Anglian Water

PR19 DRAFT DETERMINATION REPRESENTATION

August 2019

RESPONSIBLE BUSINESS OF THE YEAR 2017
BUSINESS IN THE COMMUNITY

THE QUEEN'S AWARDS FOR ENTERPRISE: SUSTAINABLE DEVELOPMENT 2015

love every drop.
anglianwater

EXTERNAL RECOGNITION

PR19 DRAFT DETERMINATION REPRESENTATION

Content

1 EXECUTIVE SUMMARY

Our Representation on Ofwat's Draft Determination centres around the following key points:

- In line with Ofwat's methodology, we give primacy to the views of our customers, derived from the sector-leading customer engagement we have undertaken to inform and support our Plan
- We seek to ensure that the Plan holds true to the long term ambitions set out in our Strategic Direction Statement (SDS)
- The challenges that our already water-scarce region faces from exposure to the impacts of climate change, along with the scale and pace of growth that is expected, warrant a very different approach to that proposed by Ofwat
- Consistent with the objectives for PR19 set out by Government in its Strategic Policy Statement, our proposals seek to preserve the step change in investment to enhance the resilience of our region to the increasing risks of drought and flood. We also propose a means by which we can facilitate our region's sustainable growth ambitions whilst protecting customers should growth prove slower than expected
- At all times, our views are informed by an analysis of what is in the long term interests of our region, our customers and the environment. This includes securing adequate capital maintenance expenditure to meet drinking water and environmental standards and improve service quality
- With these points in mind, our Representation:
  - highlights areas where Ofwat, as it acknowledges in the Draft Determination, has not fully considered previously submitted information that will close the gap between Ofwat's view of the necessary level of Totex and our own;
  - points out where Ofwat's assessment of efficient costs ignores important drivers, particularly in relation to growth, and;
  - proposes changes to the overall balance of outcomes, ODIs and PCLs in the context of the clear views expressed by our customers.
- In our revised plan, the increase in botex between AMP6 and AMP7 is just 1.3% (£47m), despite the increased challenge of maintaining our assets in the face of demands from growth and climate change, and inflation in wages and other base costs
- The introduction of a strong downside-skew towards penalties in the outcomes approach set out in the Draft Determination creates an almost impossible task for ambitious companies wishing to improve performance, as even steady improvements from a strong base will result in penalties. This risks creating a spiral of decline as penalties incurred will reduce the funding available to improve service in future
- At the level of WACC that Ofwat sets out in the Draft Determination, in the context of the overall balance of risk and return represented by the Draft Determination, we find that neither the notional nor the actual company is financeable

1.1 The right plan for our customers and our region

Our September 2018 Plan resulted from the most extensive customer engagement we have ever undertaken. The high quality of this engagement, and the extent to which it was reflected in the Plan we submitted, was recognised by Ofwat through the sector-leading 'A' rating it awarded us in its Initial Assessment of Plans (IAP). Our translation of this into our proposed suite of Performance Commitments (PCs) and Outcome Delivery Incentives (ODIs) was also recognised as strong and built on this customer engagement in Ofwat's IAP. Both of these areas of strength were recognised by the Customer Engagement Forum (CEF) in its independent report to Ofwat on our September 2018 Plan, as was our innovative approach working with the CEF to frame new ODIs in areas like natural and social capital.

Our Plan responds to the specific challenges facing our region, its environment and communities as set out in our refreshed SDS. It also addresses the priorities for PR19 set out in Ofwat's Final Methodology and in the Government's Strategic Policy Statement.

We do not repeat all of the detail of this here. However the four long-term ambitions of the SDS, which themselves emerged from detailed engagement with our customers and stakeholders, are worth restating, given how important they are to our consideration of our Plan for PR19:

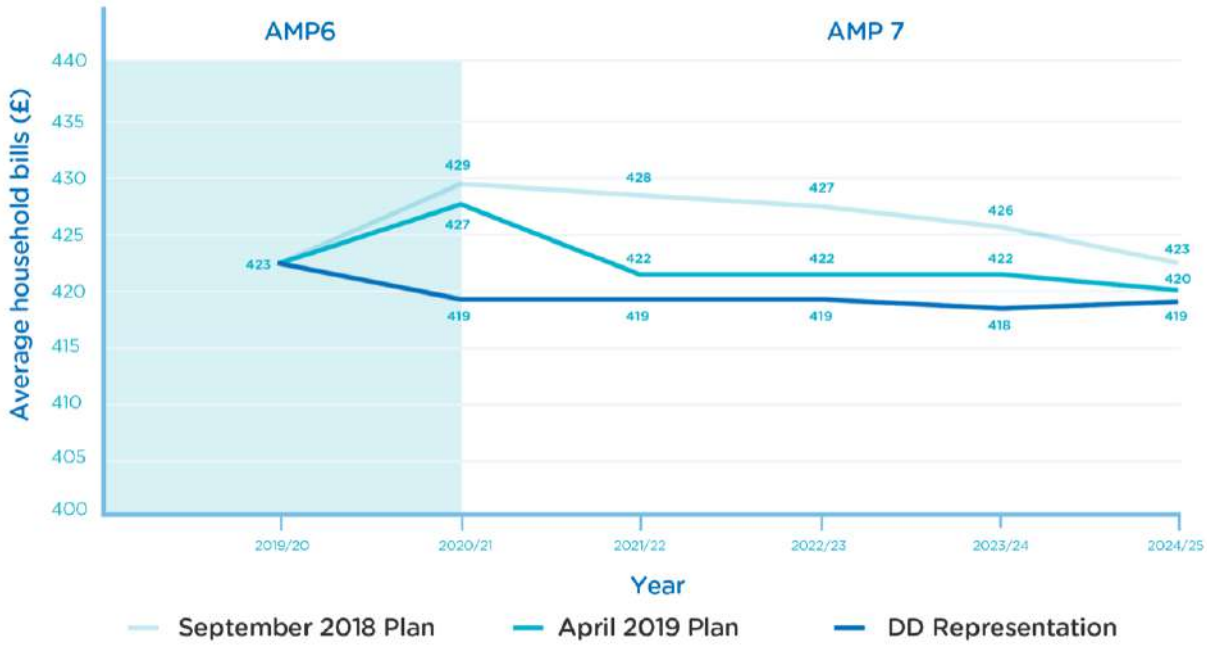
- Make the east of England resilient to the risks of drought and flooding
- Enable sustainable economic and housing growth in the UK's fastest growing region
- Be a carbon-neutral business by 2030
- Work with others to achieve significant improvement in ecological quality across our catchments

Before submitting our September Plan, and before concluding our approach to our Water Resource Management Plan, we explicitly tested customers' views on strategic choices. We asked whether to defer expenditure to address climate change impacts to keep bills lower and what the balance between keeping bills low and increasing investment should be. We tested the relative importance customers placed on key aspects of service, the level of performance improvement we should target, and how these should be incentivised through ODIs.

Customers want us to invest now to address climate change risks and improve resilience rather than defer and are prepared to see bills increase by up to 5% in return for investment to address these risks. They want us to prioritise improvements in leakage, water quality and pollutions over other areas like interruptions to supply. They feel that incentives should align with these priorities and support enhanced rewards for stretching performance, such as moving the leakage frontier. This evidence informed our September 2018 Plan, which proposed a 30% increase in totex for less than a 1% increase in bills. Ofwat instead proposes a c.£40 decrease in bills, which will make it impossible to deliver the service improvements and resilience enhancements our customers desire.

In this Representation, we propose to make some changes to our totex plan, and to accept Ofwat's proposal to test Direct Procurement for Customers for the Elsham treatment works and transfer schemes. These changes mean that bills will reduce compared to our September 2018 Plan, and compared to our IAP response. Bills will reduce by around 1.1% during AMP7, whilst preserving critical investments to address the challenges above. Bills therefore remain well below the average bill changes customers stated are acceptable to deal with the challenges facing the region, and are lower than proposed in our September Business Plan and our IAP response. We would also note that our bill reductions at PR14 were the largest in the sector, so a comparison over the last decade would show a greater level of reduction in absolute and comparative terms.

Figure 1 Anglian Water Future average bills 2017/18 price base



1.2 Public Interest at the heart of our business

Since the initial submission of our Plan, we have further developed our approach to ensuring long-term resilience, addressing affordability and delivering wider public interest outcomes. This has been reflected in the Public Interest Commitment that we worked with Water UK and other companies to shape. This sets out five ambitious goals: to triple the rate of leakage reduction by 2030; to make water bills affordable for those for whom this represents more than 5% of disposable income by 2030; to achieve net zero carbon emissions by 2030; to prevent the equivalent of 4 billion plastic bottles ending up as waste by 2030; and to be the first sector to achieve 100% commitment to the Social Mobility Pledge.

Our Board has also taken a significant step in changing the company's Articles of Association, creating a legally binding commitment to take account of the impacts of our decisions on society and the environment, alongside the financial implications. This is consistent with the commitments we have made in our SDS and Business Plan, builds on our responsible business credentials, including being named BITC's Responsible Business of the Year in 2017, and locks in this "triple bottom line" approach for the long term.

1.3 The right plan for now and for the long term

With those commitments firmly in mind, we believe it is critical that the outcome of PR19 sets the right platform for the long term. This is particularly important given that all the evidence suggests we will face ever growing pressures from climate change and population growth, areas where we are more exposed than other companies given our region is already water-scarce. To ensure we remain resilient to these pressures, we will need to deliver significant increases in investment in new infrastructure, deploy sufficient capital maintenance expenditure to safeguard existing assets, and deliver ongoing investment in our people.

Taking short-term decisions now to defer necessary new investment, or to risk insufficient levels of capital maintenance for existing assets in order to deliver bigger bill reductions would jeopardise the long-term future of our region. It would be inconsistent with our public interest commitments, out of kilter with the clear views of customers emerging from our wide-ranging engagement programmes, at odds with the Government's priorities for PR19 as set out in the Strategic Policy Statement, and would leave future generations of customers facing higher costs as a result of the wrong balance being struck at PR19. However, Ofwat's proposed changes to our plan lead precisely to this deferral of problems to the future. This is an outcome that our customers have clearly rejected.

Our Board has framed its position by reference to an assessment of whether Ofwat's proposed changes to our September Plan would be to the benefit or detriment of customers and the environment today and in the long-term. Given the particular circumstances of our region, this assessment has included a focus on growth. Ofwat's Draft Determination position would reduce our ability to facilitate the region's sustainable housing and economic growth aspirations, and frustrate our desire to increase our water-scarce and low-lying region's resilience to the increasing risks of drought and flood.

1.3.1 Evidence of customer preferences

We have also looked closely at the evidence of customer preferences, augmented in some cases by further customer engagement, to test whether Ofwat's position in the Draft Determination conflicts with what our customers are telling us matters most to them. Where we find such conflict, we have concluded that we should follow what our customers have told us, in line with Ofwat's expectations that companies should place customer views at the heart of their plans. Were we to fail to give primacy to customer views, we would risk undermining the purpose of the customer engagement that we, our customers, stakeholders, and members of the Customer Engagement Forum have put so much time and effort into.

In order to test customer views again on these issues, we carried out further engagement, asking for their views on Ofwat's Draft Determination in comparison to our amended plan. Two-thirds say they favour ensuring investment to address identified priorities can be delivered in the next five years, in preference to a larger bill reduction.

1.3.2 Our strong track record

Our performance shows we can be trusted to deliver in the future. Throughout AMP6, and in previous periods, we have consistently delivered strong operational performance and the great service that our customers want and expect. We are the frontier performer for reducing leakage, the leading water and sewerage provider under Ofwat's Service Incentive Mechanism, and the strongest performer on water quality (according to the DWI Chief Inspector's report published on 11 July 2019).

This is at a time where other companies are subject to transformation programmes for their approaches to managing drinking water quality processes, and the environmental performance of the sector remains under the spotlight. The fact that we are not subject to transformation programmes, and the serviceability of our assets is strong, shows that we have been investing adequately in capital maintenance in recent years. However, we also believe that poor performance from some companies, with consequent detriment to customers and the environment, shows that it is essential a forward looking assessment of future capital maintenance needs is carried out before Final Determinations. This would be in line with the recommendations in the recent paper by Dr Harry Bush and John Earwaker that we have shared with Ofwat.

The resilience of our service is also demonstrably robust. This was tested by both the Beast from the East and the prolonged hot weather in 2018. These extreme events tested the strength and resilience of our operations, and in both cases we were able to safeguard customers from negative effects.

This is the context for our AMP7 proposals which, supported by customers, aim to drive performance levels even higher.

1.3.3 Delivering further performance improvements

Delivering this level of quality across the key performance areas that matter most to customers does not come for free. We have invested effectively and efficiently to achieve these outcomes, including reinvestment of £165m over the last two years of AMP6 to accelerate resilience outcomes and further improve customer service. Our Plan for AMP7 includes a significant further efficiency challenge of £176m and we have responded to Ofwat's challenge in the Draft Determination by removing around £380m of proposed expenditure from our Plan as part of this Representation.

Delivering further improvements from a high performance base is more expensive than catching up from a lower starting point. We have rigorously tested our proposals with our customers who support the proposed emphasis in our plan to deliver outcomes they want at a price they have told us they are willing to pay.

1.4 Reviewing and responding to the Draft Determination

We have carefully reviewed Ofwat's Draft Determination in all aspects, including reflecting on the proposals compared to our IAP response. Our Board has fully considered all potential refinements to our Plan and concluded in favour of the positions that are set out in this document.

Further to the high level considerations set out above, we provide detailed comments and evidence to respond to the technical approaches to the delivery of the outcomes for our customers and the region that Ofwat has set out in its Draft Determination.

Ofwat has reflected some of the points we made in response to IAP in the Draft Determination. However in other areas, Ofwat's proposals do not remedy the the problems we identified in Ofwat's IAP. In the specific case of the treatment of growth expenditure. Ofwat's Draft Determination position exacerbates the problem identified in our IAP response. This is an admittedly complex area where it is difficult to adopt a single approach that appropriately captures the very different nature and pace of housing growth in different parts of the country.

We welcome that Ofwat has moved to include the log-log correction for wastewater enhancement models and has made improvements to some of the mechanisms, such as the recognition of the need to allow a Real Price Effect (RPE) adjustment for labour costs.

Where we support Ofwat's refinements we explicitly state this. In areas where we offer an alternative to the Draft Determination position, we provide compelling evidence (reflecting our initial September Plan, post IAP submission, 31 May and 7 June submissions, and other material) showing why our proposals deliver the right balance and meet the priorities of our region.

In a rapidly-changing and volatile world, we also propose some mechanisms to help manage risk and uncertainty for our customers and the environment.

1.5 Assessing the Draft Determination in the round

In addition to considering in detail all the various aspects of the Draft Determination, we have also considered the overall effects and the likely impacts on customers and the environment, both for PR19 and for the longer term.

We find that the overall effect of the Draft Determination is to create a substantial increase in the level of risk, combined with a substantial reduction in the potential for companies to deliver good service and earn returns. This is driven in particular by a combination of:

- the scale of the Totex gap including the very large shortfall related to Growth expenditure;
- the introduction of a significant downside skew on ODIs with an Upper Quartile requirement for all companies;
- the lack of recognition of any relationship between the quality of service provided and the costs required to achieve that service;
- the absence of any forward look assessment of capital maintenance needs;
- the removal of the cashflow funding mechanism set out in the Final Methodology, and;
- the introduction of a large number of uncertainty mechanisms.

Notwithstanding all of this increase in risk, Ofwat also proposes a lower WACC, which is counterintuitive given the increase in risk.

A striking example of the effect of the downside skew within ODIs can be seen in Ofwat's proposed position on Water Supply Interruptions. Our analysis (set out in detail in Chapter 5) shows that, even if the sector as a whole were to improve its performance by 50% by the end of AMP7, it would receive penalties of £285m.

We are also concerned about the process that Ofwat is following in PR19. Changes to the Final Methodology, the very significant shift in approach to modelling between IAP and Draft Determination, and the large number of issues that remain open between now and Final Determination, including areas where Ofwat has yet to consider evidence we have submitted, all create significant uncertainties. This makes it difficult to make judgments on critical questions such as financeability.

1.6 Totex

We have carefully analysed Ofwat's assessments of our proposed totex plans, to understand how the very significant changes to approach since the IAP have affected Ofwat's analysis and its cost models. This includes the move of around £4bn of growth-related expenditure for the sector as a whole (and some £750m for Anglian Water) into a new "Botex Plus" model, that seems not to have been fully retested.

We remain of the view that Ofwat's models are weak in many aspects, and do not provide a strong basis for the assessment of the level of efficient costs needed to deliver the outcomes our customers support. In such circumstances, we would expect that additional evidence should be used to test and triangulate the results from the econometric models, but regret than in most part this has not been done.

At a more fundamental level, we reject Ofwat's view that the Draft Determination base expenditure allowances fund future upper quartile performance across the board. This is difficult to square with evidence from other sectors of the economy, even in markets where competition provides a strong spur.

Moreover, as Ofwat's models are not capable of taking into account the different quality of outcomes achieved by one company compared to another, and the related differential in costs required to achieve those different outcomes, they can only ever give a very partial view of what may be needed. They cannot support the position Ofwat is taking on upper quartile performance, nor the expected balance of risk in delivering these targets.

Notwithstanding our reservations regarding Ofwat's approach, we have considered the challenge Ofwat has set us around reducing costs and increasing efficiency, and further scrutinised our Plan in the light of this and new information now available to us.

Following that scrutiny, our Board is now proposing:

- To accept Ofwat's proposal to treat the Elsham treatment scheme, and the Elsham transfer scheme, as suitable for Direct Procurement for Customers. This is a total of £122m;
- Reductions to our proposed Botex expenditure compared to our IAP position of around £100m. These changes are driven by our further challenging ourselves in light of Ofwat's push for further efficiency cost reductions;
- Reductions to our proposed Enhancement expenditure of around £160m. These are a mixture of reviewing investments to respond to Ofwat's efficiency challenge, and some revisions of our Plan in the light of new information, where we believe such descoping to AMP7 plans can be delivered without material detriment to customers or the environment.

We have reflected on how Ofwat has sought to understand the difference between our historic base expenditure (botex) and what we proposed for AMP7. In our revised plan the increase in botex between AMP6 and AMP7 is just £47m (or 1.3%). The main reasons for the significant closure of this difference between our view and Ofwat's previous analysis of this difference are:

- Ofwat is now comparing proposed AMP7 expenditure with the expenditure across all of AMP6, rather than with a comparator period of 2013-14 to 2017-18;
- Ofwat is now taking a more appropriate treatment of enhancement opex, and;
- We have made significant reductions to our botex plan in response to the challenge from Ofwat.

In responding to Ofwat's challenge in this area, we are pleased to have been able to make these significant reductions, and to have done so in ways that mean our customers will enjoy even lower bills without compromising the delivery of the resilience and wider outcomes they prioritised.

An increase of just 1.3% in botex between AMP6 and AMP7, despite greater pressure on our assets and operations from climate change and growth, and inflation pressures for wages and other costs, is very modest. To deliver against the major additional challenges we will face in AMP7 with such a small increase in spend over the previous AMP represents a huge stretch. It is difficult to square this with Ofwat's perception of an ongoing major botex efficiency challenge for us in AMP7, particularly given that Ofwat views us as reasonably efficient today.

1.7 Outcomes

As mentioned above, Ofwat's assessment of our suite of performance commitments and ODIs was positive at the IAP. We received a 'B' rating overall, with no company receiving a higher grade for this test area.

We are disappointed that Ofwat's approach to outcomes seems to have been undertaken on a very piecemeal, measure by measure, component by component approach. The net result of this is that Ofwat's Draft Determination position in no way reflects the broader picture of the overall package that our customers supported.

We have reassessed our overall suite of measures, PCLs and ODIs, in the light of our customers' expressed preferences and further engagement with our Customer Engagement Forum. We now propose changes to some measures where we do not oppose Ofwat's proposals. In other areas we believe that the position set out in our IAP response remains essential if we are to stay true to

the evidence we gathered through our customer engagement processes. Where we find a conflict between the views of customers and the position Ofwat proposes, we retain a position that is in line with customer views. At a headline level, this results in the following approach to outcomes:

- Interruptions to Supply – we reject Ofwat's performance commitment proposals as they conflict with customer preferences
- Leakage ODI – we oppose the dilution of incentives for frontier shift
- Other ODIs – we argue against the retention of common incentive rates, particularly when PCLs have been changed

Where Ofwat proposed to remove our specific Social and Natural Capital measures in absence of more detail being provided, we provide this detail as part of this document and seek to retain those two ODIs.

1.8 Financeability, cost of capital and long term financial resilience

Our Board has set out its views on these matters in its Board Assurance Statement. Its summary conclusions are that, at the level of WACC set out by Ofwat in its Draft Determination, in the context of the overall balance of risk and return represented by the Draft Determination, neither the notional nor the actual company is financeable.

Our analysis of notional company financeability was the subject of a paper we shared with Ofwat and published in 2018. We updated this analysis to reflect the position Ofwat set out in its Draft Determination and shared this with Ofwat before publishing it on 16 August 2019.

We have also reviewed analysis carried out by Economic Insight and Frontier Economics on cost of capital and financeability. These reports support our own analysis, and provide evidence that the level of challenge from Ofwat on totex, future productivity and ODIs is unprecedented, that the overall efficiency challenge is not achievable, and that the level of risk to which companies are therefore exposed is not reflected in the level of WACC proposed at the Draft Determination. This creates an inconsistency between the level of WACC proposed by Ofwat, and the level of credit rating that Ofwat expects a typical water company to achieve.

The Board's view on long term financial resilience is set out in the Board Assurance Statement, and reflects the detailed analysis set out in our September Business Plan and its accompanying appendices.

2 INTRODUCTION AND OVERVIEW

This document sets out our formal Representation on Ofwat's DD published on 18 July 2019.

In preparing this response, we reflect on all previously submitted evidence. This specifically includes our IAP response and any further information provided to Ofwat, most notably following our meeting held at Ofwat's offices on 30 April 2019.

Ofwat has not reflected all of this information in reaching its views set out in the DD. Our Representation highlights all areas where we consider Ofwat has not fully considered previously submitted information in reaching its DD position. This representation cross references these documents as appropriate.

This Representation reflects on Ofwat's DD and formally sets out the rationale and evidence in areas where we do not accept the position Ofwat proposes.

This Representation, annexes and associated data tables, commentary, and financial model reflect the latest, most current view of relevant evidence. This includes, but is not limited to, outturn 2018-19 performance. We have not wholly reflected outturn actual 2018-19 data in the tables submitted as part of this Representation, on the basis that Ofwat has acknowledged and accepted it is in possession of this information through our formal Annual Performance Report for 2018-19 as submitted on 15 July 2019.

It would not be appropriate to assume that for areas where we do not explicitly comment, this equates to acceptance of the DD position. We have focussed our attention on the most material issues.

As requested, accompanying our Representation, we provide the following:

- PR19 DD: Company representation pro-forma
- PR19 DD: Outcomes related data for DD representations
- PR19 DD: Developer Services data request with commentary.

In reaching our considered views set out in this Representation we have assessed the data requirements Ofwat has requested. As part of these representations we provide an updated set of data tables beyond Ofwat's minimum requirements and financial model to reach the conclusions set out in this document.

Title	Supporting documentation	Details
DD Representation	3a Incling Research on Executive Pay August 2019 3b Accent Acceptability Research Report August 2019 4a Providing Appropriate regulatory funding for capital maintenance activity: ensuring capital sustainability and service resilience 4b KPMG Review of Anglian Water's Approach to investment in PR14 4c Investment Areas Summaries 7a Comments on Ofwat's Application of Wholesale Water Cost Assessment Modelling in its PR19 DD 8a Reckon Note on Enhancement Opex 8b Vivid Economics: Enhancement cost assessment modelling for PR19 8c Vivid Economics: Log Model Prediction Error 8d Letters of support for Partnership funding	

	9a Notional Company Financeaibilty 9b Economic Insight: Financeability of the notionally efficient firm-top-down analysis 10a Reckon Review of Ofwat's treatment of growth-related expenditure in PR19 DD 10b Vivid Enhancement growth cost assessment at PR19 11a Strategic Regional Solution 11b Anglian Water revised dWRMP 2019 11c AW revised dWRMP 2019 supporting technical – Customer and stakeholder engagement 11d AW revised dWRMP 2019 supporting technical –Options Appraisal 11e AW revised dWRMP 2019 supporting technical – Supplyside Option Development v2 11f Ofwat letter WRMP 22 August 2019 13a Letter to Ofwat 29 May 2019	
Deep Dive Growth Expenditure	Appendix 1 AW Water site specific mains benchmarking	
Leakage Cost Adjustment Claim		
Smart Metering Cost Adjustment Claim		
Sludge Transport Cost Adjustment Claim		
DD Board Assurance Statement		
Revised Data Tables	Mandatory tables as requested plus others required to ensure totex changes appropriately reflected.	
DD Representation Outcomes data submission		As requested
Developer Services data request	See commentary in Data Table Commentary.	As requested
Data Table commentary	Including commentary for Developer Services Data Request and the Financial Model	
Financial Model	See commentary in Data Table Commentary	
Totex Menu Model		
Revenue Adjustments Feeder Model		

RCV Adjustments Feeder Model		
WS2 WWS2 Third party adjustment update		Updated table for query ANH.IAP.CA.001
Ofwat proforma	RP1, RP2, RP3	As requested

3 CUSTOMER VIEWS

3.1 Customer engagement

The customer engagement that we have drawn on to co-create, steer, influence and test our strategies and plans, involved more than half a million interactions with customers using 38 different channels over the course of around two and a half years. Ofwat has largely ignored our customers' preferences in some key and material areas, both at the macro and the micro level of our plan.

In developing our plan, among the many topics we explored and questions we asked, we tested customers' appetite for bringing forward or putting back investment to mitigate the impact of climate change, and the extent to which they supported investing to protect the environment. A large majority supported investment in both mitigating climate change and protecting the environment and taking this investment forward now, rather than delaying. We tested this using four different channels; stage three of the acceptability research, with our online community, through our innovative Be the Boss game, and in focus groups. More than 7,000 customers were directly involved in the detailed consultation on this, and delivered a consistent message about their preferences. We were clear about the impact on bills, including the effects of inflation, and customers clearly told us they wanted a lower risk service, and they supported a consequent bill increase.

Our customers have told us that they value the service they receive, and our acceptability research demonstrates that the majority of customers find our plan both acceptable and affordable. We have put measures in place to help customers with affordability issues.

Ofwat has also ignored our customers' preferences when setting out interventions to our package of ODIs, with regards to the use of incentive rates, deadbands, and caps and collars. We have set out in detail our response to these interventions in our Outcomes for Customers section.

We want to correct some points that Ofwat made in the DD regarding our customer engagement.

In the DD, Ofwat stated that our acceptability research did not include inflation in the bill profiles. Our research on bills has always included inflation as part of the information provided to participants. For example when we tested our business plan with customers we used our acceptability research, our online community, focus groups, and our game 'Be the Boss' to test customers' views on bills, all of which included an estimate of the impact of inflation. For the avoidance of doubt, we tested nominal bills with customers at IAP stage with the following information "...if inflation is included by 2029-30 bills would be £536 in Anglian Water's September profile (the blue line) and £534 in their new profile (the red line)."

We also note Ofwat's feedback in relation to the bathing waters ODI, and whether it should be an in-period or end of period ODI. Ofwat states that:

"A four year rolling average calculation should be made each year and we see no reason that the incentives should not be in-period.

We are not convinced that customers understood this was the case when they were asked their opinion."

We do not know why Ofwat thinks customers didn't understand the engagement materials. If Ofwat thinks that customers didn't understand that there was a four year calculation involved, then we would like to make clear that we have engaged with customers twice on this specific issue, and on both occasions (acceptability research, stage 2, January 2018, and online community research, IAP response, March 2019) we clearly set out the four year nature of the calculation.

If Ofwat is instead suggesting that it would be appropriate to offer an incentive, which would affect customer bills year by year, but be based largely on past performance, as would be the case for the initial years of the AMP, that would have the result that past performance would affect current customer bills.

In addition to the new research set out below, we are continuing to develop and test our detailed proposals for reporting on the natural and social capital ODIs with key stakeholders and customers.

3.1.1 New research

Acceptability research

We have continued our acceptability research programme with a fifth phase of testing in August 2019. We started our acceptability research in 2017 by setting out the principles of good acceptability research. At the outset of PR19, we envisaged a five-stage approach taking us through the key development milestones of our business plan, and Accent, a leading market research consultant, was appointed to carry out all five phases for us. Below is a description of the staged approach we have taken, setting out where we have changed our plans as a result of the acceptability research.

Stage 1 – May 2017 – Strategic Direction Statement

We tested the challenges we face and the long term goals set out in our draft SDS with customers. 87% of customers found the key challenges relevant, and 79% thought they closely reflected their views. We set out four long term goals within the draft, and although overall we gained 83% acceptability, nearly half of those who thought at least one goal should not be included chose 'better serving customers by driving digital transformation into the operation of the business and assets'. As a result we dropped that goal and replaced it with one focused on ecological status within catchments, which had emerged as a priority for stakeholders.

Stage 2 – January 2018 – ODI development

The next stage of our plan was to develop our view of the acceptability of the ODI suite, which was based on the WTP surveys carried out during 2017.

Each of the compulsory ODIs was tested and three quarters found all ODIs clear and easy to understand, and 94% found at least some of the suite easy to understand. Similar results were gained for the bespoke suite (74% found all were clear, 94% found some or all clear) and 77% of participants thought Anglian Water should be measured against all the ODIs within the suite.

We also asked about dead bands and caps and collars: 69% supported dead bands and 74% supported caps and collars in principle.

Stage 3 – April 2018 – Draft plan testing

We then tested our draft plan using several different engagement channels, including acceptability research. Acceptability was 88% which rose to 93% once informed for household customers, and 88% rising to 94% once informed for non-household customers.

Affordability was equally high, at 81% rising to 89% once informed for household customers and 87% rising to 93% for non-household customers. Bill profiles were tested including inflation with more than 95% of participants confirming they understood the impact of inflation on bills.

We tested the performance commitments and asked whether participants thought they were sufficiently stretching. A total of 28 measures were tested, with a range of responses from 56% to 83% of respondents who said they understood the measure thinking each one was sufficiently stretching.

Stage 4 – March 2019 – IAP bill profile

We made minor revisions to our plan in response to the Initial Assessment of Plans and tested the resulting bill profile with customers. Acceptability increased marginally to 90% uninformed and 91% informed, and affordability to 85%.

Stage 5 – August 2019 – Representations on the DD

We made further minor revisions to our plan in response to the DD. We decided to test both the revised plan that we put forward and the Ofwat DD with customers to see what their preference was. In order to test customer views again on these issues, we carried out further engagement with them, where we asked for their views on Ofwat's DD compared to our amended Plan. Two-thirds of customers say they favour ensuring that investment can be delivered in the next five years to address the priorities identified, instead of a larger bill reduction. The report can be found at Annex 3b - Acceptability Research (Report 29.08.19).

We have developed our plan and tested it at five key stages over the past two and a half years. At each stage, the research has told us that a large majority of our customers support our plan, agree it is based on their priorities, and find it affordable. Our customers have consistently told us through many different channels that they want a low risk risk, high quality service, rather than wanting bills to reduce at the expense of service. Ofwat has ignored this in setting its position at the DD.

3.2 Executive Pay

We are pleased that Ofwat has recognised our commitment to the "Back in Balance" principles. As described in our IAP response, we have fundamentally revised our approach to Executive Remuneration, by replacing our previous annual bonus and separate LTIP awards with a single deferred bonus scheme.

To ensure that performance is maintained during the deferred period of the bonus, the deferred element will be subject to additional performance conditions which require stable serviceability to be maintained over the whole of the deferral period, as well as underlying malus and clawback provisions.

In the IAP response, we set out the basis for the performance conditions that will apply to AMP7 awards under our new scheme - three sets of measures, all reflecting customer priorities: customer satisfaction; customer delivery and customer efficiency. Subsequent to the IAP submission, we have continued the conversation with our online community about their preferences for the balance between these elements, and the set of ODIs that they value most.

The majority of our customers who participated in this activity told us that they rated the three sets of measures for customer satisfaction; customer delivery and customer efficiency as equally important. Where the minority has a clear preference for a particular set of measures as being "most important", 26% said customer delivery, 23% said customer efficiency and 12% stated customer satisfaction.

In the second component of the activity customers were asked to choose which five outcome measures should be the ones used to determine executive bonuses. Customers expressed a clear preference for leakage to be included (74%) in addition to pollution incidents (56%); water supply interruptions (50%); external sewer flooding (35%); mains bursts (33%). The report can be found at Annex 3a - Exec Pay (AW Report 16 08 19).

We will now be validating these results with our Customer Board. For example, we were surprised that external sewer flooding was ranked above internal sewer flooding and we will be discussing this with the Customer Board and the CEF. We will also consult other stakeholders as, for example, the vulnerability measures were rated as being relatively unimportant to customers who participated in our online forum, but we know that to a subset of our customers, these are critical measures that we are taking.

These discussions will be taking place in September and then a report will be prepared with options and definitions for the Remuneration Committee to review at its November meeting. For example, the ranking of CMEX, DMEX and Retailer satisfaction in the customer satisfaction measure needs to be debated and agreed. As described in our Annual Integrated Report (AIR), we have a regular cycle of Remuneration Committee meetings, and we will continue to follow this cycle. Once the design of the performance conditions which relate to the 2020 Deferred Bonus Award is agreed in November, we will then wait for the Final Determination to agree the quantitative targets at the Remuneration Committee meeting in February. This is translated into a formal performance contract (which forms the basis of the Deferred Bonus Awards) which is signed off at the March Remuneration Committee. The performance contract is documented in the AIR which is published in June.

This regular cycle of Remuneration Committee meetings and deliberations ensures that the performance contract is stretching and up to date. Each year the design of awards is reviewed in November and the targets in February, with some knowledge of how stretching the current year's targets have proved to be. Each year a review of the previous year's targets and achievement are published in the AIR, along with a description of the targets for the coming year.

4 KEY METHODOLOGICAL POINTS

4.1 Summary

In this chapter we set out our overarching observations on some important cross-cutting issues emerging from the DD. These are captured in three main topic areas relating to the interactions between Cost and Service, Assessing Future Needs and Dealing with Uncertainty.

At the outset of PR19, in addition to setting out expectations for falling customer bills at PR19 and also PR24, Ofwat indicated that companies should expect that the base level of return received through the WACC would be reduced, compensated by the opportunity to earn rewards through ODIs, so that high-performing companies would be rewarded for that performance. The combination of the effect of these cross-cutting issues is to severely restrict the ability of companies to earn returns and materially increase the level of risk companies face.

These issues affect the majority of the regulatory building blocks underpinning this Price Review. These are important matters, as the ultimate decisions reached in the Final Determination will have significant consequences for customers and the environment, now and in the long term.

The Cost Service Trade-off section sets out the central limitation of Ofwat's evolving methodology as executed in the DD, which does not recognise the interrelationship between the efficient level of costs that a company reasonably incurs in relation to the level of service it provides to customers, the environmental outcomes it delivers, and the requirements of quality regulators that it must meet. We provide evidence to support this point and the risks created if not addressed.

In particular, we describe the spiral of decline that would result from the DD approach. In this scenario, companies incur penalties (even if materially improving from their base position), which results in them having less funds available to maintain and improve performance, which in turn under the DD regulatory construct would incur further penalties, and so on.

It is clear from our analysis that Ofwat's PR19 methodology, including the IAP assessment, does not reflect or seek to capture the interaction between costs and service. Nor does it reflect historic performance in key areas for customers such as drinking water quality and leakage reduction in reaching its conclusions. In terms of cost assessment, the link between actual performance and costs incurred to deliver services to customers is not reflected in Ofwat's models.

In addition, the use of forward-looking upper quartile company forecasts as the standard for all to achieve is not mathematically possible. This creates an ex-ante consequence that a quarter of the sector would expect to be incurring penalties irrespective of how far they are improving performance. We illustrate this point by demonstrating that under Ofwat's DD, even if all companies reduced their interruptions to supply performance by 50% over AMP7, the collective penalty incurred would total **£285m.** A brief comparison of companies' actual AMP6 performance compared to their AMP7 forecasts questions the overall credibility of some of these forecasts.

The Assessing Future Needs section considers the shortcomings of Ofwat's approach to assessing base costs, including capital maintenance. Ofwat's current approach is based solely on consideration of sector-wide econometric analyses to determine expenditure allowances for the average company, based on an assessment of historic spend.

As the Bush-Earwaker paper on this issue sets out, this approach fails to consider any forward-looking assessment of need, does not triangulate the econometric analysis with any other evidence or data and, if not addressed at Final Determination, risks replicating the fundamental criticisms levied previously at Ofwat, especially the "intellectual neglect" for which Ofwat was criticised in PR99[1], and from which such future looking approaches such as the Capital Maintenance Common Framework were born.

We provide examples to illustrate the risks that a failure to include a forward-look assessment on the lines of the Common Framework adopted in PR04 and PR09 can generate, including evidence of the particular risks we are exposed to in relation to new towns and London overspill settlements.

1 House of Commons (2000), Environmental Audit Committee, Seventh Session. Specifically recommendation (l) and paragraph 208

We also provide two specific case studies, informed by our forward-looking risk models, which demonstrate the risks to service and performance associated with changes to the level of capital maintenance.

Finally, the Dealing with Uncertainty section reflects on the extensive list of uncertainty mechanisms that Ofwat proposes as part of the evolving PR19 methodology. These mechanisms enable retrospective adjustment on the regulatory settlement to reflect outturn positions where they differ from assumptions made at the point of the Final Determination.

There is a role for proportionate, targeted mechanisms which play a key role in achieving a balance of risk between companies and customers whilst retaining incentives to both deliver and forecast accurately. However, considered in the round, there is a significantly greater use of such mechanisms than in the past. This creates complexity, but also reduces the extent to which incentive-based, outcome based and totex regulation applies. For a large swathe of areas of activity to simply be subjected to an *ex-post* true-up is more akin to previous output-based regulation.

Overall, our assessment is that the package of measures and interventions materially weaken the overall regulatory incentives, including those to outperform the regulatory contract. This is at odds with Ofwat's view that the totex and outcomes regime can incentivise innovative thinking and approaches which may unlock much higher levels of productivity than seen in the sector - or indeed the economy as whole - in the past as well as deliver step changes in performance which benefit both customers and the environment.

This reduction in upside opportunity, and the overall increase in downside risk resulting from the approach to ODIs needs to be taken into account, including for the conclusions Ofwat must reach on WACC and financeability for the Final Determination.

We propose that Ofwat undertakes significantly more work on these issues to resolve the shortcomings we have identified before the Final Determination.

4.2 Service Cost Trade Off

In this section we set out the risks and consequences of Ofwat's overall PR19 approach, which fails to acknowledge the interrelationship between the level of efficient costs and the level of service provided. This has the potential to create detriment for customers and the environment, both over AMP7 and in the long term.

4.2.1 Our plan - What we did

- We developed a package from which we derived the expenditure requirements to meet the needs of customers and the environment in AMP7. This included reflecting both the costs of delivering improvements to service, as well as the enhancements needed to address statutory and other drivers such as WRMP, WINEP and facilitating growth.
- Our proposals were developed based on extensive customer and stakeholder engagement. Our draft plan in March 2018 explicitly set out choices for customers and the associated bill implications. Our societal valuation and ODI workstreams captured customer views on the level of performance commitments, the reasonableness of caps, collars and deadbands as well as the balance of ODI performance between customer service ODIs and asset health measures.
- Finally, we carried out further engagement to test the views of customers in the light of the DD position. Two-thirds of customers say they favour ensuring that investment can be delivered in the next five years to address the priorities identified, instead of a larger bill reduction.

4.2.2 Initial views - IAP

- At IAP our customer engagement received the only sector-leading "A" grade and our Outcomes proposals received the highest score of any company across the test questions Ofwat posed at IAP. Ofwat's IAP reflected that one of the strengths of our Plan was the comprehensive nature of how customer engagement had been used to develop our suite of outcomes.
- At IAP, Ofwat requested further evidence on a component by component, measure by measure, level for our ODIs. We responded with a combination of restating where we had previously undertaken research in these areas that Ofwat had not taken into account, and also undertook further customer research in targeted areas such as their views on the use of deadbands for four performance commitments, and their views on the timing of our Bathing Waters ODI.

4.2.3 Ofwat's DD - costs

- Ofwat's DD retains the policy position that botex models provide the efficient level of expenditure required to fund future forecast upper quartile performance. This is a fundamental misinterpretation of Ofwat's own cost models that both we and independent third parties have previously highlighted. The modelling framework used by Ofwat to derive future expenditure requirements does not capture the key performance cost drivers, and is instead based on historic costs. Multiple companies have now made this point in their documents and we invite Ofwat to consider this central point afresh.
- Ofwat's DD also fails to recognise that different companies are performing at materially different service levels currently and this will have implications for current costs. Our cost adjustment claim for leakage, for example, seeks to address this shortcoming in that particular area.
- Furthermore, with the exception of leakage, no expenditure is allowed for enhancement of service in AMP7. The rationale is that the design of the ODI framework for rewards and penalties do the heavy lifting, but as our analysis of the ODI position shows, the downside-skew on penalties, the lack of outperformance incentives and the component by component assessment without reference back to an assessment of the viability of the overall ODI package means that this is not a viable position. This position is exacerbated by Ofwat's approach to setting incentive rates which effectively decouples companies' incentive rates from their company specific research which was directly linked to the marginal benefits of moving from the current service position to deliver their proposed AMP7 levels of service.

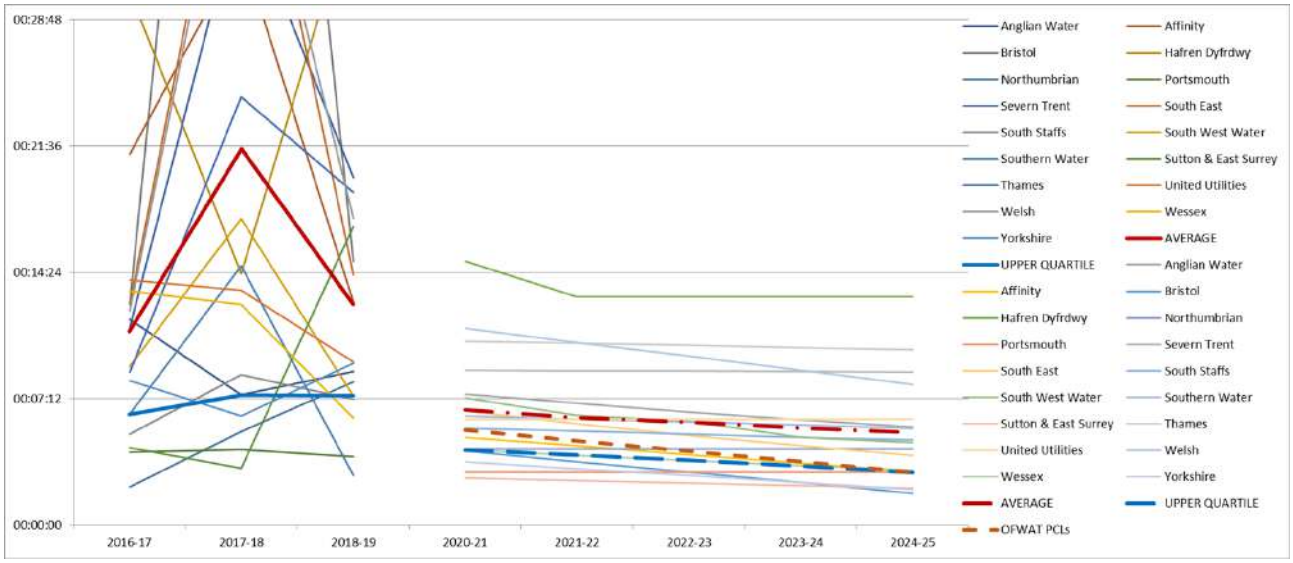
4.2.4 Ofwat's DD - ODIs

- Ofwat's DD assessment of ODIs continues in the vein of the IAP, specifically a measure by measure, component by component intervention-based approach. In this micro detail, Ofwat

has systematically increased risk by adjusting PCLs, removing deadbands and moving caps and collars. Ofwat also intervenes on incentive rates. There is a clear asymmetry to these interventions. This is captured by the extension of companies' downside for RoRE. Ofwat has not made any adjustments where their analysis suggests that companies have set targets that are too stretching or incentive rates that are too punitive. The totality of these interventions serve to decouple the ODI package significantly away from our customers' views on their priorities.

- Ofwat weakly refutes this downside skew on the basis that companies have historically outperformed PCLs and therefore should be expected to do so again. This does not recognise that performance expectations and costs in AMP7 are materially different to the past. For example, we have presented evidence of the increasing marginal cost of a further reduction of leakage.
- This approach has a number of problems associated with it. Firstly, it undermines the macro "package" which companies developed with their customers. In our case, this engagement and its application was acknowledged by Ofwat as leading. Secondly, Ofwat's interventions appear to happen in isolation from from the basic economics of the ODI measures. For example, on Water Supply Interruptions, Ofwat's DD stretches the PCL out to 3 minutes but fails to adjust the incentive rate to be consistent with the diminishing marginal benefit of service improvement, retaining an incentive rate associated with the original PCL proposal. This undermines the basic economic theory of diminishing willingness to pay for service improvements.
- In its reliance on future forecast performance for setting specific PCLs, Ofwat has not conducted a basis sense check on whether the proposed performance range is realistic relative to historic performance. We illustrate this point below with the comparison of historic performance with AMP7 forecasts on interruptions to supply. The stark difference between the historic reality and the future forecasts questions the credibility of this approach.

Figure 2 Comparison of AMP6 performance and AMP7 forecasts



4.2.5 Considering the cost-service trade-off in the round

Ofwat's IAP sought to assess the quality of companies' customer engagement and their previous operational performance as well as to conduct an assessment of cost efficiency[2].

There are significant differences between companies in terms of the level of service they provide to their customers. We have performed well in the past, maintaining good service across the board. The figure below, derived from published data, demonstrates this across a range of performance areas over AMP6.

2 "Engaging Customers", "Accounting for Past Delivery" and "Securing cost efficiency" test areas

The overall performance assessment in the figure below is based on seven measures which cover dimensions of performance of the greatest importance to customers and stakeholders. These are well-established, with a sound methodological basis and historical pedigree, are objective, and are generally recognised as good measures of the performance aspect in question. They are:

- SIM : Ofwat's Service Incentive Mechanism
- Percentage of performance commitments delivered – this measure itself includes a basket of performance measures
- Acceptability of drinking water to customers - a measure of customers' satisfaction with the quality of their drinking water
- Environmental Performance Assessment – the Environment Agency's independent assessment of the overall performance of companies on, for example, pollution incidents and compliance with environmental permits
- Customers' overall satisfaction with the water service provided by their water company – measured independently by CC Water
- Customers' overall satisfaction with the sewerage service provided by their water company – measured independently by CC Water
- Leakage

We collect the data for each company for each measure then convert the data into a 'common currency' that can be used to calculate a single overall performance score. We allocate each company a score between 0 and 10 for each measure. The company with the best performance is allocated 10 points and the company with the poorest performance scores is allocated 0. All other companies receive a score between 0 and 10 which is proportional to their position along the range between highest and lowest score. The overall performance score for each company is the unweighted average of the seven individual performance scores.

Figure 3 Water company overall performance AMP6 (AW analysis of published data)

Company	2015-16	2016-17	2017-18	2018-19	Average
Anglian	7.51	6.69	8.02	7.04	7.31
Welsh	6.83	6.91	6.87	6.02	6.66
Northumbrian	6.00	6.39	6.55	7.12	6.52
Severn Trent	6.20	5.71	6.52	5.72	6.04
South West	2.70	2.75	3.32	4.40	3.29
Southern	3.46	4.58	3.46	4.68	4.05
Thames	3.25	1.76	3.15	2.14	2.58
United Utilities	5.89	7.06	6.72	5.92	6.40
Wessex	7.51	7.52	7.84	7.08	7.49
Yorkshire	6.29	6.39	6.36	6.30	6.33

In the three areas most important to customers, leakage, water quality and customer service, we have been the best performing company. Achieving these standards, which customers and regulators value, has required us to spend more money than companies who are performing less well. Yet under the simplistic approach to modelling cost efficiency that Ofwat has adopted, these higher costs contribute to our 'inefficiency', in the absence of any allowance for the higher quality service that these costs are delivering.

Service and cost are inter-related. However, in the DD Ofwat has not undertaken an 'in the round' assessment of service and cost proposals. Companies' forward-looking business plans should reflect their customers' preferences for a level of service provided at an efficient price for that level of service. Where companies' historic performance is strong, and customers support maintaining this level in future, this should inform the level of costs customers pay. Maintaining good service costs money. Conversely customers should not pay for the recovery from poor performance or bad management decisions.

Ofwat's current sole reliance on econometrics does not reflect these interactions, because the quality of service provided is not included as an explanatory factor within Ofwat's models. The risk is that poor performers are rewarded through the current approach while good performers are penalised.

The risk of the current situation is a simple one. Cost allowances derived in a way that do not cover the expectations of arbitrarily stretched performance ODIs will, in future, present companies with the dilemma of whether to invest further beyond their allowances in order to meet these PCLs and to avoid penalties under the ODI framework. It is unclear if this is the genuine policy intent from Ofwat.

Unless they invest additional funds beyond those allowed in their Final Determinations, these companies would be subject to both penalties under the ODI framework and potential further enforcement action. On the former, these penalties represent payment flows in the form of lower future bills to deliver an ever increasing service. It is not difficult to see a scenario where perpetuation of this interaction creates a spiral of decline which undermines companies' ability to deliver for their customers and the environment as well as creating reputational damage to the sector.

The following table sets out our comparison between different hypothetical scenarios of cost and service and how these compare to Ofwat's approach:

Table 1 Service and costs trade offs

	Hypothetical 1	Hypothetical 2	Ofwat's approach
Scenario	All companies are equally efficient but deliver different levels of service	All companies deliver identical levels of service but differ in efficiency	Companies differ in terms of service quality and efficiency
Cost allowances derived from models based on historical cost and performance fund …	Average level of service	Average level of efficiency	Average level of service and efficiency
Challenge is applied by …	Requiring all companies to deliver service at the level of the best performer – penalties for not doing so	Requiring all companies to deliver service at the efficiency level of the frontier performer through a catch-up challenge plus an allowance for future productivity improvement	• Inclusion of a catch up challenge • Allowance for future productivity improvement • Setting baseline service a the current service frontier, or • Setting of a service challenge beyond the current frontier not represented in industry current costs

Service improvements are achieved by …	Incentives for service enhancements beyond the current service frontier	Incentives for service enhancements beyond the current service frontier	Setting this future service challenge as a minimum with no additional funding and penalties for missing it
Efficiency improvements are achieved by …	Incentives for efficiency improvements beyond the current efficiency frontier	Incentives for efficiency improvements beyond the current efficiency frontier	Incentives for efficiency improvements beyond the current efficiency frontier

The logic here produces the following conclusions:

- Taking current service frontier as the baseline for the future under scenario 1 is reasonable
- Taking current efficiency frontier as the baseline for the future under scenario 2 is reasonable
- Taking current service *and* efficiency frontiers as the baseline for the future is very challenging as it takes the best of all worlds and creates a hypothetical frontier company not represented in the real world
- Taking as the baseline for the future the current efficiency frontier *plus* a stretch service frontier not currently observed (as Ofwat does for leakage) creates a proposition which is not reflective of anything observed in real markets.

4.3 Assessing Future Needs

4.3.1 Summary of Ofwat's approach

Ofwat's PR19 approach has been to include capital maintenance as part of base expenditure (botex), and to base its assessment of costs solely on sector-wide econometric approaches which seek to standardise PR19 funding allowances around the historical spend of the upper quartile company during the period 2013/14- 2017/18. Ofwat's DD models now also include growth-related expenditure in its revised view of "Botex Plus" costs, which we explore further in our 7 Cost Assessment - Botex Plus and our 10 Focus Area - Growth.

4.3.2 What's changed since the Initial Assessment of Plans (IAP)

Ofwat has made no formal changes to its approach for DD but acknowledges that it has yet to consider all of the evidence we have submitted, including at meetings with Ofwat on 30 April 2019, and the submission of additional evidence on 30 May 2019 and 7 June 2019, which included the May version of the Bush-Earwaker discussion paper on capital maintenance[3].

In a July update to their discussion paper (see Annex 4b), the authors note:

> *"We have seen no evidence that Ofwat has, in the draft determinations issued in July 2019, supplemented its econometric modelling by consideration of company specific information in the way we suggest; it may be that time was too tight. However, this omission makes it even more important that the necessary work is put in hand in good time for its final determinations later this year."*

We concur with this view. We understand from our meeting with Ofwat held on 1 August 2019 following publication of the DD that Ofwat is reviewing its capital maintenance approach and considering the evidence we have submitted, including the Bush-Earwaker paper.

4.3.3 There are significant shortcomings to Ofwat's approach

Ofwat's approach places significant burden on a small suite of models, using a small range of explanatory factors to set the majority of the sector's expenditure requirements. Our view accords with that of independent regulatory experts that such an approach, in isolation, creates a significant risk of mis-provision for capital maintenance on an individual company basis.

The logic here is a simple one. *Ex-ante*, it is a reasonable assertion that underlying capital maintenance requirements will vary markedly between companies and within companies over time, depending, *inter alia*, on differences in underlying asset health and age.

The models that Ofwat has used for setting base allowances do not take into account these factors. For example, the models do not account for variations between companies in previous enhancement investment (e.g. for P removal).

At the end of this section, we provide evidence in relation to our greater exposure to New Towns and London Overspill developments. This is but one illustration of the many factors that will be embedded into companies' future asset investment requirements, which need to be considered in any assessment of future needs.

As factors such as these will determine the underlying maintenance requirements, we are concerned that Ofwat's approach will not capture upper quartile efficiency in its PR19 botex allowances, as is its stated intention. Rather, it merely bases all companies' cost allowances on historical lower quartile volumes of maintenance activity (irrespective of the profile of past investment, new information on the underlying condition of assets, or any other company- or period-specific factors which may be impacting on asset health and serviceability). The output will simply deliver a number that may well fall short of an adequate allowance for capital maintenance. A robust approach would be one that also takes into account the relationship between capital maintenance expenditure, asset condition and the resilience of networks to an ever-increasing exposure to climate-related shocks and stresses.

3 Bush and Earwaker (May 2019) Providing Appropriate Regulatory Funding for Capital Maintenance activity: Ensuring capital sustainability and service resilience

In light of:

- Ofwat's primary duty on resilience;
- the historic critique of previous approaches taken in water at PR99[4], which resulted in the development through joint working[5] across the sector of improved approaches to asset management and information, and;
- the development of risk-based approaches to forecasting capital maintenance requirements

it is perverse for there to be no recognition of the importance of established, forward-looking approaches in setting cost allowances for PR19.

It is even less understandable that risk-based analysis of future capital maintenance requirements should seemingly play no part at all in Ofwat's PR19 assessment of capital maintenance, given the evidence of the variability and cyclicality of this activity.

4.3.4 How we built our Plan

Our September 2018 Plan set out how we used a robust and challenging process to develop our botex costs, using benchmarking both within and beyond the sector. Our bottom-up approach is rigorous; we use the most recent efficient unit costs as our baseline, test these through internal challenge groups, then cross-check the outputs against our peer-reviewed econometric models and historic costs.

Our September 2018 Plan[6] set out our rigorous three step process to develop our approach to asset management and the derivation of our future investment requirements, namely:

- We challenge the need to invest and the scope of solutions. We do this component by component, rather than at a site-wide level;
- We select the most appropriate and innovative solutions to meet the need. This means we build only when we need to and challenge ourselves to deliver low carbon, innovative solutions, including examples such as Ingoldisthorpe natural capital solution; and
- We ensure efficient delivery of the selected solutions developed by an unrivalled level of information on previously delivered projects. Furthermore, our commitment to alliancing, has delivered a range of efficiency enhancements, and a range of long term relationships to innovate and both drive down costs and develop innovative solutions driven by our emphasis on six capitals.

The quality of our approach to Asset Management has been externally recognised through accreditations to ISO55001 and PAS2080, where we continue to demonstrate that we are following best practice as would have been assessed in previous price reviews through the Asset Management Assessment process. Our commitment to carbon reduction and pioneering use of Green Bonds, explicitly linking environmental outcomes to raising funds to make the necessary investment to enhance the region's environment, has also been recognised as best practice.

4.3.5 The role of performance and the expressed views of customers

In section 4.2 we set out how Ofwat's approach to setting cost allowances and performance commitment levels as separate, distinct analyses failed to recognise the link between the two and therefore risked setting unrealistic challenges. It also fails to recognise the company's task, which is to create balanced plans which reflect customers' views of the trade off between bill levels (incorporating efficiency) and service performance, and the views of our Customer Engagement Forum as to how well we have performed this task.

We are particularly concerned about the consequences for asset health arising from the failure to consider service performance. In its IAP Ofwat seemingly focussed primarily on cost reduction, with little weight given to track record.

4 House of Commons (2000), Environmental Audit Committee, Seventh Session. Specifically recommendation (l) and paragraph 208
5 Specifically the development of the Common Framework for Capital Maintenance Planning in the UK Water Industry
6 Specifically Chapters 10.10 and 10.11

Companies bear the risks which follow from accepting funding allowances which do not allow them to discharge their asset health responsibilities. But Ofwat also has a responsibility to ensure that all companies are capable of fulfilling their statutory duties. There is a risk that if Ofwat bases cost allowances for capital maintenance without assessing a company's future specific needs, funding will be insufficient for all companies (including for Fast Track companies) with negative consequences for customers and the environment.

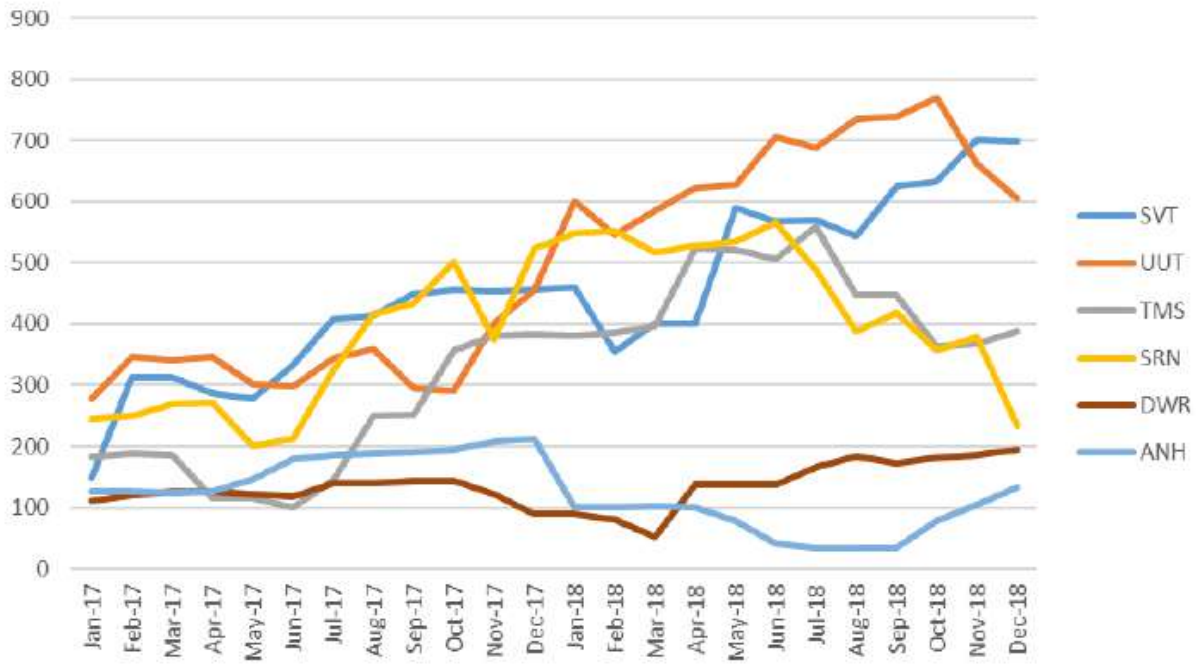
Ofwat has said it is considering the evidence we have put forward on capital maintenance, which we welcome. As it does so, we would suggest it considers the following key elements of an approach to capital maintenance for the Final Determination, drawing from previous frameworks used by Ofwat, and approaches we have continued to develop:

- Assessing asset health and whether pressures on assets are increasing;
- Assessing whether previous allowances have been used properly and performance is being delivered to an acceptable standard, and;
- Revisiting the previously-used Asset Management Assessment, and the ISO 55001 framework which allows for independent validation of companies' maturity when measured against this published standard

Ofwat has also said that companies' plans should be based on the views of their customers. Our own customers have told us that they want us to take the necessary steps to maintain drinking water quality and safeguard the environment; our plan, and the expenditure proposals it contains, deliver on that instruction.

The Recommendation Risk Index (RRI) is used by the DWI to assess the relative risk to customers of the regulated companies. The chart below, reproduced from the Chief Inspector's 2019 report, shows the companies of concern to the DWI alongside Anglian Water and Welsh Water who are drawn out by the DWI as examples of expected performance.

Figure 4 Tracking the performance of companies for RRI



Source: DWI Chief Inspector's Report, July 2019

4.3.6 Why it matters

Asset health, and the necessary capital maintenance, is key to the sustainability and resilience of the water, wastewater and environmental service standards that customers value and which is facing greater external pressure from more extreme weather events. It is also important to inter-generational equity. Assuring appropriate capital maintenance over time has been a perennial issue for UK policymakers, with independent economic regulation of both private and public entities providing the potential for an objective, evidenced, long-term approach in most of the UK's infrastructure industries.

Our customers consider current and future maintenance to be one of the top areas of priority for investment, with 56% of customers indicating that they would support an increase in investment in maintenance from the existing level (Our plan appendix 12c, Anglian Water customer engagement report, page 48).

We engaged extensively with our customers on the overall bill profile, reflecting our capital maintenance proposals, and we have a bill profile for AMP7 which is well below the level at which customers were willing to pay. This was recognised in the initial assessment of our plan.

Our customers demonstrated support for inter-generational fairness in paying for high-cost, long-term assets, with 72% giving a preference to pay their fair share, and 23% supportive of paying more today to benefit future customers. Without the necessary capital maintenance spend, we will see a diminution in our operational resilience, increased risk of service failures, and higher maintenance costs for future customers.

Recently there have been a number of high profile asset failures such as power failures on National Rail and Toddbrook Reservoir; others may remember the Hatfield rail disaster or, further afield, the collapse of the Genoa motorway bridge. Public awareness and knowledge of this area is very high. Customers expect companies and regulators to make informed 'no regret' decisions now to ensure problems do not emerge later.

4.3.7 How to fix it

The obvious solution to this problem is one that Ofwat, the Competition & Markets Authority (CMA) and other economic regulators have all identified in the past: namely, the triangulation of historical cost benchmarking with a forward-looking analysis, using more grounded, asset-based evidence and assessment of future risk.

In our view, the funding levels suggested by econometric models must be cross-checked against engineering assessments in order to produce more rounded and accurate overall funding allowances. This can only result in a better answer than an approach where lower quartile historical expenditure is simply rolled forward for another five years.

This was also the CMA's view in the 2015 Bristol Water case. We note that other regulators also use such information even where (as in Ofgem's case) there is the potential in a multi-company environment for sector-wide benchmarking.

Given the previous critiques, the evolution of company approaches following PR99 and the availability of customer and wider stakeholder views (for example the DWI and EA hold strong views on ensuring appropriate levels of maintenance in assets protecting drinking water quality and the wider environment), we believe it is a relatively straight forward task to conduct a cross-check between the outputs of cost models and the conclusions from asset- and risk-based approaches to ensure that capital maintenance allowances for PR19 are appropriately set. Based on the DD, it does not appear that Ofwat has sought to do this.

Our Plan was developed on the basis of our customers' views. We also triangulated our bottom-up future investment requirements with wider evidence such as econometric modelling. We therefore contend that Ofwat should accept the position we set out in this Representation.

Different assets and maintenance needs - New towns and uPVC

One example how assets and their resultant maintenance needs vary is the penetration of New Towns and overspill development.

We have undertaken research reviewing the impact of new town developments on future expenditure requirements to understand the materiality of the specific impact they have on future maintenance requirements. Our exposure to New Towns and overspill development is significant: three of the six identified 3rd generation new towns are within our operating region (Milton Keynes, Peterborough and Northampton) and 22 of the 62 overspill towns are also in our region.

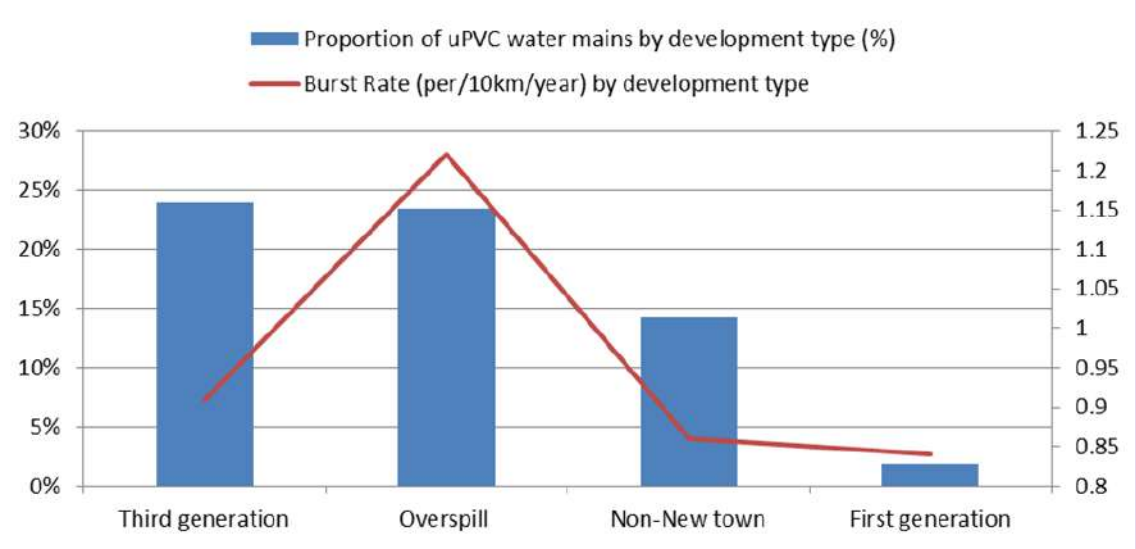
Material types associated with new towns

When uPVC pipes were used as part of the third generation of New town developments, very little was known of the long-term properties of the material.

