrade, 20 December 2019, SOC400

⁶³⁰ Ofwat Response Risk & Return, REP026, paras. 4.71 - 4.72.

⁶³¹ Ofwat Response Risk & Return, REP026, para, 4.45. 632 Ofwat Response Risk & Return, REP026, para. 4.46.

⁶³³ SOC, paras. 1030 – 1033, 1040, 1129 – 1131. 634 SOC, Section 10.7.2.

was supported by water companies retaining credit rating at this level with at least one credit rating agency.⁶³⁵ Using evidence from 'Rating actions since the FD'. Ofwat argues that this shows that an efficient company with gearing close to the notional structure can maintain a credit rating two notches above minimum investment grade.⁶³⁶

10.13.6. Our response:

- (674) Ofwat has referenced the credit rating for companies which are based on the actual company structure and has only considered one part of the financing structure gearing. It has not taken into account other relevant factors, which suggest that the companies Ofwat appears to be referring to as not comparable to the notional company. These include:
 - outperformance on financing costs Severn Trent, Wessex Water, United Utilities and Affinity Water all have an actual cost of debt that is lower than the allowance and the sector average.⁶³⁷ In some instances, this is driven by short-dated debt issuances.
 - United Utilities and Severn Trent had fast tracked business plans, which provide financial and reputational benefits; and
 - Severn Trent and United Utilities have non-regulated revenue streams.
- (675) Overall, Ofwat appears to draw conclusions about the financeability of the settlement for the sector by considering the impact on a few companies (that are not comparable to the notional company) following FD19, and we do not consider this evidence to appropriately determine whether the notional company can achieve Baa1. We consider that Ofwat should have conducted a bottom up assessment of the credit rating for the notional company

⁶³⁵ Ofwat Response Risk & Return, REP026, para. 4.28. 636 Ofwat Response Risk & Return, REP026, para. 4.51.

⁶³⁷ Ofwat PR19 Final Determinations: Allowed Return on Capital Technical Appendix, 16 December 2019, SOC187, Figure 6.6, p. 91.
ANNEX 3: INDEX OF SUPPORTING DOCUMENTS

The below index lists the supporting documents referred to in NWL's Reply to Ofwat's SoC Response.

REP	Short Name	Full Name
Number		
A. Append	ices	
REP065	Appendix 1: Covid-19 Appendix	NWL, Covid-19 Paper, Reply to Ofwat, Submission to the CMA, 27 May 2020
REP066	Appendix 2: Base Costs Appendix	NWL, Base Costs Analysis, Reply to Ofwat, Submission to the CMA, 27 May 2020
REP067	Appendix 3: Economic Insight Appendix	Economic Insight, Measuring profitability in the water industry, A report for Northumbrian Water's response to Ofwat, 22 May 2020
REP068	Appendix 4: GHT 2020 – Beta Appendix	Alan Gregory, Richard Harris and Rajesh Tharyan, A Report on the Estimation of Beta, Prepared for Anglian Water Services Ltd, 4 January 2020
REP069	Appendix 5: IED Enhancement Case Appendix	NWL, Industrial Emissions Directive Enhancement Business Case, May 2020
REP070	Appendix 6: Explain Market Research Evaluation of NWL's customer engagement	Explain Market Research, Northumbrian Water Group, PR19 Research and engagement evaluation, Research report, May 2020
REP071	[Redacted]	[Redacted]
REP072	Appendix 8: JBA Rainfall Appendix	JBA Consulting, Technical Note on Rainfall Non-Stationarity Analysis, 15 May 2020
REP073	Appendix 9: Incorrectly Attributed Arguments Appendix	Arguments Incorrectly Attributed to NWL in Ofwat's Response, Reply to Ofwat, Submission to the CMA, 27 May 2020
REP152	Appendix 10: Glossary	NWL, Glossary, Reply to Ofwat, Submission to the CMA, 27 May 2020
B. Other sup	porting documents	
REP001	Moody's Regulated Water Utilities UK Outlook April 2020	Moody's Infrastructure and Project Finance Service, Regulated Water Utilities UK Outlook, Outlook remains negative as price review leads to unprecedented number of appeals, 30 April 2020
REP002	Littlechild, Regulation and Customer Engagement 2011	Stephen Littlechild, Regulation and Customer Engagement, International Associate for Energy Economics, 2011
REP003	CFW Legacy Report	The Customer Forum for Water in Scotland: Legacy Report, Lessons learned from customer involvement in the 2015- 2021 Strategic Review of Charges, February 2015
REP004	WICS Methodology 2021-27	Water Industry Commission for Scotland, Strategic Review of Charges 2012-27: Methodology refinements and clarifications, November 2018
REP005	UKRN Consumer Engagement 2017	UKRN Consumer engagement in regulatory decisions: A guide to how UK Regulators involve customers, hear their views and take their interests into account, April 2017
REP006	CARR Customer Engagement DP.83 2016	Eva Heims and Martin Lodge, Centre for Analysis of Risk and Regulation, Innovation through customer engagement