Almost 50 years on, the failings of these materials are now better understood.

The building of these developments aligns with the introduction of uPVC water mains. There is a correlation between the third generation new towns and most of the overspill developments (1967-70) with increased use of uPVC material. There is also evidence that this material impacts the overall burst rates for water mains associated with different generations of developments.

Figure 5 Proportion of uPVC mains and burst rates



This has informed a change to the material composition of more recently produced PVC pipes used in subsequent new developments. There is a significant difference in the burst rate of overspill development and marginally higher burst rate for third generation new developments compared to non-new town or early generation new town mains where less than 2% of mains were PVCu construction.

4.3.8 The risk of getting this wrong: Case Studies

We seek to illustrate the general points from this chapter with a pair of real life case studies – one each from water and water recycling. In each case we describe:

- Why the outcome matters and the value placed on it by our customers

- What we do to maintain performance
- The relationship between investment, activity and performance
- The consequences for customers of performance failures resulting from insufficient investment in capital maintenance

We also provide more detailed analysis of seven investment areas in Annex 4c.

4.3.9 Drinking water quality

All water leaving our water treatment works must meet the stringent water quality standards set down by the Drinking Water regulations. Compliance with drinking water standards is assessed via a comprehensive programme of daily sampling and analysis. All parameters of the Drinking Water regulations are assessed; for the purpose of this case study we focus on two of the more important parameters – coliforms and turbidity.

The key assets responsible for delivering these outcomes are:

- 15 Surface Water Treatment Sites (supplying 50% of water into supply)
- 115 Ground Water Treatment Plant (supplying 50% of water into supply)
- on site potable water storage tanks

Why the outcome matters and the value placed on it by our customers

Access to safe drinking water is a pre-condition for a healthy society. Customers recognise the critical role of safe drinking water to their wellbeing. Overall, safe drinking water consistently ranks as their highest priority.

Turbidity may impede the disinfection process. It may also be associated with infection of water by Cryptosporidium, a protozoan parasite that results in a diarrhoeal disease for which there is no effective treatment. Most healthy people recover from cryptosporidiosis within 4 – 6 weeks but those with a compromised immune system or with other medical conditions may be more seriously affected and may even die. Coliforms are bacteria widely present in the environment but routinely destroyed in the water treatment process. Their presence in drinking water may cause sickness in customers and, more widely, indicates a potential failure of the disinfection process which kills other pathogens.

What we do to maintain performance

These are the key maintenance activities we carry out to ensure compliance with the drinking water regulations:

Mechanical and Electrical Equipment

- Routine planned maintenance of equipment to ensure continued operation in line with target standards
- Replacement and refurbishment of pumps, filters, media and disinfection equipment ahead of failure through asset observations and monitoring
- Regeneration of granular activated carbon
- Like-for-like replacement of assets or, where technology has become obsolete or where there is benefit of replacing, whole plant systems.

Water tanks

- Routine inspections, cleaning and testing of structures
- Refurbishment or replacement of joints, structures and access points where ingress of untreated or contaminated water could have a detrimental impact on water quality

Buildings and grounds

- Maintenance in a safe and serviceable condition to prevent rainwater penetration impact on mechanical and electrical equipment.
- Grounds maintenance to prevent structural damage from tree roots which might allow water ingress.

The relationship between capital maintenance expenditure, activity and performance and the consequences of reducing capital maintenance.

The general consequence of insufficient investment is that the maintenance activities listed above are performed less frequently. We may be forced to extend intervals between interventions, or establish higher risk intervention thresholds, increasing the potential for regulatory standards to be missed. Planned replacement programmes would be foregone and we would have to revert to fix-on-fail regimes, increasing the service risk profile due to the long lead times for delivery of specialist plant and machinery. A 'make-do-and-mend' approach of this type would store up risk and investment requirements for future years, causing inter-generational inequity.

The charts below illustrate the relationship between capital maintenance investment levels and drinking water quality, as measured by our two chosen indicators. They show that:

- the frequency of coliform failures increases with successive reductions in investment, such that in the most extreme of our scenarios (a 40% reduction in investment) we see coliform failures in 20 WTWs, or one in seven of our WTWs, by 2024: a five-fold increase on current levels. With a 20% reduction in investment we see coliform failures in 16 WTWs, or one in nine of our WTWs, by 2024.
- the frequency of turbidity failures increases with successive reductions in investment, such that in the most extreme of our scenarios (a 40% reduction in investment) we see turbidity failures in 10 WTWs, or one in fourteen of our WTWs, by 2024. With a 20% reduction in investment we see turbidity failures in 7 WTWs, or one in twenty of our WTWs, by 2024. Currently turbidity failures are very rare.

Figure 6 All WTW coliform failures

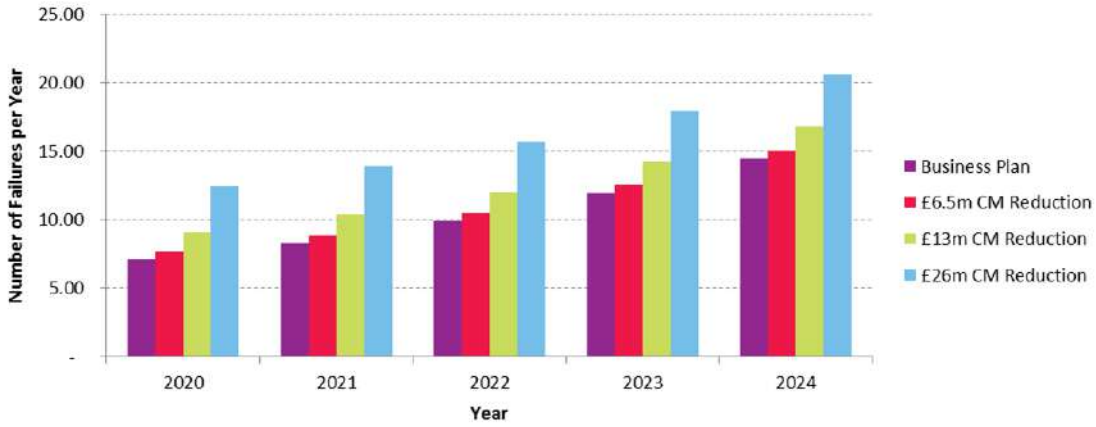
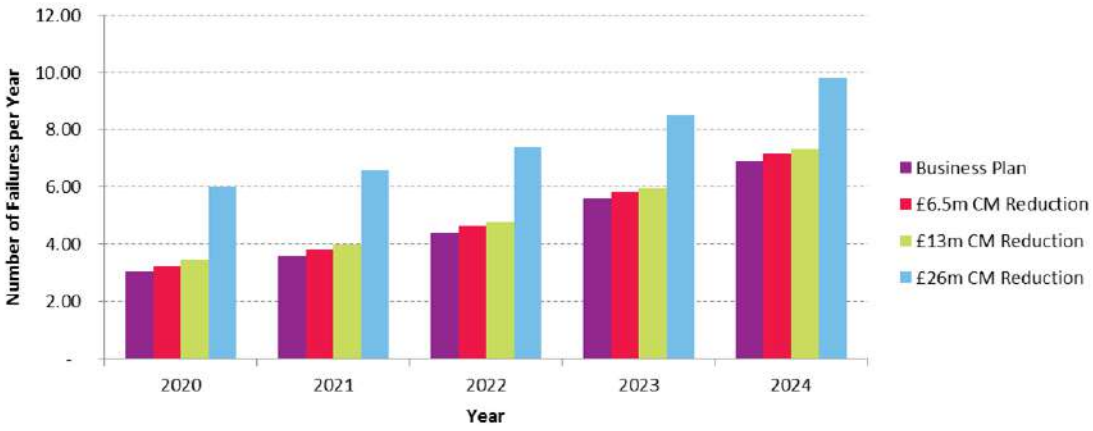


Figure 7 All WTW turbidity failures



These relationships are derived from our own service-impact models. Each model is unique to an individual WTW and replicates the asset hierarchy held in our corporate systems. We have ascertained for each item of equipment a deterioration curve and we understand the consequence on the downstream process in the event that an asset fails. These models take into account plant configuration and repair times. The models used have been validated using performance data, and the approach we adopt was externally reviewed by KPMG in a report that was part of the materials we submitted to Ofwat for PR14 (Annex 4b).

The consequences for customers of performance failures

The following are all potential negative outcomes of performance failures for customers:

Short-term

- Supply interruptions – conceivable in the event that a water treatment works has to be shut down and alternative supplies are not available. Creates a public health risk from the dependence on alternative supplies (e.g. bowsers) and loss of ability to flush toilets
- Illness, from ingestion of contaminated water as described above
- Inconvenience – we typically ask customers to boil all water for personal consumption pending the return to compliant water

Long term

- Loss of confidence in the quality of drinking water and the regulatory system which protects customers
- Increased risk to health from long term exposure to lead, pesticides and disinfection by-products
- Reduced capital maintenance expenditure in any one price control period will require higher costs in future periods to restore performance to acceptable levels

4.3.10 Water Recycling Centre performance

All treated effluent returning to environmental waters from our water recycling centres (WRCs) must comply with the requirements of the environmental permits granted by the Environment Agency. Permits are set to achieve the Government's environmental objectives. Compliance with permits is assessed by a comprehensive programme of daily sampling and analysis. The detailed conditions of permits vary according to the nature of the receiving waters and the characteristics of the WRC catchment. They typically include limits for Biological Oxygen Demand (BOD), suspended solids and ammonia. We focus on these parameters for the purpose of this case study. We also focus on our largest WRCs – the 49 Band 6 centres which serve more than 25,000 population equivalent.

Across our region, the assets involved in delivering these outcomes are 1,128 WRCs, which vary in size from very small centres serving the load equivalent to 20 people to our largest centres serving a population equivalent of 300,000.

Why the outcome matters and the value placed on it by our customers

The safe disposal of waste water is critical to the health of the environmental waters which receive them: rivers, lakes and the sea. Effluents with high levels of BOD stimulate bacterial populations which deplete oxygen levels in rivers, leading to the death of fish and other aquatic fauna. Ammonia is a toxin which also causes the death of fish and other animals. High levels of suspended solids impede the penetration of light and smother the river bed, with adverse impact on aquatic plants and the food webs which depend on them.

The quality of environmental waters also impacts on human health and the quality of life. Rivers provide the source of water for drinking, industrial cooling and agricultural irrigation. Rivers and seawater are widely used for recreational purposes, including walking, fishing, water sports, boating and swimming. They may also be used for commercial navigation. Customers place a high value on the quality of rivers, lakes, bathing waters and the sea.

What we do to maintain performance

These are the key maintenance activities we carry out at WRCs to ensure compliance with the conditions of our environmental permits:

Mechanical and Electrical Equipment

- Routine planned maintenance of equipment to ensure continued operation in line with target standards
- Replacement and refurbishment of pumps, filters, blowers, dosing equipment, scrapers, inlet screens, odour control units and media ahead of failure through asset observations and monitoring
- Like-for-like replacement of assets or, where technology has become obsolete or where there is a positive cost-benefit ration for full replacement, whole plant systems

Structures: inlet works, tanks, channels, chambers, filter beds and outfalls

- Routine inspections, cleaning and testing of structures
- Refurbishment of structures which have been subjected to wear and aggressive environments

Buildings and grounds

- Maintenance in a safe and serviceable condition to prevent rainwater damage to mechanical and electrical equipment.
- Grounds maintenance to prevent structural damage from tree roots to tanks and other structures

The relationship between capital maintenance expenditure, activity and performance and the consequences of reducing capital maintenance

The general consequence of insufficient investment is that the maintenance activities listed above would have to be performed less frequently. We may be forced to extend intervals between interventions, or establish higher risk intervention thresholds, increasing the potential for regulatory standards to be missed.

Planned replacement programmes would be foregone and we would have to revert to fix-on-fail regimes, increasing the service risk profile due to the long lead times for delivery of specialist plant and machinery. A ‘make-do-and-mend’ approach of this type would store up risk and investment requirements for future years, causing inter-generational inequity.

The charts below illustrate the relationship between capital maintenance investment levels and effluent quality, as measured by our three chosen indicators. They show that

- the frequency of ammonia failures increases with successive reductions in investment, such that in the most extreme of our scenarios (a 40% reduction in investment) the number doubles from the level projected by our business plan to over 60 per year by 2024. With a 20% reduction in investment the number increases to 55.

- the frequency of BOD failures increases with successive reductions in investment, such that in the most extreme of our scenarios (a 40% reduction in investment) the number increases from 65, the level projected by our business plan, to nearly 120 per year by 2024. With a 20% reduction in investment the number increases to over 100.
- the frequency of suspended solids failures increases with successive reductions in investment, such that in the most extreme of our scenarios (a 40% reduction in investment) the number increases from under 40, the level projected by our business plan, to over 70 per year by 2024. With a 20% reduction in investment the number increases to over 60.

Figure 8 WRC Band 6 ammonia first 95%ile failures

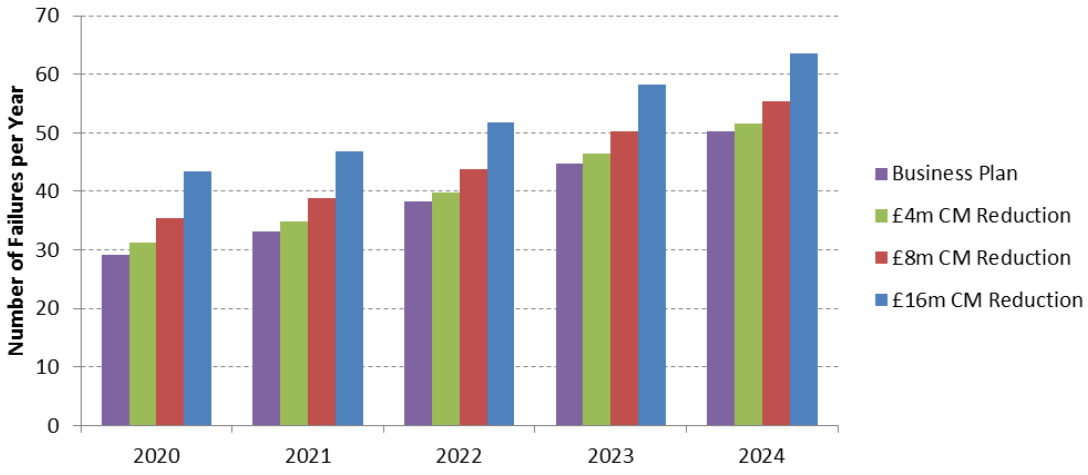


Figure 9 WRC Band 6 BOD first 95%ile failures

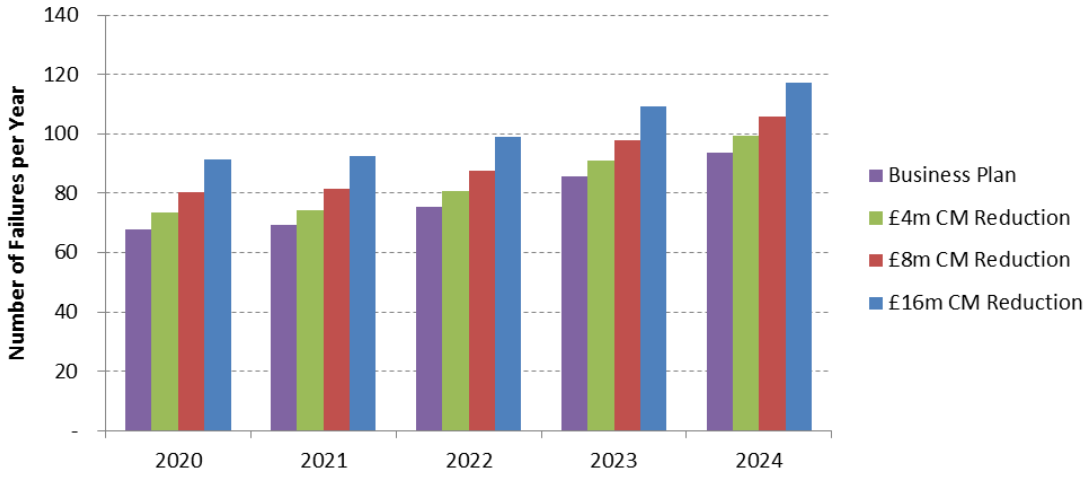
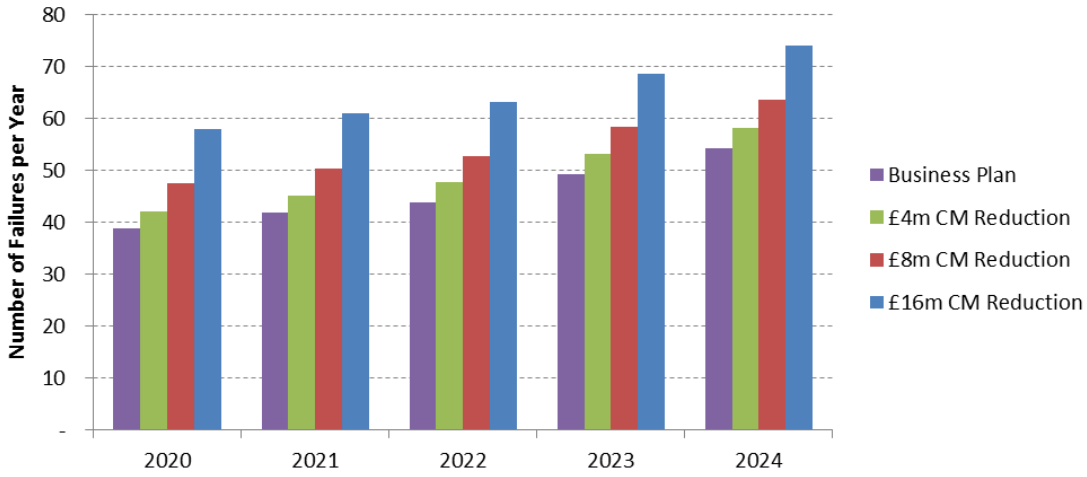


Figure 10 WRC Band 6 SS first 95%ile failures



These relationships are derived from our own service-impact models. Each model is unique to an individual WRC and replicates the asset hierarchy held in our corporate systems. We have ascertained for each item of equipment a deterioration curve and we understand the consequence on the downstream process in the event that an asset fails. These models take into account plant configuration and repair times. The models have been validated using performance data. The models used have been validated using performance data, and the approach we adopt was externally reviewed by KPMG in a report that was part of the materials we submitted to Ofwat for PR14 (annex 4b).

The consequences for customers and the environment of performance failures

The following are all potential negative outcomes of performance failures for customers and the environment:

Short-term

- Loss of species and reduction in biodiversity
- Loss of visual amenity
- Reduction in quality or loss of recreational facilities, such as those listed above
- Illness from ingestion of or contact with contaminated river or sea water during recreational or commercial activities
- Commercial damage – for example, through reduced custom from recreational users or loss of commercial fisheries

Long term

- Loss of confidence in the quality of the environment and the regulatory system which protects customers and the environment
- Reduced capital maintenance expenditure in any one price control period will require higher costs in future periods to restore performance to acceptable levels

Conclusions

The findings of the Bush-Earwaker report relating to capital maintenance are that Ofwat needs to supplement its econometric modelling with consideration of company specific information to avoid repeating the problems identified in the past. Their July update to their paper argues that it is important that the necessary work is undertaken in time for Final Determinations.

The case studies we set out here draw from the general analysis contained in the Bush-Earwaker report and illustrate the potential consequences for customers and the environment should insufficient funding be allowed to maintain assets.

The solution we propose is in line with the conclusions of the Bush-Earwaker July update, i.e. that Ofwat undertakes a full review of the question of capital maintenance and adequacy of funding before the Final Determination. We note positively that Ofwat has said that it is already actively considering this question and the evidence we have submitted already, and so believe that this can be done within the PR19 process. Delaying the resolution of this problem until PR24 would not remedy the customer and environmental detriment that could flow from incorrect conclusions being reached for this price review.

4.4 Dealing with uncertainty

Our DD includes a large number of uncertainty mechanisms. The purpose of these mechanisms is to enable retrospective adjustment of the regulatory settlement to reflect information revealed during the course of the price control period. Price controls are set on the basis of *ex ante* forecasts of a number of factors. In due course the true value of these factors is revealed. Replacement of these *ex ante* forecasts with *ex post* actuals via these uncertainty mechanisms effectively allows the regulatory settlement to be re-written in the way it would have been with the benefit of perfect foresight.

The table below lists these mechanisms and provides brief comment on each. Where relevant, we direct the reader to other sections of our Representation.

Table 2 Uncertainty Mechanisms

Mechanism	Purpose	Comment
1.In the Licence – grounds for an IDOK (subject to meeting IDOK criteria)		
RCC1	General provision to adjust for changes to costs due to a relevant change in law	These are not new
RCC2	General provision to adjust for changes in land sales	
RCC3	General provision to adjust for changes to costs due to new obligations or obligations no longer required	
2.Proposed by Ofwat in the DD		
DPC	Ofwat is seeking views on whether to include a Notified Item to cover the circumstance where a DPC scheme reverts to a traditional in-house delivery	Our response to Ofwat's proposal is included in Chapter 13 Focus Area - DPC
All price controls		
Performance commitments	Adjustments (mostly In-period) to allowed revenue to account for performance against the performance commitments, including CMEX and DMEX	We accept the principle of this approach, which is not new. We comment on the detailed proposals in Chapter 5 Outcomes
Real Price Effects	Proposal for a true up to adjust for the difference between the real wage growth assumed in the DD and the actual manufacturing wage growth	We comment on this in Chapter 7 Cost Assessment - Botex Plus
Cost incentive	End-of period true up to share with customers the difference between actual and allowed costs, in accordance with the cost sharing mechanism (not bioresources or retail)	We comment on this in Chapter 7 Cost Assessment - Botex Plus
Revenue forecasting incentive	Adjustment to reflect differences between actual and allowed revenue, including a penalty for variances >2% (not retail)	No comment
Developer Services Revenue Adjustment	To account for differences between the forecast and actual number of new connections	We comment on this in 10 Focus Area - Growth

Water resources price control		
Bi-lateral entry	In-period adjustment to allowed revenue to account for bilateral entry	This is covered below
Strategic Regional Solutions (SRS)	End of period reconciliation mechanism for SRS to address uncertainty relating the level of expenditure required to develop water resources options	We have responded to Ofwat's proposals via a joint document from the all company working group
Water Network Plus price control		
Smart meter delivery	Adjustment mechanism (performance commitment) to return money to customers for non-delivery of smart meters	We comment on the detailed proposals in Chapter 8 Cost Assessment - Enhancement
Internal interconnection delivery	Adjustment mechanism (performance commitment) to return money to customers for non-delivery of internal interconnection programme (6% to water resources)	We comment on the detailed proposals in Chapter 5 Outcomes
Water Network Plus price control		
Amber WINEP schemes	Adjustment mechanism to return money to customers for non-delivery of WINEP Amber schemes – a model will be produced in Autumn 2019	This is covered below
Bioresources price control		
Sludge production	In-period adjustment to allowed revenue to account for differences between actual and forecast sludge production	No comment
Use of appointed assets	In-period adjustment to allowed revenue to account for profit made by the appointed business in using the appointed assets for non-appointed activity	No comment
Residential retail price control		
Customer numbers	In-period adjustment to allowed revenue to account for differences between actual and forecast number of customers	No comment
Financing		
Cost of debt	End of period adjustment to index the allowed cost of new debt to a market benchmark (IBOXX)	We comment on this in Chapter 9 Risk and Return
Tax changes	Annual adjustments, to be trued up at the end of the period, to take account of any changes to corporation tax or capital allowance rates	No comment
Inflation	Adjustment to account for differences between actual and assumed differences in the RPI-CPIH wedge	No comment
3.Proposed by us in our representation		

Metaldehyde	An adjustment mechanism so we can recover the costs of our metaldehyde strategy should the ban on metaldehyde not be reinstated	This is covered below
Water housing and estate mains	A symmetrical adjustment mechanism to return money to customers for if fewer water connections occur than forecast or increase allowed revenues if more connections occur	We comment on this in Chapter 10 Focus Area - Growth
Water recycling network reinforcement – surface water	A symmetrical adjustment mechanism to return money to customers for if capacity in surface water drainage is not delivered increase allowed revenues if more capacity is delivered	We comment on this in Chapter 10 Focus Area - Growth
Growth at water recycling centres	A symmetrical adjustment mechanism to return money to customers for if capacity in treatment works is not delivered increase allowed revenues if more capacity is delivered	We comment on this in Chapter 10 Focus Area - Growth
Cyber risk	An adjustment mechanism to return money to customers for non-delivery of our cyber programme	We comment on the detailed proposals in Chapter 5 Outcomes
4. Not currently proposed – decision required on whether and how to deal with them		
New reinstatement regulations	Government is due to decide on these in September. Potential cost £100m	See 'Future risks' below

4.4.1 General comments

Aside from the detail of each of these mechanisms, it is worth commenting on some broader issues.

Firstly, it is notable that this list is much longer than we have seen in previous price reviews. Alongside other developments, such as the move to multiple price controls and market separation, they add significantly to the complexity of the regulatory framework. Simplicity is one of the principles of good regulation and the costs and benefits of every additional mechanism should be carefully weighed before introduction.

Another test of new regulatory mechanisms is their impact on stakeholder behaviour. A core principle of water regulation since 1989 is that, by and large, companies bear the risks of unforeseen change. As soon as a company accepts its Final Determination the customer is relieved of those risks, including the risk of bill increases in excess of the price control. The company's responsibility is to manage those risks and the challenge of doing so is a stimulus to innovation which benefits customers in the long term. Mechanisms which share the risks between company and customer threaten this paradigm, with potentially adverse consequences for the longer term.

When the industry was privatised, considerable thought was given to this question of who should bear the risk of change. The conclusion was that provision should be made for the balance to be adjusted in the event that the cost exceeded a (high) threshold level. Condition B of companies' licences included the provision for regulatory contracts to be revised via interim determinations of K (IDOK). The definition of Relevant Changes of Circumstances (RCC) and Notified Items are components of the IDOK mechanism. It is evident that most of the mechanisms listed above are not part of this licence mechanism.

In principle, we accept this change to have mechanisms beyond the IDOK process. The IDOK process is imperfect and we look forward to it being reviewed post-PR19 as part of Ofwat's ongoing review of licences. We welcome the use of simpler mechanisms. However, we note that, whilst Ofwat proposes simpler mechanisms for areas where customers may be due to receive money, it proposes a Notified Item for DPC where the company may be due to receive money. We believe there should be an equivalence of approach here.

4.4.2 Changes to PR19 methodology

One major source of uncertainty in the Price Review process has been the number of changes Ofwat has made since it published its Final methodology in December 2017. We set some of these out below. We regard it as poor regulatory practice that there are so many items on this list, and that the 2017 methodology has proved an inadequate guide in so many areas and cannot, even now, be considered final.

We are also dissatisfied with the state of completion of our DD. This document is intended to be a full and complete version of the regulatory contract which Ofwat is minded to present to us in December, and yet there are proposed changes for which we have no detail (e.g. the true-up for RPE and the prospect of a Notified Item for DPC) and other areas where further change is promised (e.g. the treatment of non-S.85 diversions income). This is in addition to Ofwat's admission that it has not fully reflected all the information and evidence received from companies.

Again, this is poor regulatory practice. Ofwat should notify companies of the outstanding changes and provide them with an opportunity to comment rather than present them for the first time in our Final Determination.

Table 3 Changes to the PR19 methodology

Topic	Modification
Cost assessment	Invention of Botex Plus at DD Revision to criteria for assessing Resilience expenditure
Cost sharing incentive	Shape of the curve between 110 and 120 has changed at DD Company view to be based on the average of its September Plan and its response to the DD
Real Price Effects	Proposal of a true up for the wages RPE (but no detail provided)
Cost allowance	Allowances to calculate price controls will be based on Ofwat's baseline rather than the efficiency sharing factor between baseline and company view
PR14 reconciliation	Reconciliation of 2019/20 ODI incentive payments to be paid in year 2 of AMP7
Developers	Introduction of the Developer Services Revenue Adjustment For Final Determination non-section 85 diversions will be outside the price control
Grants & Contributions	Application of a recovery rate to Ofwat's view of new developments and new connections expenditure
Outcomes	The use of industry averages to drive incentive rates rather than customer evidence specific to the performance commitment levels proposed by companies Per capita consumption is set as an upper quartile percentage reduction, which was not sign posted in the methodology The calculation of upper quartile of companies' forecasts of upper quartile to set common PCLs, regardless of the deliverability of these forecasts Creation of "good" performance for Asset Health measures as a way of changing incentives and levels

Use of customer evidence	The Final Methodology set out plans should be based on customer priorities … "Companies are best placed to understand and respond to their customers' needs and requirements (principle 4). This is why we do not want to place ourselves – or any other third party – directly between them and their customers" … but customer evidence has been largely ignored
Financing	Ofwat has excluded the majority of swaps in its assessment of embedded cost of debt. Ofwat has increased the assumption of a halo effect on WACC from 15bps to 25bps Calculation of the risk free rate based on index-linked gilts rather than nominal
Transition expenditure	Assessment criteria changed in the DD (p96) – costs are now expected to be non-routine and subject to an early statutory deadline.

4.5 WINEP Uncertainty Mechanism

Ofwat has rejected our proposal for a WINEP adjustment mechanism, stating that we have not provided evidence to justify the retention of 10% of the cost allowed for schemes which do not proceed.

Ofwat acknowledges that we undertook customer engagement on this and that it was of "satisfactory quality" (DD page 11). They have not taken this into account when making the decision to reject our uncertainty mechanism.

The evidence that underpins our proposal is previous regulatory practice when sharing mechanisms have been used, such as the mechanism Ofwat introduced for all companies on business rates at PR14 when companies were expected to bear 25% of additional relevant costs.

Our proposal reflects our belief that both customer and company should benefit from the exclusion of schemes from the WINEP. The sharing rate should reflect the relative risk borne by customers and companies and the ability of each stakeholder to determine the outcome. Given that companies have greater influence over the shape of their WINEP programmes (through their interaction with the Environment Agency) than they do over the outcome of a rates revaluation, it does not seem unreasonable that their share equates to 10%, when 25% was used in the case of rates. Very importantly, by allowing companies this share, they retain the incentive to argue schemes out of the WINEP which they consider provide poor value for money.

We have tested our proposal to retain 10% with our customers via our Online Community. There was support for this kind of mechanism and the 10% level we have suggested. A majority, around two thirds, support the incentive mechanism. Of the 11 customers who did not support the incentive mechanism, 9 of them felt that we should at least be able to keep any abortive costs we incur in the development of schemes which do not proceed. One customer said, "Initially I thought higher than 10% so if AW feels that's enough then I am more than happy to accept that".

We expect Ofwat to reverse this intervention for Final Determination.

4.6 Metaldehyde Uncertainty Mechanism

Our September 2018 business plan included funding for a package of measures to deal with the threat of metaldehyde (a pesticide used to control slugs in a range of crops and in gardens) to enable compliance with the pesticides standard in drinking water.

In December 2018 Defra announced that a ban on the outdoor use of metaldehyde was to be introduced across Great Britain from Spring 2020. Accordingly, in our April IAP response we adjusted our plan to remove the costs of our metaldehyde programme. The value of this adjustment was £68m.

In July 2019 the metaldehyde ban was overturned in a judicial review brought by Chiltern Farm Chemicals. In response to this Defra has said :

The government has decided to withdraw and review the decision made in December 2018 to restrict the sale and use of metaldehyde products, following concerns raised about the decision-making process. We will retake the decision as swiftly as possible, taking account of the procedural points raised. Our priority is to protect people and the environment, and all decisions on pesticides are always based on the best available science."

Our expectation is that Defra will address the procedural points made in the judicial review and re-impose the ban in a timescale such that the metaldehyde programme we envisaged in our September 2018 plan will not be required. Accordingly, we have not re-instated the costs of this programme in our response to Ofwat's DD and our reconsideration of our proposed AMP7 expenditure.

However, we recognise the risk that the ban may not be re-imposed in the requisite timescales. In this event, we may be required to implement part or all of our original metaldehyde strategy. An adjustment mechanism is required to cover this eventuality. We propose that an adjustment mechanism of the type Ofwat has undertaken to develop for WINEP schemes provides a good model for a metaldehyde mechanism.

We urge Ofwat to work with us on the development of this mechanism during the Autumn such that this can be reflected in our Final Determination in December.

4.7 Bi-lateral entry

We believe that the bilateral market entry mechanism has not been adequately explored, and note that the consultation on wholesale markets referenced in the Final Methodology has not yet been published. We are concerned about the interaction between the investment in schemes for resilience, the bilateral market and the sustainability of new entrant schemes.

We highlight three specific areas relating to sustainability that need to be addressed in the arrangements for the market:

- Customer sustainability – new entrants may not be able to guarantee the same security of supply as incumbents. Would incumbents be expected to act as supplier of last resort? If so, how should this be funded and included in company planning to ensure resilience in their supplies
- Environmental sustainability – we would also expect any new entrants to be subject to the same sustainability obligations (e.g. abstraction management, catchment risk assessments) as incumbents to safeguard the environment and ensure a level playing field
- Forecast horizon - we believe the exposure to the adjustment mechanism of the post 2020 investment should be time limited. Our infrastructure and interventions tend to have long asset lives. Accurately forecasting market entry over the lifetime of our supply interventions is impossible considering the rapid pace of change in the sector. It is unreasonable for companies who have made an efficient investment to avoid a supply demand deficit and ensure supply to their customers, then to be unable to recover the costs of that investment due to unforeseeable market entry several years later.

We urge Ofwat to work with companies to resolve these outstanding problems over the Autumn.

4.8 Future Risks

As well as uncertainty issues which may result in a decrease in totex for our AMP7 expenditure, we have also considered uncertainty issues that may well lead to an increase. This forms part of our continuous financial resilience assessment to understand future cost shocks to our business. These are reflected in the range of high totex scenarios described in App26. One issue in particular that has arisen since IAP and has the potential to increase costs by over £100m in AMP7 is the Department for Transport (DfT) consultation on the Specification for the Reinstatement of Openings in Highways 4th Edition. We currently spend in the region of £35m per year on road reinstatement following road openings. Our detailed assessment of the changes proposed by DfT revealed that their proposed changes would add up to £40m per year, more than doubling our costs. We have since worked with DfT to clarify and amend parts of the proposal but still consider that the changes,

should they come into force next year, would increase our costs by over £20m per year. DfT has undertaken to make a decision on this issue by this September, hence we have not built additional costs into our Representation.

We regard this as a risk that ought to be covered by RCC1 in our Instrument of Appointment as the application of a legal requirement. If Ofwat disagreed with this interpretation of RCC1 the licence alternative should be designation as a Notified Item. However, bearing in mind our points above about Ofwat's preference for mechanisms other than Notified Items in areas where customers stand to benefit, a simpler uncertainty mechanism should be applied for this risk.

4.9 Conclusions

In conclusion, the overall effect of the mechanisms described above is to restrict companies' ability to outperform their regulatory contracts. This is relevant to the discussion on financeability in Chapter 9. Companies' willingness to accept challenging assumptions on the cost of capital, for example, is influenced by their assessment of the overall balance of risk and return. This includes the potential to earn returns through innovative delivery of their regulatory contracts, and the level of exposure to risks. If the potential gains from innovative delivery are denied to them, through extensive correction mechanisms, this will change the overall risk and return balance and reduce the effectiveness of incentive-based regulation.

In Chapter 6 we also comment on the inconsistency between the increased use of this form of regulation and Ofwat's assumptions about the higher productivity improvements it believes are available as a result of its totex and outcomes framework. A regulatory framework that includes a high number of correction mechanisms and output-based measures is very different from one where companies are at liberty to deliver their outcomes in the most innovative manner and can earn rewards for so doing. Each may have its merits but it is not consistent to create the former while assuming the benefits of the latter.

Utility regulation in the UK, following its innovative privatisation programme, was based on allowing companies to obtain rewards for reducing costs or improving quality, recognising that they themselves were best-placed to identify the means to do so, and indeed to find innovative approaches that Government or regulators could not anticipate, as long as they had the right incentives to do so.

Such incentive-based regulation necessarily also exposed companies to downside risk from underperformance. However, Ofwat's overwhelming emphasis in PR19 on penalties changes the nature of this regulatory contract. Instead of incentives to innovate, companies face targets set by the regulator and heavy penalties for not achieving them.

5 OUTCOMES

5.1 Overview

5.1.1 What Ofwat said

Ofwat has proposed a range of interventions across our proposed suite of Outcomes and ODI measures.

Individually these relate to the inclusion and exclusion of measures and changes to performance commitment levels, caps and collars, deadbands and incentive rates.

Overall, the combination of these interventions introduce a materially downward skew to the potential RoRE performance range during AMP7.

5.1.2 What we did

We have assessed Ofwat's proposed interventions against the suite of measures and incentives that flowed from our comprehensive customer engagement and ODI research. Where our assessment shows that Ofwat's intervention does not significantly conflict with our customers' views we have accepted Ofwat's position. For example, we accept the removal of caps and collars for eight ODI measures.

Where our customers hold strong views that contradict Ofwat's position, we revisit and share more of this evidence to support retaining our original suite of measures and the underpinning incentive rates and associated levels of performance.

5.1.3 Why change is needed

Ofwat's approach (in many places) sets aside the clear evidence we gathered during our engagement on the outcomes customers prioritised, and their views on the incentive regime to support delivery of these outcomes. As Ofwat has previously stated that "*customer engagement will provide essential evidence for companies' proposals in their business plans, such as their performance commitments to customers"* and that "*Customer engagement will be central to our assessment of companies' business plans at PR19*" we believe it is imperative that this evidence is reconsidered.

Overall, there is also a substantial increase in the risks facing us as a result of capping potential outperformance and extending the downward skew in RoRE.

The imposition of caps on our ODIs has the effect of reducing much of the outperformance that we will be able to earn through delivering improved levels of performance for our customers.

Ofwat is proposing two companies should have a range of downsides more aggressive than the 1-3% indicative range set out in its methodology, one of which is Anglian Water.

Ofwat has not provided evidence that there is consistency between, what it is assuming on the overall balance of risk and return (which includes the position on ODIs and RoRE, the scale of the Totex funding gap and the reduction in the value of legacy rewards) and its view on WACC and financeability.

Fundamentally, a company should expect to earn its cost of capital, without needing to achieve across the board upper quartile performance to do so. At a sector-wide level, this is plainly not achievable from the position Ofwat has set out in its DD. If a company sees risks so heavily skewed to the downside that it might expect penalties equivalent to 1% of RoRE on the basis of average performance, then all other things being equal, the WACC would have to be higher to allow it to earn its cost of capital.

The recent Economic Insight report "Financeability of the notionally efficient firm: top-down analysis" concludes that the overall level of regulatory challenge is unprecedented and in excess of even the most aggressive views of historical outperformance. It further concludes that the notional firm is likely not financeable, as a result of the overall efficiency challenge not being achievable.

5.1.4 What is needed to fix it?

Ofwat should review the overall balance of risk and return represented by the DD position. This should include:

1. reviewing the detailed evidence we set out in this chapter on outcomes and amendments needed to retain the integrity of the overall suite of ODIs and PCLs, consistent with our evidenced customer priorities from our engagement processes and;
2. reviewing the proposed WACC and financeability analysis taking into the account the overall balance of risk and return in the Final Determination, once changes to outcomes, Totex and legacy rewards are reviewed;
3. giving due consideration to the evidence in our updated analysis of the financeability of the notional company, Economic Insight's report on the same issue, and Frontier Economic's report for Thames Water.

5.2 Introduction

5.2.1 How we built our Plan

The package of performance commitments and outcome delivery incentives (ODIs) we proposed in our Plan strongly aligns with the interests of customers, management and shareholders. It did this through:

- placing the strongest financial incentives in the areas that our customers have told us matter most to them and strengthening reputational incentives and;
- protecting customers from bill volatility and excessive incentives by appropriate use of deadbands, caps and collars.

Our proposals were recognised by Ofwat as appropriate, well-evidenced and stretching.

Our proposed incentives were driven by our customers. Our bottom up incentive rates were based on customer valuation of service improvements. The scale of total incentives (i.e. caps and collars) on each performance commitment were driven by customer views on the appropriate and acceptable level of bill impacts and the relative importance of each. This meant that the strongest financial incentives were focused in the areas that our customers have told us matter most to them. Our approach to developing our ODIs and the application of customer views was reviewed and challenged by a specific sub-group of our CEF - the Valuation sub-group.

We have strong reputational incentives in AMP6 and the proposals in our plan increased the overall strength of incentives in AMP7. This is through increased use of industry league tables and reporting on important issues such as services for vulnerable customers.

We have developed sector leading proposals to support customers in vulnerable circumstances, and our approach was challenged and informed by the Affordability and Vulnerability sub-panel of our CEF. Our reputation is vital for the legitimacy of our business. Our social capital and natural capital performance commitments provide a significant contribution to our reputational incentives, as it partly reflects our reputation and standing with our customers and our role in shaping the environment.

5.2.2 How we have assessed the DD proposals

We have compared the DD proposals that Ofwat has made against the wide customer engagement that we have carried out at various stages during the development of our plan. We have also assessed the impact that the interventions that Ofwat has made on the balance of risk and reward and our ability to be financeable in AMP7.

We consider that overall the measure by measure and component by component approach that Ofwat has taken to assessing our proposals loses the "package" of incentives that our customers demanded. While Ofwat gave a high rating for our "package" of incentives in the initial assessment of plans, there is no evidence that Ofwat has considered the "package" as a whole when making

interventions in its DD. These interventions result in a suite of incentives with a number of commitments that go well beyond the levels that customers endorsed and with a heavy skew towards penalties.

While there are a number of areas where we disagree with the principles that Ofwat is applying to intervene in company proposals, we are making representation on those areas where there is a significant deviation from the Plan that our customers endorsed. In these areas we challenge Ofwat's approach and provide further evidence to support our proposals.

5.2.3 Structure of the chapter

We have written this chapter with the aim of assisting the reader to easily identify the most material areas of concern.

- We start by focusing on the major concerns we have with Ofwat's approach. These are on the level of skew towards penalty and the approaches towards incentive rates, caps and collars and P10s and P90s.
- We outline the areas where we do not intend to make representation on DD interventions.
- We explain our performance commitment specific concerns and structure this by focusing first on those performance commitments where we have most significant concerns. These are Leakage, Mains repairs, Water supply interruptions, WINEP, Internal interconnector scheme, Bathing waters and Compliance Risk Index.
- We include a proposal for a new performance commitment against our investment in cyber security for operational technology.
- We explain our performance commitment specific concerns for the remaining performance commitment interventions.
- We have produced an Outcomes Technical Annex, where we cover areas that Ofwat requires additional detail. This includes the detailed definitions for our Natural Capital and Social Capital performance commitments and additional information requested in relation to the Per capita consumption, Drought Resilience and Sewer Flooding Resilience common performance commitments. We have also included commentary on the rationale behind the P10 and P90 performance levels that we have provided in the Outcomes Representations Data Template tables OC1, OC2.1, OC2.2 and OC2.3.

5.2.4 Commentary to Outcomes Representation Data Template

We provide commentary for the Outcomes Representation Data Template within the body of this chapter. This mainly covers changes to our suite of performance commitments that are reported in table OC2.1, OC2.2 and OC2.3.

We have also included commentary in our Outcomes Techincal Appendix on the rationale behind the P10 and P90 performance levels that we have provided in the Outcomes Representations Data Template tables OC1, OC2.1, OC2.2 and OC2.3.

We have not made any revisions to ODI rate input data reported in table OC3.

Commentary to our AMP6 performance commitments reported in table OC4 can be found in our 2018-19 Annual Performance Report alongside table 3A and 3C (Abstraction Incentive Mechanism).

5.3 Level of skew towards penalty

Comparing the proposed ODI component of the DD RoRE ranges shows a clear asymmetry between Ofwat's range of expectations for outperformance and underperformance payments.

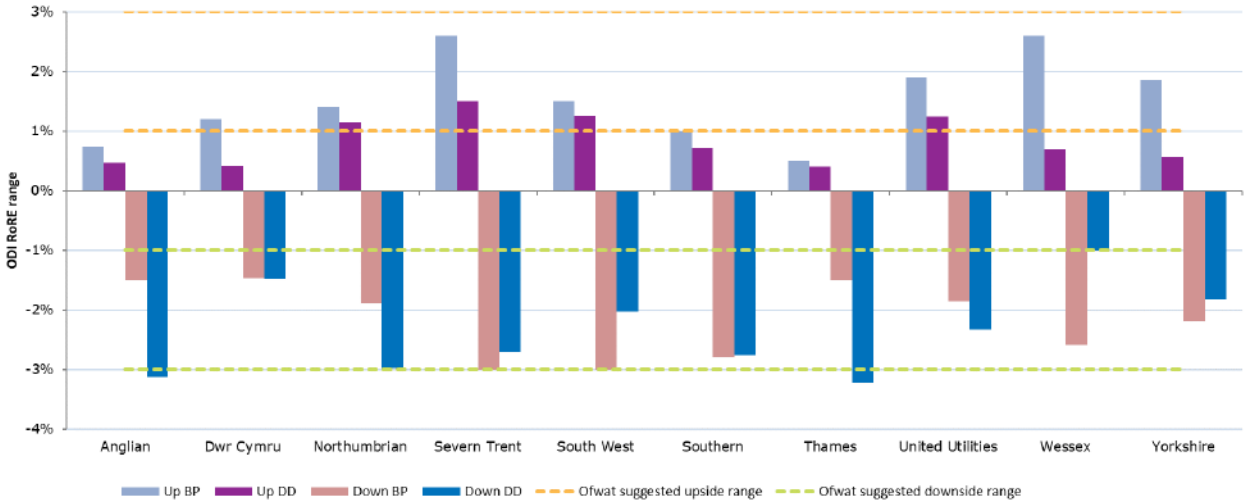
Ofwat's PR19 ODI framework builds in asymmetry towards penalty for companies. This comes from the combination of stretching performance commitment levels requiring upper quartile performance across the board, a number of mandated "penalty-only" ODIs, and Ofwat's default calculation of incentive rates resulting in higher penalty unit rates relative to outperformance rates.

The impact of the DD is to further shift that asymmetry of incentives compared to company business plans. This is the result of the compound effect of a series of isolated adjustments to individual measures, without consideration of their impact in the round.

This appears to be a systematic shift to reduce the potential rewards that companies would recover should they achieve stretching performance by way of achieving their P90 forecasts. This asymmetry between penalty and reward creates perverse incentives and is inconsistent with our customer engagement evidence on the appropriate calibration of reward and penalty.

The impact of Ofwat's interventions at DD is shown below for the 10 WaSCs. The potential for outperformance is reduced for eight companies. For five companies their P90 outperformance is lower than Ofwat's indicative range of 1-3%.

Figure 11 P10 and P90 RoRE Impact



Moreover, this asymmetric downside skew has a direct impact on the assessment of an appropriate WACC, because the downside risk has increased.

The appropriateness of the balance between RoRE ranges and WACC should be reviewed in light of Ofwat's review of the proposed WACC. This will then provide the complete picture for all companies to comment on.

While these concerns apply across the suite of ODIs, they are of particular concern for us with relation to a number of specific performance commitments. We provide recommendations for how Ofwat can address these concerns as part of our detailed performance commitment by performance commitment representation.

We researched customer views on the appropriate RoRE range for ODIs, expressed as bill impacts. Evidence from our customers supported a symmetrical RoRE range of +/- 2%. See Annex 13d: Outcome Delivery Incentive Research of our September 2018 business plan. Ofwat's proposals results in a RoRE range for us with significantly less potential for outperformance and significantly more potential for outperformance than the range support supported by our customers.

5.4 Representation on Ofwat approach to incentive rates

5.4.1 What has Ofwat done?

1. Agreed that the evidence we have provided, in response to IAP Action ANH.OC.A2, on our approach to incentive rates is sufficient "*to detail the estimation of forecast efficient marginal costs within [our] ODI rate calculations, in line with [Ofwat's] Final Methodology*"
2. Made changes to the structure of our performance commitments (e.g. tougher PCLs and removing deadbands) that affect assumptions made when the incentive rates were derived
3. Awarded our customer engagement - on which our incentive rates were based - the only highest A-grade rating at IAP, and awarded our, outcomes proposals a B grade (the highest awarded)
4. Applied its view of a "reasonable range" to the industry incentive rates and modified a selection of our incentive rates either in line with or towards those "reasonable ranges".

5.4.2 Why change is needed

1. Ofwat's approach to assessing incentive rates is flawed because it has not considered the performance commitment levels proposed by companies when assessing the incentive rates. Incentive rates should have been based on marginal customer willingness to pay and marginal costs. In this case the incentive rates would be expected to decrease as service improves. Therefore as Ofwat adjusts performance commitment levels it should also adjust incentive rates downward so that they align with the new (lower) willingness to pay and appropriate level of costs.
2. It is inconsistent to agree that our approach to incentive rates is correct but at the same time to change them to align with a different view of reasonable incentive rates. The view of reasonable rates has been developed to address incentive rates that are not in line with the guidance that Ofwat prescribed in its final methodology.
3. Ofwat has applied its view of a "reasonable" range only on selected ODIs where the net effect is to increase risk on companies. This places ambitious companies proposing higher underperformance rates and lower outperformance rates on their ODIs at much greater risk, and significantly decreases the ability of those companies to outperform.

5.4.3 Why does it matter?

We carried out extensive customer engagement when setting incentive rates for our performance commitments. As our engagement was thorough and we followed Ofwat's standard incentive rate formula in many cases, we have confidence that our incentive rates are appropriate.

The submission of business plans has highlighted that, in general, the industry has proposed a wide variety of incentive rates. Ofwat has responded to this by taking an average of these rates and defining a reasonable range of incentive rates at half a standard deviation around this average.

We continue to have significant concerns with Ofwat's approach to standardising incentive rates across the industry. This approach was set out in Ofwat's IAP Technical Appendix 1. This approach oversimplifies:

- The varying robustness of willingness to pay research across the industry
- The varying approaches to calculating marginal cost information adopted by companies
- The relative performance of each company, and that customers were asked to value improvement from their own company's current performance
- That some companies may have used only household customer valuation, while others (such as ourselves) have used combined household and non-household valuations
- The variety of approaches to calculating rates themselves, as some will be more closely linked to valuations and the default approach than others.

The level of standard deviation around the mean chosen by Ofwat is not well evidenced. The consequences of Ofwat mandating companies to adopt standardised incentives would be to significantly undermine the contribution of customer views to the PR19 process.

We note that for some of our incentives, our rates are lower than the Ofwat range. For others they are higher. This suggests that our approach has neither over nor under estimated valuations in the round and that our rates reflect the preferences of our customers. Given the quality of our work on societal valuation and calculation of rates it would be inappropriate for us to change our rates.

Ofwat's approach to setting incentive rates in the DD has been inconsistent. There are three approaches that Ofwat has taken:

i. Accept company incentive rates as supported by customer engagement and willingness to pay evidence and ignore the reasonable range that Ofwat has determined
ii. Reject company incentive rates as supported by customer engagement and willingness to pay evidence and impose the reasonable range that Ofwat has determined
iii. Triangulate an incentive range from a variety of sources of varying quality and consistency

In the majority of cases Ofwat has chosen the incentive rate that is "in the interest of customers" and therefore most punitive to companies. In some cases the approach is inconsistent even across the same performance commitments such that customer evidence is accepted for an outperformance rate, but rejected for an underperformance rate or vice versa (such as for South East Water on water quality contacts and Thames Water on mains repairs and supply interruptions).

This results in an incentive package that is not consistent and does not achieve either of the following aims:

i. Providing an incentive package that weights incentives according to the priorities of customers served by individual companies
ii. Providing a common approach to incentive rates that is the same across all companies

5.4.4 What should Ofwat do?

We consider that Ofwat should be consistent in its approach to setting incentive rates. We think Ofwat should take the approach that is focussed on customer valuations and the outperformance and underperformance payment formulas, as outlined in Ofwat's methodology (Appendix 2 page 91). This is appropriate for the incentives that we proposed and the customer valuation research that we carried out around the performance commitment levels that we proposed.

Setting incentive rates for common measures where we have societal valuations

i. Water supply interruptions – our incentive rates are based on a PCL of 5:34 and are therefore higher as customer willingness to pay is greater at this level and marginal cost is lower. Ofwat should accept our stretching PCL and the incentive rates associated with that level and our robust customer engagement. While we do not accept the justification for the common PCL, if Ofwat is going to impose a level of 3 minutes, it should use the industry average incentive rates as these are more appropriate for this level of performance.
ii. Leakage – our rates are within the Ofwat range (see separate response on leakage enhanced rates and cost recovery).
iii. Per capita consumption - our incentive rates are based on our proposed PCL of 131Ml/d, this is the third lowest PCL for a company that has provided empirical customer willingness to pay data in App1 of the PR19 data tables. As this target is one of the more stretching, willingness to pay is lower at this level and marginal cost is higher. We consider that, in conjunction with our adoption of the more stretching common % reduction, Ofwat should accept our incentive rates associated with a level that is more stretching than most of the industry and is supported by our robust customer engagement.
iv. Internal sewer flooding – our incentive rates are based on our customer willingness to pay research and we consider that Ofwat should accept our stretching incentive rates associated with that level and our robust customer engagement. Although we are one of the best performers on internal flooding, we have one of the highest underperformance incentive rates. While we do not accept the justification for the common incentive rates, we do not seek to make representations on these incentive rates as they remain unchanged from our IAP submission.
v. Pollution incidents – our incentive rates are based on our customer willingness to pay research and we consider that Ofwat should accept our stretching of the incentive rates associated with that level and our robust customer engagement. While we do not accept the justification for the common incentive rates, we do not seek to make representations on these incentive rates as they remain unchanged from our IAP submission.

Setting incentive rates for asset health PCs where we do not have societal valuations

In the customer research we conducted on ODIs for our Business Plan, we gathered data on the overall range of incentives supported by customers and their relative weighting of individual measures for financial incentives.

For measures where we did not have societal valuations, we used this additional source of customer evidence to set incentive rates. We have updated this method to calculate the incentive rates to be used for the Final Determination. To determine the rates, we have apportioned the incentives allocated by customers over the range of likely performance for these underperformance only ODIs using the range from the proposed PCL to the P10.

We have used this approach for:

- Unplanned outages
- Sewer collapses
- Treatment works compliance.

This approach provides higher underperformance incentive rates for asset health performance commitments than relying on extrapolating societal valuations and is in line with Ofwat's methodology guidance on using a wide range of customer evidence to set incentive rates for asset health.

The revised calculation of the underperformance penalty payment incentive rates is shown in the following table:

Table 4 Revised calculation of underperformance penalty payment incentive rates

Performance Commitment	Performance Range	Incentive allocated (£m)	Incentive rate (£m)
Unplanned outages	PCL = 2.34 P10 = 12.00 Range = 9.66	19.1 over AMP7 3.8 per year	0.393 per %
Sewer Collapses (our proposed PCL)	PCL = 6.1 P10 = 9.1 Range = 3.0	26.0 over AMP7 5.2 per year	1.733 per collapse per 1,000km sewer
Sewer Collapses (Ofwat proposed PCL)	*PCL = 5.5* *P10 = 9.1* *Range = 3.6*	*26.0 over AMP7* *5.2 per year*	*1.444 per collapse per 1,000km sewer*
Treatment Works Compliance	PCL = 99.0 P10 = 95.0 Range = 4.0	24.27 over AMP7 4.85 per year	1.214 per %

Unplanned outages – our underperformance rate was based on the inclusion of a deadband and an underperformance collar being in place. Ofwat has proposed removing both of these mechanisms and has therefore changed the basis on which the incentive rate was set. We have calculated that a revised incentive would be £0.393m per %.

Sewer collapses – our underperformance rate is the highest proposed by any company, this was based on the inclusion of a deadband and an underperformance collar being in place. Ofwat has proposed removing both of these mechanisms and has therefore changed the basis on which the incentive rate was set. We have calculated that a revised incentive would be £1.733m per 1,000km sewer.

Treatment works compliance – our underperformance rate is higher than the average proposed by other companies, this was based on the inclusion of a deadband and an underperformance collar being in place. Ofwat has proposed removing both of these mechanisms and has therefore changed the basis on which the incentive rate was set. We have calculated that a revised incentive would be £1.214m per %.

For the Compliance Risk Index (CRI), our proposed incentive rate is within Ofwat's range. In this Representation we retain our IAP deadband which results in no change to our proposed incentive rate.

5.5 Our Representation on Ofwat's approach to caps and collars

5.5.1 What has Ofwat done?

Ofwat has intervened in many areas to remove caps and collars and to allow unlimited outperformance and underperformance payments for certain ODIs (up to the total aggregate cap of 3% RoRE). In our response to Ofwat's IAP we said that we disagree with this approach.

We demonstrated that our use of caps and collars is supported by our customers. It has been extensively reviewed by the CEF and its Valuation sub-group.

On page 114 of Ofwat's Delivering outcomes for customers policy appendix it explains its approach to applying caps and collars.

With regards to applying caps Ofwat says that it will "apply caps to financially material performance commitments". It defines "financially material" performance commitments as those that "have adjusted P90 payments higher than 10% of the sum of the company's P90 performance payments for all performance commitments within the relevant price control area".

The caps are then applied "at the notional P90 performance level". This does not affect the ability of companies with enhanced outperformance payments to earn outperformance payments.

5.5.2 Why change is needed?

There are several reasons why we believe change is needed to Ofwat's DD approach:

- This approach ignores any research that companies may have carried out with their customers, as we have done, into appropriate levels of caps and collars.
- Ofwat's interventions to remove collars on underperformance and place caps on outperformance take our range of incentives further away from the +/- 2% supported by customers.
- Defining financially material performance commitments in relation to the sum of each company's P90 performance payments, introduces a bias against those companies:
  - With lower total P90 performance payments (relative to their size) as there is a lower threshold for 10% of the total performance payments,
  - With fewer performance commitments for each price control, as the higher the number of performance commitments the more likely the P90 performance payments are going to be below the 10% threshold. If there are 10 or less performance commitments under a price control, at least one is certain to be considered "financially material" regardless of the magnitude of the underperformance penalties.
  - With more penalty only performance commitments as this further increases the likelihood of the 10% limit being hit and caps being introduced.
- By capping the outperformance payments at the "notional P90 level", Ofwat makes no assessment of whether the company has set an appropriate P90 level. Any company that has set a relatively wide range of P90 performance will therefore be allowed a relatively high cap on its outperformance payments and this may still be an unduly high level of outperformance payment. On the other hand, companies that have set unrealistically narrow P90 levels will not have caps imposed, but will be able to earn uncapped outperformance payments.
- This also limits the incentives for pushing forward frontier performance. Where enhanced incentives have been proposed, Ofwat has allowed outperformance payments to be unlimited up to the point of the total cap on incentives under each price control. Companies who have not proposed enhanced incentives are capped at a much lower total and also do not have any financial incentive to perform at a better level. This is at odds with Ofwat's policy approach (Delivering outcomes for customers policy appendix page 113) where it says, "caps are intended to protect customers from unduly high outperformance payments in the event that ODI rates are not correctly specified".

5.5.3 Why does it matter?

This matters because, in the round, the adjustments that Ofwat has made here are inconsistent across different companies. Some companies can make up to 1% of regulated equity for each price control for measures where they have enhanced incentives, whereas others are capped at levels that are a fraction of this as they have not proposed enhanced incentives.

For Anglian Water, the imposition of caps on our ODIs has the effect of reducing any outperformance that we will be able to earn through delivering improved levels of performance for our customers. We proposed one of the lowest ranges of outperformance payments and by imposing these arbitrary caps based on a flawed methodology, Ofwat is limiting this scope for outperformance further.

5.5.4 Example – Internal sewer flooding

Ofwat has limited the outperformance payments that four companies can earn on this measure (in 2024-25 this equates to Anglian £3.3m, Thames £3.5m, Southern £1.7m and Welsh £0.6m), based on these incentives being "financially material", but for others it has allowed the potential for far more significant outperformance payments (in 2024-25 this equates to £35.5m Severn Trent, £8.2m South West, £17.0m Yorkshire, £21.3m Wessex).

Figure 12 Internal sewer flooding - variation in performance payment caps and collars

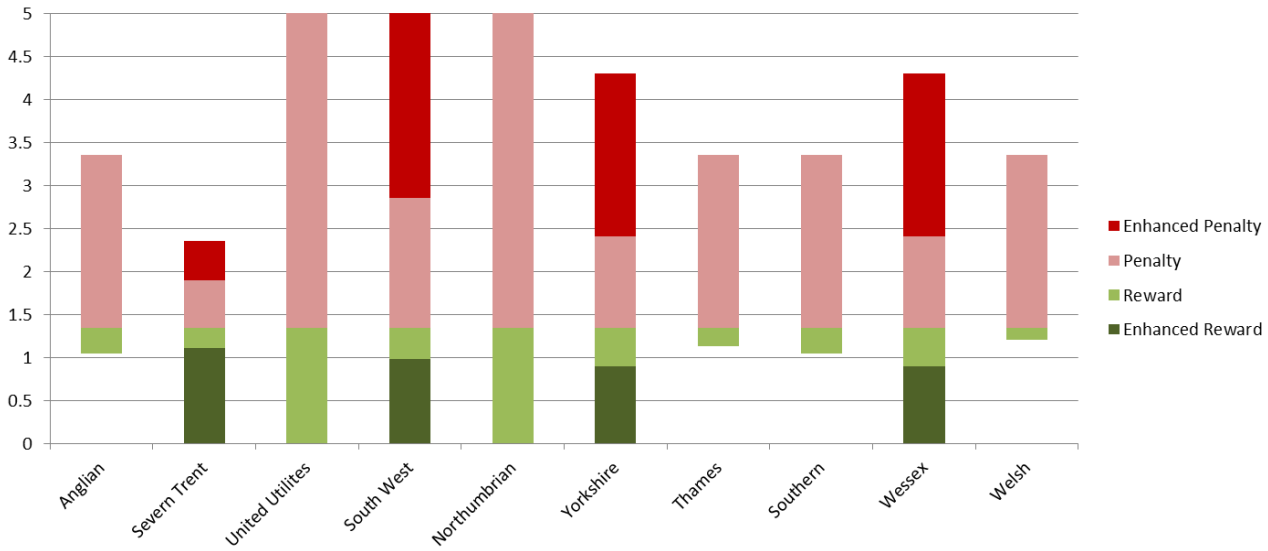
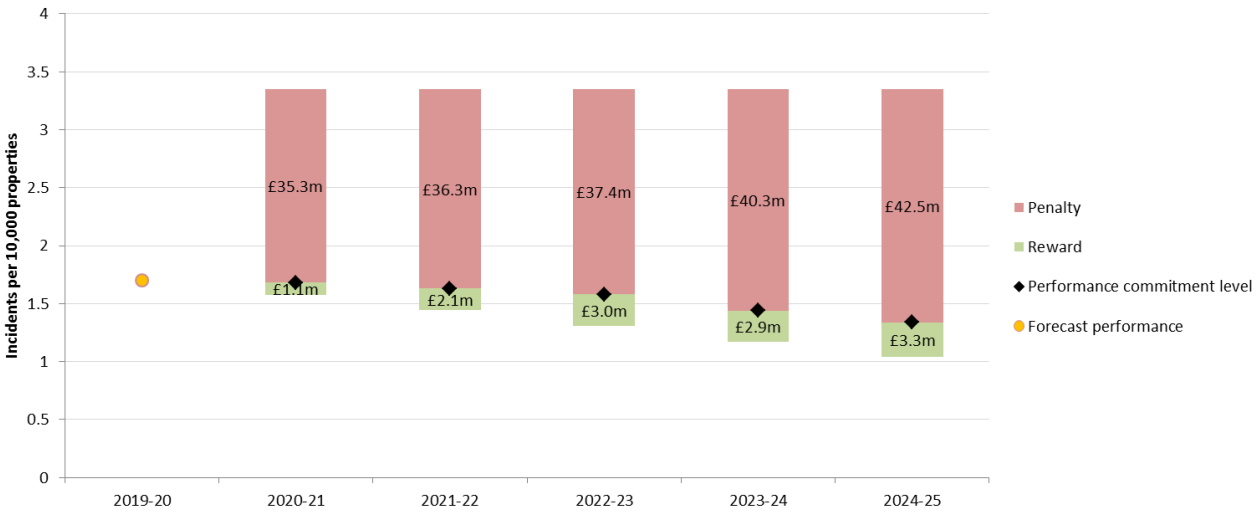


Figure 13 Internal sewer flooding - scale of Ofwat's proposed penalties / rewards



5.5.5 What should Ofwat do?

In our Plan and in our IAP response the level of caps and collars we proposed for each performance commitment were based on a suite of customer evidence for each measure. They are the result of a triangulation of bottom up customer views (willingness to pay information) and top down customer views on the level of bill volatility that should be associated with ODIs. The caps and collars represent the maximum incentives that customers consider appropriate for each measure. We have set the underperformance collars each year in line with these maximum incentives.

Ofwat notes there is strong evidence that our customers support the principle of using caps and collars. A recurring theme from our engagement with customers is that we can help them with the challenge of affordability through providing regular and consistent bills.

> *Several pieces of research suggest that customers generally prefer to avoid sudden increases in their bill. For example, participants at two of the future customer workshops emphasised that careful phasing and planning of new initiatives and investments was important, to avoid bill increases that were too large, or too sudden. In the consultation on the draft PR19 plan with members of the online community, some participants also expressed concerns about rapid bill increases, especially on the vulnerable, and those on low-incomes.* [1]

We do not propose to make a representation on areas where caps and collars have been removed, as there is not a material impact on the likely range of bill impact at the P10 and P90 levels. Where there has been an impact we challenge the imposition of new caps and collars as this does not align with the robust customer research that we have carried out. In some cases the adjustments that Ofwat has made create lopsided incentives that do not incentivise companies to improve.

We have accepted the removal of caps and collars in relation to:

- Per capita consumption
- Pollution incidents
- Total mains repairs
- Unplanned outages
- Sewer collapses and burst rising mains
- Treatment works compliance
- Low pressure
- Water quality contacts

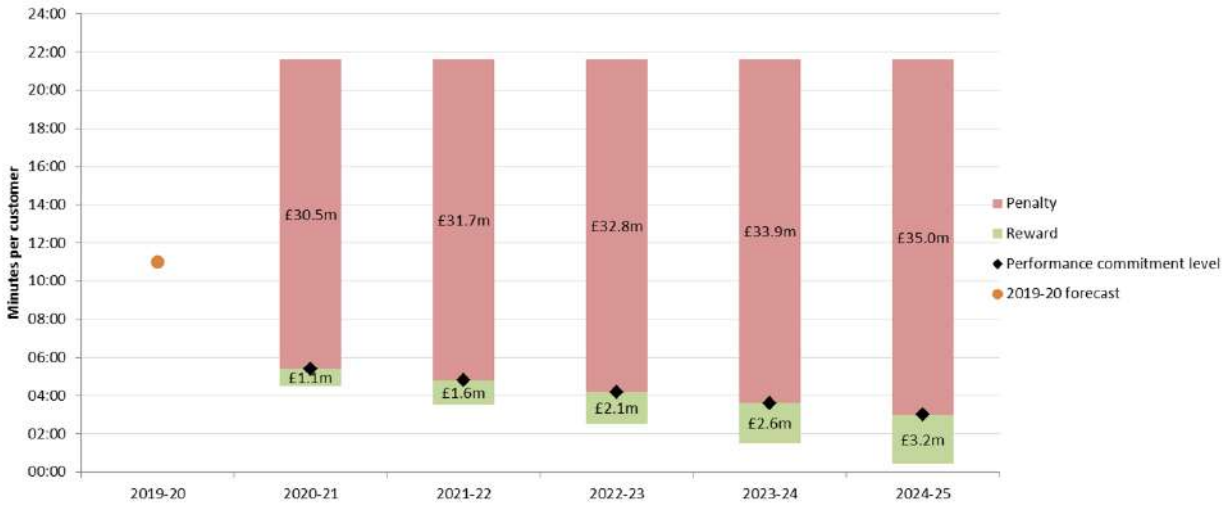
We disagree with the approach to caps and collars that Ofwat has proposed for:

1 Extract from Annex 12c Anglian Water Customer Research & Engagement Synthesis page 100 of our September 2018 Plan

- Water supply interruptions
- Leakage (enhanced threshold)
- Internal sewer flooding
- External sewer flooding
- Abstraction incentive mechanism
- Void properties

In these areas we stand by our proposals for caps and collars at our IAP submission. The example below illustrates the skewed position towards a penalty for Water Supply Interruptions that would result from Ofwat's approach, relating to an outcome that our customers felt was of lower priority. This demonstrates why a reconsideration of the retention of caps and collars is needed:

Figure 14 Water supply interruptions - scale of Ofwat's proposed annual penalties and rewards



5.6 Representation on Ofwat's approach to P10s and P90s

Ofwat expresses the likely range of outperformance payments and underperformance penalties that companies may attract in terms of a RoRE range. This was calculated at IAP using company assessments of the likely extent of their performance range, these are termed P10 performance (= worst performance expected only under 10% of scenarios) and P90 (= worst performance expected except under 90% of scenarios). Companies were encouraged to make these assessments based on the following guidance:

"*We proposed that companies should use the specific RoRE functionality in the financial model to provide the upside and downside scenarios. We proposed that the scenarios should be designed to represent realistic high and low cases. The scenarios are not intended to reflect extreme possibilities. We proposed that we would expect these to be specified at the P10/P90 range of probabilities. This means there would be a 20 percent chance of the key risk factor(s) falling outside of the P10 (high case) and P90 (low case) assumptions used for the scenario."*

"These P10 and P90 views may be estimated using historical and forward evidence or expert judgement where appropriate. Companies should be clear about how these levels have been estimated. We proposed that we would expect companies to provide sufficient detail so that we can understand the basis for their calculations and the evidence in support of their estimates."

Ofwat has used the values of P10 and P90 under and outperformance payments generated to determine the likely adjustments to company RoRE and thus to demonstrate company ability to outperform its regulatory contract.

However, in its DD Ofwat has changed its methodology and, as demonstrated on page 114 of Delivering outcomes for customers policy appendix, it says that it adjusts P90 (and P10) ranges to retain the same distance between companies' original P90 (and P10) levels and the performance commitment levels in their business plans. It justifies this by saying that these performance ranges "*represent the expected ranges of the notionally efficient company*".

This assertion that the P10 and P90 performance levels should reflect the notionally efficient company has not been made before the DD and was not referred to in previous guidance on completing tables. There is no economic rationale to support this change in methodology, and the construct of the notional company does not support it.

We consider that Ofwat should use the P10 and P90 levels provided by companies, which reflect realistic ranges of likely performance, rather than artificially altering them to maintain a range of performance that is not realistic. We have not made any updates to the P10 or P90 ranges of performance that we made in our IAP submission.

5.7 Ofwat interventions that do not materially change our Plan

Our Plan was based on strong customer engagement that received the top "A" rating from Ofwat. There are a number of areas where Ofwat has made interventions at the DD stage that do not align with the clear direction that we received from our customers during our engagement process.

We make a distinction in our representation on the DD between interventions that cause a material divergence from our customers' preferences and those that are not material. We have reviewed Ofwat's DD and, in preparing our representation, we have assessed whether these component by component interventions materially detract from the views of our customers. Where these do not change the balance of risk and, in cases where there is not a material divergence from our Plan, we will not be making our representation, subject to sufficient botex cost allowances being made in the final determination.

The interventions where we do not intend to make our representation and the related Ofwat action references are listed in the below table:

Table 5 Non-contested Ofwat interventions

Performance Commitment / Area	DD Intervention	Our View
Deadbands, caps and collars	ANH.OC.A3 - removal of several caps, collars and deadbands	In some cases these interventions do not materially detract from the views of our customers or alter the risk profile of our Plan. In these cases we do not make a representation on this intervention. These are outlined in the specific sections.
Customer protection	ANH.OC.A6 - 3% of RORE cap on outperformance	This does not materially impact our suite of performance commitments as the level of outperformance we would need to achieve to exceed this cap is extremely unlikely.
Leakage	ANH.OC.A13 - removing deadbands	We have proposed a new incentive mechanism that does not involve the use of deadbands.
Per Capita Consumption	ANH.OC.A16 - removing caps and collars	We have assessed that as the P90 and P10 values for this commitment are similar to the caps and collars we proposed, this intervention does not detract from the views of our customers or alter the risk profile of our Plan.

Per Capita Consumption	ANH.OC.C8 - common performance commitment levels	We have assessed that these are not materially different from those that we proposed, or detract from the views of our customers or alter the risk profile of our Plan.
Internal sewer flooding	ANH.OC.A17 - common performance commitment levels	We have assessed that these are not materially different from those that we proposed, or detract from the views of our customers or alter the risk profile of our Plan.
Pollution Incidents	ANH.OC.A20, - removing caps and collars	We have assessed that as the P90 and P10 values for this commitment are similar to the caps and collars we proposed, this intervention does not detract from the views of our customers or alter the risk profile of our Plan.
Pollution Incidents	ANH.OC.A22 - common performance commitment levels	We have assessed that these are not materially different from those that we proposed, or detract from the views of our customers or alter the risk profile of our Plan.
Unplanned outages	ANH.OC.A31 – removing collars	We have assessed that as the P10 values for this commitment are similar to the collars we proposed, this intervention does not detract from the views of our customers or alter the risk profile of our Plan.
Unplanned outages	ANH.OC.C1 – removing deadbands	We have assessed that our limited performance data for this measure suggests that deadbands would not be necessary for this measure for the level of PCL we have proposed. Therefore this intervention does not detract from the views of our customers or alter the risk profile of our Plan.
Sewer collapses	ANH.OC.A33 - removing collars	We have assessed that as the P10 values for this commitment are similar to the collars we proposed, this intervention does not detract from the views of our customers or alter the risk profile of our Plan.
Treatment works compliance	ANH.OC.A36 - change to deadband and removal of collars	We have assessed that the deadbands proposed are not materially different from those that we proposed, and do not detract from the views of our customers or alter the risk profile of our Plan. We have assessed that as the P10 values for this commitment are similar to the collars we proposed, this intervention does not detract from the views of our customers or alter the risk profile of our Plan.
Low pressure	ANH.OC.A38 - removing collars	We have assessed that as the P10 values for this commitment are similar to the collars we proposed, this intervention does not detract from the views of our customers or alter the risk profile of our Plan.
External sewer flooding	ANH.OC.A41- removing collars	We retain the view that deadbands are appropriate features of the performance framework for measures which are highly susceptible to weather variations and likely to display significant inter-year variability. However, as this performance commitment had

		approximately equal elements of outperformance payments and underperformance penalties, we have assessed that the removal of deadbands does not materially alter the risk profile of our Plan.
Water Quality Contacts	ANH.OC.A51- removing collars	We have assessed that as the P10 values for this commitment are similar to the collars we proposed, this intervention does not detract from the views of our customers or alter the risk profile of our Plan.
Supporting customers in vulnerable circumstances (quantitative) PSR	ANH.AV.A3 - change to a non-financial incentive	We recognised in our Plan that there wasn't clear customer support for a particular incentive type, and we understand Ofwat's preference for us to align our incentive with the rest of the industry.
Void properties	ANH.OC.C2 - change to include unmetered properties	Unmetered properties are a small minority of the properties that we serve, so we do not consider this to be a material change to our Plan.
Retailer satisfaction	ANH.OC.C3 - change to a non-financial incentive	As this performance commitment had approximately equal elements of outperformance payments and underperformance penalties, we have assessed that the removal of financial incentives does not detract from the views of our customers or alter the risk profile of our Plan.
WINEP	ANH.OC.A62 - introduction of an underperformance payment	As we intend to deliver all our statutory duties under the WINEP to the timescales required, we have assessed that the inclusion of underperformance financial incentives does not detract from the views of our customers or alter the risk profile of our Plan.
WINEP	ANH.OC.C4 - introduction of a new non-financial performance commitment.	As this is a non-financial measure we have assessed that this intervention does not detract from the views of our customers or alter the risk profile of our Plan. We make a separate representation on the change to the initial performance commitment.

5.8 Our Representation on areas that materially change our plan

Where we challenge the interventions proposed in the DD and provide further evidence to demonstrate our positions we summarise these areas in the following table and add further detail below.

Table 6 Contested ODI interventions - Summary

Performance Commitment / Area	DD Interventions	Our View
Leakage	ANH.OC.A11 - introduction of additional underperformance rate,	We challenge the basis on which the additional underperformance rate has been set and propose outperformance payment

	ANH.OC.A12 - reduction in enhanced incentive rates, ANH.OC.C11 - changes to enhanced incentive thresholds and caps.	rates that reflect the level of investment required to deliver frontier shifting performance. We also put forward evidence to support a new incentive mechanism with more stretching performance commitment levels and a revised penalty threshold.
Mains repairs	ANH.OC.A26 - introducing a financial incentive for total mains repairs, ANH.OC.A27 - setting an underperformance payment rate, ANH.OC.A43 - changing reactive bursts to non-financial incentive.	We challenge the financial incentive for total mains repairs and propose returning the financial incentive to reactive bursts. We provide further evidence of the link between increasing proactive mains repairs and decreasing leakage.
Water supply interruptions	ANH.OC.A7 - imposing common performance commitment levels.	We challenge the performance commitment levels that have been set and the method used to set them. We also highlight the implications of the incentive on the industry as a whole.
WINEP	ANH.OC.A63 - altering caps and collars, ANH.OC.C4 - change to definition to only include "Green" schemes, ANH.OC.C5 - setting new performance commitment levels.	We challenge the additional 10% added to the number of statutory obligations to create the performance commitment levels. We have included outperformance deadbands to ensure only stretching performance is rewarded. We propose PCLs and caps and collars based on a revised profile that excludes schemes to be delivered using natural capital solutions.
Internal interconnector programme	ANH.OC.C13 - introducing new financial performance commitment.	We propose an additional underperformance penalty rate for late delivery and some exclusions to account for factors outside of our control. We also propose minor ammendments to the performance commitment level and a deadband.
Bathing waters	ANH.OC.A53 - removing deadbands and setting new caps and collars, ANH.OC.A54 - change to in-period incentive ANH.OC.C14 - introduction of new performance commitment levels for 2020-21 to 2023-24, ANH.OC.C15 - change to incentive rates.	We propose that this should be a non-financial incentive on the basis that the Environment Agency do not consider this metric appropriate as part of its Environmental Performance Assessment.

Compliance Risk Index	ANH.OC.A25 - setting tighter deadbands.	We challenge the deadbands that Ofwat has set and the implication for the UK water industry and propose deadbands that align with Drinking Water Inspectorate guidance.
Cyber security	N/A	We propose a new performance commitment to protect customers from under-delivery of our investment in cyber security for operational technology.
Unplanned outages	ANH.OC.A29 - stretch in performance commitment levels, ANH.OC.C1 - removing deadbands.	We propose revised stretching performance commitment levels based on the implementation of new reporting procedures.
Sewer collapses	ANH.OC.A33 - removing deadbands.	We propose revised performance commitment levels based on the increase to the risk profile caused by the removal of deadbands.
Water quality contacts	ANH.OC.C10 - setting new performance commitment levels.	We propose performance commitment levels that are more in line with our customers' preferences and which account for our current good performance against this measure.
Percentage populations supplied by a single system	ANH.OC.A52 - change to caps and collars, ANH.OC.C9 - removing financial incentives.	We propose that the outperformance incentives attached to this incentive are retained to provide an incentive to improve beyond the performance commitment levels.
Void properties	ANH.OC.A45 - stretching performance commitment levels. ANH.OC.A46 - introduction of outperformance and underperformance rates.	We are challenging the use of financial incentives and propose a reputational incentive. We have introduced a glidepath to reflect the inclusion of unmetered properties and taking account of our current performance level.
Priority services for customers in vulnerable circumstances	ANH.AV.A3 - change to reputational incentive and introduction of performance commitment levels for attempted and actual contacts.	We challenge the "actual contacts" performance commitment levels on the basis of benchmarking with energy industry distribution network operators.
Supporting customers in vulnerable circumstances (qualitative)	ANH.OC.A55 - expectation for assurance of panel independence and publication of organisations appointed to panel, ANH.OC.A56 - introduction of an underperformance payment rate, ANH.OC.A57 - incentive rate, ANH.OC.A58 - removing caps.	We propose to remove this performance commitment as there is overlap with several other affordability and vulnerability performance commitments (particularly BSI).

Helping those struggling to pay	ANH.AV.A1 - change to performance commitment definition.	We have made amendments to the performance commitment level so that it now correctly reflects the number of *unique* customers and the glide path in support for customers struggling to pay.
Abstraction Incentive Mechanism	ANH.OC.C16 - changing caps and collars.	We challenge the alterations to the caps and collars.
Smart metering	ANH.OC.C12 - introducing new financial performance commitment.	We have increased the underperformance penalty rate to reflect our updated view of smart meter unit costs.
Value for money	ANH.OC.A1 - including reputational performance commitment.	We challenge the performance commitment levels set.

5.9 Leakage

We make representations on Ofwat's Actions ANH.OC.A11, ANH.OC.A12, ANH.OC.A13 and ANH.OC.C11 in the separate leakage section of our representation.

Detail on our representations on the leakage performance commitment can be found in the separate Focus area on leakage section of our representation. Below, we have provided a table setting out the revised tier 1 underperformance penalty thresholds for each year of AMP7, as there is no option to include this in the outcomes data tables.

Table 7 Revised tier 1 underperformance thresholds for leakage

Year	2020-21	2021-22	2022-23	2023-24	2024-25
Underperformance collar for tier 1 standard underperformance rate – percentage reduction	0	0	0	0	0
Underperformance collar for tier 1 standard underperformance rate – absolute level, megalitres per day	184	184	184	184	184

5.10 Mains Repairs and Reactive Mains Bursts

In this section we make representations on Ofwat's Actions ANH.OC.A26, ANH.OC.A27 and ANH.OC.A43.

Use of Reactive Mains Bursts as the financial incentive

In our Plan we provided evidence to demonstrate the inverse relationship between repairing water mains and leakage levels. Eight other companies (Affinity, South East, Severn Trent, South Staffs, Thames, United Utilities, Wessex and Yorkshire) also demonstrated that this relationship would cause the leakage and mains bursts performance commitment incentives to work against each other.

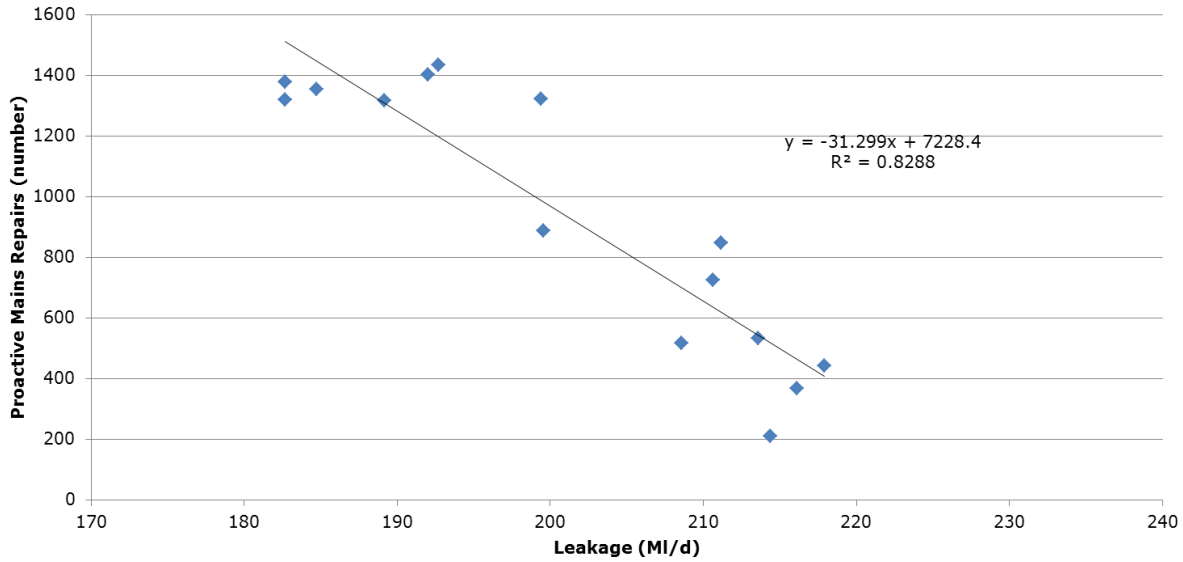
Despite the evidence we have provided and expert opinion across the industry, Ofwat has not accepted our arguments that there should be no financial incentive on total mains repairs. We have proposed that incentives should instead be based on reactive repairs only, to allow companies to be flexible with the amount of proactive mains repairs that they include in their leakage reduction strategies. This is particularly important for Anglian as we are the frontier company on leakage and we are going beyond where any company has been before. We will therefore need to be flexible as we develop the right strategy to set the future frontier.

In Annex 1 to its *Delivering outcomes for customers policy appendix* Ofwat says that "there is historical evidence to show that proactive repairing of mains results in a leakage reduction". Ofwat also says that "there is little... compelling evidence... that maintaining lower levels of leakage must require a higher number of mains repairs".

What Ofwat is asking companies to do in AMP7, however, is not just to maintain low levels of leakage, but to significantly reduce their leakage to levels not previously achieved. Therefore, by accepting the link between increasing proactive leakage repair and decreasing leakage Ofwat must accept that in AMP7 proactive leakage repair should be expected to rise significantly to meet the challenge that it has set.

Ofwat requested statistical correlation in its DD. We have provided further evidence in the graph below to demonstrate the strong link (R^2 = 0.8288) between high levels of proactive leakage detection and low levels of leakage. This is based on the graph we provided in our IAP response on page 176 and demonstrates the statistical correlation Ofwat requested as well as showing the relationship between proactive mains repairs and maintaining leakage at low levels. We have removed the observation for 2010-11 from this analysis. In that year, a spell of exceptionally cold weather in December caused significant damage to our water infrastructure and a dramatic increase in leakage. During the final quarter of the year we significantly increased the resources devoted to leakage control in order to commence recovery of our leakage position. Despite this, our outturn leakage for the year was 229 Ml/d, by some distance our worst performance in the last decade. The year 2010-11 was therefore clearly an outlier.

Figure 15 Proactive mains repairs vs Leakage levels



We propose that the total mains repair measure should be a non-financial incentive in AMP7 as we strive to reduce leakage beyond the frontier that we are currently setting. We therefore propose to have a financial incentive on reactive mains repairs as set out in our Business Plan.

PCLs for Total Mains Bursts

In our Plan we proposed deadbands for reactive mains bursts (our preferred financial measure of mains repair performance). This was based on the inherent volatility of this measure as a result of the impact of weather on performance. This proposal was supported by our customers.

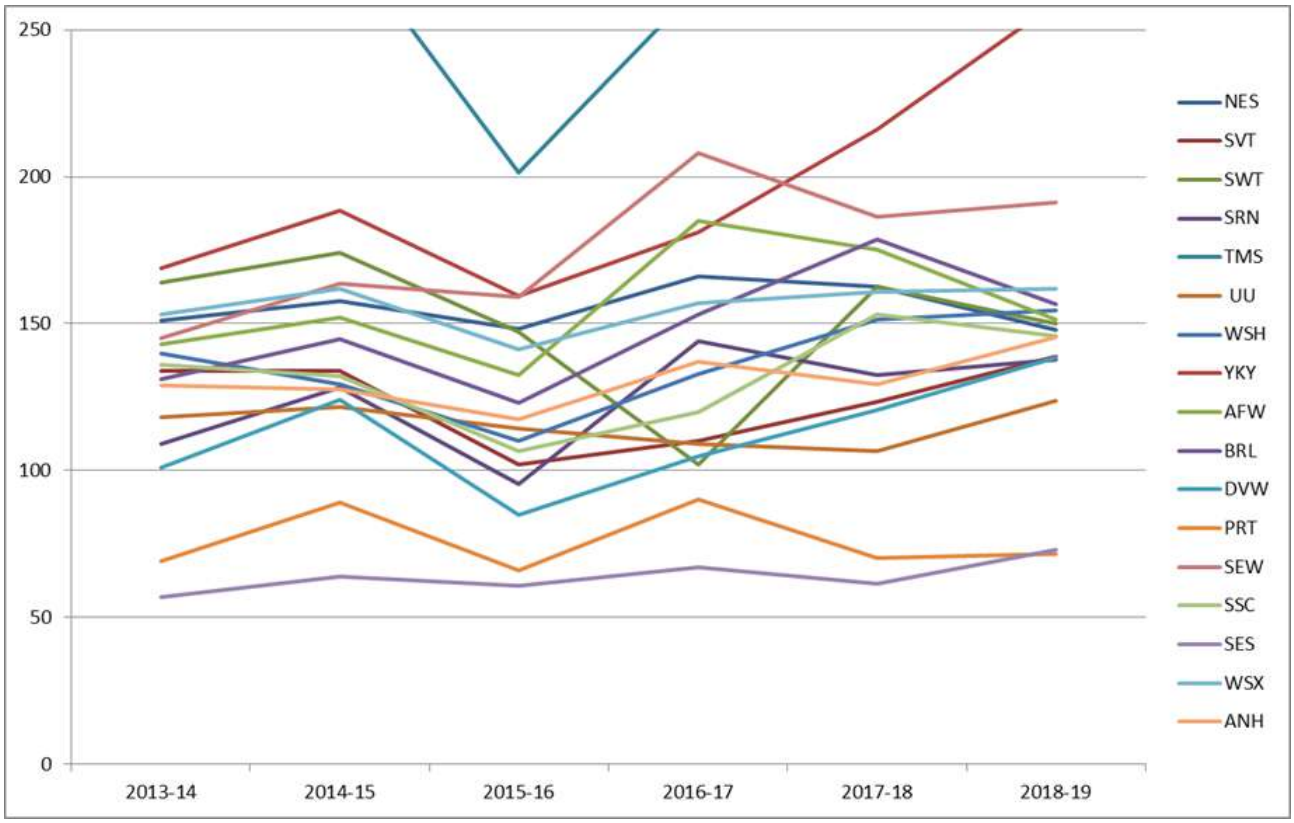
In assessing and setting PCLs and in its assessment of “good” levels of performance, Ofwat has not taken any account for any external factors that might influence performance (PR19 DD: Delivering outcomes for customers policy appendix, page 39). However, it does, acknowledge that these factors, such as extreme weather, could influence performance in the future, but it still does not account for those factors in the future.

For mains repairs, Ofwat has intervened to set PCLs at a level, which is based on "the average of 3 years of best historical performance from 2011-2018". This does not acknowledge the variation in performance caused by external factors, which affect all companies. Ofwat says that for these interventions that they "use a flat line profile because we consider that companies have achieved this before and therefore should be able to achieve this from year 1 in the period."

This assumption is incorrect and does not reflect how water networks react to external factors. It also does not align with Ofwat's previous acknowledgement that "external influences such as extreme weather could occur in the future". In years where performance is good, such as those used to set PCL levels, external factors are assisting companies with their performance and this is regularly seen across all companies. The graph below demonstrates improving performance across the industry in 2015-16, which is generally reversed across the board in 2016-17. A reasonable position to take would be to understand that this is most likely due to external factors affecting the whole industry and would account for this variation (which amounts to an average variation of over 20 mains bursts per 1,000 kilometres of pipe) when setting PCLs.

In the past Ofwat accounted for this using control limits set around serviceability reference levels, which varied between companies. These were a buffer to account for this natural variation.

Figure 16 Industry annual variations in total mains bursts



Ofwat has imposed an underperformance penalty based on our proposal for PCLs, which were based on limited information. This is because the new definitions for mains repairs were not published until March 2018. We cannot therefore have confidence that the historical data from other companies that have been used to set PCLs is consistent with the new definition.

Ofwat has assessed the "good" level of performance using companies' historic data. This is inappropriate as the data may not have been produced in line with the new common definition. Company performance across the industry has worsened in 2018-19 due to less favourable weather than in the previous year.

We therefore propose a revised PCL based on the 2018-19 upper quartile level of performance. This is 138.5 and is an improvement on our 2018-19 performance of 145.5. This also allows a buffer above our recent good levels of performance to account for external influences such as extreme weather.

5.11 Water supply interruptions

In this section we make representations on Ofwat's Action ANH.OC.A7.

What has Ofwat done?

Ofwat has taken the forecast upper quartile performance that each company proposed in its Business Plan submission and assumed they are the levels of performance that those companies plan to deliver and that they are realistically achievable. Ofwat has then created an upper quartile from these predictions and imposed it across all companies.

Ofwat views from DD:

"Our draft determinations take into account customers' views on performance levels, as well as historical and forecast performance levels across the sector. In some instances this results in our draft decisions on performance commitment levels differing from the level supported by customers."

"In calculating forecast upper quartile levels, we have not excluded company forecasts because we recognise the information asymmetry that exists between us and companies and that forecast levels can be unrealistic in either direction (too high or too low)."

"Our experience at PR14 was that many companies accepted performance commitment levels based on current upper quartile performance that they outperformed in the run-up to, and the first year of, the 2015/16 – 2019/20 period. The sector has continued to outperform against PR14 levels over the first 3 years of the current period, and continues to forecast to do so at sector level for the remainder of the period on each of these three performance commitments."

"For supply interruptions, there have been significant improvements in performance for this measure over time with some of the better performing companies improving by more than 50% in the first three years of PR14. However, the step change at the beginning of the 2020-25 period from 8.25 minutes (sector average in 2019/20) to 4.17 minutes appears very challenging and requires an improvement of close to 50% in year one of the period. In addition, there is substantial dispersion across companies in both historical performance and company forecasts for the 2020-25 period. The 64% reduction in the upper quartile for 2020-25 (from 2019/20 forecast levels) appears achievable given improvement in earlier periods."

Penalty versus reward

As in other areas the interventions that Ofwat has made have created an inappropriate balance between underperformance penalties and outperformance payments for this performance commitment. For Anglian this equates to a £164m maximum underperformance penalty versus £11m maximum outperformance payment.

Why change is needed?

The upper quartile glide path with a 64% reduction is unachievable for the proposed water supply interruptions ODI – it is above the 50% that Ofwat quotes for the "better performing companies". From our observations, those companies that have made the largest percentage reduction were those that were initially performing poorly and therefore had more scope for improvement. The industry has already made the easier operational improvements. Improvement for companies that are already performing at or near the frontier is much more difficult and costly to make significant improvement. It is therefore inconceivable that, in general terms, performance improvements in this area will continue at the same rate as they did at the start of AMP6, particularly for those companies who have already delivered a step change in performance.

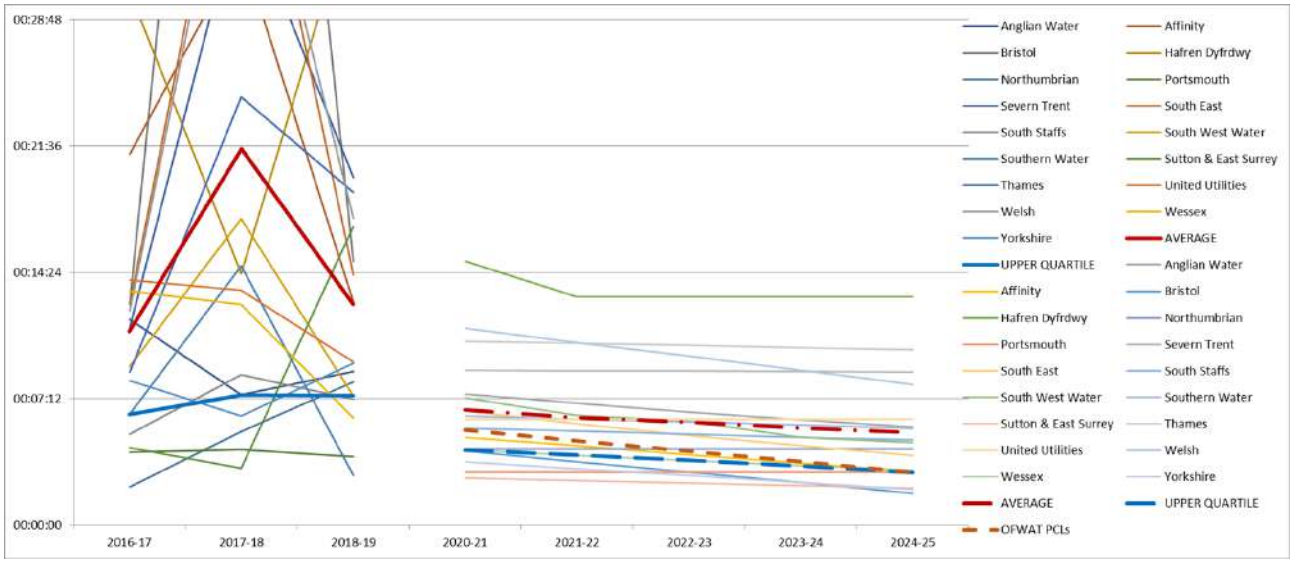
Our analysis of each company's performance against the Water Supply Interruptions performance commitment shows that more than half of companies have not achieved the PCL in at least one of the years during AMP6. This further supports our IAP argument that future upper quartile predictions cannot simply be taken at face value.

Table 8 Water Supply Interruptions performance against PCLs in AMP6

	Water supply interruptions
AFW	All missed
ANH	None missed
BRL	Some missed
DVW/HDD	Some missed
NES	None missed
PRT	None missed
SES	None missed
SEW	All missed
SRN	Some missed
SSC	None missed
SVT	Some missed
SWB	Some missed
TMS	Some missed
UU	Some missed
WSH	Some missed
WSX	Some missed
YKY	None missed

The graph below represents all performance to date of companies against the common definition of Water Supply Interruptions that will be adopted for AMP7 and shows the marked change in average and upper quartile performance that is assumed by Ofwat's method for setting PCLs. The right hand side of the graph shows the performance commitment levels that companies proposed in their Business Plans. The graph shows the inherent variability of the measure currently and the dramatic improvements that Ofwat expects to see across the board to justify the forecast upper quartile that it has assumed to set performance commitment levels. Although very unlikely, if the right hand side of the graph were to be a true forecast of future performance, 75% of companies would be penalised each year, despite an outstanding improvement in performance.

Figure 17 Performance against the common definition of water supply interruptions



Volatility is seen in this measure in part because the ability to minimise supply interruptions is strongly influenced by factors outside management control, such as isolated large impacts and other broad external factors such as weather. We always work hard to mitigate all events that will impact on the service we provide our customers, however, this can be challenged greatly when responding to complex events. This is true for all companies.

Some of these events can be wholly or partly outside of management control:

- a farmer has exposed and damaged a main
- mains bursts under road, rivers or rail (meaning time elapses before permits or access can be granted)
- power loss on remote assets.

Location and accessibility play a large part in the ability to respond and resolve issues quickly, this is particularly true across our large and predominantly rural geography.

The volatility demonstrated in the above graph for AMP6 will continue into AMP7 as these incidents are all outside of companies' control and the profile Ofwat envisages will not materialise. The adjustment that Ofwat has made to the PCLs since the IAP is insignificant in relation to the change in the profile of performance expected.

Why does it matter?

The approach to setting the upper quartile means that companies will be penalised even if they are continuing to improve performance.If every company in the industry improves on their 2018/19 performance by 50% there will only be two companies (Portsmouth and Wessex) that meet the PCL in 2024/25. Based on our analysis the average performer would be performing at 5 minutes 50 seconds. Fourteen companies would have reduced their 2018/19 I2S score by 50% and still be in significant penalty.

Table 9 Interruptions to supply PCL

Company	2018-19 performance	50% improvement on 2018-19 performance	Penalty rate (-£m)	Total penalty over AMP7 based on a 10% improvement each year
Anglian - ANH	00:08:44	00:04:22	1.884	18.02
Northumbrian - NES	00:09:09	00:04:35	1.492	16.45
Severn Trent - SVT	00:18:53	00:09:26	1.081	45.75
South West - SWT	00:09:40	00:04:50	0.461	5.92
Southern - SRN	00:07:23	00:03:42	0.336	1.63
Thames - TMS	00:22:03	00:11:01	1.97	110.66
United Utilities - UU	00:09:10	00:04:35	0.71	7.87
Welsh - WSH	00:16:02	00:08:01	0.745	26.16
Yorkshire - YKY	00:10:28	00:05:14	1.482	23.17
Affinity - AFW	00:12:42	00:06:21	0.739	13.35
Bristol - BRL	00:15:01	00:07:30	0.122	3.85
Portsmouth - PRT	00:03:54	00:01:57	0.094	-0.69
South East - SEW	00:14:12	00:07:06	0.237	0.95
South Staffs & Cambridge - SSC	00:07:09	00:03:35	0.237	0.95
Sutton & East Surrey - SES	00:16:06	00:08:03	0.148	5.23
Wessex - WSX	00:05:51	00:02:55	0.176	-0.09

Our analysis also shows that should each company deliver 50% improvement on 2018/19, with the improvement made progressively and split evenly at 10% increments over each year of AMP7, the industry as a whole would be in approximately £285m penalty.

We reiterate that in setting our performance commitment for water supply interruptions we followed the Ofwat methodology to define upper quartile performance and then applied a stretching target to be achieved. This approach was supported by our customers and our incentive rates reflected our customers' willingness to pay for the proposed improvement.

Ofwat's interventions on this measure so significantly disassociate expectations around performance and exposure to penalties from both funded levels of investment and customer willingness to pay for improvement that we would face a stark choice of needing to divert investment from much needed and valued actions focussed on asset health or face significant penalties. Such an approach would be contrary to the views of our customers and would address symptoms not underlying causes.

What should Ofwat do?

We are supportive of setting a common performance commitment that incentivises companies to improve their performance over AMP7. We believe that Ofwat should reconsider the upper quartile glide path to make this more realistic.

We propose that there should be a consistent collar across the industry. However, currently there is an inconsistent approach to underperformance penalty collars (as demonstrated below) and the level at which these are set provides an imbalance to risk and reward on the water supply interruptions performance commitment.

Table 10 Interruptions to supply Year 1 collar

Company	2020-21 collar	Note
Affinity	8.06	increasing over the AMP
Portsmouth	8.06	increasing over the AMP
Severn Trent	14.4	
United Utilities	14.4	
Anglian	21.36	
Southern	21.36	
Thames	21.36	
Bristol	21.36	
South East	21.36	
South Staffs & Cambridge	21.36	
Wlesh	31	
Northumbrian	32.54	
Yorkshire	32.54	
Sutton & East Surrey	32.54	
Wessex	32.54	
South West	no collar	

We have made a separate representation on the levels at which incentive rates have been set and for water supply interruptions we have proposed that the level set should be related to the performance commitment level.

5.12 WINEP

In this section we make representations on Ofwat's Actions ANH.OC.A63, ANH.OC.C4 and ANH.OC.C5

ANH.OC.C4 – Ofwat's intervention to focus the performance commitment on green obligations is sensible. One nuance to this, with agreement from the Environment Agency and our CEF, is the exclusion of a number of obligations from the performance commitment where they could be

delivered through innovative approaches delivering greater contributions to natural capital than traditional solutions. This is captured in Ofwat's definition. However the list of 74 includes mainly amber obligations.

Of the 74 obligations we agreed with the EA could be delivered through a natural capital approach, 14 are green obligations. We propose these should be removed from the PCL and not counted under performance for this performance commitment (they would still be captured by the reputational performance commitment). These obligations are captured below for the definition of the performance commitment.

Table 11 Green obligations proposed for removal from the PCL

WINEP No.	Obligation type	Site
7AW202014	Green	Brant Broughton STW
7AW201981	Green	Stanion
7AW200300	Green	East Harling STW
7AW200289	Green	Hanslope STW
7AW200288	Green	Waresley STW
7AW200231	Green	Cotton STW
7AW200242	Green	Monks Eleigh STW
7AW200266	Green	Stagsden STW
7AW200311	Green	Charsfield STW
7AW200219	Green	Investigation at Blackwater estuary to identify best options and measures to prevent deterioration
7AW202231	Green	Market Harborough Wetland Creation
7AW200048	Green	Southwold STW UV no deterioration scheme to protect bathing water quality at Southwold the Denes
7AW200046	Green	Walton and Frinton joint bathing waters improvement scheme Walton and Frinton joint bathing waters improvement scheme for Walton on-the- Naze Terminal Pumping Station
EAN00362	Green	Lee Brook

ANH.OC.C5 – We recognise Ofwat's desire to ensure outperformance payments for stretching performance. We strongly disagree that the PCL should be set with a 10% stretch element on statutory obligation dates. This could see us in a position where we deliver our obligations on time but receive underperformance penalty. This is inappropriate when we are facing a significant delivery challenge for the largest WINEP we have had to deliver. We also note this is inconsistent with Ofwat's view on Wessex's WINEP performance commitment, where the PCL appears to be based on obligation dates.

It is also important that Ofwat does not lose sight of the views of our customers. In acceptability research on our outline plan[2], we further tested whether customers understood this PC and whether our PCL was stretching. In response to this research:

- 94% of household and 97% of non-household customers understood our definition
- 77% of household and 92% of non-household customers agreed the PCL was stretching.

In light of the strong support from our customers for a PCL that reflects obligation dates we do not believe Ofwat's proposals are appropriate. We believe our proposals represent stretching performance, accounting for the early delivery element in the definition of the performance commitment (i.e. obligations must be delivered in the previous reporting year to be considered for early delivery). However, to deliver Ofwat's intent for significant early delivery before outperformance payments are earned, without penalising the company even if all obligation dates are met, we propose that the Ofwat 10% stretch is reflected as a reward deadband.

Reflecting on both of the above actions, we propose the following PCL (taking account of the 14 natural capital obligations) and reward deadband set at 10% below the PCL (to capture stretching outperformance).

Table 12 Proposed PCL

	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Obligations in Year, less natural capital obligations	280	725	120	431	300	1,856
Cumulative obligations - PCL	280	1,005	1,125	1,556	1,856	
Cumulative obligations + 10% outperformance deadband	308	1,106	1,238	1,712	1,856	

ANH.OC.A63 – we have proposed alternate caps and collars in line with the adjustments to the PCL and proposed deadband. The amendments retain the levels of under and outperformance from Ofwat's DD.

5.13 Internal interconnection programme

In this section we make representations on Ofwat's Action ANH.OC.C13.

Ofwat has proposed a performance commitment and ODI for our interconnector programme based on capacity, rather than adopting our proposal for a mechanism based on managing deficits. Ofwat's proposed mechanism accounts for 'output' delivery rather than outcomes delivered for customers.

We accept the need for a mechanism to deliver effective customer protection on such a large area of expenditure and believe there may be some merit in Ofwat's proposal. However, we have a number of concerns relating to the design of the mechanism which we outline here and propose a series of amendments to resolve these issues.

Firstly, we provide some high level background on the drivers for the investment and the existing statutory and regulatory framework which already strongly incentivises timely delivery.

Regulatory and Statutory Background

The interconnector programme is the largest area of investment associated with our WRMP supply side programme. The investment is driven by supply demand deficits associated with drought resilience, climate change impacts and sustainability reductions (reductions to abstraction licence volumes to protect the environment). There are strong regulatory incentives already in place for us to deliver our WRMP and our duty to meet supply. The Environment Agency regulates the duty

2 Annex 13g of our September Plan https://www.anglianwater.co.uk/siteassets/household/about-us/pr19-13g-acceptability-testing-outline-plan.pdf

to meet supply through the Security of Supply Index, reported through the Environmental Performance Assessment. The need to comply with abstraction licenses is a legal requirement and inability to deliver the programme on time could potentially lead to prosecution.

Exclusions

We propose exclusions from this performance commitment in two areas:

- Capacity associated with DPC schemes
- Scheme delivery issues and interactions outside of management control.

We discuss both of these areas in further detail below.

Capacity associated with DPC schemes

We do not believe that capacity associated with DPC schemes should be included in performance nor the performance commitment level. This is on the basis that:

- Main charges customers do not fund DPC projects in the same way that they would conventional investments. Customers pay for DPC projects over time reducing the need for protection.
- To incentivise efficient delivery by the DPC provider and share risk appropriately, we would seek to reflect this mechanism in any contracts for DPC schemes. The provider would price this risk into their bid, increasing the cost to customers of DPC schemes.
- As a new delivery route, the timescales associated with DPC are less certain and potentially out of our control.

The timing of DPC may mean testing some interconnectors at full capacity, and this is not possible until these schemes are delivered.

Scheme delivery issues and interactions outside of management control

Our interconnector programme comprises more than 500km of mains, which are integrated at multiple points within our supply system and span several planning authority areas. This is a complex programme of work with multiple factors that have the potential to cause delay. The programme also has the potential to be impacted by wider policy issues, specifically the metaldehyde ban. Further detail on both of these specific issues is provided below:

Planning related delays

It is possible that schemes could be delayed due to the need to undertake additional activities in order to obtain planning permission, for example Environmental Impact Assessments, that had not been previously factored into the programme.

Metaldehyde ban relayed delays

If metaldehyde is not banned, or there is a delay in banning metaldehyde, then treatment requirements will need to be adapted to reflect this or in the case of delay, scheme commissioning delayed to avoid the installation of expensive treatment technology for a short term issue. A performance commitment that constrained us in this way would not be in the best interest of the customer. On this basis there should be exceptions to underperformance payments due to reasons outside of our control, with specific reference to the metaldehyde ban and planning.

We propose the following drafting for the exclusion from this performance commitment:

Due to the complex nature of the programme and associated interactions there are a number of factors outside management control. These include planning planning related related delays, interactions with the metaldehyde ban and associated uncertain treatment requirements and timescales for direct procurement schemes (DPC). Availability of water from DPC schemes could affect commissioning and testing of some interconnectors. Delays associated with factors outside of the company's control will be excluded from the calculation of underperformance incentives.

Performance commitment level

In light of our view that schemes linked to DPC should not be included within this mechanism, we propose the following revisions to the PCL. This includes the schemes themselves and their contribution to capacity elsewhere in the network.

There is an inherent level of uncertainty associated with the capacities required for the WRMP and a number of schemes have been upsized to address future uncertainty. It is possible, that as further information becomes available in the future, the capacities required are adapted to reflect this new information. Examples include the impact of future sustainability reductions, which are inherently uncertain, or the benefits of our demand management programme savings. On this basis we believe it appropriate that a deadband be included as part of this mechanism. We propose that this deadband be calibrated at 10% below the performance commitment level.

We believe there are some minor errors in the proposed performance commitment level. These are:

- Ruthamford South to Ruthamford Central – the scheme in PR19 is for 7Ml/d capacity.
- Ixworth to Thetford is 1.8Ml/d.

The proposed performance commitment level and associated deadband are outlined below.

Table 13 Proposed performance commitment level

	Corrected capacity
WRZ to WRZ transfers	
North Fenland WRZ to Ely WRZ	20
Central Lincolnshire WRZ to South Lincolnshire WRZ	63
South Lincolnshire WRZ to North Ruthamford WRZ	67
North Ruthamford WRZ to South Fenland WRZ	40
Ruthamford South WRZ to Ruthamford Central WRZ	7
Ely WRZ to Newmarket WRZ	20
Newmarket WRZ to Cheveley WRZ	1
Newmarket WRZ to Bury Haverhill WRZ	20
Bury Haverhill WRZ to East Suffolk WRZ	20
East Suffolk WRZ to South Essex WRZ	15
Norwich & the Broads WRZ to Happisburgh WRZ	1.5
Central Lincolnshire WRZ to Nottinghamshire WRZ	3.5
South Fenland WRZ to North Fenland WRZ	20
Norwich & the Boards WRZ to Norfolk Rural North WRZ	5
Bury Haverhill WRZ to Ixworth WRZ	3
Ixworth WRZ to Thetford WRZ	1.8
Intrazone tranfsers	
Ruthamford South WRZ – Meppershall PZ	5
Ruthamford South WRZ – Woburn PZ	5

Bury Haverhill – Haverhill PZ	8
North Norflok Rural WRZ – Diddlington PZ	1.5
South Humber Bank WRZ – Transfer from Pyewipe to non-potable network	20.4
Treatment	
South Humber Bank WRZ – Pyewipe water reuse treatment	6
North Fenland WRZ to Ely WRZ treatment	20
Ruthamford South WRZ – Meppershall PZ treatment	5
Total - PCL	**378.7**
Deadband	*37.87*

Incentive rate

We understand the logic of the proposed underperformance incentive rate. We agree with this approach for non-delivery i.e. where a scheme is no longer required and not undertaken. However we do not consider it to be appropriate for all of the funding to be returned in the cases where the company is committed to delivering a scheme and is actively incurring expenditure but the scheme is delivered late. This is on the same basis that for the 'regional scheme delivery' mechanism, there are differential rates associated with 'solution discontinued' and 'delivery penalties'.

On this basis we propose two incentive rates:

- Scheme discontinued incentive rate – as proposed by Ofwat.
- Scheme delayed underperformance incentive rate – based on the default ODI underperformance incentive rate formula.

We propose that the scheme delayed incentive rate is calculated in the following way, using the customer willingness to pay information used for the 'percentage population supplied by a single supply system' and Ofwat's ODI rate formula.

$$ODI_{penalty} = \text{Incremental WTP} - (\text{incremental cost} \times p)$$

$$ODI_{reward} = \text{Incremental WTP} \times (1-p)$$

Table 14 Calculation summary

#	Descriptor / Step	Value	Source
1	Benefit delivered by single supply resilience investments	10.13% reduction	Anglian Water investment proposals (aligned to proposed PCL for that performance commitment)
2	Marginal benefit single supply resilience investments	£856,234.98 per %	Anglian Water societal valuation (aligns to £0.41 per unit per household value reported in table App1)
3	Total benefit of single supply investments	£8.674m	Multiply figures from step 2 and 3

4	Capacity of single supply resilience investments	91.927 Ml/d	Anglian Water investment proposals
5	Incremental customer benefit per Ml/d	£94.353k	Figure from step 3 divided by figure from step 4
6	Incremental cost per Ml/d	£734k	Ofwat figure
7	Outperformance rate	£47,177	Using incremental benefit, sharing rate of 50% and Ofwat's outperformance incentive formula
8	Underperformance rate (assuming incremental cost = incremental benefit)	£47,177	Using incremental benefit, assuming incremental cost equals incremental benefit, sharing rate of 50% and Ofwat's underperformance incentive formula

Ofwat's default formula results in a negative underperformance incentive rate due to the magnitude of the incremental cost compared to the benefit. We propose to set the underperformance incentive rate on the basis of assuming that incremental cost equals incremental benefit. This is an approach we have followed for other ODI rates.

We note the incentive rate for non-delivery needs to be updated to reflect Ofwat's final cost allowances and final totex sharing rate.

Definition

Ofwat's definition is restrictive. We propose that the definition makes it clear that while the table of capacities shows how the total has been derived, it is possible for the schemes that deliver the capacity to vary from the table.

Following on from our commentary on incentive rates, we propose that the definition be expanded to define:

Scheme discontinued - returns future funding where a solution is cancelled for no longer being required. The scheme discontinued incentive rate is applied for underperformance in Ml/d.

Scheme delayed – where a scheme is delayed and the performance commitment level is not achieved. The scheme delayed incentive rate is applied for related underperformance in Ml/d.

5.14 Bathing Waters

In this section we make representations on Ofwat's Actions ANH.OC.A53, **ANH.OC.A54,** *ANH.OC.C14 and ANH.OC.C15.*

Incentive type

In our Plan we proposed a financial incentive for Bathing Waters attaining excellent status as a development of our AMP6 performance commitment. In our customer engagement customers thought that Bathing Waters are an important asset for our region's economy and they felt that they were popular with residents and an important draw for visitors. In follow-up engagement with a subset of our customers, some expressed an opinion that it would be unfair to penalise us for as a result of external factors influencing Bathing Water results. However we considered that the importance that customers as a whole placed on this issue should outweigh this smaller subset.

The Environment Agency has been considering the inclusion of bathing water quality as part of its Environmental Performance Assessment (EPA) reputational incentive. However, as detailed at the Water UK and Environment Agency meeting on the EPA on 31 July 2019, they have concluded that as performance on this metric is not within company control it is not appropriate to include it. On the basis that the Environment Agency consider this metric inappropriate for a reputational incentive, we propose that it should no longer be a financial performance commitment for us. Recognising the importance of bathing water quality we would however keep it as a reputational performance commitment.

Delivery of bathing water obligations is captured by the WINEP performance commitment, which is financial. We have 14 WINEP bathing water obligations in AMP7. The focus of this work is to prevent deterioration of water quality and/ or to better understand how we can improve bathing waters to 'Good' and 'Excellent' classifications.

Timing of underperformance and outperformance payments

Ofwat proposes that this performance commitment be measured in-period.

If Ofwat does not amend this performance commitment to be non-financial, then we believe it should be end-of-period. Apart from the Cyber and Growth ODIs, this is the only exception to Ofwat's in-period by default that we have proposed.

Ofwat notes that there is customer support for this type of incentive, but questions whether customers understood that performance is calculated each year, based on a four year average. We are disappointed that Ofwat has disregarded two sources of customer evidence, where we made it clear to customers that performance is calculated annually. See page 14 (first bullet, inset image) of Annex 3a[3] of our IAP response and page 29 of Annex 13f[4] of our September 2018 Plan.

For completeness, we believe Ofwat should reconsider the following evidence from our September Plan and IAP response.

To seek customer views on the appropriate type of incentive for this specific performance commitment, we interviewed a sub-set of customers. In these interviews further detail regarding the time period over which the data is gathered and analysed were provided. The provision of this information led to customers changing their preference for this measure being an in-period measure to having a preference for an end of period measure. Preferences also changed on understanding that there are some external factors that can impact on our performance and it was felt unfair to penalise us immediately for this. It was felt that we should be provided with an opportunity to address these external factors. But customers do not want us to use external parties as an excuse for not hitting targets on an on-going basis. This is shown Annex 13f of our 2018 business plan.

Following Ofwat's IAP, we have sought to engage further with our customers on this topic. 71% of customers involved in that exercise support the end of period incentives proposed. The results of this engagement can be seen in Annex 3a of our April IAP response.

On the basis that there is strong, consistent support from our customers and to reflect the nature of assessments we propose an end of period reconciliation for this incentive if Ofwat continues with its proposal for this to be a financial ODI. However, to reiterate, we believe performance in this area is captured financially elsewhere, and this should instead be a reputational measure only.

Performance commitment level

Ofwat proposes an annual performance commitment, increasing over AMP7. Ofwat has removed the proposed deadband.

Ofwat's proposal for this performance commitment level is flawed. The Bathing Water assessments are based on the previous three years of data plus the year in which the assessment is made. Thus, for improvements to be delivered in AMP7 investment must be made early in the AMP and for early years in the AMP this performance will be heavily affected by performance in AMP6. However, Ofwat's proposed performance commitment level sees the number of bathing waters at excellent increasing from year three. If a performance commitment is set at on an annual basis then there should be improvement from year 4 onwards. We propose that the performance commitment be end of period, with a PCL of 36 by the end of AMP7.

Deadband

If this incentive remains financial, we believe the deadband should be retained. To reflect the impact of factors outside of our control we are proposing a deadband to be set at 33, the baseline number of beaches predicted to attain excellent classification in 2019/20. In principle, 69% of customers support the use of deadbands on the basis that some flexibility to account for extreme weather or a small allowance if things 'go wrong' will ultimately lead to better performance. See Annex 13f 'Acceptability testing: PCs/ODIs' of our September 2018 business plan.

3 https://www.anglianwater.co.uk/siteassets/household/about-us/3a.ofwat-led-feedback-incling-report-22.03.19.pdf

4 https://www.anglianwater.co.uk/siteassets/household/about-us/pr19-13f-acceptability-research-pcs-odis.pdf

We tested our rationale and the level of the deadband with customers as part of the development of our business plan. In acceptability research on our outline plan, we tested whether our PCL and associated deadband was stretching. In response to that research 72% of household and 67% of non-household customers agreed the PCL and associated deadband was stretching. See Annex 13g 'Acceptability testing: Outline business plan' of our September 2018 business plan.

As part of our ongoing customer research, we asked a sample of our customers their opinion about our use of deadbands for this ODI. Of those who took part 67% indicated support for the use of the deadband (with 10% neutral or don't know). We consider that this support justifies our inclusion of a deadband for our bathing waters at excellent status PC.

"33/49 is pretty good already; to achieve 36 would be fantastic but I understand this isn't a very easy goal because it isn't totally in AW's control. Keeping with the 33 for the buffer zone is a smart choice." Customer taking part in 2019 online community research

As Ofwat notes, this performance commitment is potentially material. On this basis Ofwat has set its own caps and collars. Ofwat's acceptance that this is a material performance commitment supports the argument that a deadband protects customers from bill volatility that may be associated with factors outside of our control.

On the basis that it is supported by our customers and that this a significant financial measure (if it remains financial) we propose the deadband at 33 bathing waters.

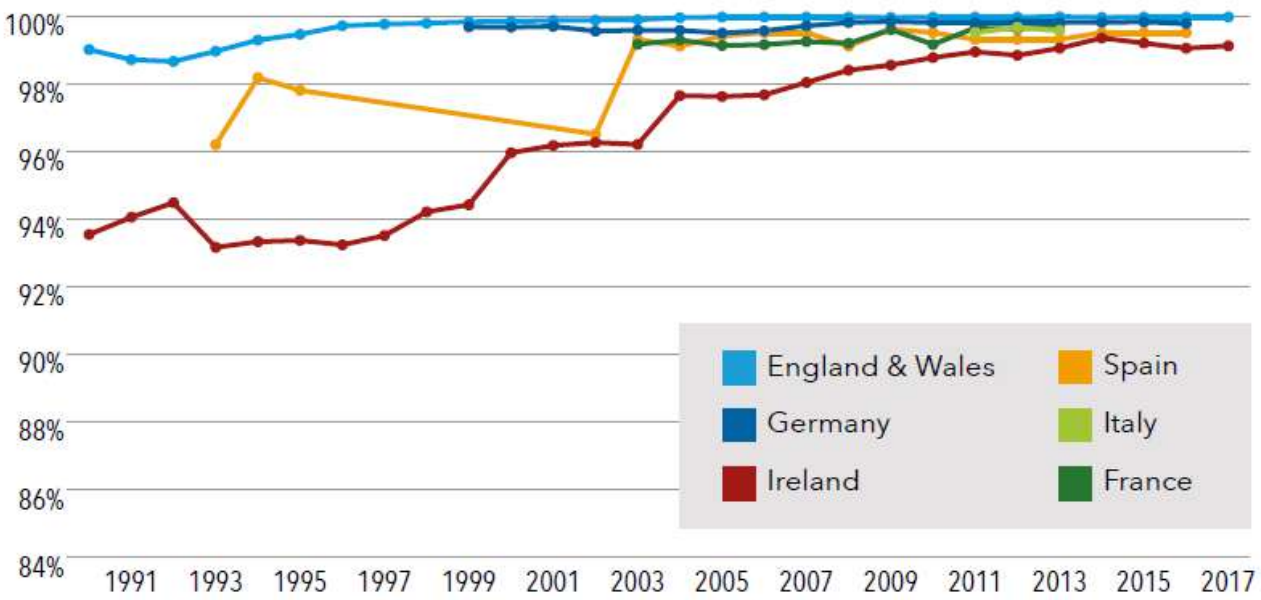
5.15 Compliance Risk Index (CRI)

In this section we make representations on Ofwat's Action ANH.OC.A25.

In our IAP response we expressed our concern that Ofwat had proposed an incentive package likely to see 75% of the industry penalised during AMP7. This proposal would see companies failing Ofwat's deadband for drinking water quality, confidence in the best quality water in Europe undermined and potentially cause unnecessary public health concerns. The proposed deadbands for CRI remain the same as at the IAP for three of the years (1.5) and at a level that only three companies forecast being able to meet at the start of AMP7. This does not appear to be consistent with DWI guidance that companies should "aspire to continuous improvement and results of at least a level that is equal to or below the national average". National average for 2018 was 3.56. Any difference between the assessment of performance between regulators would reduce confidence in the industry and could swing public opinion against the current structure.

We reiterate our position as set out at IAP. We continue to strive for 100% compliance for water quality and consistently achieve very high quality levels, achieving a 99.95% mean zonal compliance score in 2018. And this is true of England and Wales as a whole with the best water quality in Europe as shown by the Global Water Intelligence graph below.

Figure 18 International comparisons of water sector performance - overall compliance rate (%)



Source: GWI (2018)

The Compliance Risk Index as set out by the Drinking Water Inspectorate (DWI) in its Drinking Water 2018 - Summary of the Chief Inspector's report for drinking water in England July 2019 is:

> *"designed to allocate a numerical value to risk. Unlike Mean Zonal Compliance (MZC), it assigns a value to the significance of the failing parameter, the proportion of consumers potentially affected and the quality of the company's response. CRI is a measure designed to illustrate the risk arising from treated water compliance failures."*

We welcome this approach to risk based regulation and work closely with the Drinking Water Inspectorate to help us mitigate risk to our customers. This is evidenced by the 0 PCL we put forward in our Business Plan in line with Ofwat and DWI expectation.

However, the CRI is a new measure and the deadband should account for volatility in CRI performance not least to protect public confidence in drinking water quality. This volatility can be driven by a range of factors some of which will be outside management control, for example:

- Poor hygiene or non compliant fittings at customer taps resulting in bacteriological, chemical or taste and odour failures
- Third party damage, or illegal hydrant use resulting in iron or turbidity failures.

The volatility can also be driven by failures that do not impact public health or are indicators such as metaldehyde or turbidity failures.

In 2018 there was variation again in the measure showing an increase in the industry average, as set out in the below excerpt:

"The introduction of CRI recognises that the level of water quality in England remains one of the best in the world and new, innovative methodology was required to focus on the few areas which matter to the water industry and consumers alike.

"In 2018, the CRI for England and Wales was 3.87 which was a decline in performance from 3.56 in 2017. The decline shows the first indication of the index leveling out."

Drinking water 2018 - Summary of the Chief Inspector's Report for drinking water in England July 2019

This excerpt from the Drinking Water Inspectorate's Chief Inspector's Report highlights not only that the industry average for CRI has increased but also that the DWI see this as a leveling out of the measure.

As we set out at IAP if the deadband is set at 1.5 for CRI, we could potentially see 75% of the industry in penalty for the headline water quality measure. We believe this to be out of line with DWI expectation ("aspire to continuous improvement and results of at least a level that is equal to or below the national average") and has the potential to drive the wrong message and reduce consumer confidence in the safety of drinking water which is among the best quality water in Europe.

We have therefore proposed that Ofwat sets a deadband for this measure at the industry average level of 3.56.

Metaldehyde risk

At IAP stage we changed our approach to put the underperformance penalty against the overarching Compliance Risk Index measure following on from the ban on the pesticide metaldehyde. Since the submission of our IAP response to Ofwat in April a challenge was made against the legality of Defra's ban on the pesticide metaldehyde (which came into effect in December 2018). The High Court approved an order that formally overturned the ban with immediate effect.

The legal challenge that led to the overturning of the ban was based on how the decision making process was conducted. Defra will now retake the decision and metaldehyde status reverts to pre December 2018, the Court's order confirms that the applications for product re-authorisation remain outstanding, and Defra is required to decide afresh whether to grant re-authorisation for the products or to revoke the existing authorisations, in accordance with Article 46 of the EC Regulation.

In practice this means that metaldehyde is back on the market and the 'sell-out and use-up' periods previously put in place no longer apply.

We do not propose to revert to our original approach of putting underperformance penalties against the individual sub-components of CRI.

We challenge the level of the deadband for this measure across AMP7. There is a significant risk that the continued application of the pesticide metaldehyde will have an impact on our performance in this area that is outside management control. We propose that our deadband for the period of AMP7 remain as we set out at IAP.

In addition we would highlight two areas that will further impact our ability as an industry to achieve the deadband set out for this measure. Firstly the overturning of the metaldehyde ban, secondly the increase in the industry average during 2018 which equates to declining performance.

5.16 Cyber ODI proposal

Over recent years there has been an increasing cyber threat to Operational Technology (OT) and the critical infrastructure it supports around the world. For some time we have been increasing our cybersecurity capabilities in response including introducing a Security Operations Centre and creating an additional OT Security team within our wider Cyber function. The Network and Information Systems (NIS) Directive provides a new regulatory requirement and therefore determines that some specific investment in AMP7 to meet this requirement should be treated as enhancement expenditure. However, we should be clear that the need to invest is driven by the threat rather than regulation. Companies desire to address these risks as much as customers.

Headline proposal

In this representation we set out our proposal for a performance commitment relating the Non-SEMD costs associated with future investments to comply with the NIS directive.

On the basis of the further evidence provided and this delivery ODI, we assume Ofwat will allow the full expenditure for these investments at Final Determination.

Total AMP7 expenditure: £15.1m (£13.4m capex/£1.7m opex)

5.16.1 Proposed ODI measure

Percentage of sites identified in the high risk OT Cybersecurity mitigation plan with actions fully completed.

We will assess the OT Cyber risk at 106 sites and develop a plan of mitigation. This will set out the total number of sites from the 106 which require investment to mitigate risk. Following these investigation, each of the 106 sites will be given a risk rating.

These investigations will take place at the front end of the AMP.

By the end of AMP7, we commit to completing our action plan for 100% of the high risk sites identified.

Proposed ODI type

We propose this is a financial ODI, underperformance performance commitment based on revenue.

5.16.2 Proposed ODI timing

End of period. This is to enable the two necessary steps to be completed:

1. To complete the full investigation of the 106 sites, in order to identify the high level sites; and
2. To allow completion of the required actions to mitigate the risks at identified high risk sites during AMP7

Proposed units of measure

We propose that the effective unit of measure is the % of high risk sites with mitigation actions completed.

Proposed PCL

We propose that the PCL for this measure would be 100% of high risk sites with mitigation actions completed.

For example if we identify through our investigations 50 of our 106 sites are high risk, then we would need to have completed the action plans at all 50 sites to achieve 100%.

If at the end of AMP7 we have completed 40 sites, this would equate to 80% completed. On this basis, 20% of the proposed expenditure would be the subject of penalty.

Proposed cap and collar

We do not propose a penalty cap or collar.

Incentive rate

Based on the average cost per % of site not completed. The value would be subject to the 50% sharing rate.

Therefore £15.1m / 100% = £151k per % point * 50% sharing rate = £75k per % point.

Should Ofwat not allow some of this expenditure in the final determination, the penalty rate should be reduced accordingly.

For example, if we identify 50 high risk sites and only complete the mitigation plan for 40 of those sites (80%), we will return 20% of the funding to customers through the ODI.

20 * £75k = £1.5m penalty

5.17 Unplanned Outage

In this section we make representations on Ofwat's Action ANH.OC.A29

This measure was brought in at the end of the 2017-18 reporting year and for the first two years we have not had in place full systems of reporting to enable us to meet the full definition of this measure. Since the start of 2018-19 we have implemented an improved reporting process, which

has suggested that the level of outage we experience is higher than previously reported against the shadow measure. We therefore propose a PCL of 2.34 for each year, in line with those proposed for companies performing at a level higher than the "good" level.

5.18 Sewer collapses

In this section we make representations on Ofwat's Action ANH.OC.A33.

The table below summarises the progress of exchanges between Ofwat and ourselves on sewer collapses:

Table 15 Progress of sewer collapses measure

	Sept-18 BP	Ofwat IAP	IAP response	Ofwat DD
PCL	5.6-5.5	Justify deadbands and collar	5.6-5.5	5.6-5.5
Type	Underperformance only		Underperformance only	Underperformance only
Underperformance deadband	c. 6.8		c. 6.8	None
Underperformance collar	c. 9.1		c. 9.1	None
Underperformance rate £m/unit	-2.298		-2.298	-2.298

unit = no. collapses per 1,000km of sewer

In our September Business Plan we proposed an underperformance-only package which comprised a PCL more challenging than any performance level we have achieved previously and a challenging underperformance incentive rate. This package would have led us to incurring material underperformance payments had it applied to previous years' performance. In partial mitigation, we proposed both an underperformance deadband and an underperformance collar.

In its Draft Determination Ofwat accepted the challenging aspects of our proposal (our PCL and incentive rate) but has removed the deadbands and penalty collar. Ofwat did not accept the arguments we made in our April IAP response to justify the deadband and collar. Ofwat has cherry-picked the attractive elements of our proposal without recognising that they formed part of a balanced package.