REP Reference Number	Short Name	Full Name
		and negotiated settlements in water regulation – towards a transformed regulatory state?, Discussion Paper No. 83, April 2016
REP007	Gray Report 2011	David Gray for Defra, Review of Ofwat and consumer representation in the water sector, 2011
REP008	Bush & Earwaker 2015	Bush, H. and Earwaker, J, The future role of customer and stakeholder engagement in the water industry, Report ref. no 15/CU/03/3, London: UK Water Industry Research, 2015
REP009	UKRN Report 2014	Martin Coppack, Francis Jackson and James Tallack, UKRN, Involving consumers in the development of regulatory policy: A UK Regulators Network Consumer Working Group discussion paper, July 2014
REP010	Water Resources East CMA Submission	Water Resources East Submission to the CMA - Water Redeterminations 2020
REP011	Ofwat Regulatory Keynote Speech March 2017	Ofwat, Water UK City Conference 2017, Jonson Cox – Chair, Ofwat Regulatory Keynote Speech, 9 March 2017
REP012	NWL CMA Submission	Northumbrian Water submission to the CMA – CMA Redetermination, Impact of Covid-19, 12 May 2020
REP013	PWC, Impact of Coronavirus on the UK water industry	PWC, Impact of Coronavirus (Covid-19) on the UK water industry, 17 April 2020 ⁶³⁸
REP014	Deutsche Bank Research Report on UK Water	Deutsche Bank, Research Report on UK Water, 13 December 2019
REP015	CARR Customer Engagement DP.82 2016	Sharon Darcy, Roger Darlington, Sebastian Eyre, Cosmo Graham, Eva Heims, Stephen Littlechild, Martin Lodge, Trisha McAuley and Richard Moriarty, Customer engagement in regulation, Centre for Analysis of Risk and Regulation, Discussion Paper No. 82, February 2016
REP016	NWL NATS PFs Submission	Northumbrian Water Submission to the CMA on the NATS CMA Provisional Findings, 15 April 2020
REP017	C-19 Pledge	Northumbrian Water C-19 Pledge, 3 May 2020
REP018	Water Bill – Sustainable Development and Resilience Duties	Department for Environment, Food and Rural Affairs, Water Bill, Sustainable Development and Resilience Duties, January 2014
REP019	Ofwat Response Overall Stretch	Ofwat 001, Reference of the PR19 final determinations: Introduction and overall stretch on costs and outcomes – response to cross-cutting issues in companies' statements of case, 4 May 2020
REP020	Ofwat Response Anglian Water	Ofwat 002, Reference of the PR19 final determinations: Response to Anglian Water's statement of case, 4 May 2020
REP021	Ofwat Response Bristol Water	Ofwat 003, Reference of the PR19 final determinations: Response to Bristol Water's statement of case, 4 May 2020
REP022	Ofwat Response Northumbrian Water	Ofwat 004, Reference of the PR19 final determinations: Response to Northumbrian Water's statement of case, 4 May 2020

⁶³⁸ Note: This document has intentionally not been produced.