We have compared Ofwat's determination for sewer collapses with its determinations for other companies. We summarise these in the table below:

Table 16 Comparison of Ofwat's determination for sewer collapses

Company	Performance commitment level, incidents per 1,000km of sewer		Under performance collar	Under performance deadband	Under performance rate	Out performance rate
	2020-21	2024-25	unit	unit	£m/unit	£m/unit
ANH	5.60	5.50	-	-	-2.298	-
HDD	5.37	5.37	-	-	-0.002	-
NES	10.69	8.13	-	-	-0.322	-
SRN	5.72	5.48	-	-	-1.843	-
SVE	5.14	5.14	-	-	-1.045	0.345
SWB	17.06	13.99	-	-	-0.195	0.04
TMS	4.00	4.00	-	-	-0.967	0.755
UUW	4.14	3.81	-	-	-0.82	-
WSH	7.20	7.20	10.80	-	-0.14	-
WSX	17.08	13.00	-	-	-0.388	-
YKY	17.93	13.67	-	-	-0.685	-

What we observe is that:

- Ofwat has been largely consistent in removing deadbands and collars for all companies, though we note Welsh has an underperformance collar
- The PCL proposed for Anglian is substantially more challenging than the level proposed for several other companies. It is also better than the 'Good' level of 7.50 determined by Ofwat
- Our underperformance rate is significantly higher than the average for the industry and materially higher even than the next highest
- Some companies have outperformance rates, such that they will be claiming outperformance payments at levels of sewer collapses where we would be incurring very significant underperformance payments.

We note Ofwat's general intention to disallow deadbands and collars and that we failed in our April IAP response to persuade Ofwat to allow them. However, the package of proposals for sewer flooding which we proposed in our September 2018 Plan should reflect the loss of these important mitigations. We therefore propose a revised package.

Firstly, we propose that our PCL should be re-set to 6.1, which is our forecast performance for 2019/20 and not very different from the best ever performance for sewer collapses. Secondly, we propose that our underperformance payment rate should be recalibrated. It was originally determined on the basis of our customers' views of the total sum of money which should be at risk for sewer collapses. We divided this sum by the difference between our underperformance deadband and our P10 performance to derive a rate per unit. If we now divide this sum by the difference between our new PCL of 6.1 and our P10 performance we calculate a revised rate of £1.444/unit.

5.19 Water Quality Contacts

In this section we make representations on Ofwat's Action ANH.OC.C10.

In our Business Plan we highlighted that there was very little support from our customers to reduce the number of water quality contacts that we receive. This was due to our good performance compared to the rest of the industry.

Water Quality Contacts Performance Commitment

Ofwat DD intervention:

> *Intervention required. The company states that its customers told it that they felt that while drinking water quality is an important service attribute (the most important of the company's ten outcomes - 97% of customers taking part in its acceptability research) they are also strongly supportive of the company's proposals to maintain performance at the current levels. We are concerned that the company's proposed service level performance shows no improvement over the period 2020-25 and is less than industry's upper quartile in both absolute terms and upper quartile percentage improvement from 2019-20 to 2024-25. The company has improved on this measure historically also. Therefore we are therefore intervening to drive further improvement in this measure.*

As we stated in our IAP response: 'Customers have accepted our proposed level of performance as part of the package of service they will receive at a price they are prepared to pay'. However we also know customers are prepared to pay extra for additional improvements in service from our societal valuation work. This is the basis of the outperformance incentive rate.

We have calculated our incentive rate, using customer valuation for improving performance. We have included a marginal cost of 0 in the calculation of our underperformance incentive rate to reflect the flat PCL. This is because there is no investment in the plan for further improvement. However, if we do invest to improve performance we should be able to earn a return. This means that the underperformance incentive rate is significantly stronger than the outperformance incentive rate. We conclude this appropriately balances risk and reward in favour of customers.'

We note Ofwat's concern in the DD that customers should receive improved performance in this area, and we are keen to improve quality and service to our customers. We do not, however, agree that a 34% reduction in complaints would be appropriate or achievable. Firstly, on the basis of our customer expectations and their willingness to pay for the improvement which would divert investment away from other areas where our customers expect improvement. Secondly, as we are currently performing within the industry upper quartile. Indeed we received very little support from our customers to reduce the number of water quality contacts that we receive. This was due to our good performance compared to the rest of the industry.

We have reviewed the performance of this measure across the industry using information provided at DD and propose to adjust our performance commitment level to a reducing glidepath over the AMP. The table below shows industry current performance ranked by 2018 performance (note this is a calendar year measure):

Table 17 AMP6 Water Quality Contacts - Performance summary

Company	Actual Performance (includes illness)				2019-20 Forecast	DD PCL 2024-25	DD % Reduction	Comments
	2015	2016	2017	2018				
PRT	0.57	0.67	0.55	0.44	0.45	0.41	8%	
SES	0.65	0.57	0.56	0.59	0.52	0.50	4%	
TMS	0.64	0.61	0.58	0.61	0.60	0.60	0%	
ANH	1.38	1.38	1.23	1.18	1.17	0.77	34%	

SRN	1.29	1.45	1.4	1.23	1.16	0.68	42%	
SEW	2.18	1.98	1.89	1.52	1.62	1.08	33%	South East appears to be forecasting a worsening of its performance in 2019-20
WSX	1.9	1.68	1.56	1.54	1.41	0.93	34%	
SVE	1.95	1.98	1.74	1.64	2.97	1.96	34%	Severn Trent appears to be forecasting a worsening of its performance in 2019-20. It measures total number of contacts rather than per 10,000 customers
YKY	2.15	1.94	1.51	1.64	1.22	0.81	34%	
BRL	1.93	1.8	1.53	1.69	1.37	0.68	50%	
SSC	2.27	1.88	1.53	1.70	1.23	0.76	38%	
NES	1.95	2.02	1.79	1.85	0.80	0.95	-18%	
UUW	1.8	1.84	2.13	2.06	1.85	1.22	34%	
SWB	3.56	3.25	2.81	2.82	1.77	1.17	34%	
HDD	2.72	2.7	2.1	2.87	5.52	3.57	35%	Hafren appears to be forecasting a worsening of its performance in 2019-20. It also is only focussing on one of the elements of the WQCs measure
WSH	3.29	3.48	3.27	3.42	1.41	1.58	34%	
		Greater than "upper quartile" reductions						
		Less than "upper quartile" reductions allowed by Ofwat						

Taking these areas into account and our most recent performance of 1.11 we propose to set PCLs starting at Ofwat's 'Good' performance level of 1.08 contacts per 1,000 served population (2020-2021) taken from the 'Common and comparable Performance Commitments PCL Table'.

We will target improvements on this performance on a decreasing glidepath over the AMP as set out below:

Table 18 Proposed Water Quality Contacts PCL

	2020-21	2021-22	2022-23	2023-24	2024-25
Performance commitment level: WQ contacts per 1,000 served	1.08	1.06	1.04	1.02	1.00

5.20 Percentage population supplied by a single supply system

In this section we make representations on Ofwat's Action ANH.OC.A52 and ANH.OC.C9.

We understand the rationale for Ofwat's proposed intervention to make this performance commitment reputational, with financial incentives applying to the internal interconnection performance commitment. However that performance commitment is proposed to be underperformance only.

The impact of this is that it:

- Removes incentives for us to outperform. This is in the interests of customers as it would improve the resilience of supplies. This is also aligned to Ofwat's own focus on resilience.
- Is counter to the compelling evidence that customers support outperformance incentives for this performance commitment. Our extensive societal valuation programme captured customer willingness to pay for improvements in resilience[5]. On average, customers who took part in our research on ODIs with ICS[6] gave a 7 out of 10 importance to this PC having financial incentives for this performance commitment.
- Increases the asymmetry in incentives towards underperformance. As explained elsewhere we believe this asymmetry towards underperformance is not in line with Ofwat's methodology for PR19. In our context our potential for outperformance is significantly below Ofwat's indicative RoRE range of 1-3%.

On this basis we propose that the outperformance element of this performance commitment be retained.

5.21 Managing Void Properties

In this section we make representations on Ofwat's Action ANH.OC.A45 and ANH.OC.A46.

Performance commitment level

As Ofwat has proposed the inclusion of unmetered properties in our Voids performance commitment, we have updated our performance commitment level for this performance commitment. The glidepath we have introduced reflects that it is more challenging to identify unmetered properties compared to metered properties, and that we will continue to drive down the proportion of properties that are unmetered during AMP7.

We have also reflected our current performance in this glidepath. We have conducted an initial trial to identify our performance against this commitment which showed a performance level of 0.69% (note that this was based on our previous definition which excluded unmetered properties). As this is a new measure with no external or other historical data, this presents the best baseline on which to reflect our performance commitment level. This evidence shows that our PCL is very stretching. We have not altered our performance commitment level for the end of AMP7 as we want to maintain our ambitious target of just 0.25%. We have applied a glidepath to the performance

5 Annex 13c of our September Plan https://www.anglianwater.co.uk/siteassets/household/about-us/pr19-13c-pc-marginal-benefit-mapping.pdf

6 Annex 13d of our September Plan https://www.anglianwater.co.uk/siteassets/household/about-us/pr19-13d-outcome-delivery-incentive-research.pdf

commitment to reach this level from our AMP6 performance, following a step change in performance from our current level before the start of the AMP. This reflects the most recent data on our current performance and the inclusion of unmetered properties in our performance commitment definition.

Table 19 Our proposed PCL - Void properties

	2020-21	2021-22	2022-23	2023-24	2024-25
Performance commitment level (% of household properties)	0.50	0.40	0.35	0.30	0.25

Outcome delivery incentive

We have based our voids performance commitment on the number of occupied "void" properties ("false voids"), where most other companies have a performance commitment based on the overall number of reported voids. In terms of the ODI framework for void performance commitments, Ofwat has inappropriately treated our performance commitment in the same way as other companies, despite it measuring different outcomes.

Common treatment of different performance commitments

The upshot of this is that the stretch proposed in our PCL is not reflected in the DD. This is highlighted by the two examples below which draw on the average end of AMP performance commitment level for those companies that have a performance commitment based on overall void numbers is 2.93% (see table below).

Table 20 Sector comparison - Voids at end of AMP7

Company	Voids at end of AMP7 (% of household properties) – DD
Dwr Cymru	3.50
Northumbrian	4.21
Severn Trent	3.99
Southern	2.06
South West	0.84
Thames	3.00
Yorkshire	3.80
Wessex	2.00
Average	2.93

How our performance commitment differs to those of other companies can be demonstrated through the following examples.

Example 1 – Overall void level decreases below the average performance commitment level principally by macroeconomic factors

Under this scenario, the average company would receive an outperformance payment, largely by virtue of factors outside of a company's control. Under our actual performance commitment, we are required to demonstrate that a proportion of these void properties are genuinely void, to both avoid underperformance payments and earn outperformance payments under the DD. This is not a requirement for the other companies.

Example 2 – Overall void level is at the level of companies performance commitment

Under this scenario, if our performance commitment level aligned with the average company (2.93%) we would receive neither an outperformance nor an underperformance payment. However, we would be required to manage our voids such that the total proportion of false voids in accordance with our performance commitment definition does not exceed 0.25% of household properties. Other companies are not required to undertake the verification of void status.

Tighter cap on ODI rewards

In addition to the greater differential risk to underperformance penalties highlighted above, Ofwat's approach is also more restrictive on our potential for outperformance payments.

We set the performance commitment for voids at a very stretching 0.25% of household properties by the end of AMP7. Ofwat has used the same methodology for our voids ODI as other companies which measure the overall number of voids rather than false voids. The upshot of this is that Ofwat has applied a more stringent outperformance cap to our ODI by virtue of our performance commitment level being closer to the natural cap of 0%. This means that if there were 0 false voids in our entire region our outperformance payment would be £1.3 million. For companies with a performance commitment looking at the total number of voids, it is perfectly feasible that they may outperform by this same amount (0.25% of properties) simply by virtue of a reduction in the number of true voids due to macroeconomic factors. In this case, a company could be eligible for a greater outperformance payment as a result of factors outside of its control than we would be eligible for managing the false void rate down to 0% (which is unprecedented).

We raised in both our September Plan and our April IAP Response that our PC more appropriately reflects the manageable impact of voids on customers' bills than a simple measure of voids. This has not been recognised by Ofwat, and so most companies have a voids commitment for which performance will reflect macroeconomic factors which are outside of companies' control. At DD, this has manifested in greater exposure to financial penalties for Anglian, while potential rewards are extremely limited when compared with other companies. This is by virtue of a) our performance commitment being far more stretching, and therefore closer to the natural cap of 0% voids, and b) the inappropriate treatment of our performance commitment in the same way as other companies that measure a different metric.

Differential treatment of fast-track companies performance commitments

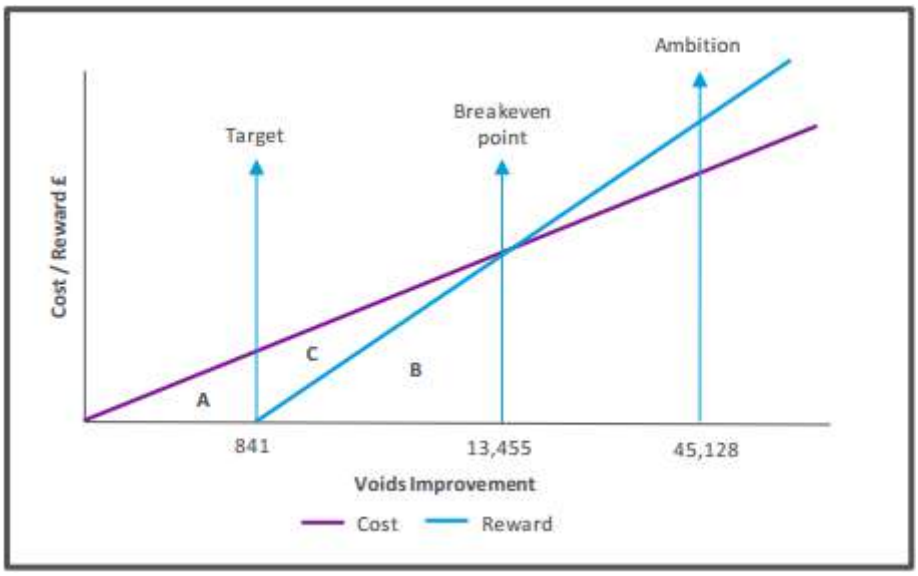
Ofwat has taken a different approach for fast track companies on three areas of void performance commitments:

- Application of underperformance collars
- Application of reputational vs financial ODI
- Symmetry of outperformance and underperformance payments.

Application of underperformance collars

At DD, Ofwat has allowed Severn Trent to apply a reward only incentive to its void performance commitment. In its Business Plan, Severn Trent cites that this is appropriate because bringing void properties into charge increases bad debt costs, therefore a reward rate which mitigates this extra cost is deemed appropriate. By the same logic, reducing the number of voids that are brought into charge reduces bad debt risk, but there is no underperformance payment in place to account for this. Severn Trent use the following graph to highlight that there will be net penalties as a result of bad debt costs if voids improvement is lower than 13,455. What this graph does not show is the flatlining of the rewards line and continuation of the cost line to the left of the graph where voids improvement is negative. Ofwat has essentially allowed a cap on the de facto penalty at 841 improvement, and rewards for the number of voids increasing beyond Severn Trent's current position.

Figure 19 Void - incentive illustration



Application of reputational vs financial ODI

Ofwat has applied outperformance and underperformance payments to slow-track / Significant scrutinty companies' performance commitments. However, it has allowed a reputational performance commitment for South West Water's ODI, despite the performance commitment definition aligning with other companies who have put forward a performance commitment based on total rewards.

Benchmarking of performance commitment level and ODI

United Utilities voids performance commitment reflects the percentage of the connected household properties supplied by United Utilities that have either been verified as occupied or verified as unoccupied/void at year end. After those occupied (and therefore charged) properties, or unoccupied (and truly void) properties have been verified, the remainder will be false or unverified voids. This provides the closest industry comparison with our performance commitment identifying the proportion of properties classified as false voids. Comparing the two performance commitment levels further demonstrates the highly stretching nature of our performance commitment. Whilst there is a slight difference in the way our performance commitments are defined and there will be regional factors at play, these alone are insufficient to explain the difference in PCLs without factoring in that our PCL is more stretching.

Table 21 Comparison of PCLs

Company	PCL at end of AMP (% of households)
United Utilties	3.90
Anglian Water	0.25

Further to this, Ofwat has applied a different methodology to UU's financial incentives, allowing a symmetrical reward and penalty at a significantly lower rate than our DD at £237k per %, rather than our £10.037m/% underperformance, and £5.216m outperformance payments.

How to fix the problem

We are taking forward a new approach with this metric of managing voids. There is no external benchmark in the industry, and historical data is limited to our own performance which demonstrates that our performance commitment shows a significant level of stretch. Therefore in line with Ofwat's approach with other new measures where stretching performance is uncertain (e.g. priority service register for vulnerable customers where DD has disallowed financial incentives as stretching

performance is deemed to be unclear) **a reputational incentive should apply**. This aligns with the approach Ofwat has allowed for South West's performance commitment, and in not applying an underperformance rate to Severn Trent's ODI.

During AMP7 we will collect further data on the ODI and learn from our performance in reducing voids relative to other companies, with a view to applying a financial incentive in AMP8 to this performance commitment (when there will be more performance data available, and smart metering will give greater certainty as to the occupancy of properties).

If Ofwat maintains the view that it must have a financial incentive (inconsistently with the approach taken for South West and Severn Trent), it should recognise the asymmetric exposure to penalties and the underexposure to rewards resulting from Ofwat's DD approach, together with our commitment to have the most stretching performance commitment level in the industry. A **collar should be applied to the underperformance penalty**. This should reflect the fact that our potential for reward is lower and potential for underperformance is greater because we have a more stretching performance commitment. It also recognises that we face greater costs of managing the number of false voids if the macroeconomic environment leads to a greater number of overall voids.

Should Ofwat accept this option we propose a collar should apply at a penalty level which is double the potential reward, in the final year of the AMP. The maximum achievable annual reward is £1.304m, therefore the maximum penalty should be £2.608m (underperformance of 0.26), and the collar should apply at 0.51% each year. Having a steady collar, but a more stretching glidepath during the AMP means our exposure to penalty risk increases during the AMP. This is appropriate given the new and uncertain nature of this performance commitment, the potential to learn from experience, and the greater opportunity to build in void identification as we roll out smart metering across our region.

5.22 Priority services for customers in vulnerable circumstances

In this section we make representations on the element of Ofwat's Action ANH.AV.A3 that relates to the PCLs for actual contacts. We do not make representations on the rest of this action.

In our September Plan we proposed to increase the proportion of our customers on our priority services register to 12.8% (compared to Ofwat's minimum target of 7% adopted by the majority of the industry). As part of this package we proposed a financial outperformance mechanism whereby we would receive a financial reward for any achievement above this industry leading target, 100% of which would be ring-fenced and reinvested to support customers in vulnerable circumstances.

At DD, Ofwat rejected our proposal for an outperformance-only mechanism and gave this performance commitment a reputational-only incentive. It cited a lack of information to understand how stretching our target is, and insufficient evidence of customer benefit from the outperformance payment.

We believe both that customers would benefit from the proposal to reinvest any reward achieved through this measure and that we have proposed a target far more stretching than the mandatory 7% level. However, we also recognised in our plan that there wasn't clear customer support for any particular incentive type, and we understand Ofwat's preference for us to align our incentive with the rest of the industry.

We note Ofwat's proposed targets for attempted and actual contacts. We have engaged with distribution network operators in the energy sector and note that two DNOs have been operating at an actual contact rate of 30%. Our in-depth customer engagement showed strong customer support for a 'tell us once' approach which avoids the need to explain their situation multiple times to multiple organisations. We should proactively engage with customers to check in and understand if their circumstances have changed. However, to enforce a high response rate would require multiple contacts and could be seen as insensitive, unnecessary and intrusive where permanent conditions exist such as blindness, dementia, or a terminal illness. Given this external benchmarking information and our customer engagement, we consider that the performance commitment level should be revised to reach 30% by year 2, rather than 50%.

We are therefore revising our PSR performance commitment to have a reputational-only incentive, and to propose a change to the PCL for actual contacts element of performance commitment, as per the table below.

Table 22 Updated PCL for Priority Services

	2020-21	2021-22	2022-23	2023-24	2024-25
Performance commitment level: Actual contact (%)	15.0	30.0	30.0	30.0	30.0

5.23 Supporting customers in vulnerable circumstances (qualitative)

In this section we make representations on Ofwat's Action ANH.OC.A55, ANH.OC.A56, ANH.OC.A57 and ANH.OC.A58.

Supporting customers in vulnerable circumstances (qualitative)

In the DD, Ofwat proposed to alter our performance commitment of an independent panel assessment on the delivery of support to customers in vulnerable circumstances with the following changes:

- Requiring third party assurance on the panel's independence;
- Requiring confirmation of the organisations/ individuals to be appointed to the panel;
- Addition of an underperformance payment rate of £0.37m per panel score;
- Removal of the outperformance cap.

We have reviewed our vulnerability plans in light of developments that have taken place over the year since we submitted our September Plan. Our September Plan recognised that a single quantitative measure (such as the number of customers on PSR) would not reflect our support for customers in vulnerable circumstances overall, and that it would be in the interests of customers to reflect overall vulnerability support in our performance commitment package. We therefore proposed a panel performance commitment which would provide an independent assessment of our vulnerability support in the round.

Our DD includes a number of measures to support customers in vulnerable circumstances which were not included in our September Plan. The DD includes performance commitments covering :

- The proportion of customers on the priority services register;
- The proportion of customers on the PSR that we have attempted to contact over the previous two years;
- The proportion of customers on the PSR that we have actually contacted over the previous two years;
- Achieving the BSI standard for inclusive service provision;
- A 'help to pay when you need it' affordability measure for supporting customers in financially vulnerable situations;
- A value for money performance commitment.

Together, these provide assessment of our vulnerability support in the round, both on a quantitative and qualitative basis. In particular, the BSI performance commitment includes an assessment of our commitment to customer services and inclusivity, understanding of risk factors, our use and management of customer data, and our policies and procedures, among a wide range of further criteria which heavily overlap criteria that the proposed panel would use to make its assessment. By definition, the BSI performance commitment will include third party assurance, whereas the Panel commitment will require extra third-party assurance, in particular as to the independence of the panel.

Given the overlap between the Panel and the broader suite of performance commitments, there is limited additional value to be added for customers through retaining the panel performance commitment. We are therefore removing this performance commitment from our Plan.

5.24 Helping those struggling to pay

In this section we make representations on Ofwat's Action ANH.AV.A1.

We note that at DD, Ofwat has removed our performance commitment relating to customers receiving support through our Extracare service, and replaced it with a new measure that relates to customers receiving support through a range of our affordability support packages.

We note that the number used to derive our performance commitment level for this measure is based on table 4 of our September Plan (replicated below).

Table 23 Helping those struggling to pay - our Plan proposals

Live Customer Accounts (thousands)	AMP7 average per annum	Description
Forgiveness Scheme	9.6	Includes schemes such as "Back on Track", the Anglian Water Assistance Fund and a scheme that combines the two to help customers become water "Debt Free in 2 Years"
Breathing Space	38.3	Payment holidays where the customer's account is put on hold if they have short term cashflow issues, to allow customers flexibility and time to pay
Concessionary Tariffs	210.2	A suite of discounted tariffs including Watersure, Aquacare Plus and our social tariffs LITE20, LITE40, LITE60 and LITE80.
Extra Case Assessments	313.4	Affordability assessments including income maximisation, third sector signposting, tariff and payment plan reviews
Leakage Allowances	25.1	Retrospective one-off allowances awarded to customers who suffer a leak on their private supply
Charges Holiday	1.3	Charges suspended for customers in vulnerable circumstances, such as those who go into long term care or hospitalisation
Temporary Instalment Plans	128.8	Includes affordable weekly, fortnightly or monthly instalment arrangements for customer in arrears, Court Plans, Payment Schemes with Debt, DWP Direct Payments
Total number of schemes	**726.6**	
Total unique customer accounts	**475.0**	

Two errors in the calculation of the PCL of this performance commitment require rectification.

Firstly, the definition of the performance commitment refers to the number of unique customers, but the number used in the PCL is derived from our non-unique count of customers presented in the table above. Our actual unique customers for these schemes is 293,933, as some customers will receive assistance through more than one scheme.

Secondly, the figure used represents an AMP7 average per annum figure (as highlighted in the header row of the table above). Therefore, the PCL does not reflect the glidepath for each year that we used to generate this average. The table below reflects the correct figures for the PCL, reflecting the actual number of unique customers and the glidepath to increase the numbers receiving support during the AMP.

Table 24 PCL - Corrected actual unique customer numbers

	2020-21	2021-22	2022-23	2023-24	2024-25
Performance commitment level (number)	281,653	288,958	292,577	296,618	310,161

5.25 AIM

In this section we make representations on Ofwat's Action ANH.OC.C16.

Ofwat has removed the deadbands from our proposed AIM ODI. Although Ofwat did not include this in its actions and interventions appendix it has since confirmed this in a query response, saying "This removal was intentional and should have been included in the actions and interventions appendix." Ofwat did not provide any justification or rationale for this removal along with the query response.

The purpose of the AIM is to reduce abstractions environmentally sensitive sites, at times of low flows. We believe that this deadband was appropriate as it allowed for an underperformance penalty when abstractions were above past levels, but did not penalise us for matching those historic levels. We proposed a PCL of a reduction in abstraction of 87Ml for one of our abstractions that has, in recent years, shown lower abstractions compared to the historic levels used to set the baseline (following Ofwat's methodology). Had we followed the methodology strictly a PCL of 0Ml would have entirely been reasonable for this abstraction, however we moved the PCL and introduced the deadband to reflect what recent performance suggested was achievable. By removing the deadband, we will now be penalised for abstracting water to provide to our customers that would have been considered a reduction against the baseline calculated using the Ofwat methodology.

For this reason we propose to retain the deadband that we proposed in our Plan.

5.26 Smart metering

In this section we make representations on Ofwat's Action ANH.OC.C12.

Detail on our representations on the smart metering performance commitment can be found in the separate smart metering sections of our representations:

- Chapter 8 Cost Assessment Enhancement - Section 8.3 Enhancement: Review by Investment Area
- PR19 Draft Determination Smart Metering Cost Adjustment Claim
- PR19 Draft Determination Supplemental Evidence - Chapter 2 Smart Metering

5.27 Value for money

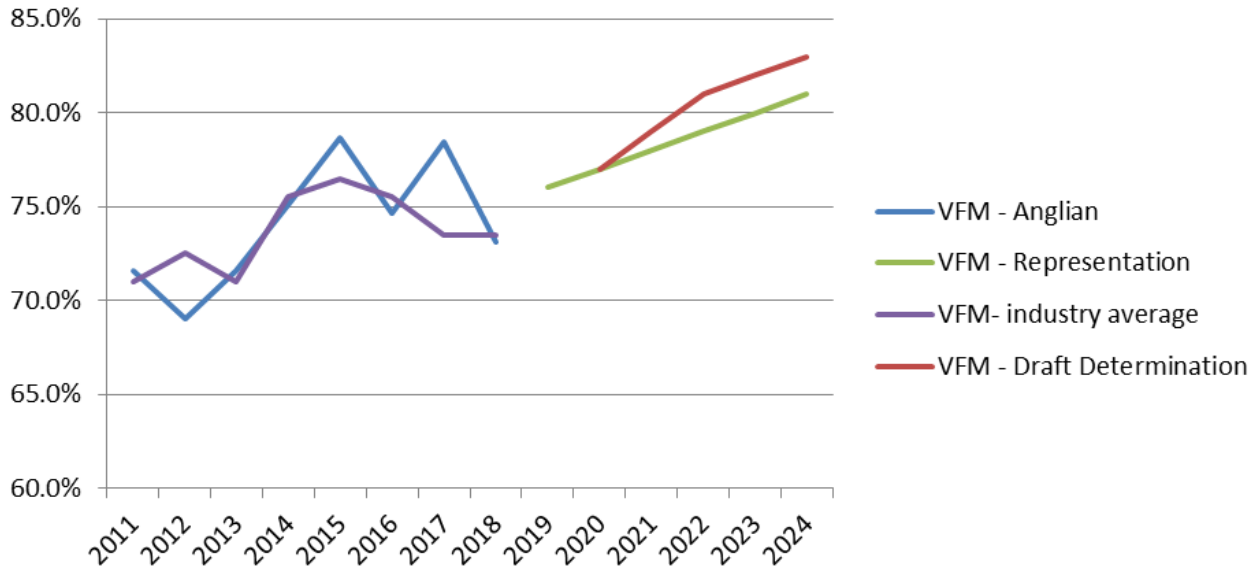
In this section we make representations on Ofwat's Action ANH.OC.A1.

In line with our approach to not making representations on Ofwat interventions that do not materially affect our Plan, we have chosen to not make representations on the inclusion of a PC for value for money.

We have reservations about the level of stretch that Ofwat has included in the PCLs. These are based on achieving current frontier level by the end of AMP7. Based on current sector wide trends in value for money satisfaction, we don't consider that this will be achievable. The PCL that Ofwat has proposed for 2024 has only been bettered twice by any company since 2010.

We have therefore proposed a slightly less stretching profile, based on an improvement of 1% point per year from a baseline of 76% (our AMP6 average score).

Figure 20 Proposed AMP7 PCL comparison - Value for Money measure



6 COST ASSESSMENT - OVERVIEW

6.1 Totex Overview

6.1.1 Key changes to Ofwat's approach to cost assessment since the IAP

Ofwat has made substantial changes to the way in which it defined Botex for wholesale in the DD. It has *removed* enhancement opex from Botex and *added* the capex associated with a number of enhancement categories linked to growth and new development. The re-scoped collection of costs is defined as Botex Plus.

The enhancement categories now included in Botex Plus are listed in table 25 below.

Table 25 Enhancement components moved into Botex at DD

Water	Water Recycling
Addressing low pressure	New development and growth
New developments	Growth at sewage treatment works
New connections	Reduce flooding risk for properties

In this section we use the word 'growth' to refer to those components of enhancement whose capex has been moved into Botex Plus at the DD.

The impact of these changes on Ofwat's allowances is substantial. The figures are set out in table 26 below.

Table 26 IAP and DD Wholesale Botex / Botex Plus allowances

	IAP (Botex)	DD (Botex Plus)
Base opex	Yes	Yes
Enhancement opex	Yes	No
Capital maintenance	Yes	Yes
Enhancement capex	No	Some growth components
Total Ofwat allowance (£m)	**3,212**	**3,648**

Wholesale excluding third party services and PDRCs

There is a corresponding reduction in the allowance for enhancement costs. These are set out in table 27 below.

Table 27 IAP and DD Wholesale Enhancement allowances

	IAP (Enhancement)	DD (Enhancement)
Enhancement opex	No	Most - but not growth
Enhancement capex	Yes	Most but no growth
Total Ofwat allowance (£m)	**1,879**	**1,269**

Wholesale excluding third party services and PDRCs

Enhancement opex has been moved out of Botex in the DD so that enhancement could be assessed on a totex basis. We welcome this change which is in line with our IAP representations, supported by analysis by Reckon.

Unfortunately, as the capex for the components set out in Table 25 was moved into Botex, the enhancement opex associated with those components was moved out with no corresponding home for them to be assessed. Accordingly, the enhancement opex relating to these components was omitted altogether. We note that Ofwat has recognised the error and committed to rectify it in the Final Determination.

We have adopted Ofwat's definition of Botex Plus in the analysis below.

6.1.2 Ofwat's DD cost challenge

Through its cost assessment processes, Ofwat has estimated that the efficient costs of delivering the outcomes in our plan are significantly lower than those we proposed in our September Plan and revised in our April IAP response. The gap between Ofwat's assessment and our own expenditure proposals comprises a mixture of scope and efficiency challenges.

Our response

We disagree with Ofwat's overall cost assessment and throughout this August plan we identify areas where Ofwat has made errors. We also provide additional information to justify the scope of our proposed investments and challenges to Ofwat's conclusions on efficiency.

In response to Ofwat's challenge, we have also reviewed the entirety of our business plan. This section of our plan sets out at a high level the outcome of that exercise while subsequent sections provide further detail.

Table 28 below sets out our revised Business Plan both in the aftermath to the Initial Assessment of Plans (IAP) and now the DD.

Table 28 Summary of our revised plan and changes

Cost category	Sept 2018 Table 1 (£m)	April 2019 Table 1 (£m)	Aug 2019 Table 1 (£m)
Base opex	2,568	2,568	2,520
Capital Maintenance	1,067	1,070	1,054
Base Botex	**3,635**	**3,639**	**3,574**
Enhancement Growth opex	14	14	15
Enhancement Growth capex	702	702	647
Botex Plus	**4,351**	**4,355**	**4,236**
Other Enhancement capex	1,783	1,740	1,457
Other Enhancement opex	211	190	212
Totex	**6,345**	**6,284**	**5,905**

Wholesale excluding third party services and PDRCs

In total we have reduced the totex value of our plan by £380m. The key changes in our Representation compared to our April IAP Response are set out in table 29 below.

Table 29 Key changes in our revised Business Plan

		Non growth enhancement		
£m	Botex Plus	Water	Water Recycling	Total
Reductions	-159	-29	-70	-258
Transfer of Elsham to DPC		-122		-122
Transfer of Smart Metering	42	-42		0
Total	**-117**	**-193**	**-70**	**-380**

We set out the detail of the changes to our Botex and Enhancements programmes in chapter 6 Cost Assessment - Overview and chapter 7 Cost Assessment - Botex Plus respectively.

Table 29 above shows the transfer of a proportion of smart metering costs from enhancement to Botex. This item was highlighted in Ofwat's DD analysis of our smart metering programme and we have accepted this amendment to our Plan.

Ofwat has suggested that the Elsham treatment and transfer scheme could be delivered through the Direct Procurement for Customers (DPC) route. We also accept this suggestion and have reduced our Water Capital Enhancement programme accordingly.

Table 30 below shows the make-up of our final revised plan:

Table 30 Our Representation proposed expenditure

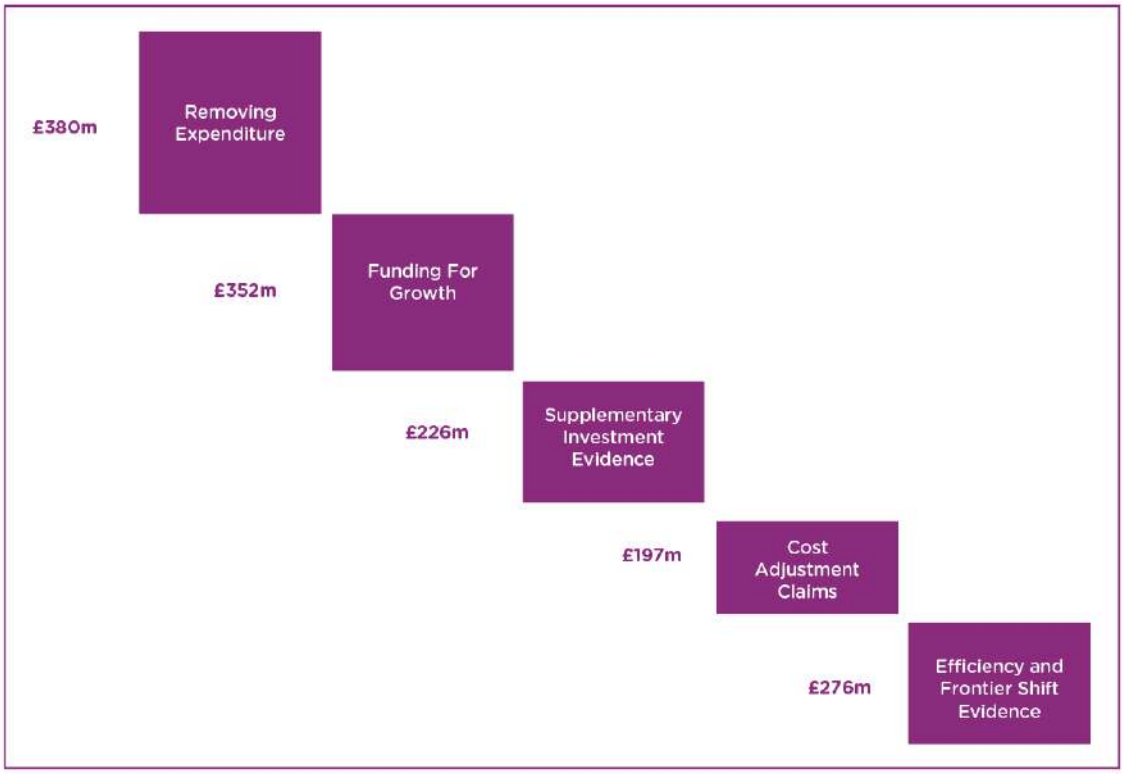
	Water resources	Water Network Plus	Water Recycling Network Plus	Bioresources	Total wholesale	Retail	Total
Botex	237	1,419	1,610	462	3,729	403	4,132
Enhancement	82	971	1,290	16	2,359	0	2,359
RPE	2	68	97	14	180	25	205
Continuing productivity	-10	-76	-96	-12	-195	-14	-209
Affordability challenge	-11	-70	-71	-17	-169	-7	-176
Totex excluding PDRC and third party services	**300**	**2,312**	**2,829**	**464**	**5,905**	**407**	**6,312**
PDRC	2	20	25	10	57	7	64
Third party services	8	38	7	2	56	0	56
Totex	**310**	**2,370**	**2,861**	**476**	**6,018**	**414**	**6,432**

6.1.3 Totex Waterfall

The following diagram sets out the main areas where we have reassessed our totex requirements and responded to Ofwat's DD approach. These are:

1. Removing expenditure - This relates to areas where we have responded to Ofwat's DD challenge to expenditure. We also set out the areas where we have applied further challenge ourselves to our plan. We also include in this section the removal of investment associated with Elsham, which will now be subject to the DPC process. Chapter 8 Cost Assessment - Enhancement and Chapter 13 Focus Area - DPC of our Representation provide further information.
2. Funding for Growth - Chapter 10 Focus Area - Growth set outs a critique of Ofwat's DD approach to growth and proposed solutions to ensure appropriate funding is available to support sustainable growth. We provide further evidence of the drivers and intensity of growth in our region. We also set out the detail of our proposed customer protection mechanisms for growth.
3. Supplementary investment evidence - We present additional evidence to support the need and quantum of investments in areas where Ofwat's DD has removed proposed expenditure. This specifically includes responding to Ofwat's views on WRMP (Chapter11 Focus Area - WRMP). This evidence is referenced in chapter 11 and the Supplementary Evidence accompanying our response.
4. Cost Adjustment Claims - We set out updated evidence for leakage, and sludge transport where Ofwat's methodology does not capture our specific circumstances. We also provide new information for Smart Metering. These are set out in our PR19 Supplementary Evidence document and Cost Adjustment Claims for Leakage, Sludge Transport and Smart Metering.
5. Efficiency and frontier shift evidence - This chapter present arguments and evidence in support of alternative assumptions to those used in the DD for the building blocks which determine Ofwat's view of efficient costs across the Price Review as a whole. The evidence presented relates specifically to RPE, future productivity, company efficiency factors and the WINEP Programme level efficiency.

Figure 21 Totex evidential waterfall



6.1.4 Real Price Effects

Ofwat's approach

In its IAP Ofwat decided there was no case to make an adjustment to companies' costs to reflect Real Price Effects (RPEs). In its DD Ofwat has revised its view and included an RPE adjustment for wages with the promise of a true-up to reflect the difference between real wage growth assumed in the determinations and outturn manufacturing wage growth.

Our response

We are pleased that Ofwat has reviewed its assessments of RPEs. In our response to the IAP we drew attention to a number of flaws in the Europe Economics analysis which Ofwat relied on for its conclusions and we recognise that Ofwat has attempted to address some of those flaws.

Our expenditure proposals in this August 2019 Plan include adjustments for RPEs in wholesale Botex, enhancement and retail. Despite the change in Ofwat's approach to RPEs, there are still substantial differences between us in the valuation of these adjustments. The Botex proposals of our September Plan included £114m of expenditure attributable to RPE and Ofwat's DD assumptions allow us £42m[1] according to our own calculations.[2]. Below we set out the features of Ofwat's analysis which explain the differences between us and which we suggest Ofwat should correct for the Final Determination.

(a) Labour share of totex

A key aspect of Ofwat's proposals on labour RPEs is the suggestion that wages account for only 35p in every pound of totex. This 35% figure is noticeably lower than the percentage values that have been used in previous water industry price reviews. Table 31 below picks out the assumed input mixes in two comparable pieces of analysis: the NI Utility Regulator's PC15 price control determination for NI Water and the Competition Commission's (CC's) AMP5 price controls for Bristol Water.

Table 31 Assumed water industry input mixes

	Utility Regulator		CC
	Opex	Capex	Opex (excl. power costs)
Labour	50%	45%	59%
Materials	10%	25%	12%
Plant & Equipment	-	25%	-
Chemicals	2.5%	-	3%
Power	12.5%	-	-
Rates	10%	-	12%
EA Charges	5%	-	6%
Bad debt	5%	-	6%
Other	5%	5%	6%

Sources: Utility Regulator (2014), Water & sewerage services price control 2015-21 final determination, annexes O & S; Competition Commission (2010), Bristol Water plc, annex K.

1 We note that separately Reckon has estimated RPE at DD to be worth £44m
2 We note that in its assessments of enhancement costs Ofwat has made adjustments for neither RPE nor productivity as it says these are separately reflected in its assessment methodology. We accept this approach.

Table 32 below provides a cross-check comparison to the share of labour in the CC's and Ofgem's calculations of RPEs for the UK's electricity distribution networks.

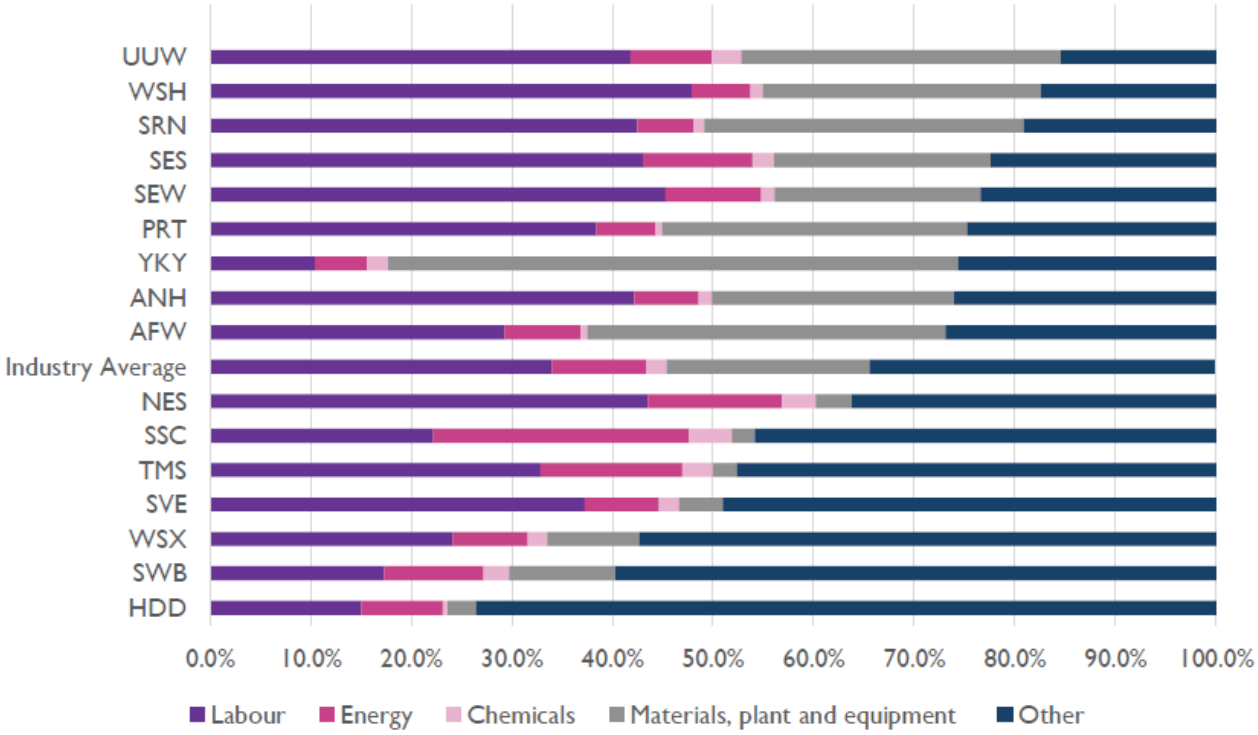
Table 32 Assumed energy network industry labour shares

	CC		Ofgem
	Opex	Capex	Totex
Labour	77%	53%	67%

Sources: Competition Commission (2014), Northern Ireland Electricity Limited price determination; Ofgem (2014), RIIO-ED1 final determinations for the slow-track electricity distribution companies: business plan expenditure assessment.

Ofwat's 35% figure comes from a chart in Europe Economics' report, which is reproduced below as Figure 22 below. We understand that the source data for this chart is a 2018 industry data submission to Ofwat.

Figure 22 Companies' submitted cost breakdowns



Source: Europe Economics

The stand-out feature of this chart is the very large 'other' category. At the industry level, approximately 35% of costs have not been allocated to a specific input type. At an individual company level, companies have been unable to allocate between 15% and 65% of their expenditure.

When set alongside the past assumptions in Tables 31 and 32 (above), the blue bars in Figure 22 above cast doubt on the accuracy of Ofwat's claimed 35% labour share of totex. Our impression from the conversations we have had is that companies had different understanding of what Ofwat was expecting from the June 2018 table – for example in terms of how far companies were to go into contractor costs and allocate expenses between labour, materials, plant, etc. It may also have been the case that companies approached this part of the submission with different levels of detailed analysis.

We set Ofwat's 35% estimate alongside our own estimate of the proportion of total expenditure attributable to labour. In completing App24, and similar tables from earlier in the price control process, we sought to 'see through' outsourced arrangements to the underlying cost categories in a way which was not universally adopted in the industry. Table App24 shows that the share of labour within our expenditure varies between price controls from 37% in water resources to 50% in bioresources. A weighted average estimate across all of wholesale is 43%.

Our view is that Ofwat needs a more complete understanding of the industry input mix in order to be able to make an appropriate allowance for labour RPEs. Companies should be asked to resubmit their tables, with clarified guidance on the need to identify the labour element of hired and contracted services.

(b) Choice of Labour index

Ofwat proposes to base its RPE allowance for labour costs using 'manufacturing wages'. However, it is not clear what measure of 'manufacturing wages' Ofwat has in mind;

The report by Europe Economics references data from the ONS' Annual Survey of Hours and Earnings. This release contains multiple time series for "manufacturing wages" which are broken down, among other things, to:

- mean and median earnings
- hourly, weekly and annual pay
- all employees, full-time workers and part-time workers.

From these series, we would suggest that median weekly pay for full-time workers is likely to give the most robust measure of wage growth for Ofwat's purposes. We would especially emphasise the unsuitability of industry-level measures of wage growth for all employees given the sensitivity of such metrics to changes in the mix of full- and part-time jobs.

There is a question, however, about whether Ofwat ought to be using manufacturing wages or an economy-wide measure of average wage growth. The figure below plots wage growth for manufacturing workers and all employees between 2011 and 2018. The chart shows that manufacturing workers saw faster wage growth between 2012 and 2016. However in 2017 and 2018, manufacturing wage growth was slightly behind economy-wide wage increases. Over a seven-year period, growth in manufacturing wages exceeded growth in economy-wide wages by around three percentage points (16.5% vs 13.7%).

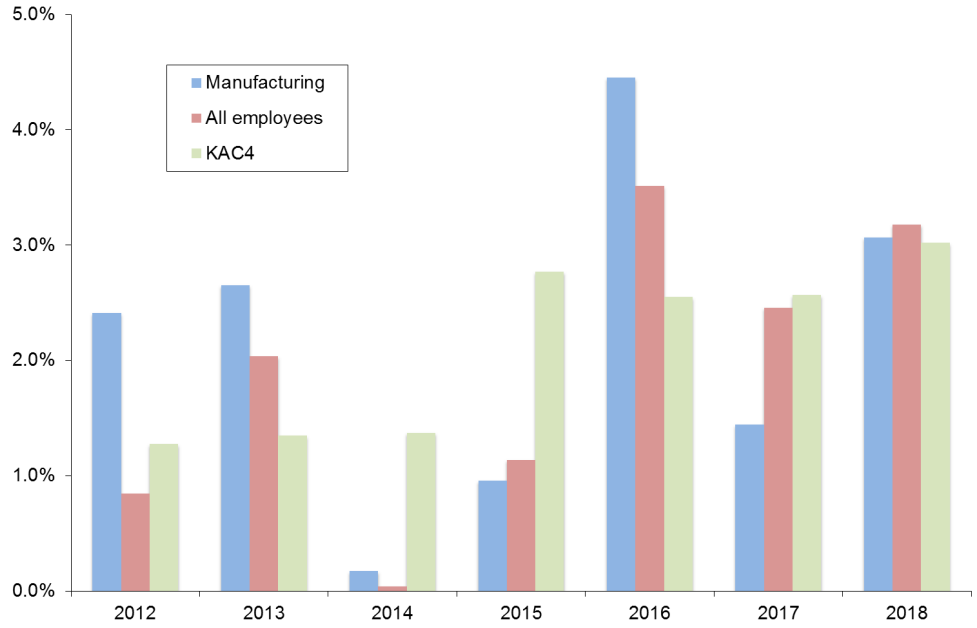
Figure 23 Annual growth in mean weekly pay for full-time workers

Source: ONS

It is difficult to say that past experience gives any grounds for thinking that there will naturally be a positive or negative differential between manufacturing wages and economy-wide wages during AMP7. However, we are uncomfortable with the suggestion that manufacturing wage growth is the best proxy for water and sewerage industry wage growth. We note that water and sewerage companies are not classified by the ONS under SIC codes as a component part of the country's manufacturing industry, but are treated as a separate industry in its own right. Similarly, the construction sector, where most supply chain partners sit, is also classified as a separate industry. At a time when Brexit-related uncertainties are to the fore, our worry is that manufacturing wages will be extremely sensitive to trade volumes and that there could easily be a disconnect over the next few years for wage growth in more domestic-focused industries. For this reason, our instincts are that an economy-wide measure of wage growth will be less volatile and a better overall match to water industry wage increases.

In our own RPE analysis we used the 'average earnings' measure from the OBR Fiscal Outlook and we commend this for consideration as an economy-wide wages index. An alternative would be the ONS' average weekly earnings total pay index for the private sector (ONS code: KAC4), which is published on a monthly basis as part of the ONS' Labour Market Statistical Bulletin. This measure has the benefit of excluding public sector wage growth, addressing the objection that Ofwat rightly raises that economy-wide measures cover both private- and public-sector wage growth. The figure below plots recent annual wage growth on this measure. The lower volatility displayed by this measure compared to manufacturing is noteworthy.

Figure 24 Annual wage growth



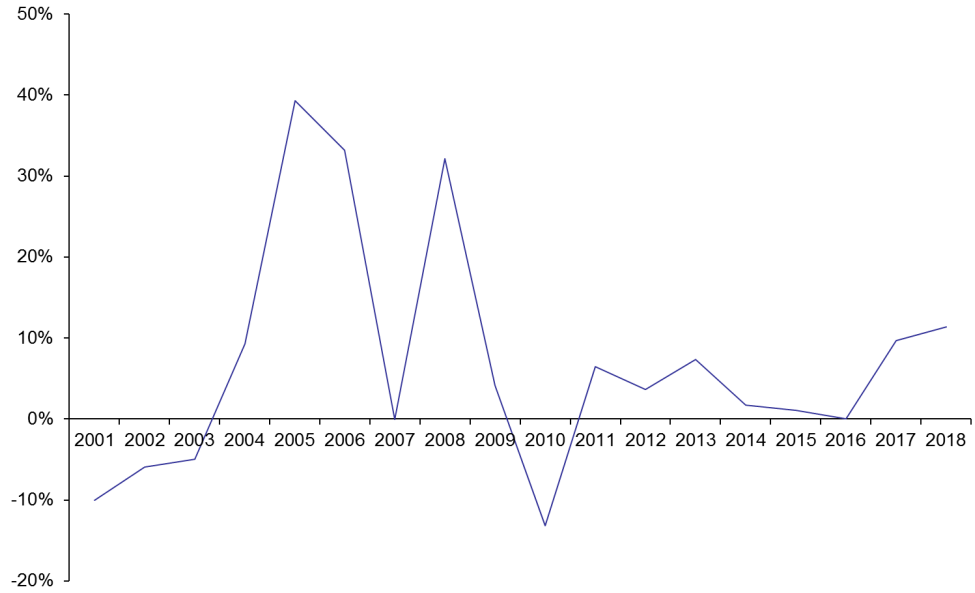
Source: ONS

(c)Adjustments for a power-related RPE

Despite Europe Economics' recommendation that Ofwat should consider allowing for both labour and energy input price inflation in its allowed revenue calculations, Ofwat elected not to bring forward any sort of energy RPE in its DD. One reason for Ofwat's stance is that power costs are a comparatively smaller part of the industry cost base. While this is true, the real terms increases in industrial electricity prices in the latest BEIS forecasts are sufficient to warrant an adjustment.

Moreover, where a reasonable assumption of the margin of uncertainty around wages is perhaps ±2 percentage points, the margin of uncertainty around power costs is potentially of the order of at least ±10 percentage points. As evidence for this, the figure below gives historical data for power purchase costs.

Figure 25 Annual change in electricity purchase costs (p/kWh) for a user with annual demand of between 8.8m kWh and 150m kWh



Source: BEIS

Our expenditure on power in wholesale in 2018/19 was £78m, comprising 8.5% of wholesale totex. Given the materiality of this cost item and the margin of uncertainty around its cost, we think there is a good case for a power RPE and would be willing to accept an ex post true-up mechanism.

(d) True-up

We note Ofwat's intention to apply a true-up to the difference between assumed and outturn wage growth rates. The DD is intended to be a full and complete statement of the final regulatory contract Ofwat is minded to publish in December but the detailed form of this true-up is not included in our DD. Given this omission, companies should have an opportunity to comment on the form of the proposed true up before it is published as part of the Final Determination in December through a formal consultation during the autumn. Our preliminary view is that Ofwat should true-up the whole of the RPE – i.e. the difference between annual wage growth using an appropriate economy-wide measure and out-turn CPIH inflation against the RPE allowance made by Ofwat in its final determination. The true-up amounts should logically be factored partly into AMP8 allowed revenues and partly into RCVs in accordance with the average AMP7 PAYG ratio. In the Chapter 7 Cost Assessment - Botex Plus we also set out why productivity should be part of this true-up.

(e) Changes to our RPE estimates we have made since IAP

We incorporated estimates of RPE in the cost proposals of our September 2018 plan. For our Representation we have refreshed our RPE assumptions, reflecting updates to economic forecasts in the twelve months since we made our original estimates. We have returned to the original data sources for our nominal price change forecasts and made no methodological changes. We have not revisited our weighting of cost types as we do not expect these to change materially in the short or medium term.

Following this review, we propose changes to nominal price change forecasts for the following cost types, set out in table below.

Table 33 The source of RPE updates

Cost type	Data source	Change
Labour	OBR Economic and Fiscal Outlook	The 2019 OBR report forecasts higher labour rates than the 2019 report we used for the first plan. In contrast to Europe Economics statement that the OBR tends to over-forecast age growth, more recently it has under-forecast and revised its forecasts upwards.
Energy	BIES Energy and Emissions Projections	The projections have changed materially and non-systematically: first two years of the AMP are lower; the mid year is almost the same; the last two years are higher
Rates	Valuation Office Agency	From April 2018 rates increases are indexed annually to CPI; we assumed continued indexation to RPI in our September 2018 plan
Abstraction charges	Environment Agency	These charges are held nominally; we assumed automatic indexation to RPI in our September 2019 plan

The impact on these changes by year, cost type and price control is set out in Table App24a.

As can be seen in table below, the net effect of these changes is to reduce marginally our RPE estimates compared to the ones in our original plan. The impact of our RPE assumptions in the September 2018 plan was to add £239m to our wholesale costs and £25m to Retail. We did not change our RPE assumptions for the April IAP response. However, wholesale RPE fell to £235m due to the minor reduction in totex, mainly related to excluding methaldehyde. The impact of our RPE assumptions in this Representation is to add £180m to our wholesale costs and £25m to Retail, representing an overall fall of £59m on our September 2018 Plan.

Table 34 Movements in our RPE forecasts

	Value of RPE adjustments (£m)		
£m	September 2018 Plan	Representation	Change
Water wholesale	104	70	-34
Water Recycling wholesale	136	111	-25
Retail	25	25	0
Total	264	205	-59

6.1.5 Continuing productivity improvement

Ofwat's approach

Ofwat has applied a continuing productivity challenge of 1.5% per annum to all costs included within Botex Plus. This challenge, which significantly exceeds the corresponding figure which has been applied by utility regulators across various sectors and is acknowledged by Ofwat as 'strong', is supposedly justified on the basis of the improved efficiency companies will derive from its outcomes and totex framework. The impact of Ofwat's challenge is to remove £157m from our overall DD cost allowance.

Our response

Ofwat's conclusion is largely based on a report they commissioned from KPMG and Aqua Consultants. We made a range of observations on the KPMG / Aqua analysis when it was first shared in March 2018 and repeated those observations in our April 2019 IAP response. While Ofwat has responded to stakeholders' IAP representations on its productivity challenge, and the analysis on which it is based, Ofwat has not addressed the three key points we made in March 2018 after first seeing the KPMG analysis:

- There is confusion between totex outperformance (which is dependent on regulators' determination of expenditure) and efficiency
- There is no clear transmission mechanism between the regulatory innovations to which future productivity improvements are ascribed and those improvements, and
- The overall conclusions are not credible when considered alongside the marginal areas where those regulatory innovations are likely to take effect.

On balance, we remain unconvinced and have continued to apply a challenge of 1% per annum to all of our wholesale costs.

Given the concerns we raised have not been addressed by Ofwat in its DD, we stand by our arguments on continuing productivity and do not repeat them in detail here. However, we will comment on one area where Ofwat appears to have been highly selective: its justification of the marked incongruity between its 1.5% figure and the much lower level of economy-wide productivity growth. Ofwat's only response to this challenge is the following statement:

Europe Economics' considers that its forecast for frontier shift remains appropriate as it considers both the more recent growth in the post crisis period, and also growth over the longer term … Europe Economics notes that the lower bound [in its range of 0.6% to 1.2%] for frontier shift is based on productivity growth in the post crisis period and so takes account of more recent lower growth, although it notes that comparator sectors have tended to exhibit stronger growth than the economy as a whole. Overall we consider that Europe Economics forecasts of frontier shift are based on an appropriate time period as they consider growth over more recent years and the longer term.

Europe Economics' report states that:

… although total economy productivity growth has been lagging behind pre-crisis averages, productivity growth in certain sectors has recovered.

…

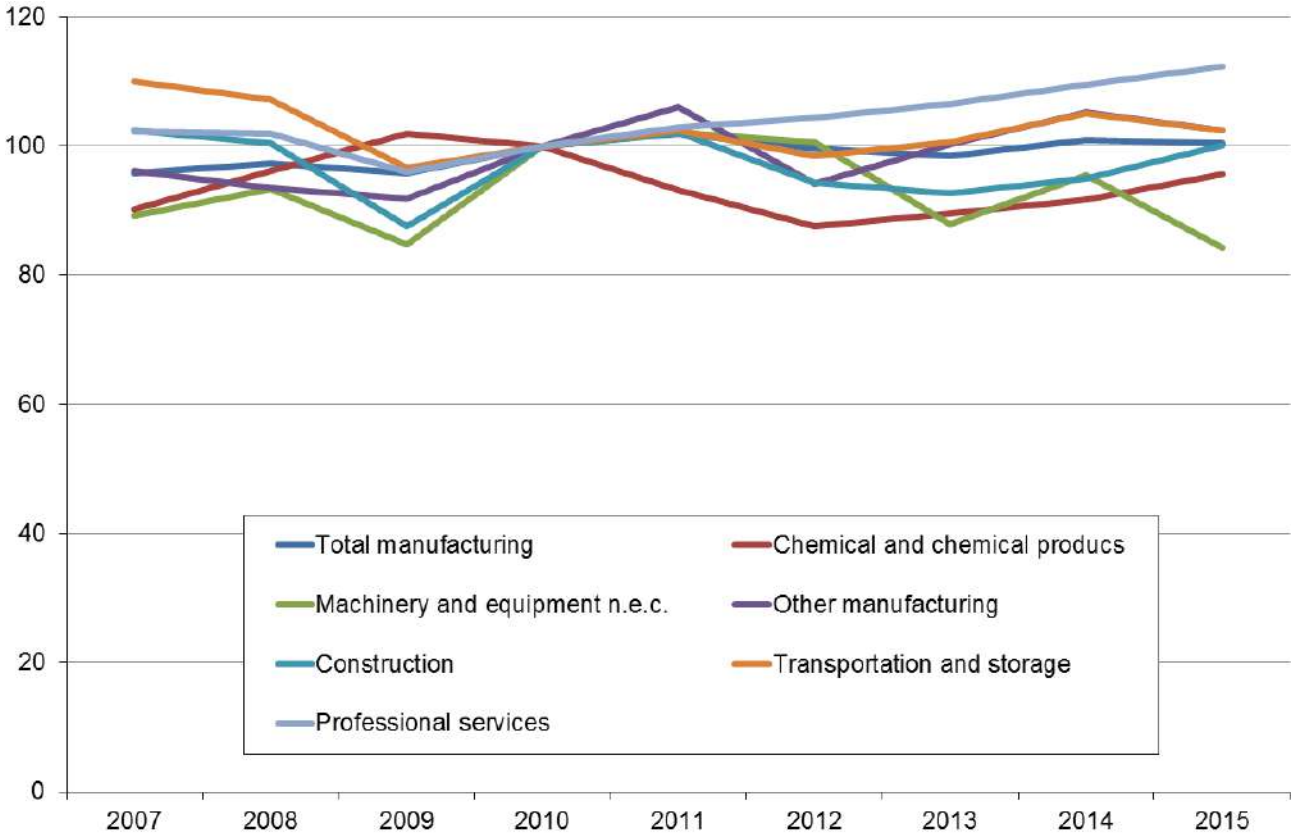
Our recommended lower bound for wholesale is 0.6 per cent. This is based on the post-crisis period (NACE 2 data for 2010-2014) during which the economy as a whole has been characterised by low productivity growth relative to pre-crisis years

…

Our recommendation for the upper bound for wholesale is 1.2 per cent. In determining an upper bound, we take note of Ofwat's approach of setting stretching performance targets for the water companies. As such, we focus on the TFP growth performance of the stronger performing comparator sectors … We note that even in the post-crisis figures, there are three comparator sectors clustered close to our upper bound ("Machinery and equipment n.e.c.", "Other manufacturing; repair and installation of machinery and equipment" and "Professional, scientific, technical, administrative and support service activities", with TFP growth rates of, respectively, 1.0, 1.3 and 1.5 per cent).

This conclusion that there has been productivity growth in comparator sectors since the global financial crisis is based on a very selective reading of the data. Figure 26 below sets out the source data that Europe Economics is drawing from.

Figure 26 Value-added total factor productivity (2010 = 100)



Source: EU KLEMS

It can be seen straight away that:

- productivity in the comparator sectors was broadly unchanged between 2007 and 2015
- between 2010 and 2015, there was meaningful productivity growth in only one of the seven selected industries – professional services.

Europe Economics' contradicting statements, as set out above, stem wholly from its choice of 2009 as a base year. (Note that although Europe Economics labels its post-crisis period "2010-14", it is actually measuring productivity in 2014 vs 2009). This is the point at which output per unit of labour, capital, etc. employed was at its most depressed due to falling sales during the recession and when firms had not had the opportunity to fully respond to lower demand by adjusting headcounts and asset stocks. A 2009-14 average productivity growth rate therefore mixes the sharp bounce-back that there was from the temporary low in 2009-10 followed by broadly flat productivity growth thereafter.

The importance of this point is further illustrated in table 35 below, by showing the average productivity growth rate that one can calculate with slightly different choices of start and end dates.

Table 35 Average annualised gross output total factor productivity growth rates

Sector	2009-14	2010-15	2007-15
Total manufacturing	0.3%	0.3%	0.2%
Chemicals and chemical products	-0.8%	-0.3%	0.3%
Machinery and equipment n.e.c.	**1.0%**	-1.3%	-0.3%

Other manufacturing	**1.3%**	0.2%	0.4%
Construction	0.7%	0.0%	-0.1%
Transportation and storage	0.8%	0.2%	-0.4%
Professional services	**1.5%**	1.4%	0.7%
Average	**0.6%**	0.0%	0.1%

Source: EU KLEMS.

In our view, the lower bound in Europe Economics'/Ofwat's range should really be the ~0% average shown in shown at the bottom of the middle column of this table (and also achieved in the same period by the construction sector), not the 0.6% in the preceding column.

In addition, it is not appropriate for Ofwat to cherry pick the stronger performing comparator sectors (denoted by bold text). The industries in table 35 (above) collectively give what is sometimes called a "nature of work comparator", in that the sectors, in combination, match up to the basket of activities that a water and sewerage companies must undertake in order to provide services to customers. It is not appropriate to challenge companies to match the productivity growth achieved by a subset of the comparators, given that this rate of productivity improvement is only realistically achievable in a subset of companies' activities.

Ofwat justified its exceptional level of continuing productivity challenge on the basis of the introduction of the outcomes and totex regime. We take this to mean that companies will be able to achieve productivity achievements beyond levels they (or indeed others) achieved prior to AMP6 because the outcomes and totex regime affords them levels of flexibility and freedom not previously available to them. It suggests that companies' capacity to achieve productivity gains has until now been constrained by an excessively restrictive regulatory regime.

One of the characteristics of this pre-outcomes regime was a focus on the delivery of outputs rather than outcomes. And yet we notice that in its DD Ofwat has included a number of mechanisms designed to dissuade companies from failing to deliver outputs for which it has provided funding. For us, these include ODIs where we will return funds to customers if we fail to install the specified number of smart meters, deliver named WINEP schemes and deliver our internal inter-connection programme within its specified timelines. The combined value of funds associated with these three ODIs is £262m.

Furthermore, given the difficulties Ofwat has clearly found in estimating base and enhancement costs, and the different approaches it has taken to doing so, it is questionable whether AMP7 is a true totex regime.

There is a clear inconsistency between factoring in the purported benefits of a new regime while at the same time struggling to implement that regime and imposing the same restraints as a previous regime which is being held responsible for impeding delivery of those benefits. If Ofwat's argument for higher productivity from new opportunities is to be sustained it must be made only in the context of a regulatory framework in which those opportunities are genuinely available.

One of the new proposals in Ofwat's DD is the decision to apply the 0.5% per annum totex-driven productivity growth assumption to all enhancement costs. Leaving to one side the poor justification that Ofwat has for this overlay generally, the application to enhancement cost allowances is particularly weak.

Essentially, Ofwat is saying that enhancement budgets can be lowered by 0.5% per annum (i.e. by ~3% by 2024/25) as companies continue to respond to Ofwat's new-ish totex incentives. However, it is wholly unclear why a company should be able to reduce the budgets for individual projects in the way that appears to be providing for in its DD. If totex incentives have any impact on expenditure, savings will likely manifest themselves in the form of companies not taking on capex

at all but incurring opex instead. This is something very different from a 0.5% to 3% reduction in the efficient cost of specific Ofwat-backed schemes, like building a new reservoir or a new treatment works.

Finally, we noted in Ofwat's DD documents the linkage it made between productivity improvements and real wage growth. The documents recognise that in the long-term wages grow only as a consequence of productivity improvement, so we expect productivity and wages to change in tandem. A key issue at IAP was the gap between Ofwat's assumptions on these economic indicators: a very optimistic productivity challenge of 1.5% per annum alongside inconsistent real wage growth of 0%.

However, while the updated RPE approach provides a better acknowledgment of the linkage between productivity and wage growth, the RPE true-up will undermine this linkage unless productivity also has a true-up. Consider the scenario where wages (as measured by Ofwat's chosen wages index) stagnate due to Brexit while productivity growth continues at the sluggish rate of recent years. Companies would lose the value of their labour RPE via the true-up with no mechanism in place for them to be compensated for Ofwat's productivity error.

6.1.6 Cost sharing incentive

We note the changes to the cost sharing incentive which Ofwat has made at the DD. The revised approach on the slope of the cost sharing curve and the way in which Ofwat proposes to combine companies' September 2018 and August 2019 cost proposals are clear.

What is less clear is how scope changes will be taken into consideration in the calculation of the totex ratio. At previous reviews scope changes were removed from both the company and Ofwat view of costs as 'two-sided adjustments'. It is not clear what the approach will be at PR19. In response to a question at the cost efficiency webinar on 25 July Ofwat implied that scope changes made by Ofwat would be applied in a one-sided manner, with negative consequences for companies' totex ratios. However, we note that where Ofwat has determined that a project should be delivered via the Direct Procurement for Customers (DPC) route it has made the adjustment two-sided.

The approach Ofwat takes is particularly important given the scope challenges Ofwat has made to aspects of our WRMP. Contrary to statements made at the cost efficiency webinar ('we have not challenged companies' scope where the scope is underpinned by statutory obligation or where the need for an investment was identified at the WRMP'), substantial components of our WRMP have been excluded by Ofwat in the DD allowances. Elsewhere in this document, and in our letter of 13 August 2019 to David Black, we have made representations on these exclusions and we look forward to the full scope of our WRMP being included in our Final Determination. Given that we wrote our plan in expectation of receiving approval from Defra to publish our WRMP, following a lengthy period of public consultation, we have clearly acted in good faith. We would expect the value of the scope reductions to be reflected as two-sided adjustments should the exclusions remain at Final Determination.

7 COST ASSESSMENT - BOTEX PLUS

7.1 Introduction

This chapter sets out our position on base expenditure as follows:

- It begins by setting out some important points of definition of base expenditure, Botex and Botex Plus, and explaining the significant differences in Ofwat's approach between IAP and DD;
- We explain the reductions we have made to Botex between the IAP and this, our DD representation, and why a comparison between Botex at IAP and Botex Plus at DD is misleading. It also describes some of the specific Botex challenges and reductions to Botex that we have made
- We review the comparison of historical Botex costs with those we propose for AMP7. With the move to an appropriate AMP6 to AMP7 comparison, and comparing true Botex across the two periods, our increase is just £47m, or 1.3% for AMP7 over AMP6. This is a very different picture to the £481m increase that Ofwat calculated at IAP.
- We review Ofwat's assessment of Botex Plus and the models it has used to derive that assessment.
- We then examine the efficiency challenge on Bioresources;
- We conclude by looking specifically at the approach to cost allowances for sludge liquors.

7.1.1 Base expenditure: definitions

Since the IAP, Ofwat has created a new concept of Botex Plus, which comprises Botex less enhancement opex plus certain categories of enhancement capex (including growth). In this chapter we use the terms Botex and Botex Plus carefully since they refer to substantially different concepts. We consider Botex to be the more appropriate measure of base expenditure for the reasons set out in chapter 6. It also enables comparison with historical Botex and reconciles more readily with the format of the prescribed expenditure tables. Much of our discussion therefore concerns Botex which, for the avoidance of doubt, we define as opex (less enhancement opex) plus capital maintenance.

7.1.2 Our concerns over Botex Plus

We view Ofwat's substantive change to its base cost econometric models between IAP (Botex) and DD (Botex Plus) as being deeply unsatisfactory on three grounds.

i) The change was almost entirely unheralded and at a late stage of the regulatory process. It has overturned more than 25 years of regulatory precedent with no discussion and no adequate rationale.

ii) The existing models do not contain cost drivers which are capable of capturing significant parts of the enhancement capex moved into Botex Plus. No new cost drivers were proposed to address this critical shortcoming.

iii) The Botex Plus models treat new and existing customers as if they have the same impact on costs despite their obvious differences.

If Botex Plus was intended to address the shortcomings of Ofwat's IAP approach to growth cost modelling, then it has taken a flawed approach and made it worse.

We analyse these points in depth in section 7.3.1 below.

7.2 Our revised Botex plan

We have revised our Botex plan compared to our April IAP response to reflect latest analyses and updated information. The result of this revision is that our Botex has fallen by £103m between our April IAP Response and our August 2019 Representation. This reduction is offset by the transfer of £42m from enhancement to base for smart metering, giving a net Botex reduction of £61m. Table 36 below sets out the key elements of this. This is followed by descriptions of lines in the table.

Table 36 Key elements of the base botex reduction

	£m
Water Recycling challenges	15
Energy Management	25
Management and General changes	10
Additional challenges	48
Reduction in RPE	5
Total Reduction	**103**
Smart metering costs moved to base from enhancement	-42
Total net reduction	**61**

7.2.1 Water Recycling challenges (£15m)

The reduction of £15m falls under two headings

i. Real time cache reductions (£7m)

In AMP6 we have chosen to re-invest efficiencies we made through the programme into reducing pollutions through innovative technology-based solutions. The AMP6 reinvestment programme has delivered the enterprise architecture needed to host the digital solutions internally, thus reducing future hosting, licence and integration costs. The AMP6 pump station monitoring, control and automation programme, along with our enhanced data science capability, has allowed us to generate greater value from fewer new instruments.

In our Representation we have challenged the extent to which monitoring, control and automation capabilities are dependent on new data sources. We believe there is now an opportunity to gain greater insight from existing data, meaning fewer new instruments are needed on pumping stations in AMP7. Additionally, we have used our near-real time modelling programme to better pinpoint locations where monitoring in catchments will offer benefit, resulting in a further reduction in the number of instruments required. Finally, we have identified opportunities for efficiency and reduced cost through:

- the removal of external hosting
- licence and integration costs following early delivery of new IS and OT capabilities
- reduce unit cost instruments through greater collaboration with suppliers .

This has enabled us to removed £7m of capex from our submission.

ii. Descriptive to numeric programme (£8m)

A key factor determining the type of permit required to discharge treated effluent from water recycling centres (WRC) is the size of the WRC, as measured by the population equivalent of the load it treats. The Urban Wastewater Treatment Regulations set out the size thresholds which determine whether WRCs required simple descriptive permits or numerical permits. Our September Business Plan included a programme of work to investigate 21 WRCs where we believe we may need to convert permits from descriptive to numeric as a result of catchment growth during AMP7. Prior to this new permit application, we need to understand the treatment performance of these WRCs. Currently, small population descriptive sites receive a more limited sampling regime than those with existing numeric permits.

In September 2018 we expected that 60% of these sites would be able to achieve the numeric permits without investment. In lieu of the latest sampling programme results, cost benefit analysis was used to select eight named schemes for improvement projects.

The results of ammonia samples since September 2018 on the 21 sites indicate that 80% of these sites should be able to achieve the likely numeric permits for ammonia without investment. On this basis we have used cost benefit analysis to reduce our totex allowance for this programme and selected four named schemes.

7.2.2 Energy Management (£25m)

We have an established energy management programme to offset the natural increase in power demand which comes with aging assets and to maintain energy consumption at historical levels. We have reviewed this programme and identified that there is potential to go beyond merely maintaining consumption at historical levels and move to reducing consumption. We have therefore removed expenditure on the basis that future investment in this area should be self funding.

7.2.3 Management and General changes (£10m)

We have reviewed our Management and General needs for AMP7 and have identified that a programme of activities to support the digital capabilities of our people can be absorbed within existing budgets, either by re-prioritising needs or delivering efficiencies to offset the costs.

7.2.4 Additional challenges (£48m)

We have reviewed areas where we felt additional expenditure was required to meet future challenges and decided to take them as additional efficiency challenges. More detail on the additional challenges is provided in the table commentary on totex changes.

7.2.5 Smart metering costs moved to base from enhancement (+£42m)

We plan to roll out smart meters in targeted geographical areas to deliver the best value to our WRMP objectives. This will result in us replacing some existing 'dumb' meters before they have reached the end of their natural life in order to maximise future customer and environmental benefits.

In its DD, Ofwat has concluded that we should only receive £15m out of £72m for dumb-to-smart meter replacement before the end of the life of the dumb meters. We are submitting a Cost Adjustment Claim for £42m to cover, through Capital Maintenance allowances, the cost of the additional meter replacements. This is not captured in modelled base costs.

The net result of Ofwat's DD approach and our response is that our enhancement programme reduces by £42m and our Capital Maintenance (and thus Botex) increases by an equal amount.

7.2.6 Reduction in RPE (£5m)

The capex values set out in table 36 (above) were quoted before taking account of Real Price Effects. The £5m figure is the RPE associated with the removed capex.

As previously stated, comparing the Botex in our April IAP response with the Botex Plus in this August 2019 Plan is confusing (and arguably irrelevant) because the two terms represent different concepts. However, Table 37 below reconciles the key changes between our April IAP Response and our August 2019 DD Representation.

Table 37 Our revised Wholesale Botex Plan

	£m
April IAP response (Botex)	**3,843**
Enhancement opex removed from Botex	(204)
IAP base Botex	**3,639**
Changes to base Botex	(61)
Enhancement Growth added into Botex	659
August 2019 Plan (Botex Plus)	**4,237**

Wholesale only excluding third party services and PDRC

7.3 Our revised Botex plan compared to historical expenditure

In its IAP, Ofwat compared our Plan Botex to our historical baseline expenditure. For this purpose it assessed our historical baseline as our Botex expenditure over the five years to 2017/18, inflated at CPIH. Using this baseline, Ofwat found that our Business Plan represented an uplift of £481m on our historical baseline. This figure was then presented as evidence to support Ofwat's conclusion that our plan was inefficient.

We agree that comparing planned and historical expenditure is reasonable and that companies should explain significant variances. In our April IAP response, we outlined why the appropriate comparison was not the five years up to 2018 but instead ought to be our AMP6 expenditure. An AMP to AMP comparison would then recognise the substantial Botex expenditure we planned for the remaining two years of the current price control period and provide a more appropriate like for like assessment.

In contrast, if AMP6 were the comparator rather than the most recent five years, our perceived Botex gap would fall by almost 50% from £481m to £251m.

Ofwat recognised our argument and at DD is now comparing the proposed AMP7 expenditure with AMP6 ('Securing Cost Efficiency' Technical Appendix page 7). In table 38 below, we show how our revised August 2019 Plan compares with our historical expenditure, now defined as AMP6 spend. In this table, we make the comparison on the basis of Botex (opex plus capital maintenance) plus enhancement opex rather than Botex Plus to maintain consistency with Ofwat's IAP analysis.

Table 38 Our revised Wholesale Botex plan compared to historical expenditure (before removal of enhancement opex)

	AMP6			DD Representation		
	Opex	CM	Botex	Opex	CM	Botex
Water (£m)	1,145	425	1,570	1,319	407	1,727
Water Recycling (£m)	1,302	659	1,961	1,428	646	2,120
Wholesale (£m)	2,447	1,084	3,531	2,747	1,054	3,801
Changes (£m)				300	-30	270

Change %				12.3%	-2.8%	7.6%

Table 38 (above) indicates that our August Botex plan remains materially higher than our historical expenditure. However, this is because the table shows opex as published in Tables WS1 and WWS1 of the Business Plan. In these tables opex includes enhancement opex, which is (a) not part of Botex and (b) highly material, at £224m. In table 39 below, we set out a version of table 38 (above) from which we have excluded enhancement opex.

Table 39 below shows that the underlying increase in Botex between AMP6 and AMP7 (that is, excluding enhancement opex) is just £47m, representing an underlying increase in Botex of just over 1% compared to AMP6.

Table 39 Our revised Wholesale Botex plan compared to historical expenditure (excluding enhancement expenditure)

	AMP6			DD Representation		
	Opex	CM	Botex	Opex	CM	Botex
Water (£m)	1,145	425	1,570	1,169	407	1,576
Water Recycling (£m)	1,302	659	1,961	1,355	646	2,002
Wholesale (£m)	2,447	1,084	3,531	2,524	1,054	3,578
Changes (£m)				77	-30	47
Change %				3.2%	-2.8%	1.3%

We note that our AMP6 opex included additional opex associated with the AMP6 enhancement programme. We have not removed those sums since they do not disappear at the end of AMP6; we continue to incur them and they become part of our AMP7 base. For transparency, we evaluate our enhancement opex in AMP6 at £55m.

7.4 Ofwat's assessment of Botex Plus costs

7.4.1 Ofwat's general approach

At the IAP in January, Ofwat set out the models it had built to assess companies' Botex costs. For its DD, Ofwat has made relatively few changes to its models (with the exception of its significant re-definition of modelled costs, which we discuss below). These changes comprise:

- change of approach to the forecasting of certain cost drivers
- the inclusion of a population sparsity driver to the bioresources models
- the use of updated historical data for booster pumping stations, following an information request.

We made many comments about Ofwat's Botex models in our response to the IAP. Our comments were informed by analysis by Professor David Saal and Dr Maria Nieswand of Loughborough University. In summary, we said:

- The rules Ofwat has set itself for modelling have resulted in models which are far too simple to capture the complexity of our industry and result in a failure to take account of critical factors
- There is no proper triangulation, by which we mean a range of models which differ meaningfully from each other, including a puzzling lack of an integrated waste water model
- The use of random effects models means that errors arising from model mis-specification are misinterpreted as inefficiency
- The lack of time dummies implies efficiency and technology are static over the period of the panel, making the models inappropriate for forecasting future expenditure.

Ofwat has taken into account some of our comments regarding cost drivers and driver forecasts but otherwise Ofwat's models are largely unchanged. We asked Professor Saal to review Ofwat's DD models. His conclusion is that the various issues, model mis-specifications and omitted variables bias identified in his and Dr Nieswand's review of the IAP models remain unaddressed in both the water and water recycling models. Our significant concerns about the quality of Ofwat's base models and the reliability of cost forecasts derived from them therefore remain.

Professor David Saal has observed that the Ofwat water Botex models include features which deliver a systematic downward bias in their forecasts of efficient costs. We asked Professor Saal to assess the impact of these biases in the Ofwat water models and to calculate the cost forecasts which would result if the restrictions which caused them were to be removed. He fed into this work the insights he has gained from working with us in the development of alternative water cost models. Professor Saal's work shows that appropriate corrections to the Ofwat models give rise to substantial increases in the cost forecasts for Anglian Water Botex.

We include Professor Saal's report as Annex 6a to our Representation.

7.4.2 Modelling Botex Plus

As we have already discussed, the one very material change Ofwat has made from its original IAP models is to substantially change the scope of costs covered by its models, with the exclusion of enhancement opex and the inclusion of certain categories of enhancement capex.

We pointed out in our April IAP response that, while there has always been an element of enhancement opex in business plans, levels were small in the context of overall plans. In contrast, for companies which have embraced the totex approach (including ourselves), the extent of enhancement opex at PR19 is of a greater order of magnitude than previously as would be expected.

In line with the philosophy of the totex approach, which Ofwat has promoted, many plans now include opex solutions in place of what previously would have been enhancement capex solutions.

We pointed out that including enhancement opex in Botex, as was the case at IAP, had two unwelcome impacts:

- The enhancement opex inevitably appeared as "inefficiency" as there were no cost drivers included to address the costs, and;
- Ofwat's policy focus of promoting innovative least cost whole life cost solutions was undermined.

We therefore agree with Ofwat's exclusion of enhancement opex from Botex for the DD.

On the other hand, we do not consider it appropriate that Ofwat has moved some enhancement capex into Botex Plus. We outlined the weaknesses with Ofwat's unit cost enhancement capex models for growth at IAP. However, the solution it has reached at DD, to bring growth costs into Botex Plus, is significantly worse than the previous approach at IAP.

We do not accept the argument that because growth is an on-going process, it can be included in base. As we explain in our growth cost adjustment claim, for us growth in AMP7 involves much more than just the incremental cost of connecting additional properties.

In its redefinition of Botex as Botex Plus, Ofwat has added £3.5bn of costs across the industry (after Ofwat reallocations) in the form of the various elements of enhancement capex. This represents about 10% of industry base costs. At the same time, it has removed £1.4bn of enhancement opex from Botex, representing 3.8% of industry base costs. Together, the definition of modelled cost has been re-defined by nearly 15%.

Firstly, from a procedural perspective we are surprised that Ofwat has made such a fundamental change without any prior consultation or notice.[1]. Moreover, we find it extraordinary that Ofwat believes the modelled costs can be changed so significantly in scale and nature without the requirement for any accompanying reformulation of the models.

The objective in creating an econometric model is to articulate the economic forces and interactions that explain observed expenditure levels across a range of companies with different demographic, environmental and asset characteristics. In applying essentially the same models to Botex and

1 Other than a very brief discusion about Botex Plus models on page 12 of Ofwat's March 2018 Cost Modelling Consultation

Botex Plus costs, Ofwat is saying that the same economic forces that it considered at IAP explain the cost of routine opex and capital maintenance activities to deliver a base service also explain an additional £3.5bn worth of other activities that since 1989 have, without dispute, been regarded by all stakeholders as enhancement activities worthy of completely separate analysis.

Most of the new capital enhancement drivers that have now been moved into Botex Plus relate in some way to changes in the number of properties served, or growth. In the Botex models the following drivers could be said to control for the number of properties served: number of properties, length of sewer, length of water main, load at sewage treatment works and sludge production. When used in the IAP Botex models, these drivers were being used to explain the variation between companies of different sizes in the day-to-day costs of providing services to existing properties. Now, in the Botex Plus models, those same drivers are also being used to explain the costs of the various activities involved in connecting new properties to companies' networks.

One significant problem with this is that the costs of growth are not incurred at the same time as new connections are made. Network reinforcement activities typically have to be made at the outset of large developments, such as Alconbury or Northstowe where over 10,000 new homes are planned for each, whereas the associated connections may not be made until several years later. Thus the Botex Plus models cannot forecast the required costs until long after they have been incurred.

Secondly, and more importantly, the Botex Plus models treat new and existing connections as having the same effect on costs, when the reality is very different. The single coefficient for each driver delivers an allowance which can be regarded as having one component for existing properties and another for new properties. That coefficient represents the average balance across the industry between existing and new properties. Companies with a higher proportion of new properties will therefore be insufficiently remunerated for their growth costs, whereas low growth companies will be over- remunerated, resulting in a discriminatory outcome.

This concern is borne out by our analysis of industry allowances. Because of the changes made between the IAP and the DD, it is difficult to compare our IAP Botex allowances with our DD Botex Plus allowances. However, we have attempted to deconstruct the gap between our plan and Ofwat's Botex Plus allowances into Botex and the newly added enhancement drivers. We note that the biggest growth gaps are seen in companies where we would expect high rates of growth, meaning that those companies are disproportionately impacted by Ofwat's change in methodology. This point is powerfully made by our Focus Area - Growth, section 10.3: Shortfall in Growth Allowances.

For ourselves, our assessment is that our Botex allowance has improved somewhat whereas our growth gap has substantially increased since IAP. Since we are a high growth company, this illustrates this general effect.

Our concerns about the allowances for growth made by the new Botex Plus models are supported by the fact that the marginal allowances for growth implicit in the DD econometric models are far below the historical levels of enhancement capex per new connection (based on our decomposition calculations described above). We illustrate this in table 40 below.

Table 40 Botex Plus growth allowances compared to historic enhancement costs

All companies	Marginal allowances for new connections under DD approach (annual)	Marginal allowances for new connections enhancement capex using IAP figures	Historical industry growth-related enhancement capex per new connection (2012-13 to 2017-18)
Water	£55-£234	£1,126	£1,128
Wastewater	£76-£150	£1,644* - £2,026*	£1,939

Source: Reckon report: *Review of Ofwat's treatment of growth-related expenditure in PR19 draft determinations*, page 28

Even allowing for the fact that the marginal allowances are annual, clearly these levels amount to a value significantly lower than the historical industry average and provide evidence that the flaws in the approach we set out above are demonstrated by a sense check of the results they produce.

7.4.3 Our proposals for Final Determination

We support the removal of enhancement opex from Botex and its separate assessment. We say more on the assessment of enhancement costs in Chapter 8.

We regard the addition of certain capital enhancement costs to Botex and the creation of Botex Plus as a serious flaw, which is compounded by the continued use of models which originally purported to be capable of forecasting Botex.

To remedy these clear flaws, Ofwat should remove these enhancements, abandon the concept of Botex Plus and seek to assess Botex for the reasons set out above. In re-assessing Botex we urge Ofwat to consider again the comments we expressed on the IAP models in our April IAP Response, including the corrections applied by Professor Saal.

As regards the flaws with the IAP growth models, we would recommend that the costs of those enhancement items removed from Botex Plus are assessed by means of deep dives. The rationale for this recommendation is set out in 'Focus Area - Growth'.

Model drivers

As noted above, the wholesale Water Botex models have not changed between IAP and DD in terms of the structure of the individual models. There were no changes to the model drivers for the water models. The DD water model catch up was marginally lower than that at IAP.

In Water Recycling, the Sewage Collection, Sewage Treatment and Bioresource Plus models also have the same structure as the comparable models at IAP. One of the two Bioresource models, BR1, has an additional cost driver added, the percentage of load treated in bands 1-3. This sits alongside Load and Sludge produced in what was one of the least sophisticated models used by Ofwat at DD.

We are pleased that a further rurality factor has been introduced into the Bioresources model to capture sludge transport costs. We have always identified that our sludge transport costs are exceptionally high because of the rurality of much of our region and the related higher costs of transporting raw sludge from 1,120 water recycling centres to sludge treatment centres. With our September 2018 business plan we submitted a cost adjustment claim, in case Ofwat's cost models did not adequately forecast the exceptional costs of sludge transport. We estimate the value of the new driver to our bioresources cost allowance is £17.5m. The basis of the £17.5m figure is shown in table 41 below.

Table 41 Bioresource uplift from new cost driver

Bioresource Models	AMP7 (£m)
Allowance from IAP Botex models	348.6
Allowance from DD Botex Plus models	366.1
Change	17.5

The total value of our cost adjustment claim for sludge transport was £42m. We have therefore re-submitted an updated claim as the additional £17.5m allowed by the modified bioresources model does not capture the full additional cost that we incur.

7.4.4 Driver values

At both IAP and DD, Ofwat has followed the approach it took at PR14 to cost driver values for its Botex econometric models. By and large, rather than use company forecasts as set out in companies' Business Plans, Ofwat generated its own driver values.

We considered this approach to be unsatisfactory at PR14 and at IAP. Unsurprisingly, we still find it unsatisfactory. Ofwat's approach in essence assumes that the future will be like the past. For a company such as Anglian which faces a period of rapid growth, this approach will inevitably underestimate the potential for growth. Because of Ofwat's ad hoc approach to generating its forecasts, there are illogical discontinuities within the forecasts. For example, despite sewage load being dependent on property numbers, while wastewater property numbers are based on ONS forecasts of households, sewage load forecasts are based on the historic trend for load volumes.

What follows in this section are comments on key cost drivers within the Wholesale models.

Property numbers

For us, the most important change Ofwat made at DD to its IAP approach to estimating Botex cost driver values was with respect to estimating property numbers.

Consistently throughout the PR19 process we have followed the DEFRA / EA guidance that the WRMP should be based upon Local Authority forecasts for new properties. Given that our WRMP and Business Plan are both cut from the same cloth, it would have been internally inconsistent not to use the same property forecasts within our Business Plan.

To be absolutely clear, the numbers we used for forecast property growth were drawn from those published Local Authority Plans, and did not include any additional numbers linked to the projected further increases in housing that may result from the plans for the Oxford-Cambridge arc.

At IAP, Ofwat forecasts for property numbers (both Water and Water Recycling) were computed by trending the seven years up to 2017/18 forward across the following seven years up to the end of AMP7. Given that the seven year period included the nadir of the post financial crash property bust, such an approach unsurprisingly generated figures which were significantly lower than our own forecasts: the IAP forecast AMP7 growth was only 47% of the company forecast for Water and 38% of the company forecast for Water Recycling.

In the DD, Ofwat changed its approach to use a forecast of new households generated by the Office for National Statistics (ONS) in 2016, a forecast that Government has suggested should only be a first step in any household growth projection. Using the ONS numbers means that for Water we now are using a forecast which is 53% of our growth forecasts; for Water Recycling the figure is 56% of our forecast growth.

Our AMP7 forecast numbers as well as the IAP and DD Ofwat figures are shown below in tables 42 and 43 below.

In conclusion, we note two final points with regard to property numbers.

First, at IAP in contrast to the trended approach it used in its Botex assessment, Ofwat used our company forecasts of property numbers for enhancement growth. While we welcomed the use of what we perceive to be the correct cost driver, we criticised the unit cost models used at IAP on various grounds. Now, at DD, while we welcome Ofwat not using the flawed unit cost models, we consider Ofwat's revised approach of including enhancement growth in Botex Plus and considerably lower property numbers marks two retrograde steps in the cost assessment process and is flawed.

Second, as we note in our document 'Deep Dive on Growth Expenditure', the impact of increasing the growth forecast leads to an implausibly low marginal cost to connect.

Table 42 Water Properties

Forecast	Basis of forecast (x000)	2020-21	2021-22	2022-23	2023-24	2024-25	AMP7 growth
Anglian Water forecast	WRMP mandates LA forecasts	2,270	2,306	2,344	2,382	2,416	178

Ofwat DD forecast	2016 ONS household forecast	2,253	2,270	2,290	2.310	2,329	94
Ofwat IAP forecast	Trended based on 7 years to 2018	2,237	2,254	2,270	2,287	2,303	83

Table 43 Water Recycling Properties

Forecast	Basis of forecast (x000)	2020-21	2021-22	2022-23	2023-24	2024-25	AMP7 growth
Anglian Water forecast	WRMP mandates LA forecasts	2,843	2,887	2,930	2,974	3,016	211
Ofwat DD forecast	2016 ONS household forecast	2,825	2,846	2,871	2,896	2,920	118
Ofwat IAP forecast	Trended based on 7 years to 2018	2,803	2,819	2,835	2,851	2,867	80

We remain of the opinion that the property forecasts which underpin our WRMP should also be used in our Business Plan. We do not accept that the ONS forecast of new households used by Ofwat is a suitable alternative for the reasons set out in 'Focus Area - Growth'.

Mains length

Key cost drivers for both Water and Water Recycling models are length of mains for Water and length of sewers for Water Recycling. At IAP, for Water, Ofwat overwrote our forecasts of new mains lengths, replacing them with a trended forecast which allowed us 42% of our forecast growth. At DD, Ofwat has changed its approach and taken the average of the Company's forecast and its own forecast. Consequently, the shortfall in mains length growth is half what it was at IAP.

By contrast, Ofwat's trended approach forecast more new sewer growth than our own forecast at IAP. As with Water, at DD Ofwat has changed its approach and taken the average of the Company's forecast and its own forecast. Consequently, the additional sewer length growth is half that at IAP.

Our AMP7 forecast numbers as well as the IAP and DD Ofwat figures are shown below in tables 44 and 45 below.

Table 44 Water length of main

Forecast	Basis of forecast	2020-21	2021-22	2022-23	2023-24	2024-25	AMP7 growth
Anglian Water forecast	Company forecast	39,719	39,919	40,096	40,285	40,827	1,327
Ofwat IAP forecast	Time trend	39,177	39,322	39,467	39,611	39,756	724
Ofwat DD forecast	Avg of Company & Ofwat forecast	39,488	39,620	39,781	39,948	40,292	1,025

Table 45 Water Recycling length of sewer

Forecast	Basis of forecast (x000)	2020-21	2021-22	2022-23	2023-24	2024-25	AMP7 growth
Anglian Water forecast	Company forecast	76,647	76,731	76,837	76,958	77,104	533
Ofwat IAP forecast	Trended based on 7 years to 2018	77,104	77,235	77,365	77,496	77,627	653
Ofwat DD forecast	Avg of Company & Ofwat forecast	76,876	76.983	77,101	77,227	77,365	593

Despite the fact that Ofwat's approach to estimating forecast length cost drivers benefits us for Water Recycling, we remain of the view that our forecast numbers represent a better basis for assessing our cost allowance than the approach followed by Ofwat.

Other drivers

Ofwat followed the same forecasting approach for Water Recycling Centre load as it did for length. At IAP, the trending approach offered 44% of the company forecast, which in turn was underpinned by the forecast growth of properties. At DD, moving to the average of the company forecast and the trended forecast halved the IAP growth gap, offering us 72% of the company forecast.

Our AMP7 forecast numbers as well as the IAP and DD Ofwat figures are shown below in table 46 below.

Table 46 Water Recycling Load

Forecast	Basis of forecast (x000)	2020-21	2021-22	2022-23	2023-24	2024-25	AMP7 growth
Anglian Water forecast	Company forecast	429,503	434,803	440,252	445,572	450,553	25,737
Ofwat DD forcast	Avg of Company & Ofwat forecast	428,562	432,334	436,180	439,962	443,575	18,478
Ofwat IAP forecast	Trended based on 7 years to 2018	427,621	429,865	432,109	434,353	436,596	11,219

Given that our load forecasts are based on our property growth numbers, we consider that our existing forecasts represent a better basis for forecasting our cost allowances than the approach taken by Ofwat and that Ofwat's approach fails to take relevant factors into account.

Moreover, we note that Ofwat used our forecast of sludge produced at both IAP and DD. We agree with this approach, but note the inconsistency between Ofwat's forecasts of property numbers and load, given both load and sludge produced are driven by our property forecasts, which Ofwat has overwritten.

7.5 Consideration of a stronger efficiency challenge for bioresources

In its DD, Ofwat created a number of waste water models. On the basis of these, it estimated companies' historical relative efficiency levels for Collection, Sewage Treatment, Bioresources and Network Plus. However, in determining its DD cost allowances it used an upper quartile challenge based on relative efficiency at the wholesale level; that is, a single catch up applied to both Network Plus and Bioresources calculated by combining the results of its separate analyses.

Ofwat suggested that for Final Determination it might apply separate catch up efficiency challenges to each of the wholesale waste water controls. This would result in a stronger efficiency challenge in aggregate as the separate catch up challenges are both higher than the combined wholesale challenge.

From Ofwat's file 'FM_WWW2_ST_DD' we have compared the relative efficiency of each company in Bioresources against its relative efficiency for Wastewater Network Plus. What emerges from this analysis is an inverse relationship between companies' relative efficiency in Bioresources and Network Plus. That is, companies which are deemed to be efficient in one activity are typically inefficient in the other. Severn Trent is the sole company with a relative efficiency factor of less than 1 in both activities.

We show this graphically in the figure below and by comparing their ranks in table 47 overleaf. The analysis here is based on Ofwat's 'Bioresources' (Ofwat code BR) but a very similar picture emerges if we repeat it for 'Bioresources based on model and residuals' (ABR).

Figure 27 Ofwat's assessment of companies' relative efficiency for Bioresources and Wastewater Network Plus

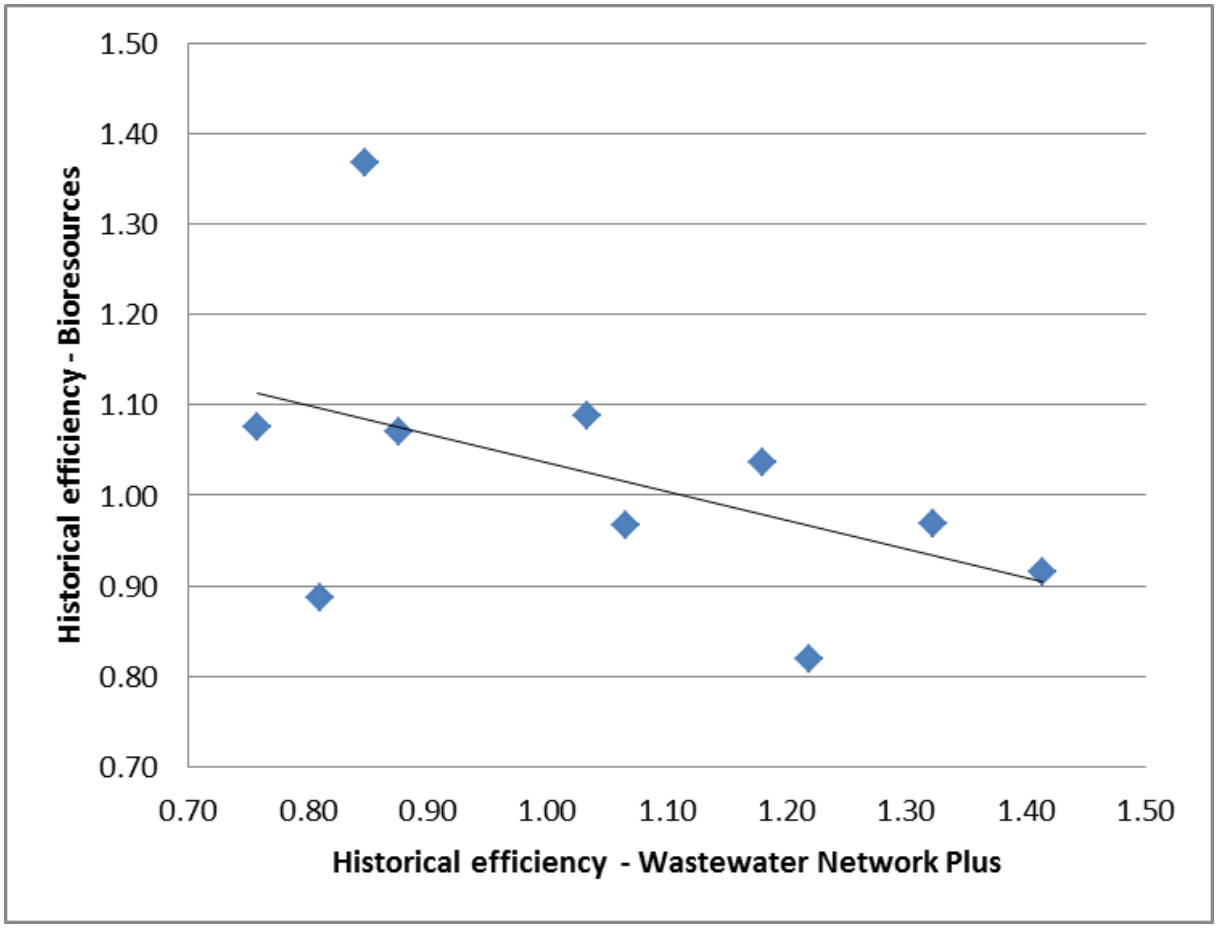


Table 47 Ofwat's ranking of companies' relative efficiency for Bioresources and Wastewater Network Plus

Company	Rank		
	Bloresources	Network Plus	Aggregate
Anglian	6	4	10
Northumbrian	1	8	9
United Utilities	3	10	13
Southern	4	7	11
Severn Trent	2	2	4
South West	7	6	13
Thames	9	5	14
Welsh	5	9	14
Wessex	8	1	9
Yorkshire	10	3	13

We ascribe this observation to differences between companies in cost allocation. If a company allocates a certain cost to Network Plus it will be judged to be less efficient in Network Plus and more so in Bioresources, while a company which allocates the same cost to Bioresources will find itself in the opposite situation.

This finding provides compelling evidence for why Ofwat should not move away from using a wholesale catch up efficiency factor in the FD. Doing so would be to exploit artificial differences which are based on cost allocation alone and apply an indefensively harsh challenge.

7.6 Liquor treatment costs

We have two concerns with the treatment of sludge liquor costs in the DD. Firstly, we do not believe that the estimation of liquor treatment costs is being made on a consistent basis across the industry. Secondly, we are concerned that allowances in the DD for future liquor treatment costs have not been allocated to the correct price control. We believe this second issue is having a significant impact on totex allowances in both the Sewage Network Plus and Bioresources price controls, albeit these net to zero across the two when combined.

7.6.1 The costing concern

Return liquor constitutes liquor returned to the WRC for treatment from raw sludge thickening, raw sludge dewatering activities where sludge is dewatered to greater than 10%DS and final product dewatering. Return liquors tend to be high in concentration and thus have a significant cost to treat.

The range of costs of liquor treatment per tds (tonne try solids) varies hugely throughout company PR19 submissions. Using costs taken from companies' APR submissions these range from £77.80 per tds (AWS), £66.80 (WSH) and £65.80 (SWB) down to £1.20 (TMS), £9.70 (YKW) and £13.10 (UU).

The scale of these variations suggests this is the result of inconsistent assessments of the impact of the return liquors on the sizing of the works, and thus the charge from Network Plus to Bioresources for the treatment of the return liquors.

AWS is one of three outliers in return liquor Network Plus recharges for treatment of return liquor as a result of our Bioresources activities.

7.6.2 Our Approach

The recharge has been calculated based on the volume returned and BOD load using measured tds throughput and historic sample data to derive a population equivalent load (PE). We use the PE to determine the opex component of the recharge by proportioning the Water recycling centre (WRC) operational costs. For example, if a 100,000 PE works has a 20,000 PE return liquor load, 20% of the operating costs of the water recycling centre would be allocated to Bioresources as a return liquor recharge. The recharge also includes allowance for asset depreciation and financing costs which are proportioned on the same basis.

We believe this approach is in accordance with the guidance given in response to Query 355 published on 15 May 2018 and subsequent clarification in query 548 published on 25 June 2018.

7.6.3 APR Comparison

We have compared the costs allocated for return liquor treatment using business plan and the latest APR data. Table 48 below gives a comparison of 2018/19 APR data.

Table 48 Liquor costs in context

	WASC	ANG	HDY	NWL	SRN	SVT	SWB	TMS	UUW	WSH	WSK	YKY
Sludge volume treated	*ttds*	151	0	70	136	239	38	374	196	75	70	151
Rank	*ttds*	5	11	8	6	2	10	1	3	7	9	4
Imported sludge liquor treatment opex	*£m*	7.4	0.0	2.1	2.3	5.4	1.7	0.4	2.6	4.9	2.3	1.1
Imported sludge liquor treatment CM	*£m*	4.4	0.0	0.0	0.0	0.7	0.8	0.0	0.0	0.2	0.1	0.4
TOTAL	*£m*	11.8	0.0	2.1	2.3	6.1	2.5	0.4	2.6	5.0	2.4	1.5
Liquor Cost £/tds (treated)	*£/tds*	**77.8**	**6.8**	**30.2**	**17.0**	**25.6**	**65.8**	**1.2**	**13.1**	**66.8**	**33.9**	**9.7**
Rank	*£/tds*	1	10	5	7	6	3	11	8	2	4	9

We have concerns that the stark difference in the range of allocated costs across companies is driven by inconsistent approaches to calculating liquor treatment costs or their allocation between price controls.

Whilst it would be legitimate to expect some variance in ranking of sludge production against liquor recharges, we would not expect such a difference in both ranking and unit cost as treatment technologies and strategies are broadly similar across the WASCs. It is essential that a standard methodology set by Ofwat is required to ensure a consistent approach is taken for Final Determinations.

7.6.4 The price control allocation concern

Historically companies have reported sludge liquor treatment as a sewage treatment cost. Consequently these costs have been taken into the Botex models which address sewage treatment costs and they are reflected in companies' Water Recycling Network Plus allowances.

The regulatory accounting guidelines are clear that in AMP7 the costs of liquor treatment should be borne by the Bioresources price control and recharges should be made by Bioresources to Water Recycling Network Plus to cover them. We therefore consider that an allowance should therefore be transferred from the Water Recycling Network Plus cost allowance to the Bioresources price control to reflect this.

Equivalent treatment of these costs is very important, particularly in relation to enabling an effective bioresources market, as return liquor treatment recharges make up a significant proportion of the unit cost of treatment that will form part of any gate fee for trading with other WASCs and third parties.

8 COST ASSESSMENT - ENHANCEMENT

8.0.1 Ofwat said

In preparing our Representation, we have reviewed Ofwat's DD approaches to deriving our future enhancement expenditure requirements. Consistent with the approach taken at IAP, independent experts have helped us conduct this analysis.

8.0.2 We did

We have reviewed the proposed scope and costs underpinning our proposed enhancement programme. In conducting this exercise we have reviewed the proposed investments against the necessary statutory drivers and obligations, as well as the areas of our plan that customers considered most important.

As in all areas of the Plan, we have assessed whether the changes Ofwat proposes in its DD would benefit customers and the environment today and in the long term. The outcome of this exercise results in the removal of **£159m** of enhancement totex relative to our post-IAP position. This is a combination of scaling back investment in some areas and applying a greater efficiency challenge to others. In relation to the delivery of large programmes, we have applied a further £37.7m efficiency challenge, reflecting the economies of scale that we feel we can target, in reflection of the size of the overall WINEP programme.

We do not agree with Ofwat's assumption at DD that the Elsham treatment and transfer scheme is a one-sided adjustment. The appropriate two-sided treatment removes a further **£122m** from our proposed Representations totex. The table below summarises the key elements of our representation relating to enhancement.

Table 49 Key elements of the enhancement representations (£m)

	£m
Reductions to enhancement expenditure (including Elsham DPC)	281
Funding for growth	352
Further investment evidence	226
Ofwat's company specific efficiency and WINEP in the round challenges	39
Total	**838**

8.0.3 Why change is needed

Ofwat's DD makes material changes to how certain investment areas have been assessed. Consistent with our view at IAP, we believe Ofwat's assessment produces unrealistic results due to limitations in the data used, as well as methodological errors. This means that Ofwat's assessments cannot be relied upon to produce robust estimates of the efficient costs required to deliver the proposed, necessary investment in our region during AMP7.

In certain areas, Ofwat has made some welcome changes which reflect, in part, the views expressed in our IAP response. These include:

- assessing enhancement on a totex rather than capex only basis;
- the partial correction of distortions from using log-log models, and;
- the partial correction of leakage enhancement costs reflecting company specific costs and not being informed by the sector's ODI rates.

However, further refinements to Ofwat's approach are required.

In addition there remain a number of inconsistencies and errors in Ofwat's DD approach, specifically:

- the lack of application of log-log adjustments to water and totex models;
- a material error in the calculation of WINEP efficiency factors at DD.

On growth, we do not agree with the DD position. Making a change away from Ofwat's IAP approach to modelling growth expenditure is something we advocated this in our IAP response. However, we fundamentally disagree with the approach Ofwat has now adopted at DD. This now models growth costs as part of base costs. Both the execution and rationale for this change are weak. The result of the change is to exacerbate the earlier problems related to assessing growth expenditure.

Ofwat's approach creates a perverse outcome whereby companies forecasting high growth are systematically penalised. Ofwat's models, which it has confirmed have not been through an extensive retesting process, essentially redistribute expenditure from companies with forecast high growth to companies with forecast low growth in AMP7.

We set out our views on this and present full, further evidence in Chapter 10 and the Growth Expenditure Deep Dive document.

In the remainder of this chapter we set out:

- revisions to our expenditure proposals;
- our views on Ofwat's high level approach to the assessment of enhancement costs;
- our investment area by investment area assessment of Ofwat's DD.

8.1 Revisions to our expenditure proposals

In responding to Ofwat's DD, we have reviewed Ofwat's proposed view on the efficiency scale and scope of enhancement expenditure in AMP7. We have also undertaken a further review of investment set out in our previous Plan.

In conducting this exercise, we have reviewed the proposed investments against the necessary statutory drivers and obligations, as well as the areas of our Plan that customers' considered most important. As in all areas of the Plan, we have assessed whether the changes that Ofwat proposes in its DD, and that we propose as part of our further review would benefit customers and the environment today and in the long term.

In certain areas we have removed expenditure from our Plan above and beyond the positions Ofwat set out in the DD where we believe such changes meet the criteria on benefits to customers and the environment mentioned above. In other areas, we challenge Ofwat's approach. Where this is the case, our reasons are set out in this chapter and supported by supplementary evidence. Examples of this include our proposed partnership funding investment to alleviate flood risk, and our Cyber investment where we now propose an additional customer protection mechanism in support of the proposed investment. Full details are set out in the model by model section of this chapter.

The outcome of this exercise results in the removal of £159m of enhancement totex relative to our post-IAP position. This is a combination of scaling back investment in some areas and applying a greater efficiency challenge to others, specifically in relation to the delivery of the large programmes where we have applied a further £37.7m efficiency challenge, reflecting the economies of scale that we seek to achieve as a result of our AMP7 WINEP programme.

Full information on revisions to totex is summarised in the model by model section below, with details provided in our supporting expenditure table commentaries and our supplementary evidence document which is part of this Representation.

8.1.1 Changes as a result of programme synergies

We have taken a further look at the build-up of the estimates for some of our large programmes of work. As explained in previous submissions, our estimating tool uses cost models for new assets developed using actual cost data from delivered schemes. The cost models used in PR19 are updated versions of the same cost models used to build the PR14 plan which Ofwat assessed as efficient at the time in its Final Determination.

Through our Risk Opportunity and Value process, the estimates of scope in the plan take account of the various options available to achieve the desired outcome (including opex only solutions), as well as detailed site by site assessments of existing assets that can be re-used. The estimation system then applies an overhead to these costs to cover project management, design costs, and corporate overheads. Currently, our estimating system applies the overhead based on the value of the individual investment. The amount applied is reflective of the scale, so smaller investments have a higher proportion of overhead than larger investments. As part of preparing for PR19 we analysed in detail the overhead on actual delivered investments and updated the rates we apply, based on which of our alliances will deliver the work, and which price control the work falls into.

In AMP6 we have no individual programmes worth more than £150m capex, and only one (WINEP No Deterioration) worth more than £100m capex. In previous price reviews we have therefore not adjusted the application of overhead from our established process. Having reviewed the PR19 plan since April, we have now identified the potential to reflect the synergies available from delivering a large programme of this type, by using the minimum percentage overhead for all projects in that programme regardless of the value.

In our DD updated tables we have applied this approach to five large individual programmes in our AMP7 plan:

- WINEP U_IMP6 Storm tanks – removing £18.8m capex from line 10 in WWS2
- WINEP Phosphorus Removal – removing £12.6m capex from lines 18 and 19 in WWS2
- WINEP U_IMP5 Full Flow to Treatment – removing £3.9m capex from line 9 in WWS2
- Water Recycling Centre capacity increase for growth – removing £2.4m capex from line 26 in WWS2

We note that for our WRMP strategic interconnectors programme as part of these representations we make no change in totex for this programme since all investments already have the lowest % overhead applied.

In total this equates to £37.7m of capex which we have removed from our plan whilst retaining the same scope and outcomes for these portfolios, and maintaining our robust bottom up asset based costing approach. At the same time we have further liaised with our delivery alliances to review the profile of spend in these large programmes and have taken the opportunity to re-profile them, resulting in a change to capex spend by year whilst leaving the total capex unchanged.

8.1.2 Commentary on profiling

As identified in 'Smoothing investment cycles in the water sector' [1].significant changes in annual spend can adversely affect the efficiency of delivery teams. Since our IAP Response we have taken the opportunity to plan our overall totex with our delivery alliances. This has enabled us to create a smoother, more deliverable profile. This includes spend in capital maintenance as well as enhancement. These changes do not affect total spend.

8.2 Ofwat's assessment approaches

Ofwat's DD uses the same range of approaches to assess enhancement expenditure as at the IAP namely:

- benchmarking of historic data;
- benchmarking of business plan data;
- deep dives; and
- shallow dives.

We examine each of these areas below.

In addition, we set out further specific comments on the treatment of enhancement opex and Ofwat's WINEP in the round assessment.

1 https://www.gov.uk/government/publications/smoothing-investment-cycles-in-the-water-sector

8.2.1 Benchmarking analysis

For enhancement activities where most companies incur costs and we identify appropriate cost drivers we develop econometric or unit cost models. Our benchmarking analysis relies on forecast data from company business plan, except for 'first time sewage' in wastewater where we put some weight on historical data.

Source: PR19 draft determinations: Securing cost efficiency technical appendix: Page 38

The majority of Ofwat's assessment of enhancement expenditure remains subject to a form of benchmarking assessment based on the single rationale that this is appropriate in areas where most companies incur some costs.

Ofwat provides no rationale or support for this preference, other than noting that most companies incur costs in these areas. This justification is inadequate. Whilst most companies do incur costs, this will mask a wide range of different factors affecting companies' costs, including the range of viable solutions available to any particular company, which will vary significantly.

There is no evidence that Ofwat has sought to triangulate between different available assessment approaches to determine allowances. This is a significant shortcoming. To illustrate, a company looking to deal with nitrates within raw water sources will generally have two options; blending sources of water to achieve a lower level of nitrates if possible, or being forced into using a treatment process to remove nitrates. These alternatives will have materially different cost profiles and mixtures of opex and capex expenditure.

Unless the benchmarking approaches appropriately control for these differences, it is likely that the models will mistake underlying differences in companies' circumstances for differences in efficiency. This will then result in unrealistic modelled expenditures.

The quality of benchmarking analysis that can be undertaken is heavily constrained by the data Ofwat has at its disposal to generate and test underlying relationships between costs and their underlying drivers. This is a function of previous decisions taken by Ofwat to obtain appropriate benchmarking data. This constraint manifests itself in the form of very limited cost and input data being used to generate relationships.

In light of this constraint and in the absence of Ofwat having sought information from companies to help generate plausible models or understand variations between companies, we believe that, for the Final Determinations, Ofwat should place greater emphasis on company-specific evidence through deep dive assessments. We note that Ofwat's DD partially seeks to do this for growth expenditure. However, given the poor quality of growth models (see Focus Area: Growth). This should be fully assessed on a deep dive basis.

Log-log adjustments

Ofwat's DD partially puts right a mistake we highlighted relating to the need to correct error terms when using a log-log specification. Ofwat has sought to correct for this in the following models:

- Storm tank – storage volume
- Storm tank – storage volume and number of schemes
- Chemical removal – Population and average permitted Zn levels
- Full flow to treatment – Schemes and FFT shortfall
- Sanitary parameters – PE and number of sites
- Sanitary parameters – No. of sites and change in load with ammonia consents below 3mg/l.

However, Ofwat should go further than this in its Final Determination. Firstly, there is not a corresponding correction for either the water model for lead or Ofwat's botex model. Having accepted the need for correction in the wastewater models set out above, there is no rationale or evidence not to apply this correction to the full suite of models affected by this specification problem.

Secondly, Ofwat has not set out the rationale for its selection of correction method. The "standardisation" factor approach adopted is less theoretically valid relative to alternatives that we specified through our work carried out with Vivid Economics and set in Annex 8c. This included the use of either 'conditional mean' or 'smearing' factors which appropriately always provide for an adjustment factor greater than one. For Final Determinations we expect Ofwat to apply a more robust approach.

8.2.2 Deep Dives

If the expenditure is more than 0.5 percent of the company's water or wastewater wholesale totex, we carry out a deep dive assessment. The deep dive process follows our assessment of cost adjustment claims (see chapter 7).

We assess the evidence provided by the company for the need for investment, options appraisal, robustness and efficiency of costs, and customer protection for the proposed expenditure, similar to In very material cases we also look for evidence of affordability and board assurance to demonstrate that the board is aware of the material investment proposals and their impact on customer bills. Where a compelling case is presented, that is well supported by a cost-benefit analysis of intervention options and a transparent breakdown of appropriate and efficient costs, we allow the expenditure in full.

Optioneering challenge in deep dive assessment

Where we accept the need for the investment, but the company has not provided a thorough options appraisal that demonstrates it has chosen the best option for customers, we challenge the proposed costs. If a company provides evidence, for example, that a lower cost option was available but gives no reasons as to why it was rejected, we use the lower cost option to set an appropriate allowance. Solution options considered can range considerably in cost. Companies have provided evidence that options such as reinforcing a length of main and replacing the same main can have a difference in cost of 35 percent. Where evidence is not provided that the option selected is optimal we protect customers from a potentially sub-optimal company solution by applying a 20 percent challenge to business plan costs.

Source: PR19 draft determinations: Securing cost efficiency technical appendix: Pages 38-39

We support the greater use of this approach as it centres on the quality of companies' business plan evidence and is not skewed by the quality of other companies' plans and data, which is the risk from using simple benchmarking approaches.

We made a series of recommendations at IAP to increase the use of this tool, most notably for Growth. Ofwat's DD does not use a deep dive for this area. The absence of a deep dive on growth is a material shortcoming. For the Final Determination we strongly advocate Ofwat assess merit of growth expenditure on a Deep Dive basis.

In certain other areas of investment, we provide further additional evidence as part of the representations.

We have concerns with Ofwat's approach to assessing optioneering evidence. Ofwat's sole focus appears to be on lowest cost in the short run, ignoring best value solutions which may be beneficial to both current and future customers and the environment, and may also be the most cost-beneficial whole life solutions.

The principal area this challenge applies to is the WRMP supply side investments. We capture our full detailed comments and further evidence in our Focus Area - WRMP and Focus Area - Leakage chapters. We do not therefore cover these in the model by model review later in this chapter.

8.2.3 Company specific efficiency factors

For every company we calculate a company specific efficiency factor. The factor provides an indication of the company's scope for efficiency improvement in its proposed base costs. We use the factor as a guide to challenge the company's proposed enhancement costs in deep and shallow dives, where there is insufficient evidence of efficient costs. We consider it reasonable to assume that the company's scope for efficiency in its proposed enhancement costs will be at a similar level to that of base costs.

The company specific efficiency factor is calculated as the ratio of our view of efficient modelled base costs to the company view of modelled base costs. For this calculation, we remove enhancement opex from the company's view of modelled base costs.

In deep dive assessments we apply the company efficiency factor only where there is insufficient evidence that the proposed costs are efficient. We cap the efficiency factors between a minimum of five percent and a maximum of 10 percent. That is, for companies with an efficiency factor less than five percent we apply the minimum challenge of five percent. We expect every company to provide evidence that its proposed costs are efficient. We recognise that the company specific efficiency factor is an imperfect indicator of the inefficiency of proposed enhancement costs. We therefore cap the challenge at 10 percent. We accept that this may understate the efficiency challenge for an inefficient company but consider that we need to set this against the risk of excessive disallowance of costs. Capping the challenge is consistent with our approach at the initial assessment of plans.

In shallow dive assessment we apply the company efficiency factor automatically. We consider that this is a proportionate approach. In shallow dives we cap the company efficiency factor between a minimum of zero and a maximum of 10 percent. We do not use a five percent floor like in deep dives because in shallow dives we do not look for evidence that the cost is efficient, due to immateriality, so a five percent floor would risk overstating the efficiency challenge.

We do not apply the company specific efficiency factor in our assessment of WINEP/NEP wastewater activities, where we determine an efficiency challenge for each company at a programme level rather than at the individual activity level.

Ofwat PR19 Draft Determination: Securing cost efficiency technical appendix – Pages 38-39

With the exception of WINEP programmes, Ofwat's DD analysis persists with the application of company specific factors. Ofwat asserts, as it did at IAP, that the company's scope for efficiency in proposed enhancement costs will be at a similar level to that of base costs. Ofwat has capped the company specific efficiency factors applied to certain enhancement areas at 10%. Where Ofwat has applied such a factor, in the case of Anglian, this is capped at 10% for both water and wastewater. For water this is lower than the capped value of 15% at IAP, and at the same level for wastewater.

Ofwat's DD does not provide any further justification as to why it considers this approach to be reasonable. Nor does it acknowledge or respond to any of the evidence we provided in our IAP Response explaining why we believe this approach to be inappropriate.

We remain of the view that this approach is inappropriate, inconsistent with other parts of Ofwat's modelling framework, Ofwat's own and other regulatory approaches, and at odds with recent views from the CMA. As Ofwat has not responded to our arguments in its DD, we repeat them below.

The derivation of these factors is based on an assessment of upper quartile efficiency between our Plan and Ofwat's modelled base costs. Both the value and robustness of these factors will be materially affected by the base modelling approaches, including the material change to the treatment of growth expenditure. We make a number of comments on Ofwat's base models and specifically with regards to growth in Chapter 10 of this Representation.

As Ofwat notes, unlike for base costs where an upper quartile and frontier productivity assumption is applied to all costs, no such common efficiency challenge is applied to enhancement costs. The implications of this are striking. In some areas of expenditure this will result in some companies having efficiencies applied to their enhancement expenditure as a result of Ofwat's assessment of efficiency based on a completely different suite of activities (base). Conversely, no enhancement

efficiency will be applied if a company is assessed as efficient for base activities. This oversimplification is neither logical nor is it likely to be in customers' interests. It also creates a significant risk of double jeopardy.

The movement of growth-related expenditure into Botex Plus models works against Ofwat's own change in methodology from PR14 to PR19. For PR19, Ofwat moved away from Totex models used at PR14. This was a result of Ofwat and subsequently the CMA, recognising the challenge of modelling base costs and lumpier enhancement together. This informed Ofwat's PR19 IAP approach which separated botex and enhancement models for IAP. The movement of growth-related expenditure into Botex Plus models for DD reverses this distinction.

Historically, some differences between companies have been driven by factors other than efficiency - for example different accounting policies for capitalisation of costs. Under the current modelling framework no account is taken of these differences. This could materially affect the assessment of base costs which, under Ofwat's DD approach, also now affects the assessment of enhancement costs.

Historically, these would have cancelled each other out; whereas the IAP approach is now: "win-win" or "lose-lose". We think this incorrect. The logic that if a company is good at maintaining water mains it must be equally good at investing in say, SEMD, seems irrational and not consistent with previous processes such as Cost Base.

Neither is the assumption that base efficiency flows through to enhancement consistent with the conclusions of the CMA in the PR14 Bristol Water referral. It is also at odds with Ofwat's historic approaches and current wider regulatory practices. In the CMA review of Bristol's PR14 determination, the results of the CMA's opex/botex modelling were not used to derive their view of the capex efficiency challenge for Bristol's enhancement expenditure.

Taking an example from other current regulatory practices, in assessing Northern Ireland Water's 2015-21 Price Determination, the regulator has always applied different efficiency targets for opex and capex derived from different methods. Capital efficiency targets have been derived through a triangulation process of Cost Base analysis, and views on Capital Procurement Efficiencies from independent sources. This leads to different efficiency targets; specifically the opex efficiency challenge being typically much higher than the challenge applied to capex.

In previous Water and Sewerage price reviews up to and including PR09, Ofwat has deployed a deeper range of techniques to determine efficiency. Central to this was Ofwat's Cost Base. This consisted of a suite of capital unit cost estimates for standardised projects across all companies.

The main objective of Cost Base is to assess the current comparative position of companies specifically for the types of activities to be carried out in the future AMP. The Cost Base submission acknowledged the differences between capital maintenance and capital enhancement expenditure.

These approaches derive materially different efficiency factors to those derived from opex efficiency models, as demonstrated by comparing assessments from the PR09 Final Determination. It is logical that these assessments reach different conclusions. It is for the reasons set out above that we believe Ofwat's IAP application of company specific efficiency challenges is inappropriate.

We presented evidence at IAP on this matter. Ofwat has not responded to this in its DD.

8.2.4 Shallow Dives

> *In shallow dive assessment we apply the company efficiency factor automatically. We consider that this is a proportionate approach.*
> *Ofwat PR19 Draft Determination: Securing cost efficiency technical appendix – Pages 38*

Our concerns set out above on the use of company specific factors are also relevant here given Ofwat's application at DD of the company specific factors to shallow dive investment areas.

We do not consider that Ofwat has justified its removal of 10% of costs across a broad swathe of our proposed enhancement programme. This approach places significant challenge on the ability to deliver these investments, many of which have statutory drivers.

8.2.5 Approach to enhancement opex

One of the major changes to Ofwat's methodology between IAP and DD is the approach to enhancement opex. Since the original consultation on the PR19 methodology where Ofwat re-issued the PR14 data table templates - which had no data capture for enhancement opex separate to base opex – it has been apparent that Ofwat has struggled with how to treat this form of expenditure. The same issue has also challenged other regulators. In the CMA's PR14 ruling, it recognised the issue of enhancement opex needing to be analysed as separate to base opex, which lead to Bristol Water being allowed an additional £3m opex associated with enhancement spend. [2]

At DD, Ofwat has chosen to assess most enhancement models on a totex basis. We strongly believe that this is not an appropriate way to assess enhancement spend, particularly due to the fact that a pound of one-off capital investment cannot be equated to a pound of repeating operational expenditure. We assess all of our investments on a whole life cost basis, comparing the initial up front capex, the repeat capital spend required for periodic asset renewal, and the operational costs over 40 years. This whole life cost approach enables us to judge schemes on best value over the long term, selecting opex solutions where those are shown to be lower over 40 years. The figure below illustrates this, using East Ruston as an example.

Figure 28 East Ruston WTW Sustainability

As pointed out in Reckon's paper on the treatment of enhancement opex (see Annex 8a), we now see two types of enhancement opex; those that recur year on year to cover operational costs of new assets such as treatment plants, and those that occur as a one-off investment classed as opex for accounting reasons. Examples of the latter found in PR19 plans were highlighted by Reckon in their report across several water companies.

Since Ofwat's data tables WS2 and WWS2 have no data capture for years beyond 2025, it is impossible for them to know which form of enhancement opex companies are including in their plans. Our assessment of our Plan indicates that out of the £203.7m included in block B of WS2 and WWS2, 59% was one-off enhancement opex. This issue is set to become even more apparent in companies' DD responses where, under IFRS accountancy rules, investment in preparation for

2 CMA Summary of Report 6th October 2015 paragraph 29

DPC schemes such as those in the Strategic Regional Solutions will be classed as opex. We believe Ofwat should change its approach again for FD to recognise this difference, asking companies for additional data if required.

8.2.6 Enhancement area: WINEP in-the-round

In our IAP Response we made representations to Ofwat regarding the application of a 'company specific efficiency challenge' to enhancement spend. We argued that it was not appropriate to follow this approach, which applies efficiency to a mainly capex enhancement programme, despite this challenge being derived from a mainly opex based assessment. In the DD, Ofwat appears to have noted the flaw in its approach and has not applied a company specific efficiency challenge to individual WINEP enhancement models as it did at IAP. Instead Ofwat has applied a catch-up efficiency outside the models based on the average efficiency scores per company. This is a substantial deviation from the IAP methodology.

The WINEP in-the-round adjustment substantially reduces Anglian Water's allowance, by £63.56m (8.6% of requested totex for WINEP). To put this into context, this is around £10m more than the total amount disallowed in all of the individual WINEP enhancement feeder models put together. It is 5 times as large as the entire wholesale totex gap for Anglian Water at PR14. Such a reduction would substantially limit our ability to deliver the stretching targets mandated by the Environment Agency in the WINEP.

We have worked with Vivid Economics to review this new approach to catch-up efficiency. Vivid has identified an arithmetic error essentially meaning that where Ofwat intended to calculate the upper quartile % they have instead calculated the lower quartile % (explained in more detail in their attached report). Correcting this error results in a significant increase in the efficiency applied to Anglian Water from 8.6% to 13.7%. The 'corrected' upper quartile score of 86% supports our repeated claim that the model fit is considerably weaker across enhancement models than in botex, and suggests that a programme-wide upper quartile score is not well founded in the data.

We have further tested the model stability by assessing the sensitivity to removing individual companies and believe that Hafren Dyfrdwy (HDD) should be excluded as an outlier with only a £2.7m WINEP programme, or 0.06% of the industry. If HDD is removed, the 'corrected' challenge reduces from 13.7% to 4.9%. This degree of shift from removing such a tiny component of the model demonstrates the instability of the 'WINEP-in-the-round' approach to efficiency catch-up.

In the absence of an improved approach at FD, we strongly recommend that HDD be removed from the model, to improve its stability.

8.3 Enhancement: Review by Investment Area

8.3.1 Overview

Consistent with our approach in our IAP Response, we have repeated our exercise of systematically reviewing Ofwat's approach for each modelled area of enhancement. This builds on Vivid Economics' further review of Ofwat's benchmarking approaches which have been materially changed since IAP.

Overall this review highlights persistent shortcomings in Ofwat's DD approach. These need to be addressed before the Final Determination in order that a robust cost assessment can be reached for material areas of proposed investment.

As part of our Representation, we have made some amendments to our enhancement cost proposals. Where this is the case, we clearly highlight the change we have made within the model by model review.

In certain areas where Ofwat challenges the need for or scope of investment, we clearly state where Ofwat has either not appropriately reflected previous evidence, or where, as part of this Representation, we are providing further evidence. We do this in the model by model section.