REP Reference Number	Short Name	Full Name
REP023	Ofwat Response Yorkshire Water	Ofwat 005, Reference of the PR19 final determinations: Response to Yorkshire Water's statement of case, 4 May 2020
REP024	Ofwat Response Cost Efficiency	Ofwat 006, Reference of the PR19 final determinations: Costs efficiency – response to common issues in companies' statements of case, 4 May 2020
REP025	Ofwat Response Outcomes	Ofwat 007, Reference of the PR19 final determinations: Outcomes – response to common issues in companies' statements of case, 4 May 2020
REP026	Ofwat Response Risk & Return	Ofwat 008, Reference of the PR19 final determinations: Risk and return – response to common issues in companies' statements of case, 4 May 2020
REP027	Ofwat Initial Presentation to CMA May 2020	Ofwat CMA – initial presentation in response to water companies' statements of case, 20 May 2020
REP028	Moody's NWL update following review for downgrade and FD publications	Moody's, Credit Opinion, Northumbrian Water Ltd – Update following review for downgrade and final determination publications, 23 December 2019
REP029	Europe Economics Initial Assessment of Cost of Capital	Europe Economics, PR19 — Initial Assessment of the Cost of Capital, 11 December 2017
REP030	UBS Global Rates Strategy Global Inflation	UBS Global Rates Strategy, Global Inflation - Linked Monthly, 13 May 2020
REP031	JBA Consulting Technical Review of Sewer Flooding Modelling and Risk	JBA Consulting, Technical Review of approach to modelling and assessing the risk of sewer flooding, 14 May 2020
REP032	PWC COVID-19 UK Economic Update	PWC, COVID-19 UK Economic Update, 13 May 2020
REP033	KPMG report on Ofwat - Innovation and efficiency gains from the totex and outcomes framework	KPMG LLP and Aqua Consultants LTD, Ofwat - Innovation and efficiency gains from the totex and outcomes framework, June 2018
REP034	CIWEM Journal of Flood Risk Management	Faulkner D, Warren S, Spencer P, Sharkey P, Can we still predict the future from the past? Implementing non- stationary flood frequency analysis in the UK, J Flood Risk Management; Volume 12: Issue 1, March 2020
REP035	Commentary on the OBR coronavirus reference scenario	OBR, Commentary on the OBR coronavirus reference scenario, Coronavirus lockdown to deliver large (but hopefully temporary) shock to the economy and public finances, 14 April 2020
REP036	Ofwat Reporting guidance – Sewer flooding	Ofwat Reporting guidance – Sewer flooding: Final reporting guidance for PR19, 27 March 2018
REP037	The OBR's coronavirus analysis	OBR, The OBR's coronavirus analysis, 14 April 2020
REP038	Speech at Wastewater 2018 Conference	David Black, Wastewater 2018 Conference, 30 January 2018
REP039	Beesley Lecture on Regulators and the social contract	Rachel Fletcher, Beesley Lecture - Regulators and the social contract, 16 October 2019
REP040	CCG Chairs letter to Ofwat	Letter addressed to Ofwat from Independent Chairs of the Yorkshire Forum for Water Customers in response to Statements of Concern made to CMA, May 2020
REP041	WW CMA Submission	Wessex Water Submission to the CMA – Water Redeterminations 2020, 11 May 2020

REP	Short Name	Full Name
Number		
REP042	Dwr Cymru WW CMA Submission	Dwr Cymru Welsh Water Submission to the CMA – Water Redeterminations 2020, 11 May 2020
REP043	SW CMA Submission	Southern Water Submission to the CMA – Water Redeterminations 2020, 15 May 2020
REP044	NWL NERL PFs Submission	Northumbrian Water Submission to the CMA on the NATS CMA Provisional Findings, 15 April 2020
REP045	WRSE CMA Submission	Water Resources South East Submission to the CMA – Water Redeterminations 2020, 11 May 2020
REP046	Barclays report on United Utilities	Barclays, United Utilities: Unknown unknown, 22 May 2020
REP047	CMA Energy Market Investigation	CMA, Energy Market Investigation, Approach to financial and profitability analysis, 8 December 2014
REP048	2015/16 National Tariff Payment System Consultation Notice	Monitor and NHS England, 2015/16 National Tariff Payment System: A consultation notice, 26 November 2014
REP049	Environment Agency Calculate grant-in-aid funding	Environment Agency, Calculate grant-in-aid funding for flood and coastal erosion risk management projects, 17 April 2020
REP050	Water UK CMA Submission	Water UK Submission to the CMA – Water Redeterminations 2020, 11 May 2020
REP051	Coronavirus: Chancellor Rishi Sunak warns of 'significant recession'	BBC, Coronavirus: Chancellor Rishi Sunak warns of 'significant recession', 13 May 2020
REP052	Bank of England Monetary Policy Report	Bank of England, Monetary Policy Report, May 2020
REP053	GDP monthly estimate UK: March 2020	Office for National Statistics, GDP monthly estimate, UK: March 2020, 13 May 2020
REP054	Anglian Water SoC	Anglian Water, PR19 CMA Redetermination Statement of Case, 2 April 2020
REP055	Bristol Water SoC	Bristol Water, PR19 Redetermination Statement of Case (Non-Confidential), 2 April 2020
REP056	Yorkshire Water SoC	Yorkshire Water Services, PR19 Redetermination Statement of Case, 2 April 2020
REP057	Yorkshire Water SoC Annex 08 Integrating cost and outcomes	Yorkshire Water Services Statement of Case, Annex 08 - Oxera - Integrating cost and outcomes, 27 March 2020
REP058	The Water Forums CMA Submission	Northumbrian and Essex and Suffolk Water Forum Submission to the CMA – Water Redeterminations 2020, 11 May 2020
REP059	Ofwat confirmation of package of measures	Ofwat, PN 14/19, Ofwat confirms package of measures aimed at strengthening financial resilience in water companies, 9 July 2019
REP060	Ofwat position statement on PR19 business plans	Ofwat, Putting the sector in balance: position statement on PR19 business plans, July 2018
REP061	Moody's United Utilities Water update following PR19 FD	Moody's, Credit Opinion, United Utilities Water Limited: Update following PR19 final determination, 4 March 2020
REP062	Speech at Water Industry City Conference	Jonson Cox speech at Water Industry City Conference, 1 March 2018
REP063	NATS (En Route) Limited provisional findings report	NATS En-route Limited (NERL) Price Determination CMA Provisional Findings, 24 March 2020