The following table summarises our review and our recommendations for necessary changes to Ofwat's assessment ahead of Final Determination:

Table 50 Summary of model by model assessment of expenditure

Area	Key changes	Assessment and updated recommendations
Overarching changes		
Enhancement opex	Included in all enhancement models. Implicit allowance netted from enhancement models to avoid double-counting through Botex Plus models	Addresses key concern relating to having capex only models at IAPs
Hafren Dyfrdwy	Discarded as a distinct data point	Addresses key concerns
Efficiency challenge	'In the round' efficiency challenge applied to WINEP wastewater line	A move towards a more aggregated efficiency challenge can reduce risks , but it is not clear why this was applied to a select group of lines and not elsewhere Recommendation for more clearly justified challenge based on a closer analysis of company efficiency scores and modelled shortfalls still stands Recommendation for change to approach to shallow dive efficiency challenge still stands
Log-log adjustments	'Standardisation' adjustment made to all wastewater log-log models	An adjustment is consistent with earlier recommendations. However, the 'conditional mean' or 'smearing' adjustments have greater theoretical validity No adjustment is made in water log-log models or Botex Plus. Recommendation for an in these areas still stands
Botex Plus modelling	Adopted for growth	Strong recommendation for a new approach based on deep dives. See separate report
Growth		
Wastewater	Botex Plus approach implemented	Recognition of lack of robustness of the IAP models. See separate report for full assessment informing Strong recommendation for a new approach based on deep dives
Water		
First-time sewerage	No changes	Recommendation to use deep dive still stands
Waste quality		
P-removal	Linear complexity model added with 0.5mg/l as threshold for more complex schemes	Use of models that cover economies of scale and complexity supported in general

		Recommendation to use 1mg/l as the complexity threshold still stands. This is the level supported by engineering narratives, with strong variation across the sector
Chemical removal	Four models with volume drivers only replaced by a single model including quality drivers	Addresses key structural concerns. Recommend check coefficient values against engineering narratives
Event duration monitoring	Adds separate median unit cost models for installations and permits	Recommendations to address problematic data still stands, with implausible variation in unit costs observed between companies
Flow monitoring	Distinct approaches for new schemes, investigations (both median unit costs), other schemes (deep dives)	
Flow to full treatment	Adoption of new models: linear and log specifications with two explanatory variables	Recommendation to drop IAP models addressed. Process to arrive at new models not assessed
Sanitary parameters	Unintuitive power and exponential models replaced by log specifications, with scale, economies of scale, and quality drivers	New specifications generally more transparent and more clearly motivated by engineering logic. Recommend reconsider the use of the quality driver (PE subject to consents of 3mg/l NH3), which is very strongly correlated with load for 7/10 companies (corr = 0.996)
Spill frequency	Linear model adopted in place of log specification	Recommend to reconsider log-log specification, given wide span between high and low volume companies (variation between YKY and SRN equals a factor of 25). Consider inclusion of economies of scale driver, which has strong narrative support and is borderline statistically significant
Storm tanks	Change in triangulation weights from 75:25 to 50:50	Recommendation to use only single model that includes economies of scale still stands, as this dominates the alternative
Water quality		
Meeting lead standards	WTW enhancement removed from dependent variable, shallow dive applied Number of lead communications pipes no longer used as explanatory variable Log and median unit cost models adopted	Changes to dependent and explanatory variables represent improvement, consistent with earlier recommendations Broader recommendation to justify model choice and triangulation weights remains, as unclear how unit cost model arrived at
Supply-demand		

Metering	No changes	Recommendation to investigate effect of meter penetration still stands
Leakage	ODI rates and ESK data points removed Company unit costs used instead of median, with shallow-dive efficiency challenge where company costs exceed minimum	Key concerns in earlier report addressed Use of shallow-dive efficiency challenge subject to recommendation above
	2020-25 schemes	Recommendation for shallow or deep dive stands

source: Vivid Economic analysis

8.3.2 Scope of Representation

We do not comment explicitly here where Ofwat has fully allowed proposed expenditure. This relates to investments in the following areas:

- WINEP / NEP – Water - Investigations
- Wastewater SEMD and Non-SEMD costs
- WINEP / NEP – Wastewater - Investigations
- WINEP / NEP – P Removal technology investigations
- WINEP / NEP – Chemical monitoring / investigations
- WINEP / NEP – Conservation drivers

We do not comment further on areas where Ofwat's challenge to costs is driven by a generic issue, such as the inappropriate application of a company specific efficiency challenge. This relates to investments in the following areas:

- WINEP / NEP – drinking water protected areas
- WINEP / NEP – Eels
- WINP / NEP – invasive non-native species
- Lead – challenge to WTW works costs
- WINEP / NEP – (water) WFD measures
- Nitrates (raw water deterioration)
- Wastewater odour

8.3.3 Enhancement area: Metering

Table 51 Investment Summary

	April Plan (£m)	DD Ofwat position (£m)	Representation (£m)
Capex	118.516		76.129
Opex	63.328		60.673
Totex	181.844	108.086	136.802

Figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

We combine the cost of meters requested by optants and selective meters introduced by companies, and meters for businesses into one metering assessment in order to address inconsistent reporting of expenditure and cost drivers between these three enhancement lines. We assess the combined metering costs using a unit cost model based on forecast totex data for the 7-year period from 2018 to 2025, where the cost driver is the combined number of optant and selective meters installed. We triangulate our cost allowance across two model specifications; level specification (both cost and driver are in levels) and log specification (both costs and driver are in logarithmic scale). Where companies are forecast below our allowance, we reduce the allowance to the company's forecast. Where companies identify significant metering expenditure outside of these three enhancement areas, we reallocate the expenditure to this model and undertake a deep dive using the information provided within the companies' submission. The deep dive assessment identifies if any additional expenditure beyond the modelled allowance is valid.

Changes post initial assessment of business plans

- *We now include totex modelling in our analysis and therefore to make use of all available data we revise the model to consider company data from 2017-18 onwards.*
- *The model incorporates the analysis of the Thames Water cost adjustment claim on water stress in the 'Deep dive_TMS' sheet because the claim is now wholly focused upon metering.*
- *A deep dive sheet has been added for Northumbrian Water to assess expenditure associated with the replacement of existing basic meters with smart meters.*

Note on meter technology:

In this model we do not specifically endorse, prescribe or approve the selection of any metering technology (the regression model makes no distinction between the types of meters installed). For the deep dives, the 'smart meter technology' is assumed to be that included in the companies' submitted plans. Our assessment determines an expenditure allocation for the specified outcomes to be delivered through the use of non-specific 'smart meter technology'. We expect companies to provide evidence to support their technology selection and to demonstrate robust and efficient costs, both now

Further Evidence: End of Life v Geographical Delivery

We have provided further evidence, including our comparison with Northumbrian Water and justification for the investment in our PR19 Supplementary Evidence document. Below we provide a summary of this evidence.

As part of our optioneering prior to submitting our business plan, we considered the option of end of life replacement of smart meters against the option of geographical delivery.

We currently replace meters at their economic replacement point of 14 years. Therefore, to fit smart meters using an end of life strategy would involve installing the network at the beginning of year 1 of AMP7 over our entire region then replacing meters and connecting them to the network over the next 14 years. Rather than having an AMP7 network cost of £42m this would increase to £87m. This investment would be underutilised until the final meters were exchanged in 2034.

If our implementation plan stretched over a 14 year period we would not achieve the water savings required to close our deficits as detailed in our Water Resources Management Plan.

To make effective use of such a large investment we need to maximise the use of the network and provide value to our customers. Therefore, our strategy is to commission the network area by area and then make full use of it by connecting all of the properties in that geographical area. In addition to providing the best value for our customers this also has a number of additional benefits:

- We have modelled our installation costs based on economies of scale. We have assumed within our calculations that we will fit on a street by street basis. This has reduced our overall costs in our business plan.
- Providing a reduction in our carbon footprint through effective geographical planning
- Targeting early delivery of water saving benefits against our water resource zones with the largest deficits
- Enabling demand side behavioural savings reduces expenditure on more expensive supply side schemes thus reducing the impact on natural capital
- As new network technologies develop over the 14 year period we will be able to deploy these always ensuring we provide the best value and functionality for our customers.
- Delivering smart meters over a 10 year period provides customers and companies with early sight of supply side leakage and the ability to reduce customer bills.
- Allowing customer engagement at a community level. This will greatly assist our behavioural change programmes.

With regard to the treatment of costs relating to meters replaced before end of life, we consider that of the £73.7m difference between the requested totex and allowed totex, £42.4m is attributable to base dumb-for-dumb replacement costs, £28.6m is attributable to the smart uplift and £2.7m is new meter installations.

We agree with Ofwat's view in the DD that only the smart uplift cost should be treated as enhancement expenditure (the remainder as base).

We have reallocated expenditure relating to the dumb for dumb replacement costs (i.e. excluding the smart meter uplift costs) from enhancement to base, and applied a cost adjustment claim to this expenditure. This represents a shifting of base costs between AMPs (i.e. early replacement will mean lower replacement base costs in future AMPs).

Comparisons with NES

We have engaged with Northumbrian Water (NES), and believe there are clear differences between our two approaches, such that they cannot be assessed on a like-for-like basis. NES intends to fit Automatic Meter Reading (AMR) meters at a cost of £72.62 for a dumb meter and £24.85 for the uplift to AMR. It only intends to change its strategy in the future if it can switch to AMI at no further cost. If this is not possible NES will continue with an AMR approach. This is further emphasised as their ODI can be met by the fitting of AMR meters. We cannot roll out an AMR-only strategy because the benefits associated with this would not be sufficient to achieve the demand reductions set out in our WRMP.

We have engaged fully with smart meter providers. None have solutions or technology that are zero cost to implement an Advanced Metering Infrastructure (AMI) solution for the Anglian Water Region over AMR. However, should AMI technology become available which is zero cost over AMR, either later in AMP7 or more realistically AMP8, by implementing on a geographic basis rather than end of life we will be able to take advantage of this in the future.

Ofwat and our customers recognise our need to move to AMI as our network costs have been fully reflected within DD.

We have compared our base costs of meter replacement with that in Northumbrian's metering enhancement case to replace 309,832 for a base cost of £22.5m (£72.62 per meter). This compares with our cost adjustment claim to replace 602,380 meters for a base cost of £42.387m (£70.37 per meter). The table below shows the full cost comparison.

Table 52 Smart Metering Cost Comparison

Company	Base Dumb Unit Cost (£)	AMR Uplift Unit Cost (£)	AMI Uplift Unit Cost
Anglian Water	£70.37	£24.80	£19.50
Northumbrian Water	£72.62	£24.85	

Only three companies had a deep dive into smart metering costs – Anglian Water, NES and Thames. For Northumbrian, Ofwat state that *"We allow the requested expenditure in full because the proposed uplift costs for replacement of existing basic meters with smart meters are lower than the those proposed by Anglian Water*". Anglian Water's uplift costs for replacing a dumb meter with an AMR meter is lower than NES whereas our proposal reflects the move to AMI.

The difference is clearly attributable to the move to AMI from the commencement of AMP7 which is driven by the need to deliver the demand side water savings contained within the WRMP and to provide our customers with hourly data to be able to identify customer side leaks, give helpful tips and rewards and help customers save money on their bills. The frequency of data is key to behavioural change. We also have a clearly understood cost based for AMI following our trials in both Newmarket and Norwich. We have clear evidence to support our cost base with third party assurance from KPMG.

We do not challenge Ofwat's use of the ODI mechanisms to monitor the delivery of our smart metering programme. Consistent with our wider representations evidence, we propose that the ODI penalty rate for this performance commitment be uplifted to be consistent with representing 50% of the allowed unit rate. As this is an end of AMP performance commitment, we assume that any penalty will apply to the year 5 performance commitment level only.

8.3.4 Enhancement area: Water Resilience

Table 53 Investment Summary

	April Plan (£m)	DD Ofwat position (£m)	Representation (£m)
Capex	54.684		29.322
Opex	0.962		0.796
Totex	55.646	17.082	30.118

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

Due to the company-specific nature of this investment we undertake a deep dive of all companies' plans. We allow investment on this line that relates to addressing low probability – high consequence risks, including those related to the National Flood Resilience Review. We reallocate investment where we consider it to be related to expected operational activities (for example, managing interruptions to supply not related to critical points in the network) or where the resilience need is covered by other enhancement areas. In this way we ensure that our assessment is equitable across the industry.

Principal changes since IAP

Ofwat have moved from a capex approach to a totex approach using the revised forecast expenditure data submitted on 1 April 2019.

They have refined the criteria which must be satisfied to demonstrate our assessment gates. In particular, for each proposed investment, to demonstrate the need for investment they seek evidence of:

1. *The specific service failure mode and associated quantitative or semi-quantitative probability of failure the investment is proposing to address;*
2. *How mitigating against the failure is currently beyond management control;*
3. *The impact on customer service; and*
4. *How, should the failure occur, the consequence is currently beyond management control.*

Further Evidence

After careful consideration we will not make representations on a number of Ofwat's proposals as set out in the DD with the exception of three areas;

- water treatment works (WTW) critical shutdown systems
- proactive risk visualisation dashboard
- critical infrastructure crossings

These investments fall within enhancement and provide significant additional protection to customers from resilience events We provide further evidence to support the need for these investments

The further evidence provided is set out in our DD Supplementary Evidence document.

8.3.5 Enhancement area: Meeting Lead Standards

Table 54 Investment Summary

	April Plan (£m)	DD Ofwat Position (£m)	Representation (£m)
Capex	25.023		18.168
Opex	4.728		4.738
Totex	29.751	11.026	22.906

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What is Ofwat saying

Approach

We assess the lead reduction costs using a univariate panel data model where the cost driver is the number of lead communication pipes replaced for water quality. The model is in logarithmic scale and uses forecast data for the period of 2020-21 to 2024-25. We triangulate our cost allowance with a unit cost approach looking at the unit cost of pipes replaced for water quality. Where companies' forecasts are below our allowance, we allow the company's forecast. For companies whose submissions suggest unique and material costs not captured by our model, we carry out a deep dive using the information provided within the companies' submission. Treatment costs are assessed in a separate deep dive.

Principal changes since IAP

We move from assessing capex to assessing totex expenditure. We move from triangulating between a historical and forecast model to using a forecast model only. We drop the number of lead communication pipes as a model driver, and use the variables in logarithm rather than in levels due to evidence of economies of scale and because it provides more credible results for the very small and very large companies in our sample. We use the unit cost approach to triangulate our allowances from the econometric model.

Further Evidence

Following the DD, we have refined our approach and revised this to include the communication pipe replacement of all of the 5,250 pipes and the replacement of the customer's side of the pipe on 2,250 of those pipes. This is broken down to 1,750 reactive pipe replacements (to include both the communication pipe and the customer's side) for example following a lead failure, 3,500 planned pipe replacements (to include the communication pipe) and a focused trial area within those planned replacements of 500 customer side pipes.

This has resulted in £6.8m being removed from our Plan.

Further explanation on our lead investment can be found in PR19 DD Supplementary Evidence document. We also provide further evidence on the average cost breakdown for a new orthophosphoric acid dosing plant installation in this document.

8.3.6 Enhancement area: Water SEMD and non-SEMD costs

Table 55 Investment Summary

	April Plan (£m)	DD Ofwat position (£m)	Representation (£m)
Capex	25.630		14.981
Opex	2.474		1.830
Totex	28.104	12.451	16.811

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

We combine the Security & Emergency Measures Directive (SEMD) and non-SEMD costs into one security assessment as these areas are both driven by the requirement to ensure that the water network is resilient in the event of an emergency situation. We assess the combined security costs by determining the proportion of each company's base totex spent on security for the period 2011-12 until 2024-25. Where a company forecasts costs above the average proportion of all companies' security costs, we reduce its allowance. For companies whose PR19 costs are material as a proportion of base costs, we carry out a deep dive using the information provided within the companies' submission.

Principal changes since IAP

For our IAP, we assessed costs based on capex only. We now also include opex associated with enhancing service (so our analysis is on a totex basis).

Further Evidence

Ofwat has accepted the need for Resilience investment in order to comply with the Network and Information Security (NIS) Directive. We provide further evidence to support the classification of this work as enhancement expenditure.

We disagree with Ofwat's rational regarding SEMD expenditure being treated as Botex expenditure. We believe all these investments provide additional protection to customers from unforeseen resilience events. The SEMD expenditure specifically relates to improvements and enhancements to the system rather than on-going maintenance. and is a specific Defra requirement.

SEMD enhancement investment in previous AMP periods has been needed to meet the requirements of DEFRA advice notes and the recommendations of company and site CPNI audits. As such the requirements are site and company specific and do not have a direct relationship to Botex expenditure.

We are providing further evidence on two areas of SEMD expenditure which should be included within enhancement expenditure. The further evidence is set out in our PR19 DD Supplementary Evidence document.

Table 56 SEMD and non-SEMD Enhancement Investment

	Totex (£m)
NIS Directive	15.183
Mobile treatment facilities - potable water tankers	0.961

Emergency preparedness - Ozone at site W	0.667

We have reduced our Plan as follows:

Table 57 Plan reductions

	Totex (£m)
Mobile treatment facilities	2.232
Emergency Preparedness	9.070

8.3.7 Enhancement area: Wastewater resilience

Table 58 Investment Summary

	April Plan (£m)	DD Ofwat Position (£m)	Representation (£m)
Capex	1.341		1.340
Opex	15.817		13.663
Totex	17.158	0.994	15.003

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

Due to the company-specific nature of resilience we undertake a deep dive of all company plans. We allow investment on this line that relates to addressing low probability – high consequence risks, including those related to the National Flood Resilience Review. We reallocate investment where we consider it to be related to expected operational activities for which companies receive an implicit allowance or where the resilience need is covered by other enhancement areas. In this way we ensure that our assessment is equitable across the industry.

Principal changes since IAP

We have moved from a capex approach to a totex approach using the revised forecast expenditure data submitted on 1 April 2019.

Following our assessments in the initial assessment of business plans and company responses we have refined the criteria which must be satisfied to demonstrate our assessment gates. In particular, for each proposed investment, to demonstrate the need for investment we seek evidence of:

1. *The specific service failure mode and associated quantitative or semi-quantitative probability of failure the investment is proposing to address;*
2. *How mitigating against the failure is currently beyond management control;*
3. *The impact on customer service; and*
4. *How, should the failure occur, the consequence is currently beyond management control.*

Further Evidence

Ofwat has disallowed the Partnership Funding element of the Pluvial and Fluvial Flood Protection business case at DD, resulting in £15.817m being removed from the business plan. Ofwat has invited us to provide this evidence, should we wish to demonstrate the need for this investment in response to the DD.

We reject the complete removal of partnership funding from our business Plan, and have refined the business case. We provide additional evidence which covers our partnership funding business case submission.

We also provide letters of support we have received supporting investment in partnership funding, including from Emma Howard Boyd, Chair of the Environment Agency, confirming the Agency's *"support for investment in partnership programmes"* as it *"often deliver better otcomes for commnunities, water company customers and the environment"* see annex 8d.

We have removed 33 schemes. The further evidence demonstrating the need for this investment is found in our PR19 DD Supplementary Evidence document.

In the DD feeder model for wastewater resilience Ofwat noted that the investment FULSWS is an investment to protect a water source and that it should be coded to water resilience in the FD. The investment in question is already booked to water in WS2 line 24 Water Treatment in the year 2023-24 to the value of £39,000 and allowed in full by the water resilience feeder model, so no re-allocation is required.

8.3.8 Enhancement area: WINEP Storage Schemes at STWs to increase storm tank capacity

Table 59 Investment Summary

	April Plan (£m)	DD Ofwat Position (£m)	Representation
Capex	141.058		122.386
Opex	4.199		4.342
Totex	145.257	114.661[1]	126.728

1 adjusted for WINEP in-the-round challenge

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

We reconcile information that has been identified within the companies' submissions with the list of schemes in the latest release of the Environment Agency's WINEP spreadsheet (March 2019). For each company, following cost reallocations, we derive a modelled allowance based on the triangulation of two econometric models (both logarithmic). One of the models has total storage volume as the sole driver, the other has both total storage volume and the no. of schemes as drivers. Both models are 'standardised' to ensure that the total cost allowance across the industry predicated by the models equals the total estimated totex requested by the companies, thus eliminating any log transformation bias.

Principal changes since IAP

- *Assessment is now made on a totex basis rather than capex.*
- *The weighting of the two models used at IAP has changed from 25:75 to 50:50 to avoid unnecessary complexity.*
- *As described above, the two log models have been 'standardised' to eliminate any log transformation bias.*
- *For the WINEP/NEP wastewater programme at draft determination stage we do not make a further cost challenge on individual enhancement lines over our modelled allowance or deep dive assessment. We combine the outputs of these assessments and make a further cost challenge at the programme level. Further details of our approach is within 'PR19 draft determinations: Securing cost efficiency technical appendix'*

Further Evidence

One of the changes that Ofwat has made in this model at DD is to move away from a 25:75 weighting in the two statistical models. At IAP the reason for this weighting was that this "reflects our judgement on the relative strength of the models". Now the weighting of the models has been adjusted to 50:50, the given reason being "to avoid unnecessary complexity and is justified on basis of similarity of R-squared values". The improvement in similarity of R-squared is 0.002 from IAP to DD. This is a very weak motivation to adjust the earlier assumption. The effect of the change is to disallow a further £4.32m totex from ANH, and allow a further £4.54m to NWT whilst leaving most other companies largely unchanged. We believe this is inappropriate and unjustified based on such an arbitrary change to the model.

As explained in the section on Programme Synergies we have reviewed the costs of the schemes in this portfolio without changing the scope. This reflects our commitment to challenge ourselves on efficiency as we had done prior to our initial business plan submission where we had already

removed substantial amounts of scope from this portfolio through our Risk Opportunity and Value process, building detailed bottom up estimates for each site, re-using assets were possible and selecting the lowest cost tank configuration.

8.3.9 Enhancement area: WINEP/NEP Nutrients (phosphorous removal at activated sludge and filter bed STWs)

Table 60 Investment Summary

	April Plan (£m)	Ofwat's DD Position (£m)	Representation (£m)
Capex	414.183		402.294
Opex	36.423		33.087
Totex	450.606	385.470[1]	435.381

1 adjusted for WINEP in-the-round challenge

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

We assess the two lines of P removal enhancement totex expenditure together in order to address inconsistent reporting of expenditure and cost drivers between the lines. We apply two econometric models, placing equal weight on each. The first model predicts the required totex using the number of sites subject to a new or tightened consent and the population equivalent (p.e.) of these sites as the cost drivers. The second model uses the p.e. and the number of enhanced sites with a proposed consent at or below 0.5 mg/l.

Principal changes since IAP

We have moved from a capex approach to a totex approach using the revised forecast expenditure data submitted on 1 April 2019.

Variable for consent stringency is included

For the WINEP/NEP wastewater programme at draft determination stage we do not make a further cost challenge on individual enhancement lines over our modelled allowance or deep dive assessment. We combine the outputs of these assessments and make a further cost challenge at the programme level. Further details of our approach is within the Securing Cost Efficiency technical appendix.

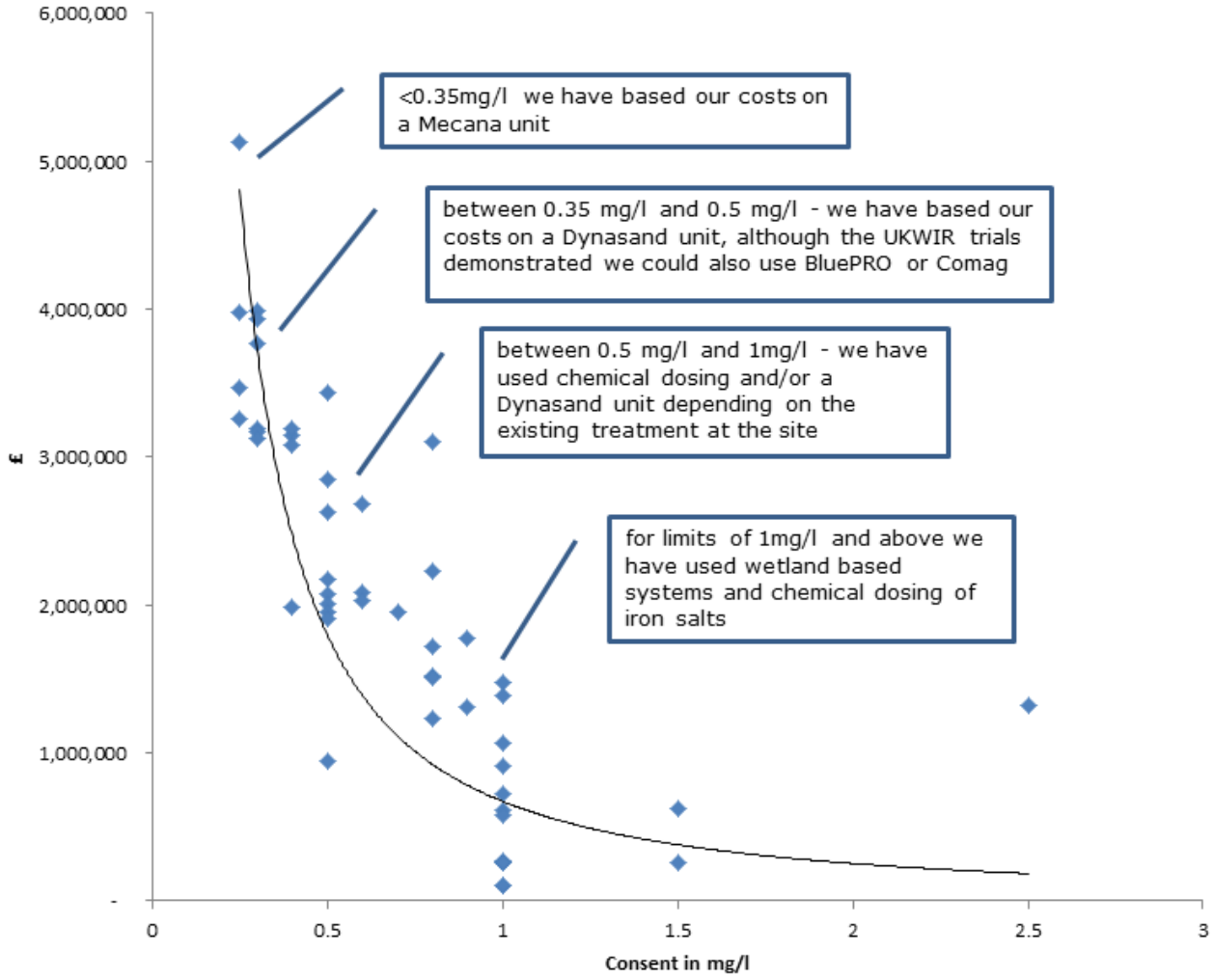
Further Evidence

As explained at IAP the phosphorus removal programme represents a step change for us in terms of the consent levels we are being asked to achieve. Ofwat's DD modelling approach in part responds to recommendations we made in our IAP response, specifically on the including of a consent stringency variable in the model.

The introduction of the consent stringency has been significantly detrimental to Anglian Water's allowance in the model, resulting in a decrease of £13m totex. As a sense check of the model this appears counter-intuitive since Anglian Water has 62% of our obligations below 1mg/l compared with the industry average of 57%. Yorkshire Water have only 47% of their consents below 1mg/l but their allowance is in fact increased by the stringency variable.

We recommend the use of the 1mg/l threshold as opposed to the current 0.5mg/l. Since IAP we have worked with Vivid Economics to review the options to improve model specifications. Our research has found an improved model fit for the 1mg/l standard using published WINEP data. As explained elsewhere we have reviewed the costs of the P removal programme and applied a revised methodology for costing, resulting in a substantial decrease in capex, at the same time as re-profiling the spend.

Figure 29 Capex by Phophorus Consent: Band 3 works



8.3.10 Enhancement area: WINEP/ NEP Event Duration Monitoring

Table 61 Investment Summary

	April Plan (£m)	DD Ofwat Position (£m)	Representation (£m)
Capex	17.247		10.853
Opex	0.453		0.450
Totex	17.700	8.867 [1]	11.303

1 adjusted for WINEP in-the-round challenge

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

We assess investment for this line using the median unit cost for installations and permit application activities, calculated from supplementary information provided by companies on the breakdown of these activities within their submitted costs and scheme numbers. We apply a median industry unit cost to installations and permit activities and sum these modelled allowances.

Principal changes since IAP

- *We have moved from a capex approach to a totex approach using the revised expenditure data submitted on 1 April 2019.*
- *At IAP we assessed expenditure for number of sites with EDM and applied a median unit cost challenge. For DD, in response to companies' challenges, we have separated out installations and permit applications, where applicable, and applied a median industry unit cost to both activities, summing the modelled allowances.*
- *For the WINEP/NEP wastewater programme at draft determination stage we do not make a further cost challenge on individual enhancement lines over our modelled allowance or deep dive assessment. We combine the outputs of these assessments and make a further cost challenge at the programme level. Further details of our approach is within the Securing Cost Efficiency technical appendix.*

Further evidence

At IAP we explained that we believed it was not correct to include HDD in the model analysis as a clear outlier. Ofwat have not followed this recommendation. Ofwat has, however, moved to a totex model as we suggested. Recognising the clear differences between WASCs approaches to costing this investment, we have reviewed any reasons for variance between our own assumptions and those of other water companies and the latest technologies being used in AMP6. The result of this exercise has been to remove £6.4m from line 6 in WWS2. The changes have been as follows:

- We have revised the EDM scope based on the latest technologies in use in our delivery alliances in AMP6 and changed the telemetry unit reprogramming to Radio link connection, this has removed around £4,239 per site
- We have liaised with the Environment Agency and other WASCs and revised the fee applicable for EDM, from a complex variation at £6,029 per site to a minor variation £2,010 per site
- In light of the publication of the June WINEP which has seen more obligations turn green, we have removed those investments where the confirmed obligation occurs on the same site as a U_IMP6 obligation for storm tanks, which also includes provision for EDM monitoring.

8.3.11 Enhancement area: WINEP/NEP Schemes to increase flow to full treatment (FFT)

Table 62 Investment Summary

	April Plan (£m)	DD Ofwat Position (£m)	Representation (£m)
Capex	69.138		65.404
Opex	1.690		1.638
Totex	70.828	73.686[1]	67.042

1 adjusted for WINEP in-the-round challenge

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

We reconcile information that has been identified within the companies' submissions with the list of schemes in the latest release of the Environment Agency's WINEP spreadsheet (March 2019). For each company, following cost reallocations, we derive a modelled allowance based on the triangulation of two econometric models. Each of the two models - one linear and the other a 'standardised' log model - have the same two drivers: no. of schemes and cumulative FFT shortfall. Hafren Dyfrdwy has been excluded from the log model as it was not producing reliable results for this company.

Principal changes since IAP

- *We have moved from a capex approach to a totex approach using the revised forecast expenditure data submitted on 1 April 2019.*
- *Our allowance for Hafren Dyfrdwy is now based on the approach described above rather than a deep dive of the company's proposals used at IAP.*
- *We no longer use the 4 single driver models that were triangulated at IAP due to stability issues and relatively poor R-squared values.*
- *For the WINEP/NEP wastewater programme at draft determination stage we do not make a further cost challenge on individual enhancement lines over our modelled allowance or deep dive assessment. We combine the outputs of these assessments and make a further cost challenge at the programme level. Further details of our approach is within 'PR19 draft determinations: Securing cost efficiency technical appendix'.*

Further Evidence

We understand that the reason Ofwat has moved away from the use the 'min of' approach for DD on the basis this has been superseded by the application of the the WINEP in the round efficiency factor.

We welcome the fact that Ofwat's FFT model shows us to be 14% efficient. As explained previously we estimate our solutions bottom-up using detailed cost models based on actual costs of previously delivered projects.

Significantly, we note that many of the 46 bottom-up cost models we have used to develop the FFT solutions, which Ofwat has assessed as efficient, are the same cost models we have used to cost our Sanitary Parameters programme, which Ofwat assessed as 11% inefficient. This overlap of cost models accounts 64% of the capex in the sanitary parameters portfolio. We have used the same risk opportunity and value process to develop the options in both suites of investments so

the 25% difference in efficiency between this and the Sanitary parameters model appears very inconsistent and should be subject to further review ahead of Final Determination to ensure suitable consistency between these modeling outcomes.

Despite being assessed as efficient in this model, we have demonstrated our commitment to challenging ourselves to reduce costs where possible. As explained in our section on programme synergies we have adjusted the costs in this programme down to reflect the scale efficiencies of a larger WINEP programme.

8.3.12 Enhancement area: First time sewerage

Table 63 Investment Summary

	April Plan (£m)	DD Ofwat Position (£m)	Representation (£m)
Capex	23.367		20.259
Opex	0.508		0.499
Totex	23.875	19.235	20.758

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

We assess the first time sewerage costs using a panel data model where the cost driver is the number of connectable properties served by s101A schemes. The driver enters the model both in linear and squared form. We triangulate our cost allowance across two models, one using historical data for the period 2011-12 to 2017-18 and other using forecast data for the period of 2020-21 to 2024-25. Both models are in levels and use smoothed data over a 3-year period. Where companies forecast below our allowance, we reduce the allowance to the company's forecast.

Principal changes since IAP

We have moved from a capex approach to a totex approach using the revised expenditure data submitted on 1 April 2019.

Further Evidence

At IAP we noted that, given that. the model relies on skewed data where two companies represent the vast majority of spend and outputs, a deep dive would be more appropriate. We remain of this view. However, since April we have been able to update our First Time Sewerage programme which has resulted in changes to both costs and outputs. The changes are as follows:

1. The number of connectable properties has been updated by reviewing each village by either site visits or by the use of online maps. This has resulted in an increase in connectable properties.
2. We work closely with the Environment Agency to encourage uptake of the offer of a connection to the sewerage network. Our original plan had included costs for lateral connections for all properties in the duty area. In our DD response the number of lateral drain connections has been reduced by 20% to align with actual connection rates form recent schemes.
3. The Little Bealings scheme has been deferred by 1 year which effectively defers the actual delivery into AMP8 due to appeal. Having reviewed this project based on the appeal through the Environment Agency and that the 3 nearest Wastewater Treatment Plants do not have the capacity to accept these increased flows. It is now proposed to defer the project by 1 year - which effectively defers the project to AMP8
4. The Knapton scheme was promoted as an AMP7 transition scheme as part of our plan to smooth delivery resource. Whilst this has now been removed by Ofwat from the allowed transition expenditure, the work completed revealed that an existing rising main can be re-used. We have therefore updated the costs of this scheme removing over £1m capex

The impact of the above changes is to reduce the spend on line 1 of WWS2 by £3.108m.

8.3.13 Enhancement area: WINEP/NEP UV disinfection

Table 64 Investment Summary

	April Plan (£m)	DD Ofwat Position (£m)	Representation (£m)
Capex	24.907		21.628
Opex	1.618		0.402
Totex	26.524	24.237[1]	22.030

1 adjusted for WINEP in-the-round challenge

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

We assess the investment for this line based on the materiality of the expenditure requested and undertake a deep dive where appropriate. We reconcile information that has been identified within the companies' submissions with the list of schemes in the EA's WINEP3 (March 2019).

Principal changes since IAP

We have moved from a capex approach to a totex approach using the revised expenditure data submitted on 1 April 2019.

Following challenge from companies on our use of median industry unit cost to support the decision to carry out deep dives, we have removed the unit cost element of our assessment for DD. We have retained our assessment approach made at IAP for companies that were fast tracked.

For the WINEP/NEP wastewater programme at draft determination stage we do not make a further cost challenge on individual enhancement lines over our modelled allowance or deep dive assessment. We combine the outputs of these assessments and make a further cost challenge at the programme level. Further details of our approach is within the Securing Cost Efficiency technical appendix.

Further Evidence

We welcome the fact that Ofwat passes the full investment through the deep dive assessment. We have reviewed Ofwat's assessment and, in particular, the request to provide more information on the investment 'Southend Chalkwell bathing water ambition investigation'. At IAP the reason for this investment being substantially higher than other investments in the same portfolio was that (as stated in the spreadsheet summary provided in response to query ANH-DD-CE-013) investment was for improvement rather than investigation and included a 3,110m3 storage tank to prevent overland flow of sewage onto the beach at Southend in storms. We have reviewed the changes in the WINEP issued in June by Defra and recognise that this obligation has now changed from a required improvement to an investigation only.

Whilst we have not been able in the tight timeframes of the DD window to remove this from our totex requested in WWS2 line 21 we request that Ofwat remove the improvement component of this investment (£5.33m) from our FD allowance as a two sided adjustment. We believe that making this request demonstrates a principled approach to adhering to the process even for investments that were allowed in full by Ofwat at DD.

We confirm for this area of spend we have followed Ofwat's guidance to include the investigations component on line 16 to align to others in the Industry.

8.3.14 Enhancement area: WINEP Storage schemes in the network to reduce spill frequency at CSOs

Table 65 Investment Summary

	April Plan (£m)	DD Ofwat Position (£m)	Representation (£m)
Capex	11.649		11.640
Opex	0.245		0.244
Totex	11.894	5.898[1]	11.884

1 adjusted for WINEP in-the-round challenge

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

We assess the investment for this line by using a linear regression model which estimates expected totex based on the volume of storage each company is planning to construct. We took this data from Business Plan tables WWS2 and WWS4 respectively. Where the charting of this data indicated a company is an outlier, we further investigated these entries for causal factors and made amendments if appropriate. The model includes the costs and cost drivers for the Southern Water conservation driver schemes as they are of a similar nature - and the greater data volume improves the model. Further to the representation from Dwr Cymru, we have used effective storage volume to allow the inclusion of alternative sustainable drainage approaches.

The model applied has good predictive power, the coefficients appear logical and it fits the data well. We reviewed a range of linear and log models and further tested for number of schemes as a variable. The number of schemes was not shown to be sufficiently statistically significant and is not used.

Principal changes since IAP

- We have moved from a capex approach to a totex approach using the revised forecast expenditure data submitted on 1 April 2019.

- For the WINEP/NEP wastewater programme at draft determination stage we do not make a further cost challenge on individual enhancement lines over our modelled allowance or deep dive assessment. We combine the outputs of these assessments and make a further cost challenge at the programme level. Further details of our approach is within the Securing Cost Efficiency technical appendix.

Further evidence

For this area of expenditure, Ofwat's modelling change has a material impact on the modelled expenditure derived. If Ofwat had retained their IAP log model specification our allowance would have been £8.59m (before the application of any additional WINEP programme challenge).

We consider there are arguments against the linear model given the the presence of outliers in the unlogged data. For example, the span from the highest volume company (YKY = 44,000) to the lowest (SRN = 1,740) is a factor of 25 (highest / lowest). Whereas, the equivalent span is just 1.37 in log models. The use of the a log-log model would address the problem of outliers.

We have also reviewed the rationale for the removal of the number of schemes was not found to be statistically significant.

However, we consider there is a strong argument for economies of scale in storage schemes to reduce spill frequency given that investment in this area is a capex-intensive. We have tested the addition of sites into the fit of the log-log specification model and determine that R^2 rises from 0.874 to 0.900). We find that the variable also has a reasonable p-value. Overall this would produce a most reasonable expenditure allowance.

8.3.15 Enhancement area: Sludge enhancement (Quality and Growth)

Table 66 Investment Summary

	April Plan (£m)	DD Ofwat position (£m)	Representation (£m)
Capex	29.650		10.910
Opex	1.515		1.627
Totex	31.165	0.500	12.537

figures are quoted as £m in 2017/18 prices including RPE and company efficiencies

What Ofwat is saying

Approach

For our assessment we combine sludge quality and sludge growth into one sludge assessment area as these areas both drive the need for additional bioresources treatment capacity. We assess the companies' estimated impacts of population growth or sewage treatment quality improvements on sludge production volumes. In addition, we assess how well the companies evaluate and use the opportunities of the bioresources market.

Further, we assess if the companies demonstrate an appropriate solution appraisal and whether the solutions have been clearly defined.

Further Evidence

In our August 2019 plan we accept Ofwat's DD assessment for the investments regarding enhancements to CHP engines, diesel generation and boilers for MCPD compliance and have removed these investments from our plan.

We also accept Ofwat's DD with regards enhancement investment for sludge input monitoring at all input points for both flow and dry solids on the basis our current method of measurement at the point of treatment meets Ofwat's revised requirement as stated in the DD response documents. We have removed these investments from our August 2019 plan.

We challenge Ofwat's DD on removing our investments at Whitlingham and Pyewipe for additional sludge treatment capacity to cater for planned growth and the impacts of additional sludge resulting as a consequence of implementation of the AMP7 WINEP programme for phosphorus removal. We provided further evidence justifying the investment in the PR19 DD Supplementary Evidence document.

9 RISK AND RETURN

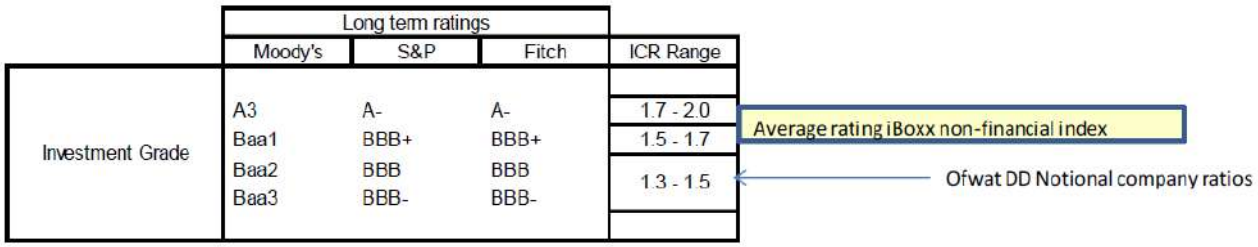
9.1 Summary

- Neither the notional nor the actual company is financeable at the level of WACC proposed and in the context of the overall balance of risk and return presented in the DD;
- Advancing cash flow by increasing the pay-as-you-go (PAYG) rate above the natural level does not enhance credit worthiness or financeability and the rating agencies will deduct it in their calculations of credit ratios. For these reasons we continue to solve PAYG at the natural rate;
- Our PAYG rate has been aligned to the actual ratio of opex and capex within the plan to ensure a natural rate, an approach that is supported by customers and rating agencies and is consistent with good regulatory practice;
- A lower WACC of 2.4%, as used in our September 2018 Plan and supported by legacy rewards, could be feasible, but only if the balance of risk in the DD can be improved for the Final Determination. If this is not possible, a higher WACC would be required, within the range of 2.5% to 2.8% to address the increased overall level of risk;
- The cost of embedded debt is understated due to the exclusion of swaps; the cost of new debt is understated due to the assumption of a 'halo' effect;
- The DD increases the scope for penalties, has amended cost sharing mechanisms, creates a large totex funding gap and delivers an unprecedented level of methodology changes. This materially changes the balance of risk relative to our September 2018 plan;
- The overall risks facing the notional company are now so heavily skewed to the downside, with an unprecedented level of regulatory challenge and a requirement for upper quartile performance, that it cannot expect to earn its cost of capital. This is evidenced in the recent report from Economic Insight (see Annex 9b), which also refutes Ofwat's suggestion of systematic historic outperformance by the industry;
- The level of equity return that delivers the expected Baa1/BBB+ credit rating rating for the notional company and ensures financial resilience over the longer term is 4.2% to 5% leading to a WACC range of 2.5% to 2.8%.

9.2 Cost of capital and financeability

Ofwat has proposed to determine the allowance for the cost of new debt based on an average of the iBoxx indices of A and BBB-rated GBP non-financial corporate bonds with 10+ years to maturity. Internal consistency therefore implies that the financeability test be conducted relative to a strong Baa1 rating. As explained in this section, the notional company cannot achieve a Baa1 rating based on the DD, as the figure below shows.

Figure 30 Why should the notional company target at least Baa1?



We have reviewed the updated cost of capital analysis presented by Ofwat, which raises a number of concerns:

- the 25bp downward adjustment to the cost of new debt based on the iBoxx reference index is inconsistent with Ofwat's methodology where the cost of new debt is based on an iBoxx reference index where over 70% of the debt instruments are rated Baa1 or better;

- we disagree with changes that Ofwat has proposed to the calculations of the cost of embedded debt. Ofwat has also excluded derivatives from its cost of embedded debt calculations which if included would increase the cost of embedded debt;
- the cost of equity assumption proposed in the DD is too low to enable a Baa1 rating (the level implied by Ofwat's choice of the iBoxx non-financial index as the basis for determining an allowance for the cost of new debt) and potentially too low for an investment-grade rating.

These concerns are confirmed by analysis from Moody's.

'*Ofwat based its draft determination on an allowed cash return of 2.69%, 21 basis points below the guidance it gave in December 2017. However, this was based on market data from February 2019. Ofwat says a further cut of 37 bps could have been justified based on more recent market data. The full cut of nearly 60 bps would mean cash returns 140 bps lower than in the 2015-20 period. As a result, the adjusted interest coverage of a company financed in line with the regulator's assumption would fall to 1.15x in the next period from 1.3x in the current period.*'[1]

We have undertaken updated financeability analysis on our revised plan under the notional capital structure. We published the updated analysis on 16 August 2019, having first shared this with Ofwat (see Annex 9a). We have assumed the cost of capital parameters published in the DD with the following amendments.

- cost of new debt reduced to 0% (RPI-real) compared with 0.34% in the DD, to reflect lower yields in the market and removal of the 'halo' effect
- cost of embedded debt maintained at 1.59% (RPI-real) as assumed in our business plan, notwithstanding that the exclusion of swaps by Ofwat means that the weighted average cost of debt for the sector is higher than 1.59%

This demonstrates that at the level of WACC that Ofwat has set out in its DD, and in circumstances where the company is required to deliver a plan which is consistent with the DD, it cannot be financeable.

Credit rating agencies disagree with Ofwat that accelerating cash flows by increasing PAYG is economically equivalent to a faster transition to CPIH. They do not view increasing PAYG as being credit positive, and remove the impact of advancing cash flow through a higher PAYG ratio when calculating adjusted interest cover. PAYG mechanisms do not therefore support credit ratings.

The DD introduces significant new risks with cost challenges across the sector, an increased assumption of the 'halo' effect, methodological changes along with asymmetric downside risks due to RORE ranges along with a WACC which achieves the bottom half of the Baa2 credit rating range (1.30x-1.50x).

We have calculated the range of equity return that delivers a 1.5x to 1.7x AICR for the notional company. This is an equity return between 4.2% and 5.0%, and a WACC of between 2.5% and 2.8% (RPI-real). This would mean a notional company could remain financially resilient over a longer term and achieve a Baa1 level rating. We have also considered the range for AICR, reflecting the rating agencies' guidance, and that the notional company should aim to be within this range, and towards the upper end if the overall balance of risk and return remains as presented in the DD.

A lower WACC of 2.4%, as used in our September business plan and supported by legacy rewards, could be feasible, but only if the balance of risk in the DD can be revisited for the Final Determination. If this is not possible, a higher WACC would be required to address the lower value of legacy rewards and the increased overall level of risk.

9.2.1 Cost of capital

Balance of risk and return

The DD adversely changes the balance of risk and return relative to our September 2018 Plan.

We set stretching targets in our September 2018 Plan for cost efficiencies and output delivery incentives (ODIs). Achieving these targets would have been necessary to deliver the base return on regulated equity.

1 Moody's Investors Service (2019), 'Ofwat tightens the screws further', 26 July, p.1.

The DD has imposed substantially greater totex cost challenges, which means that, even if the company delivered a step-change in efficiency, it would be unrealistic to keep costs to the allowance in the DD. This would result in returns lower than the cost of equity.

This is compounded by the increase in asymmetric downside risks on ODIs.

The overall scope for delivering returns higher than the cost of equity is therefore extremely limited, while there is scope for significantly lower returns even if the company improves performance.

This change in the distribution of expected returns implies that the base return required to deliver the cost of capital has increased relative to the 2.4% (RPI-real) cost of capital assumed in our September 2018 Plan.

9.2.2 Cost of debt

Cost of new debt

The output of the financeability analysis indicates that the notional company would achieve a credit rating in the bottom half of the Baa2 range, and hence would raise new debt at yields that are higher, not lower, than the average of A3 and Baa1.

We disagree with the downward adjustment to the iBoxx reference yield for an 'outperformance wedge'. A 'Halo' effect is a historic concept; it existed before 2011 and particularly during the Global Financial Crisis when debt investors paid a premium to invest in regulated assets. The CMA said in 2015:

"Any analysis of the halo effect needs to be treated with some caution, since it depends on factors such as the time period selected for the analysis; the approach taken with any outlier observations; differences between debt in the regulated entity and that at a Group Company level (non-regulated business); together with the approach taken with some debt that has unusual lengths of maturity (either short or very long) …. A number of factors may influence this reduction, including changes to the credit ratings and capital structures of the DNOs, together with changes to external market conditions. This is illustrated …. where the halo effect is around 45 basis points for debt issued by the DNOs up to the end of 2009, but then there is, on average, no halo effect thereafter … We do not therefore consider that GEMA was wrong in assuming a zero halo effect for new debt … or that GEMA failed to take account of any halo effect".[2]

Ofwat considers that, regardless of the explanation for the difference in yields achieved by companies and the iBoxx reference yield, the allowance for the cost of debt should be adjusted to be a better fit for the debt costs the sector actually achieves:

Where we observe evidence of consistent outperformance, we consider it appropriate to calibrate the level of the index for the observed 'outperformance wedge' to make it a better fit to the new debt costs the sector is observed to actually achieve. We consider outperformance due to credit rating or tenor of debt should not be excluded from this process.[3]

In effect, Ofwat is moving away from an approach that sets the cost of debt based on a notional company and towards an approach that passes through the actual cost of debt to consumers.

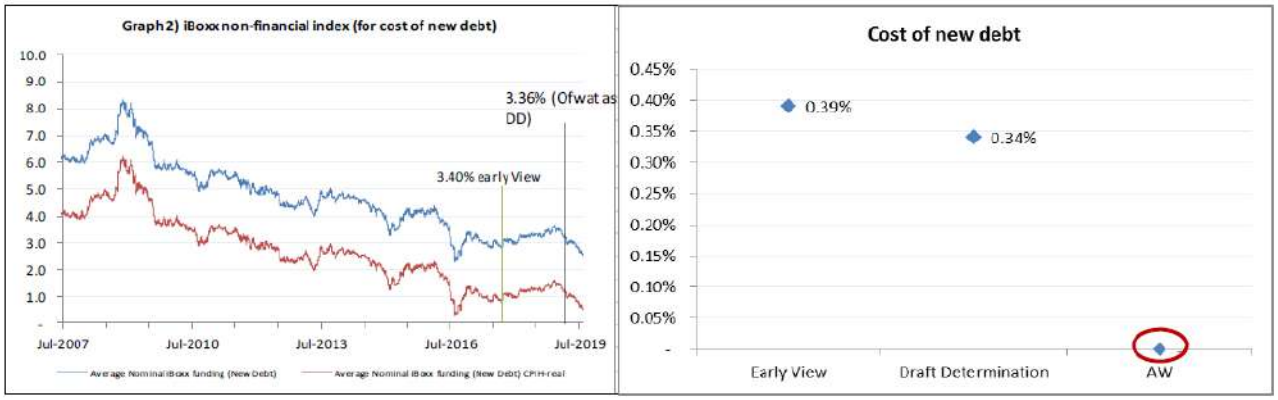
Our Representation removes the 25bp downward adjustment to the cost of new debt assumed by Ofwat in the DD.

We also update the cost of new debt to reflect changes in market conditions since 28 February 2019. We believe it is in the customers' interest to reduce the assumed cost of new debt below that assumed in the DD, but that any assumption of a 'halo' effect should be removed.

2 CMA (2015), 'British Gas Trading Limited v The Gas and Electricity Markets Authority – Final Determination', para. 8.48-8.54.

3 Ofwat (2019), 'PR19 draft determinations: Cost of capital technical appendix', p.66.

Figure 31 Changes in cost of new debt



Consideration should be given to retaining some headroom above the forward rates given the extreme uncertainty in the debt markets. With Ofwat's new indexation mechanism, any difference between assumed and actual will be returned back to customers in full.

The cost of new debt we used in our updated plan is therefore 0% (RPI-deflated) compared with the 0.34% assumed by Ofwat in the DD.

Cost of embedded debt

Ofwat has followed two approaches to derive the cost of embedded debt, which are termed the 'balance sheet' approach and the 'benchmark index' approach.

The balance sheet approach draws on company-reported data on debt and other financial instruments recognised on company balance sheets as at 31 March 2018, plus three listed bonds issued after this date. Ofwat has excluded a number of 'non-standard debt instruments', which results in 93% of reported debt instruments being retained in the analysis.

We disagree with the exclusions that Ofwat has made. Ofwat has excluded the majority of swaps in its assessment of embedded cost of debt. These swaps reflect existing real costs for those companies that cannot now be avoided. It is worth considering why some of these swaps were taken out and how they have benefitted customers:

- In the 2000's, nominal interest rates were high and real WACC low: to bridge the gap between nominal costs and real funding, companies took index-linked debt. Given the very limited market for index-linked debt at the time, many companies used swaps which combined with a bond to provide the same effect as issuing an index-linked bond.
- This innovation at the time allowed Ofwat to assume 33% RPI index-linked debt in their assessment of financeability and to discharge its financeability duty. To-date, Ofwat still makes that assumption. Many water companies still carry those long-dated index-linked swaps. These swaps were economically justified and have clearly benefitted customers. These are a prominent part of 'embedded debt' for companies and therefore it is retrospective to remove their cost allowance now.

Analysis undertaken by Europe Economics for Ofwat suggests that adding all swaps back to the sample would increase the cost of embedded debt estimated by Ofwat for WaSCs under the balance sheet approach by 60bp.[4] Adding all swaps apart from the eight identified by Europe Economics as 'particularly expensive' and one amortising loan would increase the cost of embedded debt estimated by Ofwat for WaSCs under the balance sheet approach by 53bp.[5]

Under the balance sheet approach, approximately £2.8 billion of the total £48.8 billion of debt instruments considered by Ofwat fall due for refinancing before April 2020. Ofwat has assumed that this debt will be refinanced at the forecast average spot rate for the iBoxx reference index

4 Europe Economics (2017), 'PR19 Initial Assessment of the Cost of Capital', Table 9.2, column 3 (4.88%) minus column 5 (4.28%).

5 Europe Economics (2017), 'PR19 Initial Assessment of the Cost of Capital', Table 9.2, column 3 (4.81%) minus column 5 (4.28%).

over 2018/19 and 2019/20, adjusted downward for 25bp of assumed outperformance. Ofwat calculates this number to be 2.98% (nominal). As explained above, we consider that this downward assumption is inconsistent with the yields that companies would achieve on new debt. Removing this 25bp produces an estimate of 3.23% (nominal) for the cost of refinanced debt. As the debt due for refinancing comprises approximately 6% of the total debt as at March 2018, this translates into an increase of just over 1 bp to the cost of embedded debt under the balance sheet approach.

The benchmark index approach uses the average of the yields on the iBoxx A and BBB-rated GBP 10yrs+ non-financials indices. Ofwat calculates 10-year and 15-year trailing averages and projects forwards the iBoxx yields to forecast the trailing averages as at 1 April 2020. Ofwat deducts 25bp for assumed out-performance. As explained above, we consider that for the forecast period this downward assumption is inconsistent with the yields that companies would achieve on new debt. For the period prior to March 2019 we refer to the evidence in the Economic Insight report "Financeability of the notionally efficient firm" that demonstrates once credit rating and tenor are controlled for, there has been no outperformance historically. As such we consider the 'benchmark index' approach is close to an approach that passes through the actual cost of debt to consumers, and that the distinction between the 'balance sheet' and 'benchmark index' approaches is somewhat artificial.

Ofwat has used the balance sheet approach to define the upper and lower ends of the range for the cost of embedded debt. The upper end is the company-level median of 4.65% (nominal) and the lower end is the company-level weighted average of 4.25% (nominal). The point estimate is based on the benchmark index approach and uses the 15-year trailing average adjusted down by 25bp, resulting in an estimate of 4.5% (nominal).

Ofwat has changed its approach between the Final Methodology decision and the DD. The company-level median was used as the point estimate in the methodology decision, but in the DD Ofwat uses the company-level median as the upper end of the range on the basis that '...including smaller WoCs in the sample skews the median upwards'. [6]

As explained above, adding back the swaps that Ofwat has excluded would increase the cost of embedded debt estimated by Ofwat for a WaSC under the balance sheet approach by 53-60bp. This would increase the company-level weighted average from 4.25% (nominal) to 4.78 – 4.85%. With a 3% RPI inflation assumption, this is 1.73 – 1.80% RPI-real. The 1.46% point estimate proposed by Ofwat is below this range. As we based our Plan on a 1.59% RPI-real cost of embedded debt, we therefore continue to use 1.59% (RPI-deflated) as the cost of embedded debt in our updated Plan, notwithstanding that we consider that the evidence supports a higher estimate.

Ratio of embedded to new debt

We note that the evidence submitted in company business plans indicates that around 20% of the debt of the notional company will be issued during AMP7. However, based on the lower RCV growth in the DD relative to business plans, this proportion would decrease to 15%.

Our Representation continues to use a 20:80 ratio of new to embedded debt.

Liquidity and issuance costs

We apply 10bp to the cost of embedded and new debt to account for liquidity and issuance costs. This is consistent with the assumption used in our Plan and Ofwat has not changed this assumption in the DD.

9.2.3 Cost of equity

As set out in the following section, the cost of equity assumption proposed in the DD is too low to enable a Baa1 rating, and potentially too low for an investment-grade rating.

We have considered the range for AICR, reflecting the rating agencies' guidance, as the table below shows. We have therefore calculated the minimum level of equity return that delivers a 1.5x AICR for the notional company. This is an equity return of between 4.2% and 4.5% and a WACC of between 2.5% and 2.8% (RPI-real). This will mean a notional company could remain financially

6 Ofwat (2019), 'PR19 Draft Determinations: Cost of capital technical appendix', p.78.

resilient over the longer term by just achieving a Baa1 level rating. We consider that the notional company should aim to be within this range, and towards the upper end if the overall balance of risk and return remains as presented in the DD.

Figure 32 Possible WACC scenarios (RPI-real) for a long term financially resilient notional company

	Early view	Low end	Mid	High
Embedded debt	1.59%	1.59%	1.59%	1.59%
Proportion embedded vs new	70:30	80:20	80:20	80:20
Cost of new debt	0.39%	0	0	0
Cost of equity	4.0%	4.2%	4.6%	5.0%
WACC	**2.40%**	**2.50%**	**2.65%**	**2.80%**
Typical Notional company AICR achieved (excluding legacy or PAYG)	1.46x	1.50x	1.60x	1.70x

A lower cost of equity of 4.0% and WACC of 2.4%, as used in our September business plan and supported by legacy rewards, could be feasible, but only if the balance of risk in the DD can be revisited for the Final Determination. If this is not possible, a higher WACC would be required to address the lower value of legacy rewards and the increased overall level of risk.

We have reviewed the cost of equity analysis in the DD to understand why the equity return is nearly 40% lower than in the PR14 final determination. [7]There are several aspects of the cost of equity calculation where Ofwat has adopted a methodology that does not reflect the evidence that we and other parties have provided during the course of this price review. In the interest of brevity we have not provided a comprehensive list of all our concerns with the analysis as set out in previous submissions, and only highlight some of the main outstanding areas of disagreement.

Total market returns

In this section we summarise the main outstanding areas of disagreement with respect to two of the key pieces of analysis used by Ofwat: historical estimates and 'forward-looking' estimates.

Historical estimates

Ofwat notes that in assessing the evidence on historical equity market returns there are two important factors that need to be considered.

- measurement of inflation over the long-term
- the weight to apply to arithmetic and geometric averages

Ofwat follows the approach introduced by the UKRN study of re-defining the historical UK equity market relative to a 'backcast' series for CPI and then deducting a forecast of the differential between RPI and CPI inflation for the AMP7 period, estimated by Ofwat to be 100bp. The CPI was only introduced in 1989 and hence the pre-1989 data has been created through a process of 'backcasting'. This process included setting the CPI inflation rate equal to the RPI inflation rate for a significant proportion of the dataset. This results in average historical inflation measured by CPI being very close to inflation measured using RPI. The fundamental uncertainty about the historical RPI-CPI inflation differential undermines this approach. A more robust way to assess the historical data would be to use historical returns estimated relative to the official, published RPI and adjust

7 The DD proposes an equity return of 3.46% (RPI-real) compared with 5.65% in PR14.

for the increase in the formula effect created by changes to the methodology previously made by Ofwat. The forecast RPI – CPI inflation differential would then be added to this estimate to produce a CPI-deflated total market return.

Regarding the averaging technique, we consider that the arithmetic average is appropriate for the purpose of capital budgeting and determining the allowed rate of return for a regulated business. This can be directly estimated from the historical data and does not require the calculation of a geometric average plus uplift as used in the UKRN study.

'Forward-looking' estimates

Ofwat has considered evidence from dividend discount models produced by PwC and Europe Economics. Both of these models yield TMR estimates that are lower than those from the model developed and applied by the Bank of England.

One of the main differences between the PwC/Europe Economics models and the Bank of England model is the way the long-term dividend growth rate assumption is derived. The Bank of England model assumes that in the long-term, companies will experience revenue and dividend growth rates that match the GDP growth rates of the countries they operate in. The FTSE All-share is dominated by companies that derive a significant proportion of their revenue from outside the UK. The PwC/Europe Economics models instead assume that FTSE All-share companies derive all their revenue from the UK, and therefore use forecasts of the long-term UK GDP growth rate. This introduces an inconsistency between the dividend growth forecasts that investors in the FTSE All-share would be expected to use, and dividend growth forecasts assumed by PwC/Europe Economics.

Notwithstanding the downward bias in the PwC/Europe Economics models, the latest update produced by PwC for Ofwat indicates a spot estimate of 10.4% for the implied nominal total market return. Deflating by a 3% RPI forecast would give an estimate of 7.4%, RPI-real.

Risk free rate

The risk free rate (RFR) is an estimate of the return that investors require for investing their money at no risk to the amount invested. In CAPM, the RFR represents the minimum return investors require, before considering any additional premium due to the risk characteristics of a particular investment. In its early view, Ofwat based its estimate of the RFR on March 2017 yields for 10 and 20 year UK nominal gilts.[8] At DD Ofwat changed its early view approach citing a UKRN study "that regulators should use the yield on inflation-indexed gilts at their chosen horizon to derive an estimate of risk free rate at that horizon". However, Europe Economics (Ofwat's Economic Advisors) favoured the approach of using both nominal and RPI-linked gilts to generate a range. According to Europe Economics, "the case for relying on RPI –linked gilts versus nominal gilts has become weaker as a result of the increased divergence between RPI and CPIH".[9]

Beta

The technical analysis that underpins the beta estimates in the DD needs to be seen in the wider regulatory and political context.

The regulatory context is that Ofwat is following an approach to cost allowances and incentives that exposes companies to greater downside risk and skews the expected return to a level that is lower than the base allowed return on regulated equity. The political context includes the threat of renationalisation, which affects entire regulated sectors and cannot be avoided by investors in UK infrastructure.

In this context it is surprising that Ofwat has not proposed an increase to the asset beta assumed at PR14. In fact, the PR19 DD proposes an asset beta of 0.29 (assuming zero debt beta) compared with the asset beta of 0.30 assumed for PR14.

Turning to the technical details of the analysis it appears that between PR14 and PR19 Ofwat has changed position on the appropriate time period to use for the beta analysis. The PR19 DD anchors the point estimate on two-year daily betas. In the PR14 Final Determination, Ofwat took a more

8 Ofwat (2017), 'Delivering Water 2020: Our methodology for the 2019 price review Appendix 12: Aligning risk and return', 13 December.

9 Europe Economics (2019), 'The Cost of Capital for the Water Sector at PR19, p.22

balanced approach that placed weight on betas during the period 2009 to 2013 (i.e. five-year betas). The figures below reproduce the evidence base that Ofwat presented in its December 2014 document.

Figure 33 PR14 Ofwat Methodology to estimate Beta

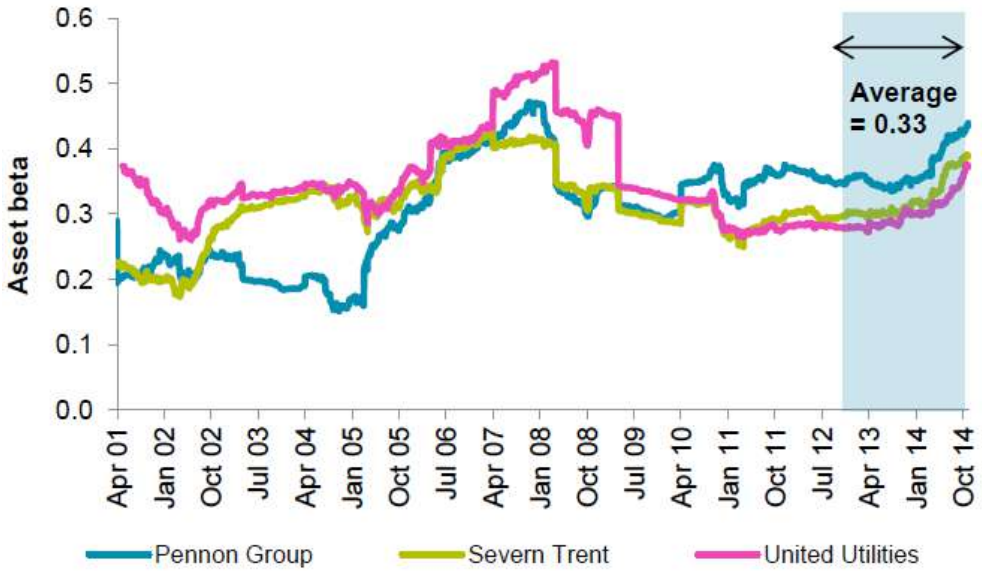
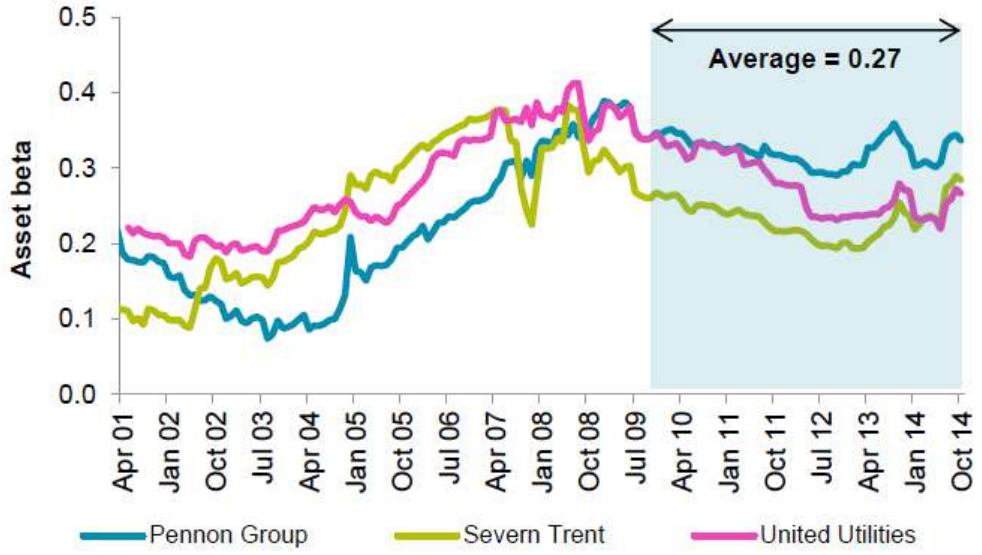


Figure 34 Five-year monthly beta estimates



10

The conclusions that Ofwat drew from the data were as follows: [11]

> *Although daily beta estimates have recently risen above 0.3, these estimates have peaked in recent months (and changes since January could be influenced by the PR14 regulatory process). We therefore place greater weight on the daily betas for Severn Trent Water and United Utilities over the 2009 to 2013 period which have tracked 0.30 closely.*

10 *Source*: Ofwat.
11 Ofwat (2014), Setting price controls for 2015-20 final price control determination notice: policy chapter A7 – risk and reward, pp.34-35.

Had Ofwat taken a 'spot' reading of betas, using share price data only from the two-year period November 2012 to October 2014, its PR14 beta would have been approximately 0.38. However, Ofwat elected to look through the day-to-day volatility in share price data, and especially the volatility that appeared in the run up to a regulator's price control decision, and was guided instead by empirical estimates of beta over a longer time horizon.

Estimates

Ofwat has also made a major change in methodology by assuming a debt beta of 0.125 in the DD, whereas the PR14 final determination used a zero debt beta. The evidence for such a high debt beta is weak.

Investor confidence in the regulatory regime depends on a consistent methodology over time, with any changes being introduced only if they are well-justified. The change in the weighting of different beta estimation periods between PR14 and PR19 is not justified, and neither is the increase in debt beta to 0.125. In the absence of a strong case to change methodology, consistency with the more robust approach taken at PR14 is of paramount importance.

9.2.4 Financeability

9.2.5 Notional company financeability

The DD financial model calculates notional AICR ratios of 1.44x excluding any legacy adjustments on a WACC of 2.19% (RPI-real). Our paper on the financeability of the notional company shows a simple relationship between the cost of equity and the notional financeability, and a WACC of 2.19% would achieve only 1.37x AICR (see Annex 9a). We have since found that the DD financial model incorrectly calculates AICR ratios by assuming a recovery of pension deficit costs through the price controls but not deducting them as a cost thereby inflating ratios artificially. Once this error is corrected, the Ofwat published DD AICR ratio falls from 1.44x to 1.37x.

Figure 35 Notional AICR (Ofwat DD, average)

These ratios are outside the range for the target Baa1 rating (Moody's AICR > 1.5x; Fitch FFO / net debt > 9%). The ratios remain below the Baa1 thresholds even when the benefit of legacy adjustments from AMP6 is included.

The Figure above provides updated ratios for the notional company based on our revised April 2019 business plan and incorporating the cost of capital assumptions used by Ofwat in the DD. However, as noted earlier, the balance of risk related to the downside skew on ODIs and the Totex gap would need to be improved to be similar to our September Plan assumptions for the 1.52x to ratio to provide sufficient headroom for risk. If not, a higher WACC would be required, within the range of 2.5% to 2.8%.

Ofwat also asks that we consider a lower outlook for WACC of 1.82%, the level indicated by Ofwat in the DD. The financeability analysis shows that the AICR ratios for the notional company fall to around 1.17 which would leave the notional company below the investment grade and consequently in breach of its licence obligations.

Analysis submitted by Anglian Water has demonstrated that, based on the cost of capital assumptions in the DD, the notional company cannot achieve an adjusted interest cover ratio that meets the 1.5x to 1.7x threshold that Moody's and Fitch consider necessary for a Baa1 rating. As our analysis shows that the current position gives an AICR that is too low in the Baa1 range, any reduction in cost of capital can only worsen the situation.

Table 67 Financeability Assessment at PR19 DD

Assume RCV	£100
Assumed Gearing	60.0%
Assumed RPI linked debt (proportion of total)	33%
Assumed cost of debt and inflation (FD assumption)	£40.2 x (1.34% + 3%) + (£19.8 x (1.33%) = 1.75 + 0.26
Notional Interest	(2.01)
Return (cost of capital)	2.64 (Wholesale blended WACC)
Notional AICR ratio (WACC / Interest)	**1.31x (1.37x incl retail) (lower than 1.5x)**
Ofwat action to resolve the issue	**In July 2019, Fitch joined Moody's in making clear that any PAYG would be removed before assessment of AICR ratios.**
Resultant average WASC AICR ratio	**1.31x (1.37x including retail)**

The conclusions of our analysis for the notional company are consistent with analysis undertaken by ratings agencies.

Fitch has concluded that not only would the notional company be downgraded, but it would be difficult for an uncovenanted entity – which the notional company is – to retain an investment-grade rating:

"Our analysis of the notional company (a theoretical company modelled using the assumptions below) suggests that its average cash PMICR in AMP7 will be 1.28x compared to 1.39x before the revision. As we have previously stated, it would be difficult for an uncovenanted entity to retain an investment-grade IDR if the cash-based PMICR was consistently below 1.3x in our forecast".[12]

Ofwat has requested that Board assurance is provided regarding the financeability of the company on a notional basis taking account of the 'reasonably foreseeable range of plausible outcomes of their final determination including the evidence of further downward pressure on the cost of capital in very recent market data' [13]. The ratios presented above show that the notional company cannot achieve a Baa1 rating either on the basis of the DD parameters or on the basis of what we consider to be more realistic assumptions for the cost of embedded and new debt.

Additionally, Ofwat's push for upper-quartile performance targets with a downside skew on penalties means that an average company, even if improving its performance, will be facing net penalties. In the DD, the range for upside has been reduced, whereas downside risk has increased significantly. This alters the balance of risk and reward relative to that in our business plan and puts upward pressure on the cost of capital.

12 Fitch Ratings (2019), 'Ofwat Price Review Intensifies Pressure on UK Water Sector', 26 July.
13 Ofwat (2019), 'PR19 draft determinations: Aligning risk and return technical appendix', p.49.

The cost of equity allowed in the DD is insufficient to finance a company at a Baa1 rating and adjustments upwards to the WACC range will be needed unless the overall balance of risk and return can be revisited. Our Board's statement on these matters is part of this Representation.

Options to achieve financeability

Pay-as-you-Go (PAYG)

In the DD Ofwat has expressed the view that 'the use of PAYG or RCV run-off to address a financeability constraint is preferable to artificially increasing the cost of equity above the level implied by market evidence.'[14]

Ofwat has seemingly not recognised the possibility that the inconsistency of the DD with a Baa1 credit rating may indicate that the cost of equity is higher than implied by how Ofwat and its advisers have interpreted the market evidence. There are many places in the cost of capital assessment where Ofwat and its advisers have exercised judgement over the interpretation of the evidence. The financeability test indicates that the cost of equity is higher than Ofwat has presented in the DD.

Ratings agencies do not regard the advancement of cash through the use of PAYG or RCV run-off to be credit positive.

Fitch has stated:

'To improve financeability [sic] for some companies, Ofwat has increased Pay-As-You-Go (PAYG) rates and proposed lower dividends. We will however adjust cash PMICRs to align accounting treatment of opex with the regulatory treatment if companies use the PAYG rate above the accounting level.'[15]

Moody's has stated:

> *'The regulator views the adjustment of PAYG and run-off rates as economically equivalent to the change in indexation measures, because they involve a trade-off between fast money (received through revenue through the detriment of RCV growth) and slow money (increased RCV growth with lower short-term revenue). However, we believe that there is a key difference: the switch to CPIH is a permanent change that applies to all companies in a similar way, while PAYG and run-off rates are partly within companies' control and can change between periods, distorting comparability between companies and over time. We will continue to remove the regulatory depreciation as well as excess PAYG to calculate company-specific AICR ratios.'*[16]

Reduced notional dividend yield to improve financeability

In the September plan we had assumed that 70% of the cost of equity to be paid out as dividend yield in the notional company structure. This was in line with previous price controls and we calculated a yield of 3.15% (70% of 4.5% cost of equity). Ofwat accepted this view at the IABP. However, given the weakness of credit ratios, we have considered whether a lower dividend yield could be assumed.

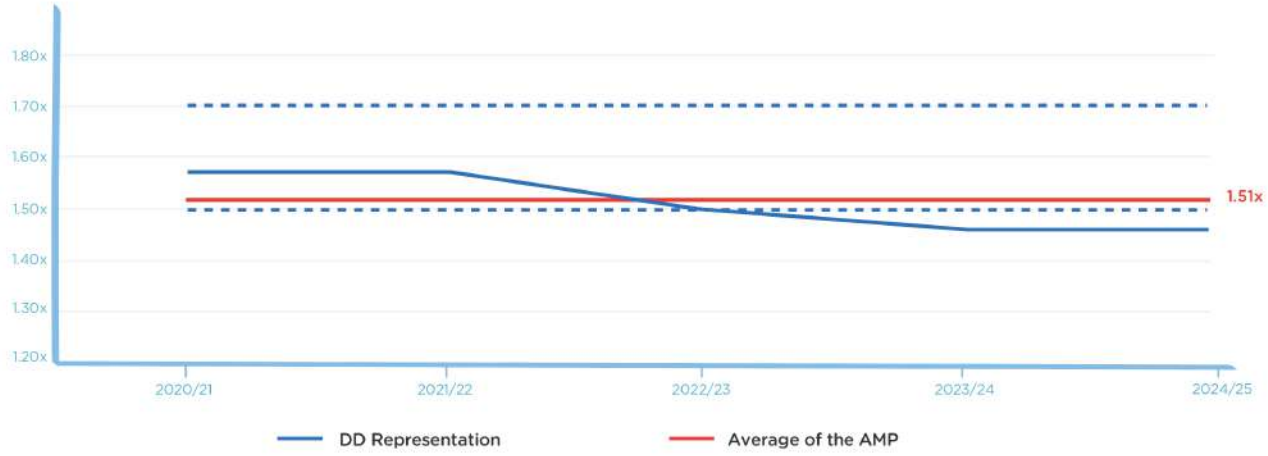
For the actual capital structure, our Board approved a Business Plan that pays no dividends to shareholders over AMP7. However, for a notional company, we did not feel it appropriate to withhold all dividends. Most shareholders in the sector are infrastructure or pension funds who rely on a dividend stream and growth. However we also consider that credit ratios for the notional company are very weak and the company has used a lower WACC in the interest of customers. On balance, we conclude that dividend yield could be reduced but marginally. We have now assumed that 60% of the cost of equity is paid out as dividend yield in the notional company structure, whilst the remaining 40% is considered as growth. We have taken this position to ensure that notional company ratios improve.

Our Representation

We have modelled a WACC of 2.4% (RPI real) for this Representation, which achieves the following ratios for the notional company.

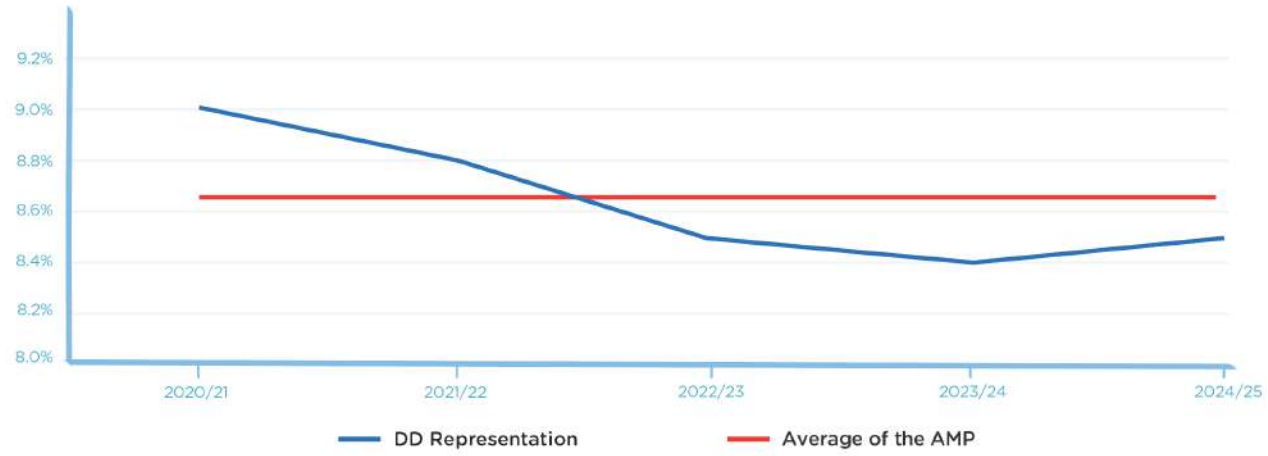
14 Ofwat (2019), 'PR19 draft determinations: Aligning risk and return technical appendix', p.56.
15 Fitch Ratings (2019), 'Ofwat Price Review Intensifies Pressure on UK Water Sector', 26 July
16 Moody's Investors Service (2019), 'Ofwat tightens the screws further', 26 July, p.5.

Figure 36 AICR: Notional Company (Range 1.50x - 1.70x)



This shows that the notional company barely achieves the bottom of the Baa1 range, even with the benefit of legacy adjustments.

Figure 37 FFO/Net Debt: Notional Company

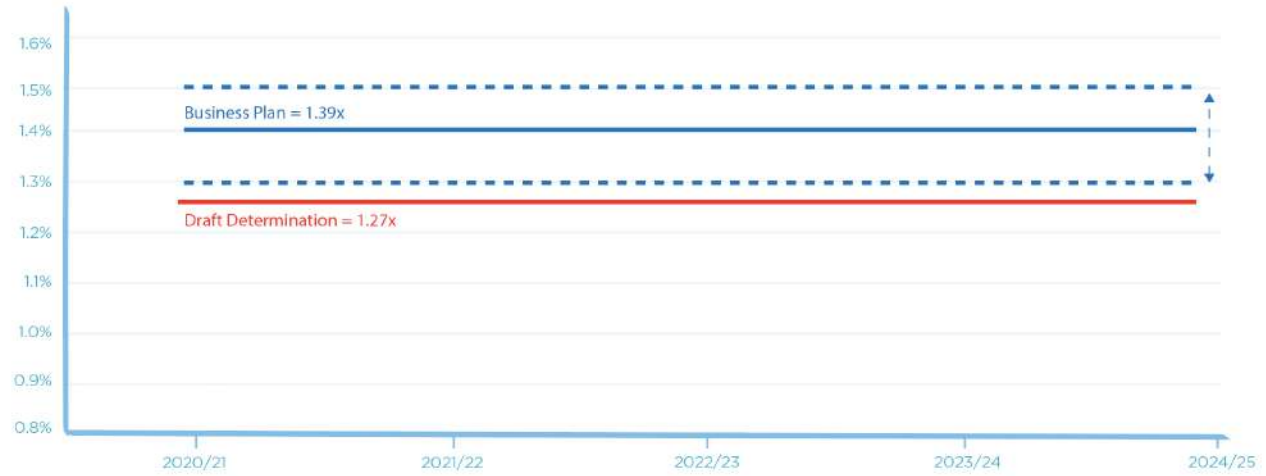


This shows the FFO/net debt position for the notional company.

9.2.6 Actual company financeability

Our September 2018 Plan used Ofwat's early view WACC and was barely financeable, only after our Board had agreed to significantly reduce their ultimate dividends from the base plan and taking into account expected legacy rewards. Ofwat has proposed a reduction to the appointee WACC (to 2.19% RPI) in the DD. This reduces actual company AICR ratios well below the recommended range of 1.3x-1.5x for the Baa1 level, as the figure below shows.

Figure 38 Average Interest Cover Ratios: Actual Company

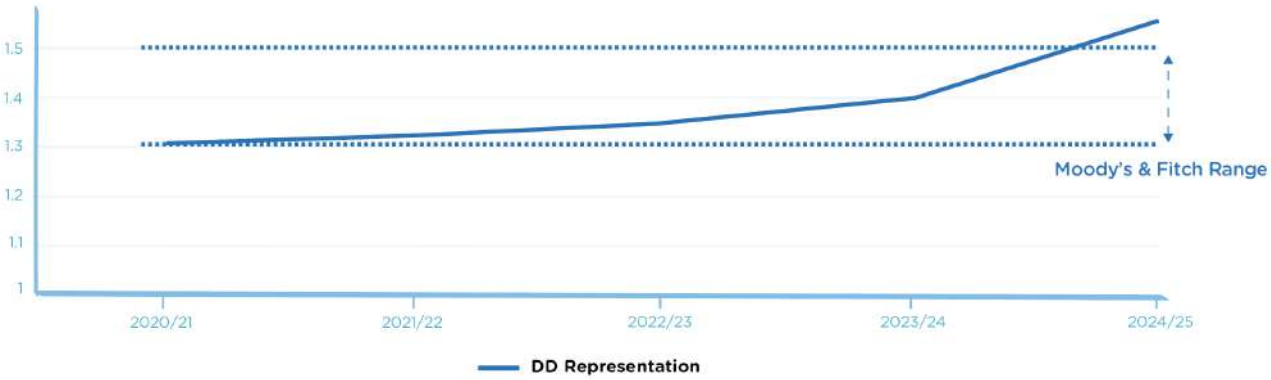


In the context of the overall balance of risk presented in the DD, at the level of WACC that Ofwat has set out in its DD, and in circumstances where the company is required to deliver a plan which is consistent with the DD, it cannot be financeable. This position is also supported by economic evidence that we have published, and which has been conducted by Economic Insight and by Frontier Economics [17]relating to the building blocks used by Ofwat in reaching a view on the WACC, including how the cost of equity has been set.

Whilst we have submitted a plan using a WACC rate of 2.4%, the actual company is only financeable if the balance of risk and rewards are restored to the position at our September 2018 plan. If this were not to be the case, a higher level of WACC will be required.

We have modelled a WACC of 2.4% RPI in this Representation, which achieves the following credit ratios for the actual company:

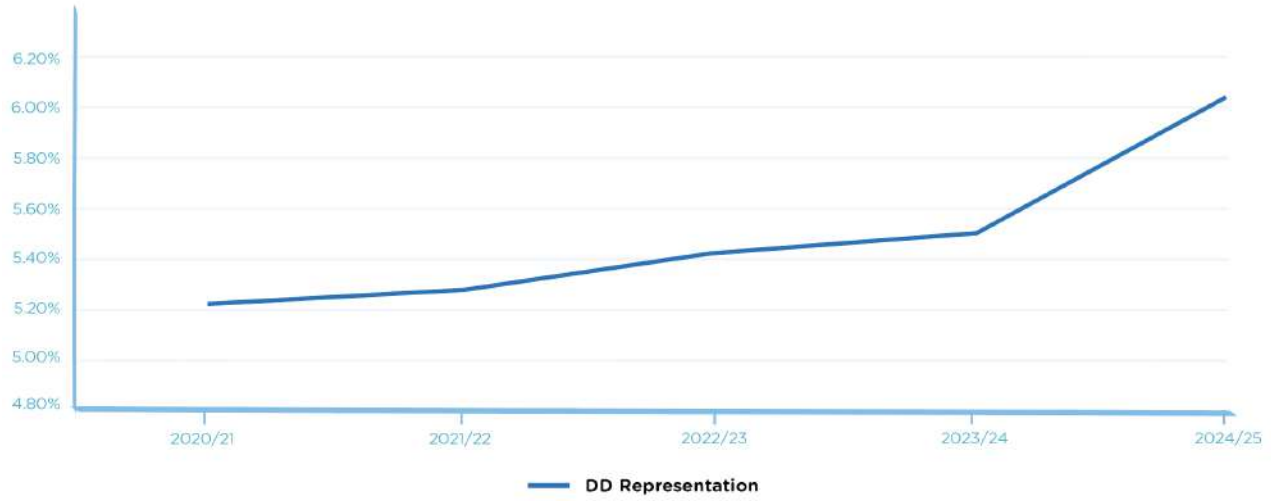
Figure 39 AICR: Actual Company (Range 1.30x-1.50x)



This shows that the actual company is at the very bottom of the range in the first year of AMP7, and remains in the bottom half of the range until the later years of the AMP.

17 See https://www.thameswater.co.uk/-/media/Site-Content/Thames-Water/Corporate/AboutUs/Our-strategies-and-plans/PR19/Cost-of-Capital-for-PR19-Report-for-Thames-Water.pdf

Figure 40 FFO/Net debt: Actual Company (Target 6%)



This shows the FFO/Net debt position for the actual company.

9.3 Pay-as-you-go ratio

As explained in our September 2018 Plan, we have set the PAYG rates for the separate controls in line with the natural ratios of opex and capex. This was done for two reasons:

1. Our customers are overwhelmingly in support of the principle of paying 'for the use of the asset', and were against the inter-generational misalignment of costs and therefore customer bills.
2. Rating agencies said that they would remove any additional fast money before they assess AICR ratios.
3. It would be inconsistent with good regulatory practice to artificially adjust costs that could create the risk of intergenerational inequity.

Given the recent statements both from Moody's and Fitch, it is clear that the only impact of a higher PAYG would be to increase customer bills, with no benefit to credit ratios. In light of this information, we continue to hold the view that PAYG should be set in line with the natural rate.

However, that means PAYG must be aligned to the plan when there are changes. Our Representation reflects a number of changes which has the effect of reducing our net totex by £342m driven by extra efficiencies and reduction in scope that we have been able to find. As a result of these, our natural PAYG rate has increased, as shown below.

Table 68 PAYG Rates

	AW IAP Response		Ofwat DD [1]		AW Representation	
	Totex	PAYG	Totex	PAYG	Totex	PAYG
Opex	2825	46.9%	2579	53.6%	2800	49.3%
Capex	3196	53.1%	2236	46.4%	2880	50.7%
Net totex	6021	100%	4815	100%	5680	100%

1 Adjusted to reflect the natural PAYG rate

9.4 Cashflow Funding within Price Controls

9.4.1 Summary of Ofwat's position

Historically, Ofwat's price control revenues have allowed part of the gap between the 'company view' and 'Ofwat's view' of the cost. Ofwat's evolution of thinking for PR19 is set out below.

Ofwat has changed its methodology for this mechanism. This methodology was used for PR09 and PR14, and was incorporated into the PR19 Methodology consultation process where continuation of this concept was confirmed. Its key purpose was to deal with any remaining cost differences between the Company and Ofwat. As the size of these differences is now larger, so the scale of risks is greater. This late change of methodology has therefore transferred all of this cash flow risk to the company.

Original methodology (source Chapter 9, 142-143)

Cash flow (para 9.3.5)

A company's cost allowance will be equal to our view of efficient totex for the company. Any reconciliation between actual cost and the allowed costs will be made at the end of the 5-year period of PR19 and will impact PR24. To minimise the anticipated reconciliations, we will set our determination (for example, revenue allowances and RCV additions) to reflect the position that the company's outturn totex in PR19 is the same as its business plan totex. We illustrate this in the box below.

Box 9.1 An example of our cost sharing mechanism for total revenue controls

The example is based on the cost sharing scheme in figure 9.1.

Determining cost sharing rates

A company submits a business plan for the period 2020-25. Its totex forecasts are £110 million for the wastewater network plus service. Our independent view of efficient totex in the wastewater network plus service is £100 million.

The totex ratio in this example is 110, and the cost sharing rates are 40% for outperformance and 60% for underperformance (read from figure 9.1).

Cash flow

The company's allowed costs are equal to our view of efficient totex, namely, £100 million. The allowed cost serves as baselines for the cost performance incentive.

However, our PR19 determinations (in terms of revenue cap and RCV additions) will reflect an allowed totex of £104 million. This amount factors in a reconciliation of £4 million to the company, which is the reconciliation that would result if the company's actual expenditure turns out to be as it had forecasted in its business plan. It is calculated as £104m = £100m + 40% x (£110m - £100m).

Determining the reconciliation based on outturn performance

If the company's actual expenditure turns out to be £120 million – an underperformance of £20 million against our independent view of totex – its investors will bear £12 million of this cost overrun (60% x £20 million). The remainder, £8 million, will be recovered from customers.

In practice, the company has already recovered £4 million from customers, as our determination reflected outturn costs of £110 million by the company.

The remaining reconciliation will allow the company to recover additional £4 million from customers.

DD cost assessment appendix (page 94-95)

In addition to this we set out in the PR19 methodology that we would provide companies with an upfront payment to reduce the scale of any reconciliation of cost out or underperformance at the 2024 price review. This upfront payment was based on the expected company outturn if it spends the costs in its business plan. This revenue was not additional revenue to companies but simply revenue transferred from that which would be reconciled in PR24 when we would reconcile the customer share of out and under performance.

In the light of latest data submitted by companies we no longer consider that such an upfront payment is appropriate. So far in the 2015-18 period companies have outperformed our efficient cost baselines by an average of 4%. This is even for some companies such as Bristol Water, whose PR14 business plan costs were far higher than their final determination as determined by the Competition and Markets Authority (CMA). Some of this reduction in costs reflects improved efficiency and some of it reductions in scope from schemes that we did not fund in company business plans. We therefore consider that our efficient cost baseline rather than company business plans are likely to be a better guide to the outturn performance of a company. We therefore no longer consider that an upfront payment is required and have not included one in slow track DD. This does not affect the overall cost sharing incentive – only the timing of this reconciliation.

Why change is needed

The DD position leaves companies exposed to greater risks, and the likelihood of there being a substantial difference between the outturn expenditure and Ofwat's view has increased.

This means that the original justification for the allowance, as set out in the Final Methodology, is greater, and the observation of data points from 2015-18 does not give a good guide to the future.

This is also a very significant change in methodology at a very late stage of the process, with material impact on companies, set out only on page 94 of an annex to the DD.

We believe that Ofwat could and should have proposed this approach in the Draft Methodology, which would have allowed for appropriate consultation before the Final Methodology.

Ofwat's rationale for the cashflow change is based on a belief that companies have consistently outperformed their determinations. However, an independent report by Economic Insight (EI) "Financeability of the notionally efficient firm"1, found no evidence as such. The EI report says:

> *...we find that, out of the 17 companies, 8 have, on average, underperformed (Affinity, Bristol, Dwr Cymru, Portsmouth, SES Water, Southern, Thames and Yorkshire). Consequently, 9 have outperformed. In other words, there is an 'even balance' of companies out and under-performing on overall RORE. This is not, therefore, consistent with firms systematically outperforming, but rather, would appear to be consistent with incentive regulation working effectively, resulting in an even split of 'winners' and 'losers'. P26*
>
> *7 of the 16 companies underperformed their respective average vanilla WACCs for the period (Affinity, Anglian, Bristol, Dwr Cymru, Portsmouth, Southern, and Thames). Similar to the above, the extent of the underperformance also varies between companies. For example, Portsmouth underperformed to the largest extent (by 39.6%) while Thames underperformed to the smallest extent (by 3.5%). P21*

Why it matters

The main purpose of this buffer is to ensure that errors in the Final Determination do not have a material impact on cash flows and the ability of any company to deliver its core services well. As noted above, the risk facing companies is now higher as a result of the DD so the need for the mechanism has increased in PR19 compared to recent reviews

How to fix it

We propose that Ofwat reinstates its approach set out in its Final Methodology.

9.5 Gearing Outperformance Sharing Mechanism

We have agreed to accept Ofwat's outperformance sharing mechanism. However there may be unintended consequences around gearing levels and credit metrics that are expected to arise as a result of the statutory accounting standards for Direct Procurement for Customers (DPC).

9.6 Direct Procurement for Customers

We have accepted Ofwat's proposal to take the Elsham treatment plant and transfer scheme through the DPC route. As this was not the preferred approach in our September 2018 Plan, we had not fully assessed any future implications as a result of IFRS16. This accounting standard now requires that such assets should be added to the balance sheet and therefore result in an increase in debt. However, given this is expected to be an accounting adjustment, not an increase in the economic liability on the company, we consider that any new debt related to DPC should be treated accordingly, and also therefore excluded from the gearing outperformance sharing mechanism.

9.7 Conclusions on Risk & Return

As we note in our arguments throughout this chapter, it is critical that the overall balance of risk represented by the DD is considered when assessing what level of WACC is needed for the notional company to be financeable.

Our own published reports on notional company financeability, and those from Frontier Economics and Economic Insight on the same subject, all suggest that a fundamental review of Risk and Return is needed before the Final Determination.

Economic Insight finds Ofwat's challenge at PR19 to be at an unprecedented scale compared to previous price-controls. Their report notes:

> *"We find the increase in regulatory challenge at PR19, relative to the past, to be unprecedented and well in excess of even the most 'aggressive' view of historical outperformance.*
>
> *We examine the percentage "gap" between Ofwat's draft determinations (DDs) of allowed revenues and those submitted in company plans at PR19 – which we take as our measure of 'regulatory challenge'. We compare this to the same metric over previous price controls. This shows that, based on Ofwat's DDs, the regulatory challenge has increased by 60% at PR19, relative to the past.*
>
> *Various specific targets set by Ofwat are 'arbitrary' (i.e. are themselves policy decisions) rather than being driven by efficiency analysis. For example, a 15% reduction in leakage, or targeted upper quartile performance for internal sewer flooding. Consequently, these targets could only be equal to the economically efficient level by coincidence – which seems unlikely. "*

The report also finds that:

> *"Ofwat's assessment of financeability is undertaken with respect to the notionally efficient firm. As such, the question of whether Ofwat is fulfilling its financeability (and consumer) duty is intrinsically connected to whether the regulator has set an achievable efficiency challenge for the notional firm.*
>
> *This issue is critical at PR19, because Ofwat has intentionally set a 'step change' in the scale of challenge to the industry. Whilst identifying the cost efficiencies and outcomes an efficient firm can achieve is complex, a 'top down' approach provides a practical way of considering the question. In particular, for such a 'step change' to be appropriate, one would need to: (i) find evidence of substantial, systematic and persistent historical outperformance; and (ii) ensure that the increase in the PR19 challenge is proportionate to this.*

The analysis contained in this report shows that neither is true – the implication being that Ofwat is at risk of failing to fulfil its primary duties and so needs to recalibrate its cost and outcomes incentives packages, in order to ensure the notional firm is financeable and protect the interests of consumers. These findings are unsurprising and are consistent with prior academic studies and the logical presumptions that follow from Ofwat's methodology."

For Anglian Water, this Representation offers a number of ways in which the balance of risk and return can be restored. We propose solutions to close the Totex funding gap (including where we have proposed cost reductions compared to our September Plan), to rebalance the downside skew to ODIs, and to address the problems related to the building blocks of WACC and other aspects of risk and return.

If changes could be made, such that the overall balance of risk and return is similar to that assumed in our September Plan, then a WACC of 2.4% could just be feasible. In the absence of such changes, a WACC in the range between 2.5% to 2.8% is required to achieve a Baa1 credit rating for the notional company.

10 FOCUS AREA - GROWTH

In this Focus Area we analyse all the aspects of Growth and how it is treated in the DD. We also make recommendations to address the significant problems that Ofwat's approach creates.

We summarise Ofwat's position in the DD as follows:

- Expenditure categorised as growth-related is no longer treated as enhancement and instead is incorporated into base cost models (known as Botex Plus).
- Ofwat has used the Office for National Statistics (ONS) trend-based Household Projection dataset.

These changes create a significantly different position compared to Ofwat's IAP approach. We address these areas in turn in this section of our representation. The combined effect is to create a significant shortfall between the growth allowance in the DD and the investment that is required in our region. In addition to the points raised in this chapter, and to help address the problems created, we have submitted additional evidence to Ofwat to inform a deep dive of our growth costs and ensure an appropriate allowance.

Our concerns can be summarised as:

- Ofwat is inappropriately basing its projections on ONS data on households that the government's own planning guidance says is not a reliable source for projections of new build housing and clearly does not track our new connections trends.
- The shift of growth expenditure from enhancement to base models is a poor remedy to the concerns highlighted in response to the IAP. Ofwat's option assessment is narrow and only identifies positives with negligible evidence that the impacts of such a change have been fully considered. Given growth-related expenditure for the sector stands at £4.5bn this is a significant shortcoming.
- The Botex Plus models have no new drivers despite including c£4.5 billion of additional expenditure. Ofwat's models are so insensitive to changes in growth that removing all growth in properties and length of sewers or mains forecast in AMP7 reduces allowances by only £187m. This undermines the work Ofwat has done to date on its econometric models.
- These models lead to an underfunding of growth across the sector of £1.8bn (an additional £900m compared to IAP). This undermines Ofwat's PR19 priority of improving resilience and runs counter to the Government's priority of enabling sustainable housing growth.
- Our growth costs are different to the wider industry but still efficient when appropriate consideration of the drivers of costs, such as the intensity of growth and the nature and scale of developments, are considered.
- The use of Botex Plus modelling has the significant, presumably unintended, consequence of redistributing expenditure from customers and high growth companies towards low growth companies. This affects companies in materially different ways. It also moderates the upper quartile (UQ) efficiency challenge applied to all base costs, leading to a net loss to customers through the dilution of catch-up efficiency.
- Ofwat's Developer Services Revenue Adjustment (DSRA) does not appropriately protect customers or companies from different outturn levels of growth, as it does not capture all the costs related to that growth.

We recognise that there is uncertainty associated with forecasts of growth. We are proposing additional mechanisms to address the fact that the outturn position will always differ from projections and that neither customers, companies, nor broader public policy objectives should suffer from this. These expand on the scope of Ofwat's proposed DSRA and are described later in this chapter.

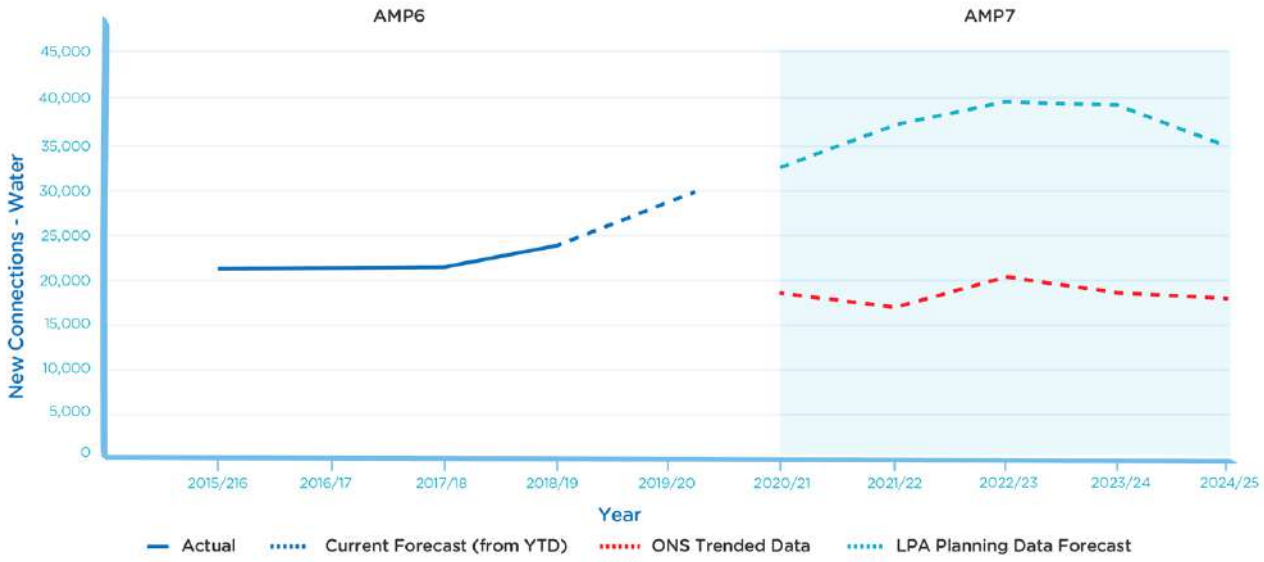
We provide our responses to the 'Our proposed approach to regulating developer services' document at the end of this chapter.

There is significant work needed to improve the approach to growth before the Final Determination. We propose that this be done through a deep dive approach and we are ready to engage directly with Ofwat on these concerns during the autumn.

10.1 Exceptional growth

One of the four long term ambitions we agreed with our customers and stakeholders in our 25 year Strategic Direction Statement is to Enable Sustainable Economic and Housing Growth in the UK's fastest growing region. One in five of new homes being built now is built in our area. This growth is materialising now, as the figure below shows.

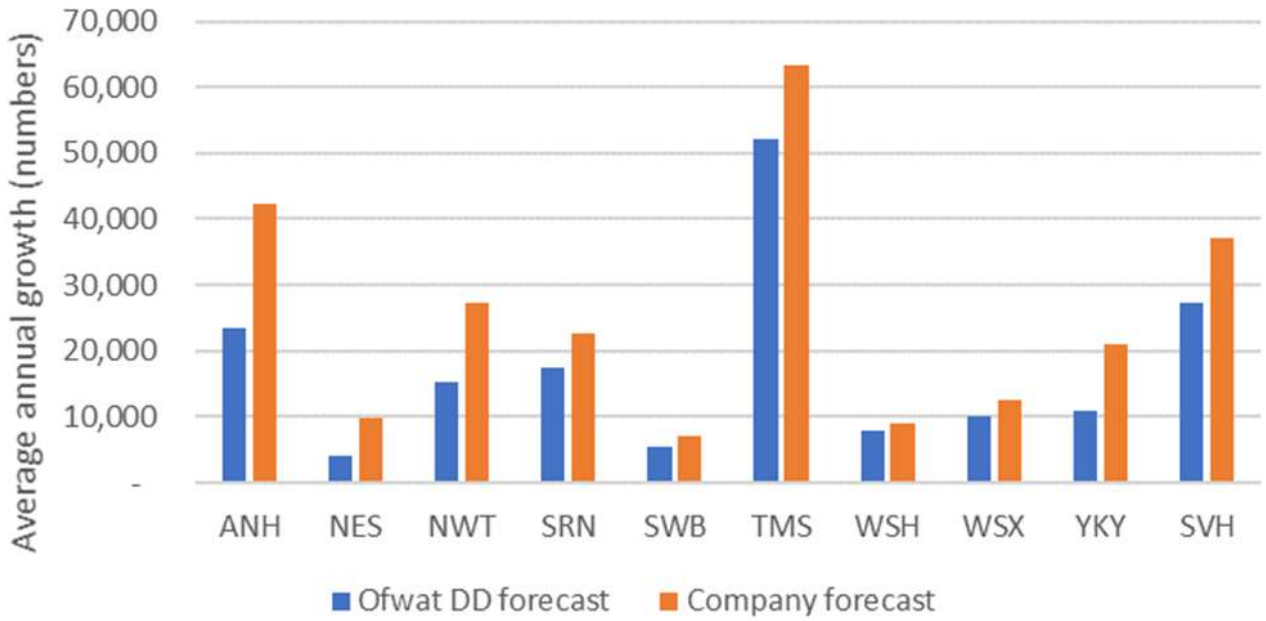
Figure 41 Total number of new water connections



The figure also shows that the Local Authority Planning forecast is more credible than the ONS trended data set that Ofwat has used.

During AMP7, we expect over 200,000 new homes will connect to our sewer network; about 180,000 will connect to our water network. To enable this growth, we will invest more than £250 million to enhance capacity in our sewer network, including Sustainable Drainage Systems, and more than £280 million on water pipes for new homes. In absolute terms we are forecasting the highest number of new connections after Thames Water whose area of appointment includes London. This is shown in the figure below.

Figure 42 Forecast new connections for water recycling



A future driver for growth beyond the 200,000 houses in our forecast will be the Oxford-Cambridge (OxCam) Arc. In its response to the National Infrastructure Commission's report on the OxCam Arc in October 2018, and through the joint declaration with local partners in March 2019, the Government has affirmed its ambition for up to one million new homes between Oxford and Cambridge by 2050. This is being backed by £4.5 billion committed Government funding on the Expressway and western section of East-West rail. We have engaged with partners to inform this ambition with indicative figures suggesting between 70% and 79% of these new homes will be within our area of operation.

A small proportion of this total will be identified within current Local Plans and so captured within our forecast. However, in the absence of a formal statutory basis, we have not included the additional housing expected from the development of the OxCam Arc within our plan. This will be a further driver for growth beyond trend and our forecasts.

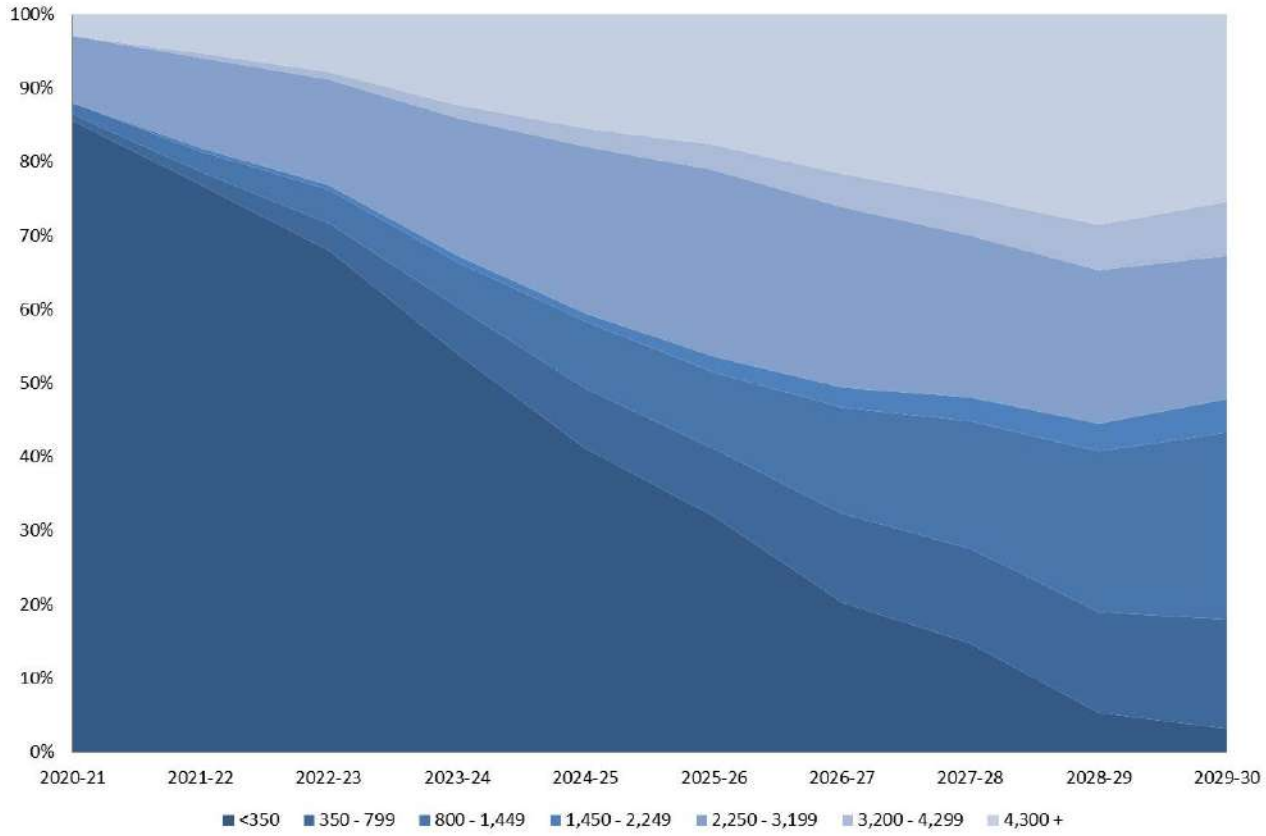
Despite macro-economic uncertainty, Government commitment to house building and infrastructure investment remains strong. For example the recent announcements by central Government making available £600m for house building in Central Bedfordshire, Essex and London.[1]

The use of historic or trended data does not appropriately capture these exceptional drivers of growth. Historic and trended data is also affected by the aftermath of the financial crisis in 2008.

Ofwat's approach does not accurately reflect increasing size of developments. Larger developments require more enabling and offsite works. This is linked to the Government's drive for 'sustainable urban extensions' over more piecemeal development. We expect the percentage of connections occurring on development sites greater than 350 plots to increase from 15% to 59% by the end of AMP7. We expect this to continue into AMP8, noting that some large sites in AMP8 are likely to be split into multiple smaller sites. This trend is shown in the figure below, with the development site banding reflecting increasing sizes in required sewer pipe size (from 150mm for a 350 plot site to 600mm for a site with more than 4,300 plots).

1 https://www.gov.uk/government/news/600-million-boost-for-housing

Figure 43 Proportion of connections made by development size



Our Business Plan aims to meet the needs of the housing growth forecasts in the region for AMP7 and to create a solid platform for future growth. Supporting sustainable housing growth is one our four long term goals in our Strategic Direction Statement, which we developed through engagement with our customers. Customers acknowledge that the combination of increasing demand and decreasing supply creates challenges. 'Supply Meets Demand' is regarded as one of the most important of the company's ten outcomes.

Customers are very concerned about population growth and new development; enabling sustainable growth is generally seen as the second most important of the company's four long-term goals. Customers therefore want the company to plan ahead, invest to ensure infrastructure is in place in good time, influence the planning system and work in partnership with developers.

10.2 Shortfall in growth allowances

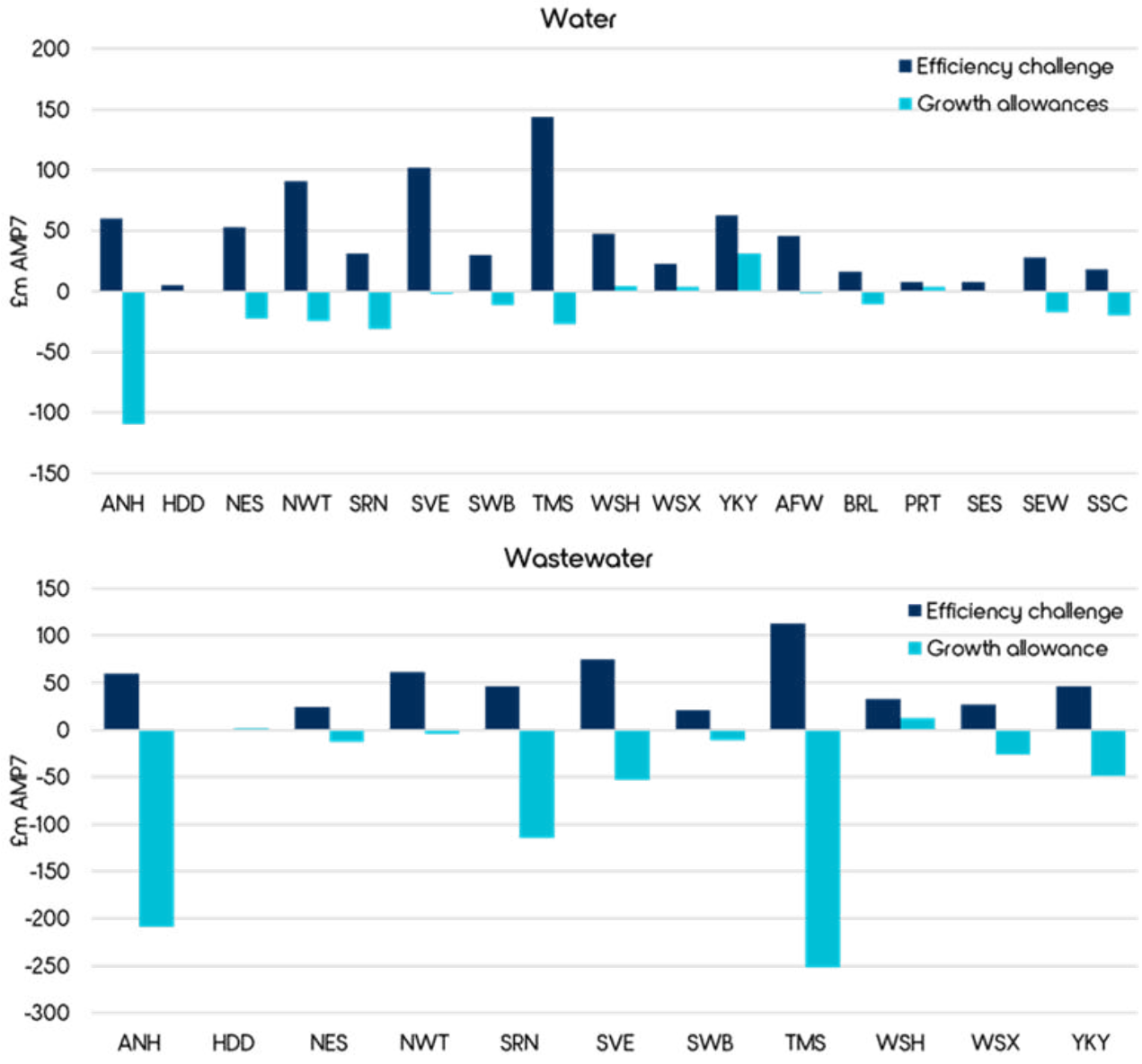
Responding to the IAP, we proposed to remove the separate IAP enhancement growth models, which were not fit for purpose. We therefore support this change. However, we do not support Ofwat's overall DD approach.

Ofwat's DD integrates growth spending into the base cost models whilst retaining the previous base cost model specifications. These 'Botex Plus' models produce a combined botex and growth allowance. We do not support moving Ofwat's view of growth-related costs into a 'Botex Plus' model.

The interaction between this approach and the forecast data for new connections creates a significant shortfall in growth funding for us. It also has significant consequences for cost allowances and efficiency challenges across the sector. Ofwat's approach results in the largest shortfalls affecting companies with the greatest growth. It is hard to reconcile Ofwat's objectives of improving resilience with its approach to growth cost assessment.

The use of Botex Plus modelling has the material effect of redistributing expenditure from customers and high growth companies towards low growth companies, with consequent impact on customer bills. All companies benefit from the less stretching botex efficiency challenge, but high growth companies are hit hardest by the lower growth allowances. The majority of the sector, but not those, like Anglian, who are experiencing rapid and intense growth, receives a net benefit from these changes, as the figures below show. Other companies are therefore unlikely to make representations on Botex Plus models and growth funding, but the negative impact on customers and the delivery of public policy priorities is significant. The figure below shows the value of the reduced efficiency challenge and shortfall in growth allowances for each company.

Figure 44 Efficiency challenge and Growth allowances - water and wastewater change from IAP



Ofwat has not shown why Botex Plus modelling is preferable to company-by-company deep dives, which it has conducted in other areas and was our recommendation in response to the IAP.

The impact of the change in approach on different aspects of companies' wholesale expenditure allowances is far from transparent. Ofwat has not shown or explained the impacts in its DD publications. The lack of transparency is so extreme that we, in conjunction with a number of other companies,[2]. commissioned Reckon LLP to unpick growth allowances. This complements our own analysis and that undertaken by Vivid Economics solely on our behalf.

Triangulating these analyses, we estimate that Ofwat's approach results in a **£352m** shortfall between the allowance and the expenditure set out as required to enable growth in our Plan. Vivid Economics calculate this figure across the sector as £1.8bn.

To help Ofwat address these problems, we propose:

- That growth costs are removed from the Botex Plus model
- Ofwat undertakes deep dives of growth costs – we have submitted additional evidence to assist with a deep dive of our costs
- Ofwat uses company forecasts of growth within its modelling and analysis of growth allowances
- Additional risk sharing uncertainty mechanisms between companies and customers - we propose to include a number of 'delivery' ODIs to share risk on uncertain growth forecasts between us and our customers.

It would be wholly insufficient to seek to remedy this problem by retaining modelling of growth costs within base allowances and 'adjusting up' for high growth companies in the Final Determination. As we explain later in this chapter, there are different ways of assessing the growth allowance in base costs (both Vivid Economics and Reckon LLP have attempted this for us in addition to our own analysis). The assumptions made and the steps by which the estimate is derived can materially affect the estimated growth allowance. We maintain that Ofwat should 'work down' on our growth costs using the justification provided in the 'PR19 DD deep dive on growth expenditure' annex of our Representation.

10.3 Cost efficiency for growth

We provide detailed information showing the efficiency of our costs in the annex 'Deep dive growth expenditure'. That document demonstrates efficiency of costs if Ofwat treats growth expenditure as enhancement or as a cost adjustment claim if growth costs remain in base allowances.

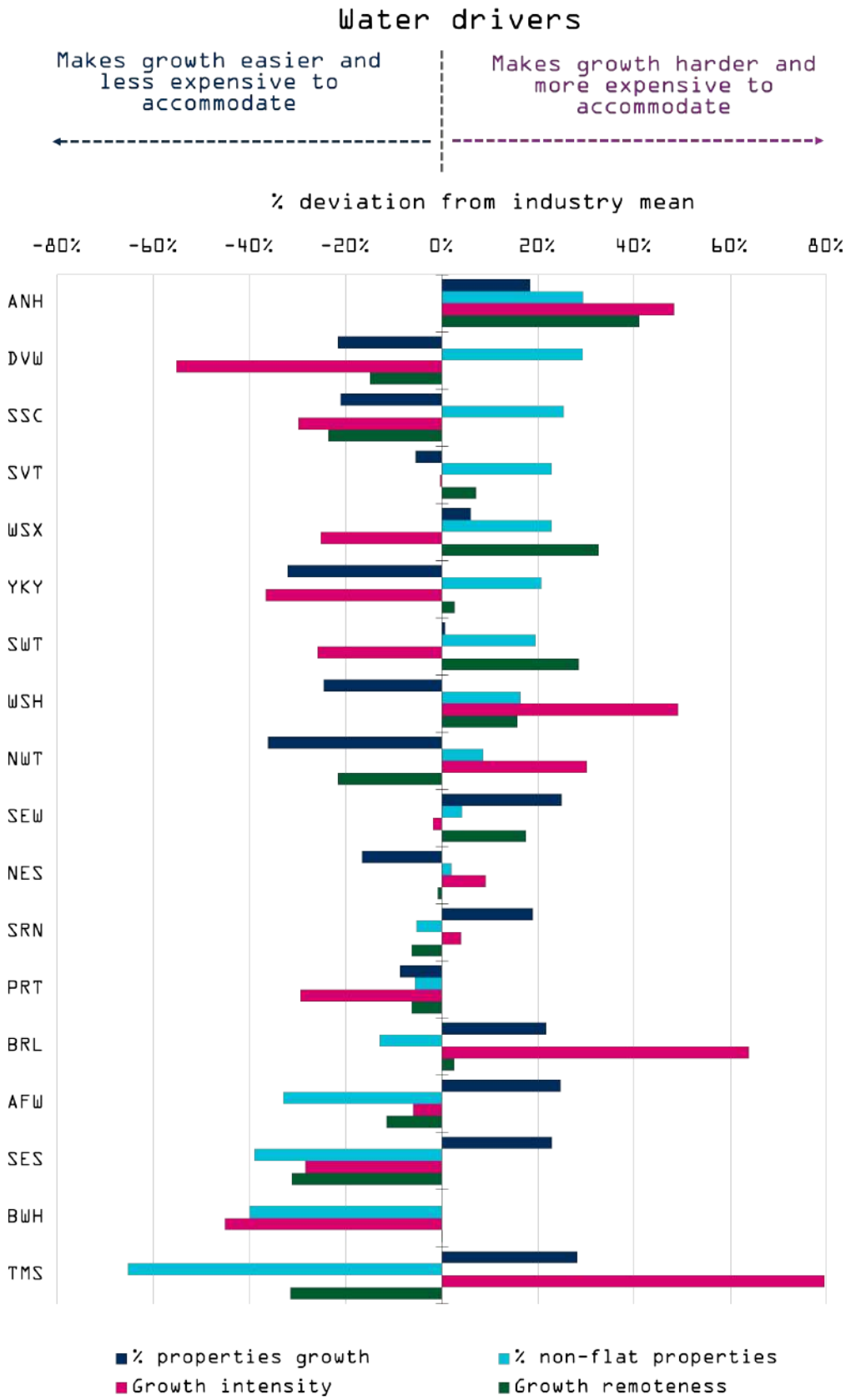
The nature of our growth is different from the industry average. This means our costs are different but they are efficient when these factors are accounted for. With Vivid Economics we have explored additional drivers of growth beyond simply the number of connections used by Ofwat. Growth in our region is different in the following ways, which is more nuanced than a simple greenfield vs brownfield comparison:

- Type of **property**. Developments with more flats have significantly shorter length of communication pipes compared to developments with primarily detached properties.
- An important driver is **intensity**. Reinforcement costs are more likely to be needed where the local rate of growth is high. If the new population to be served is high relative to the existing population for which the assets were designed.
- The second complexity driver is **remoteness**. Offsite reinforcement requirements are higher when development sites are located far away from existing infrastructure. The likelihood of new assets being required is higher, and even when existing assets can be reinforced, longer sections often require reinforcement.

Using public data we can demonstrate that the nature of growth is different in our region. We are materially different from the industry mean on all measures. This is demonstrated in the figure below. Others may experience remote but less intense growth or intense but less remote growth meaning cross industry comparison is more relevant for their costs. This means that our costs to enable growth are different from the rest of the industry, but crucially still efficient. This is explored further in the 'Deep Dive and Enhancement Expenditure for Growth' annex to our Representation.

2 Northumbrian Water, Welsh Water, Yorkshire Water, Wessex Water and South East Water

Figure 45 Industry comparison of complexity drivers of growth expenditure for water



Our analysis shows that growth in our region consists of more houses than flats, is more intense and more remote compared to the wider industry.

In the deep dive on growth expenditure we present information from three sources to show our costs are efficient. In summary these are:

- **Business plan** cost data has been rigorously built up over multiple years drawing on site-level evidence, and subject to appropriately detailed internal and external quality assurance. We provide additional benchmarking of on-site costs for water.
- **Bottom up** estimates, which use industry-wide and Anglian-specific data to calculate the expected impact of variation in the complexity factors on Anglian's costs. These provide evidence that the level of cost in the business plan is approximately in line with expectations.
- **Econometric** estimates of cost, using industry-wide data on costs and explanatory variables. These provide further assurance that the level of cost in the business plan is reasonable, when benchmarked against other company cost data.

10.3.1 Review of our growth costs

We have reviewed our expenditure requirements for facilitating growth. Overall we remain confident that our cost estimates are robust and efficient. We discuss robustness and efficiency of our costs further in our Growth deep dive.

However as part of our wider review and challenge to our costs set out in Chapter 6 Cost Assessment - Overview,we have identified further programme level efficiencies for Water Recycling Treatment growth. This results in a £2.43m reduction in programme management expenditure due to large programme efficiencies and re-profiling.

The other area to note is the removal from gross expenditure of £50.38m associated with asset payments. Under the now confirmed new connection charging rules we will no longer be making these payments. The equivalent discount will be made against infrastructure charges. The reduction in gross expenditure is balanced by a similar reduction in net grants and contributions we expect to receive.

10.4 Modelling growth in base allowances

Ofwat has listened to the wide ranging concerns raised by companies regarding the approach to growth at IAP. However the proposed remedy at DD is significantly worse for customers and has numerous flaws. We set out the detail of our concerns and suggest a way forward in the following section.

10.4.1 Ofwat's approach at IAP

We were highly critical of Ofwat's unit cost approach to enhancement growth at IAP.

In our IAP submission to Ofwat at the end of March 2019, we summarised our view of this approach. This was based on our own work and was supported by Vivid Economics and by Jacobs.

- **Data concerns** - Vivid Economics identified inconsistencies in the reporting of water cost data. Jacobs also identified concerns of cost consistency, cost omission and volume consistency within submitted data used for the development and computation of the models. We also highlighted that the enhancement opex costs had not been included in what ought to be totex assessments of costs.
- **Cost driver concerns** - we identified important concerns regarding the consistency of Ofwat's IAP unit cost enhancement models with underlying engineering and economic principles. In particular, for Water Recycling we highlighted the following:
  - We did not accept that the costs associated with reducing the risk of flooding for customers are driven by the number of connections, much less the number of new connections.
  - The impact of Sustainable Urban Drainage Solutions on the requirements for Water Recycling Centre capacity expansion is not, and cannot be, identified simply by number of connections.

- The marginal cost of capacity expansion at a Water Recycling Centre (WRC) is dependent on the size of the WRC – there are economies of scale. The unit cost model generates a single marginal cost which is invariant to scale.
- Network reinforcement, unlike network connections, cannot be linked mechanistically to the number of connections or the number of new connections. It needs to be viewed on a case by case basis, taking into account existing system headroom and changes in peak use.

- For Water we highlighted the following:
  - Expenditure relating to low pressure is not driven by the growth in new connections.
  - Network reinforcement is also a critical driver for Water enhancement spend. In addition to the points referred to above with regard to Water Recycling, for Water there is a further aspect with regard to the timing of new connections. Where the new site is large (for example in the case of garden villages), the network reinforcement precedes the connection of new properties. In some cases, the last new connection at such sites may be 10 or 15 years after the network reinforcement
  - Vivid highlighted the instability of the two Water Recycling models which generated an implausibly wide range of industry costs (£1.7bn for one model and £3bn for the other)

10.4.2 Ofwat's approach at DD

At DD, Ofwat responded to the criticisms put forward at IAP by ourselves and other companies. Instead of modelling the enhancement growth costs as stand-alone unit cost models, these costs were incorporated into botex (£1.7bn in aggregate for water; £2.9bn for Water Recycling).

While Ofwat accepted that enhancement costs should be evaluated on a totex basis and thus removed enhancement opex from base costs, the enhancement opex relating to growth was not left in base costs when enhancement capex was added. This is a surprising omission.

Ofwat felt that the existing botex models as defined at IAP needed no further cost drivers to accommodate the new requirements placed on them by including enhancement growth. So 'number of connected properties' is inappropriately used as the cost driver for growth.

The forecast of connections used by Ofwat at IAP for enhancement growth costs was the company's forecast across AMP7. By contrast, in the botex models, the companies' property numbers were overwritten by Ofwat and replaced by trended numbers based on the seven years to 2018. At DD, with enhancement moved into botex, Ofwat used ONS household growth forecasts from 2016. The ONS numbers for us were higher than the trended approach used at IAP but still significantly lower than our own forecasts.

On page 19 of its PR19 DD Cost efficiency technical appendix, Ofwat helpfully includes a table setting out its options assessment with regard to changes in the way in which enhancement growth should be handled. In considering whether growth should continue to be assessed by a stand-alone model or incorporated into botex models, six concerns were identified, all of which favoured incorporation into botex. No downside to such a move was identified. We disagree with this analysis.

10.4.3 Our concerns with the approach taken

There are three key aspects of Ofwat's approach to enhancement growth cost assessment with which we have serious concerns.

Process concerns

The decision to move enhancement capex into botex marks a sharp break from regulatory precedent. There was no discussion of the merits of this move at any point when Ofwat set out its methodology for PR19 in December 2017. Taking this step at a very late stage in the Price Review process raises the questions not only of how this matter will be handled at Final Determination, but also whether there will be any further unexpected changes to the process. In justifying this change in approach, it appears only a narrow set of options were considered and the option assessment appears cursory, with Ofwat identifying no possible downsides to its proposed approach.

We are surprised that Ofwat should accept a Cost Adjustment Claim for South East Water relating to intra-zonal transfers "largely linked to areas with high development" (SEW DD, page 22) but not consider a similar treatment for material differences between the Implied Allowance for growth derived from Ofwat's models, and the expenditure set out in our Plan.

Cost driver concerns

There are no cost drivers included in the Botex Plus models to take account of growth. Accordingly, companies with high levels of forecast growth (Anglian included) are seriously disadvantaged.

Instead, the models explain both base and enhancement growth costs using the same set of cost drivers. This assumes that the cost of serving an existing customer is the same as the cost of adding an incremental customer. Quite apart from the fact that this is implausible, Ofwat provides no evidence that it has tested this contention.

A variable to account for new developments

In page 68 of our IAP response we raised this concern:

We are also concerned about the use of connections as a driver for network reinforcement costs. Network reinforcement is complex and dealt with on a site by site basis, driven by many factors which include existing headroom in networks and changes in peak use, for example with industrial customers changing their demand.

We also design the capacity of the reinforcement works to accommodate connections which are planned to occur well beyond 2025 depending on the build-out rate of the developments. The need for network reinforcement is driven by growth, but we believe that modelling it on a per connection basis could fail to account for the driver of this investment.

Ofwat's approach to modelling these costs takes no account of existing capacity in infrastructure and non-infrastructure (e.g. treatment) assets.

We strongly disagree that all growth expenditure can be considered 'routine'. While some elements of growth expenditure, such as on-site connections may be considered more routine, wider work reinforcing the network and upgrading treatment assets involves significant, lumpy investment. The scope and scale of anticipated growth in our region and other fast growing companies means these activities will be far from routine. Rather, they involve complex engineering solutions. The need for such offsite network reinforcement in the short term is beyond management control, and is a function of the scale and nature of growth pressures, combined with the level of existing network capacity.

A variable to account for low pressure

As we said in our IAP submission (page 68)

"Our investments relating to low pressure enhancements are not driven by growth in new connections.

As part of facilitating growth, we specifically design our solutions to ensure no detriment to existing customers. We do not recover from developers, costs to address existing issues in our network. Our extensive customer engagement work underpins our strategy to tackle persistent low pressure in certain areas, but this is not always related to growth. It is therefore not appropriate to allocate expenditure to improve service on low pressure to new development and growth."

We maintain the view that including these costs in base allowances, and modelling them alongside growth expenditure is inappropriate.

A variable to account for reduced risk of flooding:

In the Securing cost efficiency Technical Appendix, Ofwat suggests,without providing evidence, that *"investment is reasonably driven by population growth and the size of the company"*.

As we said in our IAP submission (page 86):

We do not accept that flooding can be assessed on a per connection basis. Our flooding programme is designed to address existing issues in our sewer network and to mitigate against the increasing incidence of sewer flooding as a result of climate change. We are currently performing beyond

upper quartile for the industry and Ofwat has acknowledged that our 2024-25 target of 1.31 incidents per 10,000 properties connected is beyond the future upper quartile. We believe Ofwat should assess the efficiency of this funding on the basis of costs to reduce flood risk.

We maintain the view that including these costs in base allowances, and modelling them alongside growth expenditure is inappropriate. Reducing flooding reflects the level of service a company provides to its customers. Our proposals for this, supported by internal and external sewer flooding ODIs, have been developed with our customers. Given our position ahead of the upper quartile, Ofwat should review these costs in a similar manner to how it has reviewed costs for leakage.