REP	Short Name	Full Name
Reference Number		
REP064	PWC Financeability paper	PWC, Long-term financeability trends in the UK water sector, May 2020
REP074	Ofwat PR19 Final Determination, Securing cost efficiency technical appendix	Ofwat PR19 Final Determination, Securing cost efficiency technical appendix, 16 December 2019
REP075	Citizens Advice, Energy Consumers' Missing Billions Report	Citizens Advice, Energy Consumers' Missing Billions Report, July 2017
REP076	Citizens Advice, Monopoly Money Report: How consumers overpaid by billions	Citizens Advice, Monopoly Money Report: How consumers overpaid by billions, May 2019
REP077	Ofcom, Economic benchmarking in the UK postal sector	Ofcom, Econometric benchmarking in the UK postal sector – Final report, 24 May 2016
REP078	Utility Regulator, NIE Networks T&D (RP6) Final determination	Utility Regulator, NIE Networks T&D 6 th price control final determination (RP6), 30 June 2017
REP079	Ofgem, Targeted charging review: decision and impact assessment	Ofgem, Targeted charging review: decision and impact assessment, 21 November 2019
REP080	CCWater Submission to the CMA	CCWater Submission to the CMA – Northumbrian Water Limited's statement of case, 11 May 2020
REP081	Ofwat PR19 Financial Model	NWL analysis, Financial model, FD resilience schemes totex and payg changes, 16 December 2019
REP082	CCWater, Engaging water customers for better consumer and business outcome	Blue Marble, Engaging water customers for better consumer and business outcomes, Report for CCWater, April 2020
REP083	United Utilities CMA Submission	United Utilities Submission to the CMA – Water Redeterminations 2020, 11 May 2020
REP084	NWL Bioresources Strategy, Appendix 6.2	Northumbrian Water, Bioresources Strategy, Appendix 6.2, September 2018
REP085	Ofgem, About the Non-Domestic RHI	Ofgem, About the Non-Domestic Renewable Heat Incentive, 2020
REP086	Ofwat, Water 2020: our regulatory approach for water and wastewater services in England and Wales, Appendix 2	Ofwat, Water 2020: our regulatory approach for water and wastewater services in England and Wales, Appendix 2 Moving beyond waste – further evidence and analysis, 25 May 2016
REP087	Regulatory Position Statement for Biosolids Stockpiling	Memo: Regulatory Position Statement for Biosolids Stockpiling, 2013
REP088	The Environmental Permitting (England and Wales) Regulations 2016	Statutory Instruments: No.1154, The Environmental Protection, England and Wales, The Environmental Permitting (England and Wales) Regulations 2016, 11 December 2016
REP089	Directive 2008/1/EC	Official Journal of the European Communities, Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control, L 24/8, 29 January 2008
REP090	Directive 78/176/EEC	Official Journal of the European Communities, No L 54/19, Council Directive of 20 February 1978 on waste from the titanium dioxide industry, 25 February 1978

REP Reference Number	Short Name	Full Name
REP091	Directive 82/ 883/EEC	Official Journal of the European Communities, No L 378/1, Council Directive of 3 December 1982 on procedures for the surveillance and monitoring of environments concerned by waste from titanium dioxide industry, 31 December 1982
REP092	Directive 92/112/EEC	Official Journal of the European Communities, Council Directive 92/112/EEC of 15 December 1992 on procedures for harmonizing the programmes for the reduction and eventual elimination of pollution caused by waste from the titanium dioxide industry, 31 December 1992
REP093	Directive 1999/13/EC	Official Journal of the European Communities, L 85/1, Council Directive 1999/13/EC of 11 March 1999 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations, 29 March 1999
REP094	Directive 2000/76/EC	Official Journal of the European Communities, L 332/91, Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000, 28 December 2000
REP095	Directive 2001/80/EC	Official Journal of the European Communities, L 309/1, Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants, 27 November 2001
REP096	SSG Meeting – Implementation of the Industrial Emissions Directive for biological treatments of sewerage sludge	Strategic Steering Group Meeting, Item No. SSG19.02.04- 02, Implementation of the Industrial Emissions Directive for biological treatments of sewerage sludge, 2019
REP097	Water UK, Update on the EA Sludge Strategy and IED	Water UK, Update on the EA Sludge Strategy and IED, December 2019
REP098	ST CMA Submission	Severn Trent Submission to the CMA – Water Redeterminations 2020, 22 May 2020
REP099	Water UK Waste & Recycling Network Final Minutes	Water UK Waste & Recycling Network, Final Minutes, 16 April 2020
REP100	EA Standard Rules, The anaerobic digestion of non- hazardous sludge at a waste water treatment works	Environment Agency, Standard rules SR2008 No19 Version 6, The anaerobic digestion of non-hazardous sludge at a waste water treatment works, including the use of resultant biogas, The Environmental Permitting (England and Wales) Regulations, 2016
REP101	EC JCR BAT Reference Document for Waste Treatment (2018)	Antoine Pinasseau, Benoit Zerger, Joze Roth, Michele Canova and Serge Roudier, Best Available Techniques (BAT) Reference Document for Waste Treatment, Indistrial Emissions Directive 2010/75/EU Integrated Pollution Prevention and Control, JRC Science for Policy Report, 2018
REP102	EA Standard Rules, Revision of Biowaste (2019)	Environment Agency, Standard rules consultation no 20: revision of standard rules sets for biowaste treatment, Standard rules for the Environmental Permitting Regulations, October 2019
REP103	EA Standard Rules, Non-hazardous sludge: biological, chemical and physical treatment of site	Environment Agency, Standard rules SR2008No19_250kte, non-hazardous sludge biological, chemical and physical treatment of site, Chapter 4, The Environmental Permitting (England and Wales) Regulations, 2016
REP104	EA Howdon Biogas Combustion Installation Variation Notice	Environment Agency, Notice of variation and consolidation with introductory note, Howdon Biogas Combustion Installation Permit number EPR/YP3331HQ, The

REP Reference Number	Short Name	Full Name
		Environmental Permitting (England and Wales) Regulations, 2016
REP105	EA Howdon Sewerage Treatment Works Notice of Variation	Environment Agency, Notice of variation with introductory note, Howdon Sewerage Treatment Works Permit number EPR/KP3394ZE, The Environmental Permitting (England and Wales) Regulations, 2010
REP106	EA Combustion Activities (2009)	Environment Agency, How to comply with your environmental permit Additional guidance for: Combustion Activities (EPR 1.01), March 2009
REP107	EA Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste (2013)	Environment Agency, Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste, Integrated Pollution Prevention and Control, Sector Guidance Note Issue 4, Addendum to S5.06, 10 October 2018
REP108	EA Guidance on gas treatment technologies for landfill gas engines (2010)	Environment Agency, Guidance on gas treatment technologies for landfill gas engines, Sector code LFTGN 06 v2, 2010
REP109	EA Notice of variation and consolidation with introductory note, Industrial Effluent Treatment Works (2016)	Environment Agency, Notice of variation and consolidation with introductory note, Industrial Effluent Treatment Works Permit Number EPR/LP3439LK, The Environmental Permitting (England and Wales) Regulations, 2016
REP110	Calculation of totex allowances, Version 1.0	Calculation of totex allowances, Version 1.0, 16 December 2019
REP111	United Utilities, Water Representations: Cost assessment (2019)	United Utilities Water Limited, D003 Cost Assessment, 2019
REP112	United Utilities, Bioresources Business Plan (2018)	United Utilities Water Limited, Chapter 7: Supplementary document, Document Reference: S6009, 2018
REP113	United Utilities PR19 Business Plan – Data Commentary	United Utilities PR19 Business Plan – Data Commentary (2018), available at: https://www.unitedutilities.com/assets/ViewerJS/index.html?f ilename=p0003_pr19_business_plan_data_tables_comment ary.pdf#//globalassets/z_corporate- site/pr19/p0003_pr19_business_plan_data_tables_comment ary.pdf. ⁶³⁹
REP114	UK Government, Industrial emissions standards ('best available techniques') from 1 January 2021	UK Government, Industrial emissions standards ('best available techniques') from 1 January 2021, 2018
REP115	Directive 2008/98/EC	Directive of the European Parliament and of the Council – waste and repealing certain directives (2008/98/EC), 2008
REP116	AD IED Cost Impact Assessment	NWL, Cost evaluation to inform IED impact discussions - IED Section 5.4(b)(i) only, October 2019
REP117	EA Guidance for Anaerobic Digestion (2013)	Environment Agency, How to comply with your environmental permit, Additional guidance for: Anaerobic Digestion, 2013
REP118	CIRIA Containment systems for the prevention of pollution (2014)	CIRIA, Containment systems for the prevention of pollution – secondary, tertiary and other measures for industrial and commercial premises, 2014

⁶³⁹ Note: This document cannot be produced as a PDF document, so please refer to this web link.

REP Reference	Short Name	Full Name
Number		
REP119	EA H4 Odour Management (2011)	Environmental Agency, Additional guidance for H4 Odour Management: How to Comply with Your Environmental Permit, 2011
REP120	NWL, Bran Sands RSTC Odour Control Report (2019)	NWL, STW Acceptance Criteria: Briefing Note – Odour Control, February 2004
REP121	NWL, Bran Sands RSTC Form A1 Ref. LP3439LK (2016)	NWL, Bran Sands RSTC Form A1 Ref. LP3439LK, Reporting Period for A13 and A18, 2016
REP122	NWL, STW Briefing Note- Odour Control (2004)	NWL, STW Acceptance Criteria: Briefing Note– Odour Control, February 2004
REP123	NWL, Howdon STW Odour Control Summary Report (2012)	NWL, Howdon STW Odour Control Summary Report ST007/0091, July 2012
REP124	Scottish Executive Environment Group, Odour Control Code of Practice (2005)	Scottish Executive Environment Group, Code of Practice on Assessment and Control of Odour Nuisance from Waste Water Treatment Works, April 2005
REP125	Environmental Permitting (Amendment) Regulations 2018	Environmental Permitting (England and Wales) (Amendment) Regulations No. 110 of 2018, 2018
REP126	EA, Understanding the Meaning of Regulated Facility – Appendices 1 and 2	Environment Agency Regulatory Guidance Serious No RGN 2, Understanding the Meaning of Regulated Facility – Appendices 1 and 2, April 2019
REP127	EA Guidance on EU Medium Combustion Plant Directive 2015/2193/EU	Environment Agency, Guidance on Medium Combustion Plant Directive (Directive 2015/2193/EU) as set out in Schedule 25A of The Environmental Permitting (England and Wales) Regulations 2016 (as amended)
REP128	N-ERGY SCR Technical Details	N-ERGY TRI Generation and Power, Guidance on SCR Technical Details
REP129	NWL, IED Howdon STC CHP Emissions (2019)	NWL, IED Howdon STC CHP NOx Emissions, 2019
REP130	EA Regulatory Position Statement – Storage of Sewage Sludge	Environment Agency, Regulatory Position Statement 143 – Storage of Sewage Sludge, 2013
REP131	Royal Mail Price and Service Quality Review	Royal Mail Price and Service Quality Review – Final proposals for consultation, December 2005
REP132	LECG Future Efficient Costs of Royal Mail's Regulated Mail Activities	LECG, Future Efficient Costs of Royal Mail's Regulated Mail Activities, 2005
REP133	Ofcom – A New Pricing Framework for Openreach	Office of Communications, A New Pricing Framework for Openreach – second consultation, 5 December 2008
REP134	SEPA Odour guidance 2010	Scottish Environment Protection Agency, Odour Guidance, Version 1, January 2010
REP135	MAR analysis	Ofwat, MAR analysis spreadsheet, 2020
REP136	NWL Centrifuge Costing Template	Northumbrian Water Centrifuge Costing Template, undated
REP137	Calculation of catch-up efficiency challenge	Ofwat, Calculation of catch-up efficiency challenge, Version 1.0, 16 December 2019
REP138	NWL Water UK chemicals workstream analysis	NWL, Water UK chemicals workstream analysis, 2020
REP139	NWL Production Plan 2020 Budget	Northumbrian Water Production Plan, 2020 Budget
REP140	Email correspondence between Anglian Water and the EA	Email from Simon Black of Anglian Water to Amanda Molyneux of the EA, 16 January 2014

REP Reference Number	Short Name	Full Name
REP141	BBC News, Foot-and-mouth outbreak of 2001	BBC News, Foot-and-mouth outbreak of 2001 (18 February 2011), accessed online on 22 May 2020
REP142	Icopal, Nitrogen Oxide (NOx) Pollution	BMI UK & Ireland, Icopal - Health Issues, Nitrogen Oxide (NOx) Pollution, 22 May 2020
REP143	Ofwat PR19 final determinations, Dwr Cymru – Cost efficiency final determination appendix	Ofwat, PR19 final determinations, Dwr Cymru – Cost efficiency final determination appendix, December 2019
REP144	Dwr Cymru WW, PR19 Wastewater Services business plan table commentaries	Dwr Cymru WW, PR19 Wastewater Services business plan table commentaries, August 2019
REP145	Dwr Cymru WW, PR19: Bioresources Assets Maintenance	Dwr Cymru WW, PR19: Bioresources Assets Maintenance Ref. 5.8S, September 2018
REP146	NWL IED Capacity Calculation	NWL Industrial Emissions Directive Capacity Calculation (SR2008 No19 Version 6)
REP147	NWL Annual Performance Report for the year ended March 2019	NWL Annual Performance Report for the year ended 31 March 2019
REP148	Aqua Consultants Feasibility Estimate – Detailed Cost Breakdown, Bran Sands STC IED	Aqua Consultants Feasibility Estimate – Detailed Cost Breakdown, Bran Sands STW IED, May 2020
REP149	Aqua Consultants Feasibility Estimate – Detailed Cost Breakdown, Howdon STW IED	Aqua Consultants Feasibility Estimate – Detailed Cost Breakdown, Howdon STW IED, May 2020
REP150	EA PR19 Planning	Environment Agency, PR19 Planning – Traffic light system for identifying measures for the Water Industry National Environment Programme and managing uncertainty, 17 February 2017
REP151	CIS True-up 2010-15	PR09 CIS True-up Model, 2010-2015
REP153	EE, 'Advice on the Allowed Return on Capital for the Water Sector at PR19 – Betas and Gearing' (2020)	Europe Economics, Further Advice on the Allowed Return on Capital for the Water Sector at PR19 – Betas and Gearing, 1 May 2020
REP154	Nomis North East Region Local Area Report	Nomis, North East Region Local Area Report, using 2011 Census data
REP155	ONS Coronavirus and the social impacts on Great Britain	ONS, Coronavirus and the social impacts on Great Britain, April 2020

ANNEX 4: LIST OF TABLES

Table 1: Summary of key arguments	23
Table 2: Proportion of resilience investment versus bill reductions (companies sorted by FD bill reduction)	27
Table 3: Direction of changes in mean at change points detected by the Pettitt test for the AMAX series for each duration at each	
gauge. The values that are significant at a 5% level are highlighted	31
Table 4: List of base sewer flooding programme activities and costs by category	32
Table 5: Current rolling plan for sewer flooding resilience investment, cost per annum	34
Table 6: Water System Zones and their WTW Supplies - typical annual distribution of potable water into our network	39
Table 7: Accounting for other potential sources of resilience to meet demand	44
Table 8: Summary of key arguments	46
Table 9: Totex challenge: PR19 vs PR14	50
Table 10: Companies' botex cost submissions and allowance at IAP, DD and FD, compared with the FD (5 year basis)	56
Table 11: Ofwat - Comparison of Northumbrian Water's AMP6 and AMP7 costings for phosphorus removal	69
Table 12: AMP6 and AMP7 P-Removal by consent limit	69
Table 13: AMP6 & AMP7 P-Removal efficiency by population comparison	70
Table 14: Summary of key arguments	76
Table 15: Cost sharing rates at PR09, PR14 and PR19	78
Table 16: Data on totex performance and cost sharing rates	80
Table 17: Econometric model results of impact of cost sharing rate on totex performance	80
Table 18: Summary of key arguments – allowed return	84
Table 19: Results of equity beta calculations- SVT and UU composite (September 2019 cut-off)	94
Table 20: Results of equity beta calculations- SVT and UU composite (February 2020 cut-off)	95
Table 21: Europe Economics' Unlevered beta estimates - SVT and UU composite	95
Table 22: WACC estimates for different gearing	96
Table 23: Fixed-rate nominal water bonds issued between January and May 2020	99
Table 24: Summary of key arguments	. 102
Table 25: Ofwat FD target versus our P10 and P90 for common PCs	. 108
Table 26: Summary of mean expected ODI (penalty) / reward (£m).	. 109
Table 27: Outturn business rates and abstraction charges relative to Ofwat allowances, (£m, 2017/18 prices)	. 110
Table 28: Costs for quality enhancements or growth not captured in the FD19 and financeability assessments	. 111
Table 29: Bursts on large diameter pipers in NW and ESW YTD (Period 10) against Budget (2018)	. 113
Table 30: Additional expenditure costs resulting from the two extreme weather events (2018)	. 114
Table 31: Comparison of asymmetry between PR14 and PR19	. 114
Table 32: Ratio thresholds and Red Amber Green (RAG) grid	. 118
Table 33: Projected metrics – FD19 base case under scenario 1	. 118
Table 34: Projected metrics – FD19 base case under scenario 2	. 118
Table 35: Projected metrics – FD19 base case under scenario 1 and scenario 2 (actual structure)	. 118
Table 36: Summary of key arguments – new information	. 128
Table 37: Totex challenge: PR19 vs PR14	. 137
Table 38: Analyst estimates of outperformance	. 141
Table 39: Analyst estimates of the value of non-regulated and non-wholesale activities	. 141
Table 40: Analyst estimates of Pension deficits	. 141

ANNEX 5: LIST OF FIGURES

Figure 1: Comparison of rainfall frequency curves at Linbriggs: duration 1 hour	31
Figure 2: Internal and external sewer flooding performance, Ofwat's AMP7 target and projected performance	33
Figure 3: Projected properties at risk of sewer flooding with and without climate change and urban creep and projected performance	
under different scenarios	34
Figure 4: Essex Distribution Schematic	37
Figure 5: Outage due to algae at SSF WTW in our Essex WRZ	40
Figure 6: Percentage of production loss due to algae across our Essex WRZ4	41
Figure 7: Outage due to nitrate at Langford WTW	42
Figure 8: EOETS Operating and Control Levels	43
Figure 9: Industry average RoCE performance against the real vanilla WACC in each price review period	51
Figure 10: Total industry wastewater sector base costs 2011/12 – 2018/19 (£m)	55
Figure 11: Total industry water sector base costs 2011/12 – 2018/19 (£m)	55
Figure 12: The responsiveness of our energy demand at our Aquadapt sites	60
Figure 13: Electricity versus oil price inflation	62
Figure 14: Actual and forecast energy prices over AMP6 and AMP7	62
Figure 15: Cost per PE for AMP6 & AMP7 1-2mg/l P-Removal Schemes	70
Figure 16: Cost efficiency per PE for 10,000-50,000PE for AMP6 & AMP7 P schemes with a ≥1mg/l consent	70
Figure 17: Cost efficiency per PE <10000PE for AMP6 & AMP7 P schemes with a ≥1mg/l consent	71
Figure 18: Premium of Enterprise Value (EV) / RCV for SVT Utilities composite versus allowed cost of equity	88
Figure 19: Share price performance – rebased to 100 at 13 th December 2019	88
Figure 20: MARs for SVT and UU against polling data, 2017 – 2019	89
Figure 21: Decomposition of premium on MAR for SVT	90
Figure 22: Decomposition of premium on MAR for UU	90
Figure 23: Plot showing likely break dates for SVT	93
Figure 24: Plot showing likely break dates for UU	93
Figure 25: Gearing ratios across the water sector	97
Figure 26: Allowed versus outturn opex, 2015 – 2025 (£m, 17/18 prices)1	12
Figure 27: Real unit cost opex efficiency improvements (%): Comparison to other precedents	13
Figure 28: RORE range, our view versus Ofwat's view1	15
Figure 29: Percentage change in price or bills across sectors	34
Figure 30: Bill movement between PR14 and PR1913	35