Exclusion of enhancement opex for growth

In the Cost Efficiency technical appendix, Ofwat explicitly recognised that enhancement opex and enhancement capex should be assessed together on a totex basis. Unfortunately, despite this, when Ofwat added growth capex to botex it removed the associated opex. Ofwat recognized its error and noted in its totex allowance calculation spreadsheets that the error would be corrected at the Final Determination.

10.4.4 Impacts of the approach

There are significant negative consequences of the DD approach.

There are a variety of ways to evaluate the quantum of growth within the Botex Plus models. None of them are straightforward, all requiring the comparison of multiple versions of the IAP and DD model forms. We, along with a number of other companies, commissioned Reckon. We also commissioned Vivid to review the approach. Based on the variety of estimates produced, we believe the shortfall for us is around £352m over AMP7. [3]

At IAP, the stand-alone enhancement growth models used the number of new connections as a cost driver. Notwithstanding our significant concerns over the approach taken at IAP with regard to enhancement growth, the marginal allowance for new connections produced by this approach gave very similar overall figures to the seven year historic average figures.

As can be seen from the previous section, comparing the allowances at IAP with those at DD is not straightforward, not least given the difficulty of assessing the Implicit Allowances for growth in the DD models. However, on the basis of Reckon's analysis (provided as an appendix to our representation), it can be seen that the DD allowances are in the range of 10%-52% of the historic average.

Table 69 Comparison of marginal allowances for growth

All companies	Marginal allowances for new connections under DD approach (for a connection at AMP7 midpoint)	Marginal allowances for new connections enhancement capex using IAP figures	Historical industry-average growth-related enhancement capex per new connection (2012-13 to 2017-18)
Water	£139 - £584	£1,126	£1,128
Water Recycling	£189 - £376	£1,644 - £2,026	£1,939

Even allowing for the fact that the marginal allowances are annual, clearly these amount to a value significantly lower than the historic industry average.

3 Reckon's report can be seen as the 'Review of Ofwat's treatment of growth-related expenditure in PR19 draft determinations' annex to our representation. Vivid's report can be seen as the 'Enhancement growth cost assessment at PR19' annex of our representation.

10.4.5 Our suggested approach at FD

We see no practical way in the time available before Final Determinations of remedying the flawed Botex Plus approach followed by Ofwat at DD. Analysis carried out for several companies by Reckon LLP, Anglian Water included, and Vivid sets out the shortcomings of this approach and mirrors the critique we have set out above.

Unsurprisingly, given our criticisms of the approach taken at IAP, we do not consider that the approach to assessing enhancement growth allowances followed at the Initial Assessment of Plans to be an adequate alternative.

While a rapid data collection exercise for appropriate cost drivers to address the omitted variables listed above is theoretically possible, we do not suggest this as a way forward. We do not consider that there is sufficient time remaining before FD to allow such a way forward to be implemented effectively. We note Ofwat's developer services data request will improve Ofwat's information in this area but given the evolving nature of this data request and Ofwat's acknowledgement that at best, this data may be useful for future annual reporting, we would counsel against its use in cost assessment without further refinement and testing with the industry.

Our proposed approach is therefore to revert to 'pure' botex cost modelling using econometric analysis, and to assess our enhancement growth requirements through deep dives. It would be wholly insufficient to seek to remedy this problem by retaining modelling of growth costs within base allowances and 'adjusting up' for high growth companies in the Final Determination. As we explain later in this chapter, there are different ways of assessing the growth allowance in base costs (both Vivid Economics and Reckon LLP have attempted this for us in addition to our own analysis). The assumptions made and the steps by which the estimate is derived can materially affect the estimated growth allowance. We maintain that Ofwat should 'work down' on our growth costs using the justification provided in the 'PR19 DD deep dive on growth expenditure' annex of our Representation.

10.5 Use of ONS trend data

At IAP, Ofwat's base cost models used historical growth rates to forecast future connections. At DD, Ofwat's approach is to use ONS household projections with 2016 being the base year. The materiality of this issue is exacerbated by the associated change of modelling growth costs in the base cost models.

10.5.1 Why we have concerns

We have serious reservations about the use of this dataset by Ofwat for cost allowances and the impact on long term plans.

ONS data is not appropriate for this purpose

Ofwat appear to have used the ONS trend based Household Projection data with a 2016 baseline.

This dataset is a projection for households, not properties directly, and year on year changes will not directly correlate with new-build. The Government's guidance for using this dataset stipulates:[4]

The standard method for assessing local housing need provides a minimum starting point in determining the number of homes needed in an area.

Ofwat has used the 2018 (2016 baseline) version of this (406) dataset, as opposed to the 2016 (2014 baseline), which is currently the only dataset sanctioned for use by the Government as a starting point in assessing the need for additional housing in local plans. Government guidance is that:[5]

4 Paragraph 10, Housing and economic needs assessment https://www.gov.uk/guidance/housing-and-economic-development-needs-assessments

5 Paragraph 5, Housing and economic needs assessment https://www.gov.uk/guidance/housing-and-economic-development-needs-assessments

The 2014-based household projections are used within the standard method to provide stability for planning authorities and communities, ensure that historic under-delivery and declining affordability are reflected, and to be consistent with the Government's objective of significantly boosting the supply of homes.

The 2016 baseline data provides a lower forecast than the 2014 baseline data. However the Government's position[6]is that the 2014 baseline data should be used:

the Government continues to think that the 2016-based household projections should not be used as a reason to justify lower housing need. We understand respondents' concerns about not using the latest evidence, but for the reasons set out in the consultation document we consider the consultation proposals to be the most appropriate approach in the short-term. We are specifying in planning guidance that using the 2016-based household projections will not be considered to be an exceptional circumstance that justifies identifying minimum need levels lower than those identified by the standard method.

We observe that the ONS data is significantly lower than the current number of connections we make, and much lower than our forecast for AMP7, based on published Local Authority Plans, which we are required to use for our WRMP.

Alignment with statutory plans

We have used a consistent dataset for both our Water Resources Management Plan (WRMP) and our Water Recycling Long Term Plan (WRLTP). This is based on Local Authority development plans.

Our WRMP and WRLTP have been developed in line with WRMP planning guidance.[7] This guidance, in section 5.3, states:

> *For companies supplying customers wholly or mainly in England you will need to base your forecast population and property figures on local plans published by the local council or unitary authority.'*

According to the inside cover of the WRMP guidance, the guidance was developed in collaboration with Ofwat.

> *These guidelines are being issued by the Environment Agency to water undertakers that are wholly or mainly in England, and by Natural Resources Wales to water undertakers that are wholly or mainly in Wales. They have been produced in collaboration with Defra, the Welsh Government, and Ofwat.*

Local Authority plans are rigorously developed. The National Planning Policy Framework (NPPF) requires that local planning authorities identify objectively assessed housing need (the OAN). Local Plans translate those needs into land provision targets. According to the NPPF, housing targets should be informed by robust and proportionate evidence, such that a plan aimed to meet aspiration, rather than actually assessed demand, would risk being undeliverable and be contrary to paragraph 173 of the NPPF. Additionally, Local Plans go through statutory processes for review, including independent examination in public by an Inspector appointed on behalf of the Secretary of State. Developers, agents and the public are also able to challenge the methodology, during this assessment.

We have aligned our PR19 business plan with the growth projections from both our WRMP and WRLTP. To use different forecasts for our business plan and our long term plans critically undermines the relevance of those long term plans. Using trend only data (i.e. based on historic connections or the ONS figures) would mean that we are not planning and investing to enable Local Authority's to deliver their plans and the government's housing targets.

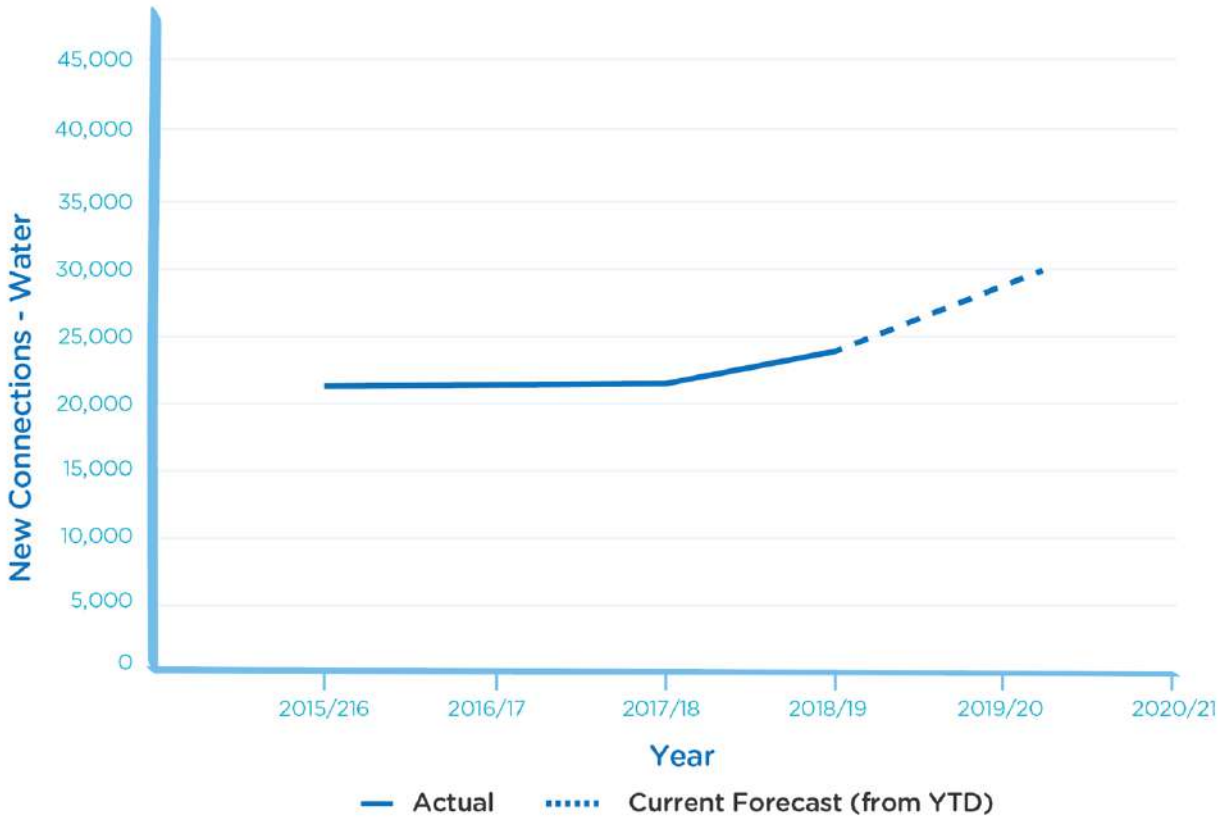
6 Page 7 , Government response to the technical consultation on updates to national planning policy and guidance https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779792/LHN_Gov_response.pdf

7 .https://naturalresources.wales/media/681612/interim-wrpg-update-final-april-2017.pdf

10.5.2 Increased growth is materialising in our region

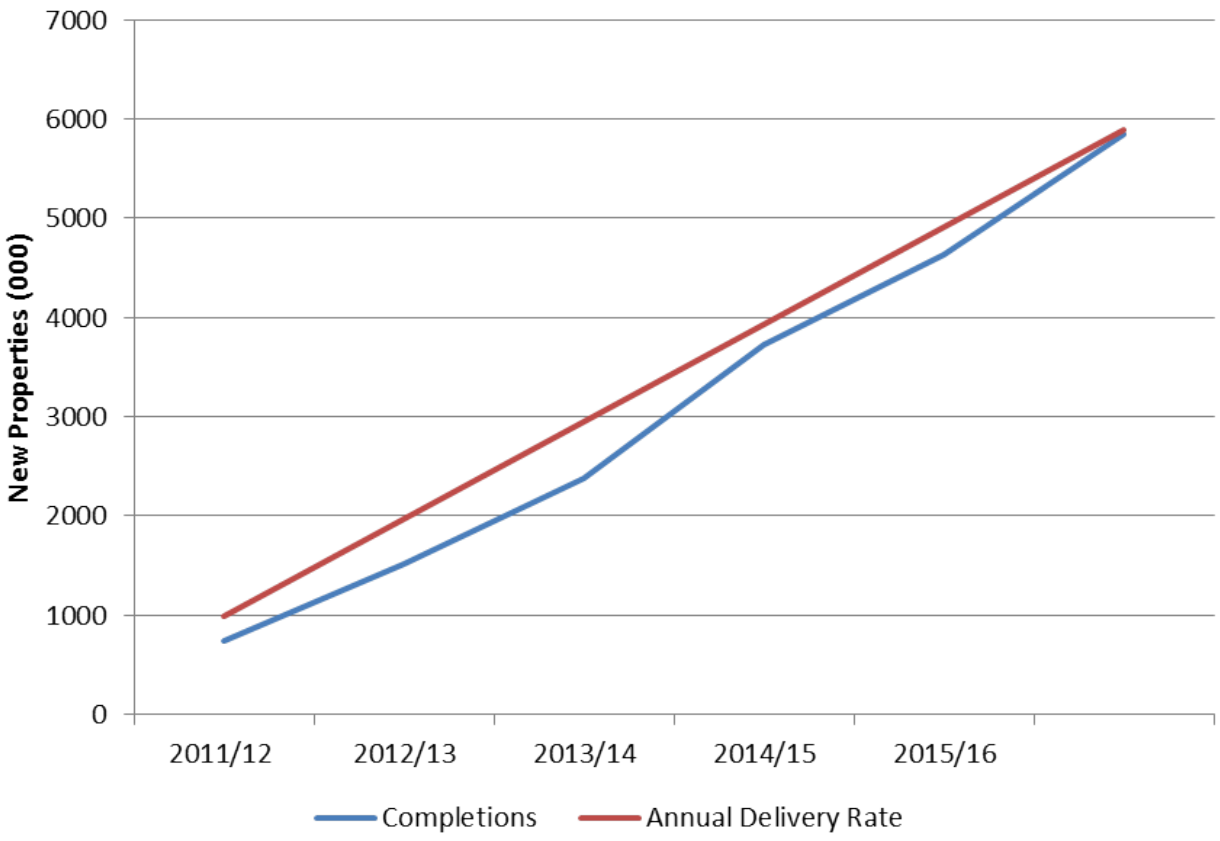
We observe that the ONS data is significantly lower than the current number of connections we make and our forecast for AMP7. The number of connections experienced last year and the number of connections we have made year to date show that we are on a trajectory to significantly higher levels of connections than the ONS trend data suggests. Our forecast is based on connections in the first third of the reporting year. Our forecast methodology accounts for activity in previous months and other factors such as peaks in activity in May, June, October and November reflecting half year and end of financial year for developers. We also reflect the usual downturn in the number of connections for Christmas and Easter each year.

Figure 46 Total number of new water connections AMP6



This is demonstrated by the example of Peterborough City Council. The accuracy of housing targets in Local Plans is demonstrated at Peterborough, where housing completions have been consistent with the annual delivery rate outlined in the Local Plan.

Figure 47 Peterborough planned new properties against completions



10.5.3 OxCam Arc – additional growth

We have not explicitly captured the OxCam arc in our growth forecast and investment plans for AMP7.

In its response to the National Infrastructure Commission's report in October 2018, and through the joint declaration with local partners in March 2019, the Government has confirmed its ambition for up to one million new homes between Oxford and Cambridge by 2050. This is being backed by £4.5 billion committed Government funding on the Expressway and western section of East-West rail. We have engaged with partners to inform this ambition with indicative figures suggesting some 70% of these new homes will be within our area of operation.

Such growth deals provide funding for infrastructure (such as roads) to support accelerated growth, and housing over and above those currently planned. For example, Daventry, South Northamptonshire and Northampton Borough (West Northamptonshire) have endorsed the principle for a deal which would see a 40% increase to 100,000 additional homes to 2050.

In some of Ofwat's commentary, it states that the OxCam Arc uncertainty around timing and location of development casts doubt on our growth forecast. To be clear, very little allowance for additional growth for the OxCam Arc is captured in our forecast and planning for growth in AMP7 as it is not yet reflected in Local Authority plans. This will be a further driver for growth beyond trend and our forecasts.

10.5.4 Why it matters

Ofwat's approach to providing growth allowances and its views on forecasts run counter to the stated priority of PR19 to improve resilience. Underfunding growth will lead to less investment and increased risk of service failures or delays to connecting new developments.

10.5.5 How to fix it

We believe Ofwat should use our forecast of new connections in its base model and when conducting deep dives of growth costs.

Ofwat's forecast number of new connections is significantly lower than our forecast. Once Ofwat improves its approach to determining growth allowances (for which we recommend deep dives), it needs to also consider appropriate forecasts for growth. Otherwise it will improve its models but still under fund this activity.

Our proposals for outcome delivery incentives (ODIs) for a sub-set of growth expenditure not captured by the DSRA to appropriately share risk between us and customers. These proposed mechanisms are described in detail later in this chapter.

This concern is less material if growth allowances are not set using the base cost model.

10.6 Sharing risk between companies and customers – growth delivery ODIs

We recognise and share Ofwat's desire to protect customers from funding investment for growth that does not materialise. We proposed that a mechanism to avoid this risk be adopted in our IAP response.

We believe the best way to share risk between companies and customers is to establish uncertainty mechanisms under the ODI framework for growth expenditure not funded by developers. This ensures that companies are neutral to the level of growth experienced rather than creating perverse incentives where companies are worse-off if growth is higher than allowed for. We believe this approach could be applied to other companies with high growth.

10.6.1 Principles

As part of its price control allowances, Ofwat is seeking to balance between companies and customers the risk of uncertain growth. This requires it to make judgements on the likely level of growth, with limited recourse for customers or companies if this judgement turns out to be incorrect.

By making ex ante estimations on the levels of growth for the purposes of a Price Review, companies are at risk of incurring additional expenditure if growth is higher than forecast by Ofwat. Likewise companies could over-recover expenditure from customers if growth is lower than forecast. Only a proportion of this is addressed through the totex sharing mechanism.

Ofwat's proposed DSRA does not resolve this problem. This mechanism only ensures that allowed revenues from grants and contributions received from developers is adjusted for the number of connections. Companies who historically made large contributions to infrastructure provision cannot reduce their contribution over time due to the charging rules requirement to maintain the balance of changes between developers and the generality of customers. This is demonstrated in our data table App28 where cost recovery is significantly lower than 100%, due to the historic balance. There is also no route to recover treatment costs from developers.

This leaves around £350m or 50% of our forecast expenditure associated with growth as fixed in ex ante allowances. This approach means companies are effectively dis-incentivised from making connections to their network. Our concerns with the DSRA can be summarised as:

- DSRA does not mitigate the totex risk in the way Ofwat thinks, noting the points above about its scope.
- There is an improbably large variation in the unit rates put forward by Ofwat for the DSRA.
- These rates are widely out of kilter with Ofwat's implicit allowances per connection from the cost models.

This contrasts with Ofgem's approach in the RIIO-ED1 price control for uncertainty associated with new connections. This price control includes an uncertainty mechanism associated with expenditure for growth (or 'load'). Ofgem's stated intent is that companies are left neutral (from a revenue perspective) to the level of growth and whether it is funded by developers or the company.

The approach to allowances for growth matters in this context because price control incentives are not simply affected by how costs and revenues move during the price control period but by companies' perceptions of the overall framework, including the potential approach to cost assessment at future price controls. The proposed approach makes new connections above a certain level financially unattractive. If the DD approach is used for Final Determination companies will attach some likelihood of this approach (or one along similar lines) being used at PR24 – this may then affect their incentives during the current period. It is perverse for the regulator to place companies in a position where they are financially worse off as a result of increases to the number of customers they supply, driven by factors outwith their control.

10.6.2 Proposed uncertainty mechanisms through the ODI framework

We are proposing three uncertainty mechanisms associated with growth expenditure. These will operate as growth delivery ODIs similar to the form of the Internal Interconnector Programme Delivery ODI proposed by Ofwat. They will cover areas where expenditure is not fully or partially recovered from developers, given. revenue recovered from developers is already in the scope of Ofwat's developer services reconciliation mechanism. The three areas for which we are proposing a mechanism are as follows:

- Water housing and estate mains – our contribution to site specific mains and asset payments
- Wastewater network reinforcement – surface water drainage
- Water Recycling Treatment

The demarcation between our proposed mechanisms and Ofwat's developer services reconciliation mechanism is shown below.

Figure 48 Ofwat and Anglian proposed reconciliation mechanisms for water

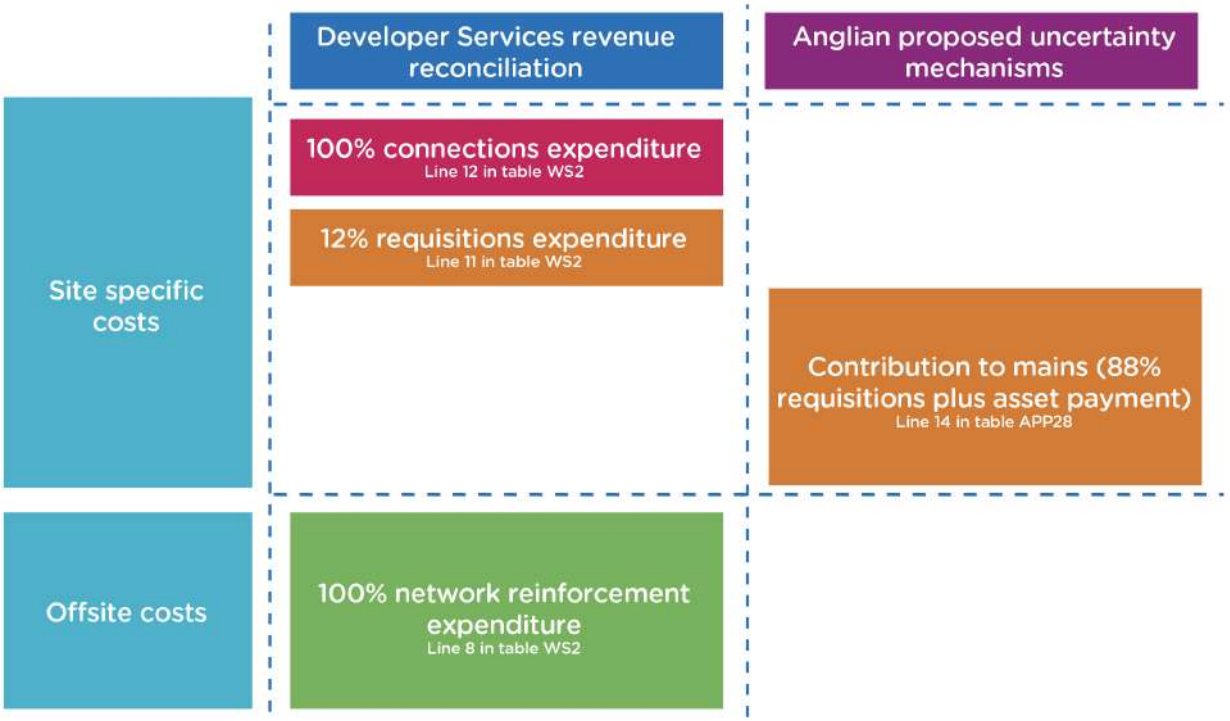
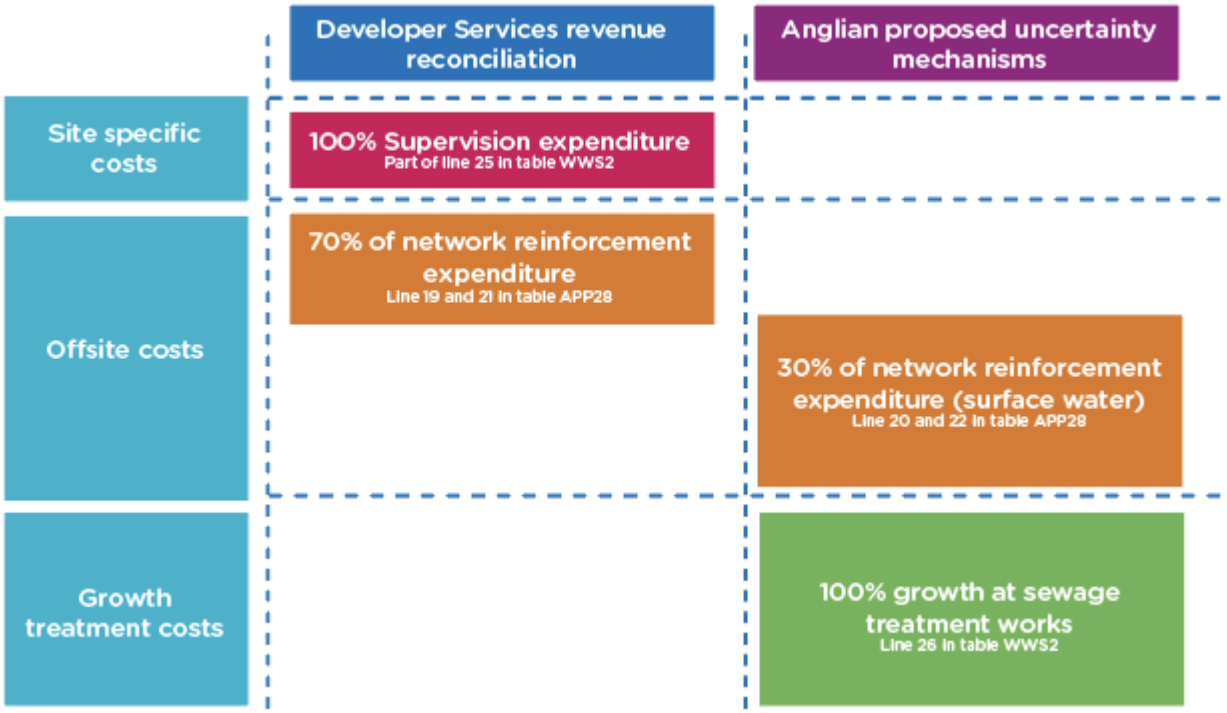


Figure 49 Ofwat and Anglian proposed reconciliation mechanisms for wastewater



10.6.3 Timing

We propose that these mechanisms operate on an end of AMP basis. This avoids revenue volatility in the event that the profile of connections or delivery of capacity varies year on year but is consistent over the AMP as a whole. This allows greater alignment with the DSRA and cost sharing incentives. This approach is similar to that proposed by Ofwat for both the 'Internal Interconnector Programme' and 'Smart metering' performance commitments.

We note Ofwat's comments around reviewing the types of growth experienced by companies when applying the DSRA. We support this given the DSRA applies a per connection reconciliation to a large bucket of revenues and costs that are not primarily driven by the number of connections (particularly for wastewater). End of period application of these mechanisms allows for any relevant adjustments to the DSRA to be taken into account.

10.6.4 Water housing and estate mains

Rationale

Rule 19 of the Charging Rules for New Connection Services requires that companies maintain the broad balance of charges between developers and the generality of customers. For us this means that the company contributes 88% to the cost site-specific mains. This contribution is currently made as a discount on requisition charges for developers or through an asset payment for Self-Lay Providers. From April 2020 we will continue to make the same value of contribution to on-site mains but via discounts to infrastructure charges.

Our contribution to on-site water infrastructure is not accounted for in the DSRA (which just captures grants and contributions). If this activity increases beyond the level allowed for in the Final Determination the DSRA will not fully cover this increase in costs. Similarly if the level of activity decreases, only part of the funding would be returned to customers through cost sharing (as it isn't captured by the DSRA). Our contribution to on-site infrastructure is material, being forecast to be £102m across AMP7.

We believe the proposed symmetrical adjustment mechanism appropriately shares volume risk between companies and customers.

Definition

We propose that this mechanism operates based on the number of connections made to our water supply system. This would include connections to NAV sites within our area of appointment, given NAVs benefit from the income offset discount that we provide.

Baseline for reconciliation in 2024-25

We propose that the baseline against which the mechanism operates is the same as the forecast of new properties connected. This is reported in our PR19 data tables as 183,810 connections across AMP7. We do not believe the terminology 'performance commitment level', as used for other performance commitments' is appropriate for this mechanism as it relates to the number of connections.

Unit rate

Our proposed unit rate for both upwards and downwards adjustment is based on the total value of our income offset for water, divided by the number of connections. This is based on the investment and forecast included in our Representation (line 14 data table App28). We have also applied the totex sharing factor which has been assumed as 50% for this unit rate. If an asymmetric sharing factor is applied this would result in different rates for upward or downward adjustment. Ofwat will need to apply these in the Final Determination.

The calculation of this unit rate is shown in the table below.

Table 70 Water housing and estate mains unit rate

Element	Value
Connections	183,810
Contribution (£m)	102.11
Sharing factor assumption	50%
Unit rate (£)	277.76

10.6.5 Surface water drainage

Rationale

We have ambitious targets in AMP7 for removing and managing surface water in our drainage network. As a consequence, for the first time, we have explored SuDS opportunities to provide wastewater capacity to meet growth requirements in a more sustainable manner, in conjunction with traditional upsizing or hybrid solutions. We have considered growth intervention options with and without climate change, and on a shorter and longer term design horizon for each catchment.

There are conflicting legal views on whether SuDS are sewers and can be charged to developers. Our proposed mitigations do not include 'outfalls' and do not represent the conveyance of water. They are predominantly water butts and other attenuation on site, that will not ultimately be owned by us. On this basis and in line with our interpretation of Section 100 of the Water Industry Act 1991 we cannot charge developers for solutions that do not convey water. This also applies to 'Other assets' as captured by table App28. This means that they are outside of the scope of the DSRA.

All of our proposed surface water drainage expenditure, as reported in table App28 is for SuDS in AMP7. This is a significant investment in a sustainable solution that delivers natural capital benefits. We have included £56.7m of expenditure in our plan for SuDS and £0.99m for other assets.

The proposed mechanism ensures that if additional capacity is delivered, we can recover the funding for it. Crucially, if less capacity is delivered, funding is returned to customers. This is similar to the rationale applied by Ofwat to our Internal Interconnector Programme and Smart metering ODIs.

Definition

We propose that this mechanism operates on the basis of the population equivalent (PE) capacity delivered by our investment in surface water drainage solutions.

Assurance will be provided on the level of capacity provided and that investment decisions were made on the basis of delivering best value to customers.

Baseline for reconciliation in 2024-25

We propose that the baseline against which the mechanism operates is the same as the PE capacity forecast for our investment in surface water drainage solutions. This figure is based on our bottom up, catchment by catchment, growth strategy.

The level of capacity to be delivered, based on our WRLTP, is shown by catchment in the table below. We are not proposing that the mechanism requires surface water PE to be delivered in these catchments but that the baseline reflects that we will deliver this level of PE during the AMP.

Table 71 Surface water capacity by catchment

Catchment	PE
Benfleet	134
Bedford	13,368
Caister	1,600
Colchester	6,938
Maldon	2,535
Ramsey	1,927
St Neots	1,924
Tilbury	103
Whittlesey	1,466
Whitlingham	15,270
Ipswich - Cliff Quay	6,763
Corby	4,621
Chelmsford	23,591

Unit rate

Our proposed unit rate for both upwards and downwards adjustment is based on the total value of expenditure on surface water drainage and other assets included in network reinforcement for wastewater, divided by the the capacity in PE. This is based on the investment and forecast included in our August 2019 business plan. The expenditure values have been taken from lines 20 and 22 in data table App28. We have also applied the totex sharing factor which has been assumed as 50% for this unit rate. If an asymmetric sharing factor is applied this would result in different rates for upward or downward adjustment. Ofwat will need to apply these in the Final Determination.

The calculation of this unit rate is shown in the table below.

Table 72 Surface water drainage unit rate

Element	Value
Capacity (PE)	80,240
Expenditure (£m)	57.7
Sharing factor assumption	50%
Unit rate (£)	359.55

10.6.6 Water recycling treatment

Rationale

We do not charge developers for enhancements to our water recycling treatment capacity. As such the funding for this investment is fixed as an ex ante allowance.

This is a significant investment to accommodate growth at water recycling treatment centres, forecast at £161.63m across AMP7 (lines 26 and 73 in table WWS2).

The proposed mechanism ensures that if additional capacity is needed and delivered, we can recover the funding for it and crucially if less capacity is needed and delivered, funding is returned to customers. This is similar to the rationale applied by Ofwat to our Internal Interconnector Programme and Smart metering ODIs.

Definition

We propose that this mechanism operates on the basis of the increase in PE treatment capacity delivered by our investment in water recycling centres.

Assurance will be provided on the level of capacity provided and that investment decisions were made on the basis of delivering best value to customers.

10.6.7 Baseline for reconciliation in 2024-25

We propose that the baseline against which the mechanism operates is the same as the PE capacity delivered by our forecast investment in treatment capacity due to growth. In table WWn4, line 25 we show that the increase in treatment capacity will be 255,917 PE during AMP7.

We propose to remove 6,239 PE from this figure relating to sites where we already have existing issues (WRC 6.13 (791 PE) and WRC 6.14 (5,448 PE)). Site 6.13 is where the site is descriptive and we treat more PE than the permit allows so will rebuild the works larger, and site 6.14 where the site is already DWF non compliant and we will need to extend to meet a new permit.

Removing the 6,239 PE gives a total increase in PE from the expenditure of 249,761. This then is the level against which capacity delivered will be measured at the end of AMP7.

Unit rate

Our proposed unit rate for both upwards and downwards adjustment is based on the total value of our expenditure for growth at water recycling centres, divided by the level of capacity created by the investment. This is based on the investment and forecast included in our August 2019 business plan. The expenditure is taken from lines 26 and 73 in table WWS2. We have also applied the totex sharing factor which has been assumed as 50% for this unit rate. If an asymmetric sharing factor is applied this would result in different rates for upward or downward adjustment. Ofwat will need to apply these in the Final Determination.

The calculation of this unit rate is shown in the table below.

Table 73 Water recycling treatment unit rate

Element	Value
Capacity (PE)	249,761
Expenditure (£m)	172.76
Sharing factor assumption	50%
Unit rate (£)	345.67

10.6.8 Interactions with totex sharing and DSRA

We note Ofwat's comments around reviewing the types of growth experienced by companies when applying the DSRA. We do not agree that the number of connections is a good explanatory factor for expenditure on network reinforcement. On this basis we agree that application of the DSRA needs to reflect the number of connections and volume of network reinforcement undertaken. We would propose that a similar consideration is made during the application of our proposed mechanisms and a cross check for unintended interactions with the DSRA.

10.7 Approach to regulating developer services – response

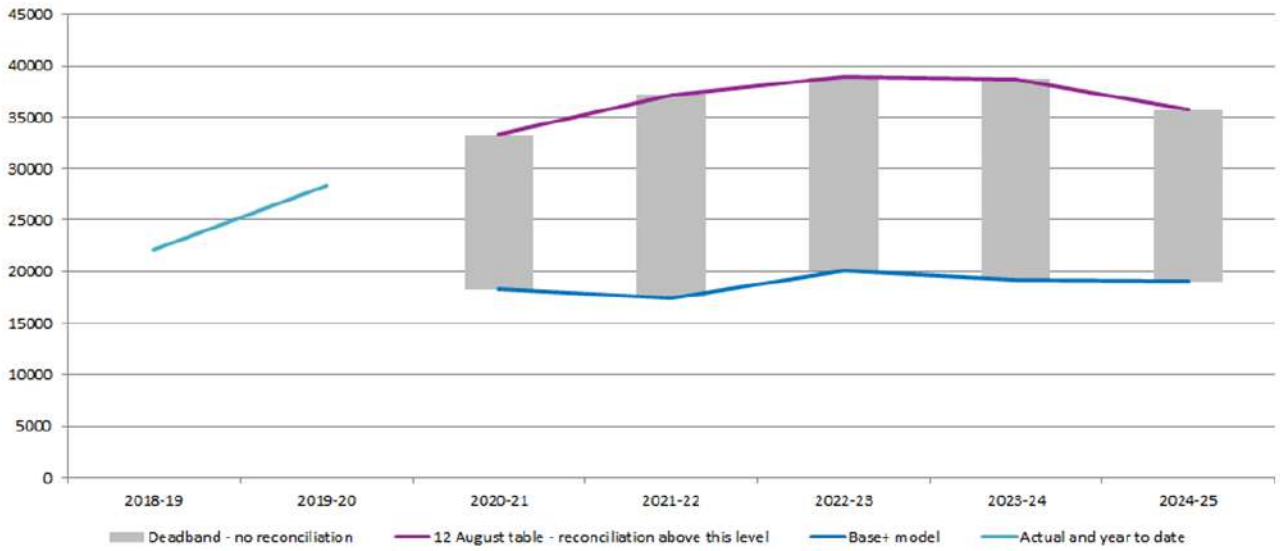
This section of our representation gives our views on Ofwat's 'approach to regulating developer services' annex published as part of the DD materials.

10.7.1 End of period reconciliation

We are supportive of a revenue reconciliation mechanism in principle. However we believe such a reconciliation mechanism should have a broader scope than just developer services revenue. We believe such a mechanism should account for growth costs where less than 100% of the cost is met by developers. This is why we have proposed our own uncertainty mechanisms, under the form of an ODI. If Ofwat broadens the scope of its mechanism the need for our ODIs is diminished.

On 12 August 2019, Ofwat issued supplementary information on calculating grants and contributions and figures that will be applied in the end of period reconciliation. The tables in this supplementary document suggest that Ofwat will use company forecasts of growth to trigger this reconciliation. If Ofwat uses different forecast number of connections for the reconciliation than that which was used to set cost allowances, then there will in effect be a deadband before the revenue reconciliation kicks in. This is shown for us in the figure below.

Figure 50 Comparison of Ofwat growth figures in base models and developer services reconciliation tables and implied deadband for water



We believe that cost allowances, number of connections and the reconciliation mechanism need to be based on consistent data.

We note that Ofwat's proposed DSRA unit rates cover a variety of unit rates. The unit rates are wildly different from the marginal allowances suggested by Ofwat's models. Ofwat must satisfy itself that it understands these variations and their implications before finalising this mechanism

10.7.2 Incentivising accurate forecasts

We agree that companies should be incentivised to submit accurate forecasts of revenue. We believe a simplified reconciliation is most appropriate.

However, as described earlier in this chapter, we have serious concerns about the validity of forecast data for new connections used by Ofwat. We do not support incentivising revenue forecasts against this baseline. The incentive for accurate forecasts remains under the proposed reconciliation mechanism through the revenue forecasting incentive.

10.7.3 Treatment within control

We support the proposals to remove conflicts between Ofwat's charging policy, the Competition Act 1998 and it PR19 allowances. However we believe ambiguity remains. Ofwat needs to clarify the interaction of totex sharing mechanism, growth reconciliation and allowed revenues. We are keen to discuss these concerns further with Ofwat, in particular in the context of our proposed growth delivery ODIs.

10.7.4 Diversions

We recognise the challenge of assessing diversions expenditure. We support the proposal to treat these diversions outside of the price control.

11 FOCUS AREA - WRMP

11.1 Introduction

This section presents our response to Ofwat's DD interventions on our supply demand balance enhancement expenditure associated with the WRMP. We firstly describe Ofwat's DD Position and then present our response.

Ofwat's DD position and subsequent letter of 20 August challenge the primacy of the statutory WRMP process in determining option selection and best value for customers and the environment. This frustrates the established decision making process, which has included extensive and well-regarded consultation with customers, stakeholders and regulators, incorporating information regarding costs and value. It also highlights the lack of a joined up regulatory response to a position of regulatory jeopardy in which we now find ourselves.

We will therefore be seeking further clarification from Government regarding the appropriate process in relation to the WRMP and the Price Review. We propose a meeting with Defra, Ofwat and the Environment Agency to try to resolve this and enable a better process for PR24 and WRMP24. Such a meeting should also try to address what, if any, further information is required to allow the situation to be resolved as quickly as possible for PR19.

We have responded in detail to Ofwat's DD position in this representation, and where possible reflected on the additional clarity provided in the 20 August letter. However, we would like to use the suggested meeting above to establish an agreed course of action for addressing any outstanding concerns ahead of Final Determination.

11.2 Synopsis of Ofwat's DD position

Ofwat made a number of changes to the supply demand balance assessment methodology between IAP and DD. The number of assessment areas are reduced from six to five, with strategic regional solutions being separated out as a distinct assessment area. Aspects of the deep dive assessment were also updated to reflect a change to the unit rates and an updated company level efficiency challenge.

The supply demand balance area was also subjected to reallocations between expenditure areas which are described in further detail below. We also provide updated information in our commentary on data table WS2.

The table below summarises the high level difference between our April IAP response and Ofwat's DD Assessment.

Table 74 Investment Summary

	April Plan (£m)	DD Ofwat position (£m)	Representation (£m)
Capex	524.654		389.763
Opex	8.652		16.347
Totex	533.306	285.303	406.110

The movement in requested totex between IAP and DD is explained in more detail in the table commentary summary of totex changes. In brief the totex changes are as follows:

- Removal of Elsham DPC scheme totex and inclusion of DPC development costs -£122m
- Inclusion of a new obligation in East Norfolk that the EA introduced in the latest version of the WINEP +£7.4m
- Removal of the allowance for investigations and future planning (WRMP24 / WRE) -£3.2m

- Transfer of the development costs of the South Lincolnshire Reservoir from the Supply Demand area to the Strategic Regional Solutions area -£9.8m
- Minor changes to both capex and opex associated with the update to RPE

Ofwat made the following reallocations to and from the supply demand balance expenditure allocation:

- £269.508m (£264.871m capex and £4.637m opex) from resilience into supply demand balance
- £245.083m (£241.068m capex and £4.015m opex) from WINEP-Water Framework Directive into supply demand balance
- £161.668m (£98.340m capex and £63.328m opex) to smart metering from supply demand balance

Ofwat removed a further £178.783m from the total allowance before completing the deep dive model assessment, as summarised in the table below.

Overview of Supply Demand Balance Totex disallowances at DD

Amount Disallowed (£m)	Ofwat's Explanation
56.994	• Enhancement costs driven by growth removed as incorporated in base cost econometric models • Not been reallocated since it is assumed within the modelled base allowance ("Housing Growth" Business Case)
121.789	• Removed from the model because the costs associated are considered for DPC • An £8.261m allocation is made for set-up/management of Elsham DPC scheme included in this element for undertaking the DPC procurement process is allocated
178.783	

Ofwat removed £124.144m following the deep dive assessment. A summary of this is provided in the table below, with a further breakdown of the Ofwat areas of challenge presented in the following table. The table references the areas of the chapter where we provide detailed representations on each area of the supply demand balance feeder model assessment.

Table 75 Summary of Supply Demand Balance DD Assessment

Component enhancement cost analysis	Requested Totex (£m)	Allowed Totex (£m)	Amount Disallowed at DD (£m)
2020-25 SDB enhancement	56.416	40.662	15.754
2020-25 leakage enhancement	76.939	69.245	7.694
Long-term enhancement	5.741	2.871	2.871
Internal interconnections	336.539	241.771	94.768
Investigations and future planning	3.057	0.000	3.057
	478.692	**354.548**	**124.144**

Table 76 Detailed Breakdown Supply Demand Balance DD Assessment

Component (enhancement cost analysis)	Amount Disallowed at DD (£m)	Ofwat's Explanation
1. 2020-25 SDB enhancement (see section 11.6.1)	18.625	Pyewipe treatment scheme change to industry unit rate (£1.20m/Ml/d) for water treatment capacity
	-6.888	Industry unit rate for North Fenland for treatment capacity (ELY9)
	4.017	Meppershall transfer scheme size challenge - adjustment to capacity (5Ml/d to 1 ML/d)
2. 2020-25 leakage enhancement (see separate leakage Focus Area)	7.694	10% company efficiency challenge applied as a result of company unit costs being greater than industry median cost
3. Long-term SDB enhancement (see section 11.6.2)	2.871	50% reduction to reflect South Lincolnshire reservoir being considered in the regional strategic model, and to reflect schemes that were identified in the stress testing of the revised draft WRMP
4. Internal interconnections (see section 11.6.3)	25.728	10% "cost challenge" applied across all interconnectors (excluding Elsham DPC scheme)
	12.45	Insufficient evidence of consideration of alternative options challenge to interconnectors (optioneering challenge)
	56.59	Capacity/size scope challenge to relevant interconnectors
5. Investigations & future planning (accepted Ofwat's position)	3.057	Botex movement – future planning costs (e.g. WRMP/WRE activities) considered normal base activities
Total	**124.14**	

The total investment disallowed as a result of Ofwat's deep dive assessment is £124.14m. The nature of Ofwat's challenge spans across four different areas, listed below. We address the capacity and scope challenges at a high level first, before going onto provide detailed comments on the supply demand feeder model. We signpost the sections of this chapter which address each type of challenge below.

- Capacity scope challenges. These are addressed at a high level in Section 11.4 and in detail for each section of the Supply Demand Balance Feeder model in Section 11.6
- Optioneering Challenges. These are addressed at a high level in Section 11.5 and in detail for each section of the Supply Demand Balance Feeder model in Section 11.6
- Efficiency challenges - addresssed for each section of the supply demand enhancement feeder model in Section 11.6
- We accept Ofwat's botex movement on investigations and future planning and do not make a representation on this

11.3 Representation – Our View

In this section we set out our representation to Ofwat's DD interventions on our WRMP plans. We start by describing the areas where we accept Ofwat's DD position, before going on to provide additional evidence for the areas where there remains a difference of view.

However, at a macro level, and as we note in our comments on Botex Plus, we **do not** accept the movement of the growth enhancement costs to the base econometric models.

We also have serious concerns about the approach to growth costs that Ofwat takes in the DD. A full response to Ofwat's interventions on growth can be found in our section Focus Area - Growth.

11.3.1 Areas where we accept Ofwat's DD Position

We do not challenge the basis of the reallocations Ofwat has made between resilience, WINEP and smart metering.

We also understand Ofwat's position on the disallowances made to account for the Elsham treatment and transfer schemes being deemed suitable for delivery via DPC and we reflect this in our data table submission. .

However, we remain concerned about adopting a DPC approach for these schemes. The deadlines for the delivery of the WRMP schemes are already very tight, so this intervention could put the programme at risk. We will undertake a review of the programme in light of these changes, and also discuss the implications with the Environment Agency to help understand any potential risks to the delivery of the overall WRMP strategy. For further details on our position on DPC, please see our section Focus Area - DPC.

In the deep dive assessment, Ofwat moves £3.057m of future planning costs to botex as part of normal base activity. We do not make a representation to Ofwat's intervention in this area.

We welcome Ofwat's continued support for strategic regional solution development and highlight the inclusion of a joint company statement in our appendices. We will look to utilise the reconciliation mechanism if further schemes are identified that are not included in the current process, as discussed earlier in this chapter.

We accept Ofwat's allocation for the development of the South Lincolnshire Reservoir and associated Anglian to Affinity transfer and have included in a freeform cost line in WS2. In line with IFRS accountancy standards we have classed the development costs as opex since we will not own the asset in the future.

All of these changes are reflected in our updated table submission.

A summary of the areas where we accept Ofwat's position is provided in the table below.

Table 77 Summary of Supply Demand Balance areas where we accept Ofwat DD position

Amount Disallowed (£m)	Area / Ofwat Explanation
121.789	• Removed from the model because the costs associated are considered for DPC • An £8.261m allocation is made for set-up/management of Elsham DPC scheme included in this element for undertaking the DPC procurement process is allocated
3.057	• Investigations and future planning - Botex movement – future planning costs (e.g. WRMP/WRE activities) considered normal base activities
124.846	

11.3.2 Areas where we provide additional evidence

In this section we address the areas of our plan where Ofwat has deemed there is not enough evidence to support the proposed investments. We set out here our additional evidence and justification.

We address specific areas that cut across the entire supply demand balance deep dive assessment first, before going on to provide a response for each specific area of the deep dive assessment.

Note that the leakage aspects of the model (£7.694m) are addressed in chapter 12 Focus Area - Leakage.

On 13 August 2019, we wrote to Ofwat to address areas of the supply demand assessment that we considered to represent an apparent misalignment between the WRMP and price review processes, and the regulators' respective assessments of our WRMP.

This has created a difficult position for us, and we took the opportunity in the letter to reflect on the principles of regulatory collaboration and increased ambition set out in last year's Building resilient water supplies letter in the hope that we can work together with Ofwat, Defra and the Environment Agency to resolve these issues. In the letter we asked whether it would be possible to address these scope and best value options challenges linked to our WRMP before the submission of our DD representation.

We received a response from Ofwat on 20 August stating that Ofwat was unable to assess or provide any feedback on the new information provided, ahead of the 30 August representation date. Instead, Ofwat provided some additional information in relation to the main points in its DD.

There has been very limited time before the 30 August to make any substantive changes to our response, but we have reflected on the additional information in the response below where possible. As stated in the introduction to this chapter we have concerns regarding Ofwat's position in the letter, but propose a meeting following the 30 August with Defra, Ofwat and the Environment Agency to resolve these issues and address what, if any, further information is required to resolve the situation as quickly as possible,

Ofwat has made challenges across several areas of the assessment related to capacity scope and, in its view, insufficient evidence of optioneering. We address these overarching challenges here first in the round, before going on to provide scheme specific comments in response to each area of the deep dive.

11.4 Capacity scope challenge

Ofwat's DD identifies that for a number of our proposed interconnectors and one of our proposed treatment (2020-2025 supply demand enhancement) schemes the capacities exceed the deficits in our WRMP planning tables.

There are two factors driving the decision to upsize schemes to deliver best value over least cost, which are discussed here in turn:

11.4.1 Single Source Resilience

In some instances scheme capacities have been increased to deliver benefits for single source resilience. Whilst delivering a scheme to address a supply demand deficit, we have taken the opportunity to ensure that the scheme delivers maximum benefit to our customers and we avoid the need to deliver a separate interconnector or treatment scheme to address single source resilience risks.

In our September Plan we proposed £18.338m single source of supply risk management. This investment constitutes seven investment schemes which connect isolated communities to a second source of water supply. Ofwat supports the proposed investment in its DD. These investments exploit synergies with the WRMP supply side interconnector programme. Without the capacity upgrades proposed it will not be possible to deliver the benefits associated with these single source resilience schemes. We request that Ofwat considers the upsizing of the WRMP schemes in line with its position on single source of supply investment in the DD as the two areas of investment are inextricably linked.

Ofwat's 20 August letter states that it expects the upsizing for resilience benefits to be assessed in line with the refined criteria set out in the securing cost efficiency appendix. We have reflected on this request and provide the following high level responses to the criteria set out below.

The specific cause of service failures and associated probability of failure the investment is proposing to address

Service failures caused by limited connectivity in the network (such that customers connected to only one source of supply have a higher risk of experiencing supply interruptions during an extended outage) The potential causes are the service failures is wide ranging and include events such as power outages and fire.

The consequence of failure to customer service

Interruptions to supply resulting in customers being reliant on alternative water supplies (bottled water). These interruptions could be potentially extensive in the event of a catastrophic failure (such as fire). These are low probability, high impact events.

How the failure and the consequence are currently beyond management control

The limited connectivity in our existing network cannot be mitigated without investment and is therefore beyond management control.

11.4.2 Future Supply Demand Uncertainty

In other instances scheme capacities have been upsized to address future supply demand uncertainty associated with pressures on our supply demand balance that will occur at WRMP24, requiring investment in AMP8 and beyond, but are not yet fully quantified within WRMP19. These pressures include the need to be resilient to a 1 in 500 year drought event, a move to new climate change projections, further sustainability reductions and expected additional future growth (including along the Oxford Cambridge arc, which is not currently factored into the WRMP growth forecast). There is an inherent level of uncertainty associated with water resources planning that must be factored in when making decisions about the future. We have used the best information available to us at this time to make decisions we believe deliver best whole life value to our customers and will reduce the risk of rework (i.e. delivering interconnector schemes along the same transfer routes in the future). We have also tested the principle of future proofing our investments with our customers, and our proposed approach received a strong level of support.

In Ofwat's 20 August letter there is a specific request to provide evidence to demonstrate the consideration of modular assets for interconnector schemes which have been upsized to address future supply demand uncertainty. The principle Ofwat proposes would deliver the investment to meet the immediate supply demand deficit in AMP7, but assumes that the scheme would be upsized to address future needs when the exact capacity requirement becomes more certain at WRMP24 or later.

Where possible we have considered a modular approach but we consider this is only appropriate for a limited number of schemes. The Pyewipe WTW investment has been designed on a modular basis, as discussed elsewhere in this chapter. This is not an appropriate approach to the delivery of interconnector schemes due to engineering and delivery constraints that are inherent in the delivery of pipelines. There is compelling evidence to demonstrate that a modular approach is not efficient. To demonstrate this we provide an example below of one of the interconnector schemes which has been upsized to address future uncertainty.

SFN4 North Ruthamford WRZ to South Fenland WRZ Modular Approach Assessment

This option has been upsized from 22 Ml/d to 40 Ml/d because stress testing showed that increasing the capacity of the transfer would allow existing/new resources (e.g. South Lincolnshire Reservoir) to be fully utilised and transferred east towards Norfolk in more severe drought scenarios. The additional capacity also provides flexibility to address future sustainability reductions.

The table below presents the capex for delivery of the 40 Ml/d scheme, compared with the delivery of a 22 Ml/d scheme, followed by am 18 Ml/d upsizing at a later date. The data show that, in this case, a modular approach would result in a 42% uplift in capex overall, clearly demonstrating this is not an efficient approach. As discussed later in this chapter 97% of the costs relate to open cut installation of pipelines (i.e. trench excavation). This on-site activity would be duplicated when installing the second, upsized section of main meaning customers would pay twice for an activity which could be undertaken once for a more moderate increase in cost.

Table 78 Modular Approach to Upsizing Capex Assessment

Capacity (Ml/d)	Description	Capex (£m)	Cost of addressing future uncertainty (£m)
40 Ml/d - One Scheme	Capacity to address immediate supply demand deficit identified in WRMP19 by 2045 and future uncertainty	50.29	10.49
40 Ml/d – Modular approach (Total of schemes listed below)	Capacity to address immediate supply demand deficit delivered immediately (22 Ml/d), followed by future needs delivered at a later date (40 Ml/d)	71.33	31.54
Individual Scheme Cost breakdown			
22 Ml/d	Capacity to address immediate supply demand deficit identified in WRMP19 by 2045 only	39.8	n/a
18 Ml/d	Capacity to address future uncertainty only	31.54	n/a

The methodology we have followed in sizing the investments is described in Chapter 5 of our main revised draft WRMP, including a description of the differences between the least cost and best value plans.

Additional detail is also provided in the Options Appraisal technical report appendix (pages 37 – 47) submitted with our revised draft WRMP. We also provide here a high level summary of the process we followed in moving from least cost to best value below and we append the main WRMP document and Options Appraisal report to this submission.

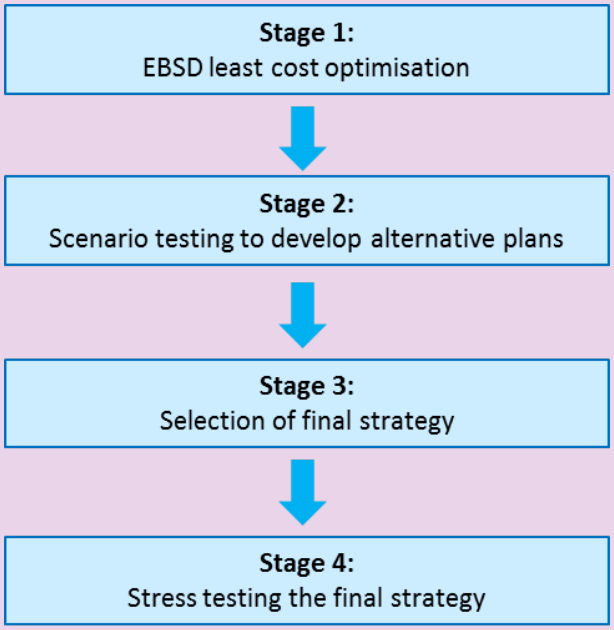
Summary of supply-side Strategy Development (Capacity Challenge)

Traditionally, we have used the Economics of Balancing Supply Demand (EBSD) approach to guide decision making around supply side options. EBSD allows planners to meet a supply-demand deficit with the lowest overall cost, or 'least cost' solution. Our WRMP 2010 and WRMP 2015 were both based on least cost option appraisal.

The limitations of the least cost planning approach are now widely recognised, and there is support from regulators, stakeholders and our customers to develop Best Value Plans. The stages outlined below describe our high level approach to best value planning.

Methodology used to develop the supply-side strategy

Figure 51 Supply-side appraisal processes



Stage 1 – industry standard EBSD methodology that is based on least cost optimisation to determine the least cost plan

Stage 2 – Scenario testing to create a set of alternative plans against the Least Cost plan – completed 60 runs using the EBSD

Stage 3 – performance criteria assess the alternative plans against the least cost plan – "multi-criteria analysis"

Stage 4 – stress testing against future uncertainties (extreme drought – 1 in 500 year return period, climate change, future trades, demand management)

A full overview of the options appraisal process can be found in *Revised draft WRMP 2019 Technical Document: Option Appraisal, September 2018*.

11.5 Challenge due to insufficient evidence of optioneering

We investigated all the possible alternative supply side options as part of the formal WRMP planning process, including third party options and water trading. We undertook extensive engagement to identify third party and trading options, engaging in detailed discussions with our neighbouring

water companies (Affinity Water, Severn Trent Water, Cambridge Water and Essex and Suffolk Water), as well as water management organisations in our region such as the Environment Agency and the Canal and River Trust (CRT). We have also held discussions with third party suppliers and other large industrial users in our region to explore trading opportunities. It should be noted that neighbouring incumbents have no, or only limited, surplus water with which to trade, and that additional treatment (for Invasive Non Native Species(INNS) risks) and transfer costs make such options less feasible. Our original draft WRMP included a Severn Trent trading option, but this option no longer features in our WRMP19 due to a change in option lead time between draft and revised draft, making the option unavailable to meet the immediate supply demand deficits in AMP7. We also included a reverse trade option with Affinity Water but, again, between draft and revised draft this option no longer represented best value following further discussions between the companies.

We have followed the prescribed process for developing our supply side options which is fully aligned with the Water Resources Planning Guideline (WRPG) and the WRMP 2019 – Water Company Checklist[1].

Following this process, we moved from circa 800 unconstrained options across all Water Resources Zones (WRZs) to circa 100 feasible options. We have also fully complied with Ofwat's market information and bid assessment framework processes. Our optioneering and options appraisal processes are clearly presented in our revised draft WRMP, both in the main document, at a high level, and in more detail in the technical appendices. Ofwat had access to all these reports at the same time as the Environment Agency, in early September 2018 shortly following our September Plan submission. Specifically, the Supply Side Option Development technical appendix and the Options Appraisal technical appendix provide the detail of the optioneering and options appraisal process undertaken for the development of our best value plan. Both of these reports, along with the main WRMP document have been appended to this submission for ease of reference.

We provide a high level summary of the optioneering process we followed below. Further details can be found in Chapter 5 of our main revised draft WRMP document and the Supply-Side Option Development technical report submitted with our revised draft WRMP, as discussed above.

We were surprised to receive this level of challenge on optioneering and consideration of third party options, given the feedback received from Ofwat at April IAP in the Targeted Controls, Markets and Innovation test area assessment.

In response to test question CMI3:

"To what extent has the company set out a well evidenced long-term strategy for securing resilient and sustainable water resources, considering a twin track approach of supply-side and demand-side options and integrating third party options where appropriate, to meet the needs of customers and the environment in the 2020-25 period and over the longer term?"

Ofwat gave a positive assessment:

"Anglian Water provides a high quality plan on its long-term strategy for water resources incorporating the use of markets to this aim.

The company provides sufficient and high quality evidence to using markets and engaging with third parties, with some evidence of an ambitious and innovative approach. On supply-side, the company has reached out [to] neighbouring companies such as Affinity water and Cambridge water to explore regional solutions, with an export to Affinity water likely to begin in 2025-2030. The company also provides high quality evidence for its long-term strategy on water resource management. A minor issue related to limited information around variance between the 'least cost' and 'best value' plan. The concerns are mitigated by the customers expressing support for the overall business plan."

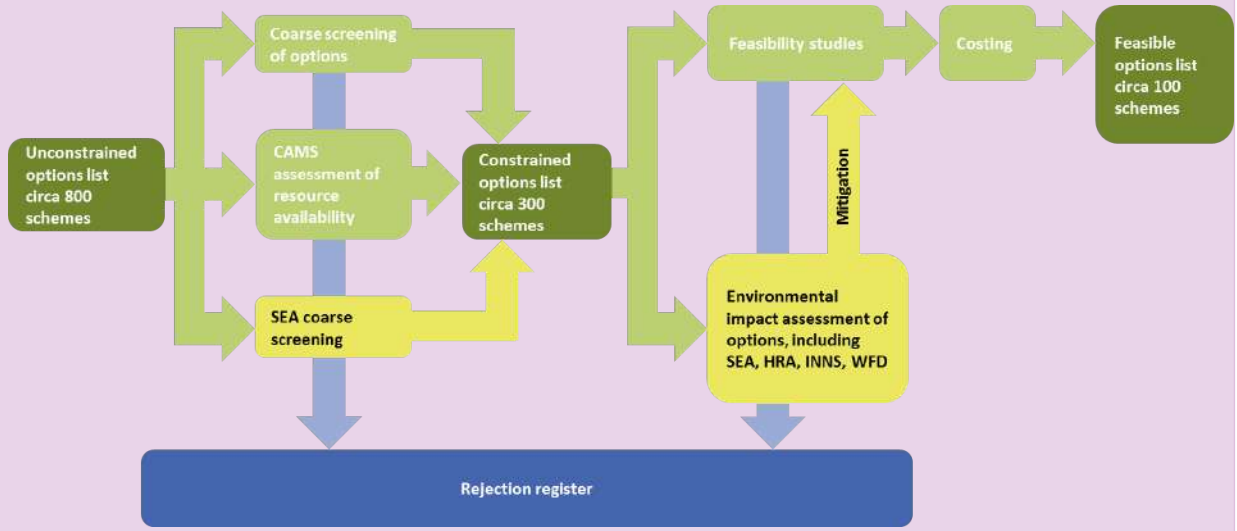
1 Environmental Agency & Natural Resources Wales, May 2017WRMP guideline supplementary document: WRMP 2019 – Water company checklist

There has been no material change to our approach between IAP and DD and so the reason for the change in Ofwat's position is unclear.

Summary of Optioneering Approach

We are confident we have investigated all possible alternative supply side options as part of the formal WRMP planning process, including third party options and water trading. We followed the prescribed process for developing our supply side options which is fully aligned with the Water Resources Planning Guideline (WRPG) and the WRMP 2019 – Water Company Checklist.

Figure 52 Development of supply-side options



Stage 2 of the 8-stage framework set out in the UKWIR Guidance on decision making processes and the WRPG specifically outlines the approach undertaken to identify our list of feasible supply side options.

Following the prescribed process, we moved from circa 800 unconstrained options across all Water Resources Zones (WRZs) to circa 100 feasible options. Full details of the supply-side option development process can be found in Revised draft WRMP 2019 Technical Document: Supply-Side Option Development, September 2018.

Summary of the Supply-Side Option Development Approach

Stage 2a

Development of unconstrained options

- Assessment of all possible options which could be reasonably used in our plan
- The options identified needed to be technically feasible options but not completely free from environmental and/or planning issues
- An assessment of trading with other water companies and third party options were undertaken
- Workshops were held with technical experts from across our region to develop the list of unconstrained options
- Our unconstrained option list for all WRZs was **circa 800 options**

Stage 2b

Moving from unconstrained to constrained options

Completion of a series of screening stages to refine the unconstrained list to a constraint list of options. Examples of the coarse screening criteria included:

- The option does not address the problem
- The option breaches unalterable planning constraints
- The option is not promotable (e.g. cost, sustainability, third party)
- The option has a high risk of failure
- The Environment Agency's Catchment Abstraction Management Strategies (CAMS) was accounted for in the screening to identify any over-abstracted or over-licenced sources as well as high level environmental screening.
- Our constrained option list for all WRZs was **circa 300 options**

Stage 2c

Moving from constrained to feasible options

- Completion of feasibility studies to confirm the feasible option set
- Environmental assessments further refined the options (SEA, Habitats Regulations Assessment, WFD, Qualitative Ecosystems Services Assessment)
- Cost estimation of capex, opex and carbon along with an estimated implementation period was produced
- Our feasible option list for all WRZs was **circa 100 options**

A full overview of the unconstrained and feasible options for each WRZ are listed in Section 6 Water Resource Zone Options in *Revised draft WRMP 2019 Technical Document: Supply-Side Option Development, September 2018*.

11.6 Detailed Representation on areas of the Supply Demand Feeder model

In the next section of this response we address each area of the supply demand balance feeder model in turn. The value associated with Ofwat's challenge is referenced for each section.

11.6.1 2020-25 SDB enhancement £15.75m

Ofwat comments:

Derivation of the supply-side allowance is based upon the 87 Ml/d identified in 1a with a reduction of 4 Ml/d for the RTS Intra RZ - Meppershall PZ based upon challenging the size of scheme which is significantly larger than that required to resolve the supply-demand balance deficit. We have applied a 10% challenge to the SHB2a scheme to reflect that insufficient evidence is provided for consideration of a wide range of options.

Unit costs	Company (£m/Ml/d)	Industry (£m/Ml/d)
2020-25 SDB enhancement unit cost	1.212	1.200

We address the three concerns raised here by Ofwat in turn:

Application of the industry average unit rate to SHB2a (Pyewipe water reuse for non-potable use) £18.625m.

The Pyewipe water reuse scheme has been selected in our WRMP best value plan to deliver an additional supply demand capacity of 20.6 Ml/d by 2045. In order to reduce the AMP7 cost to customers associated with this scheme we have adopted a phased approach to the delivery of the treatment capacity, only delivering 6 Ml/d by 2025 of the full 20.6 Ml/d scheme. However, this capacity reduction only applies to the modular specialised treatment elements of the scheme with the civil engineering components including power supplies, interconnection pipework, land acquisition, tankage and buildings all sized at 20.6 Ml/d.

This approach delivers the best whole life value for customers, reducing the costs associated with delivering the additional capacity required in future AMPs. However, it does also mean that our costs per Ml are not representative of an industry standard treatment scheme delivering 6 Ml/d of capacity. We recognise that approach does not fit the industry standard modelling approach Ofwat has adopted and that this potentially poses a problem for reconciling the costs for delivery of the additional treatment capacity in future AMPs.

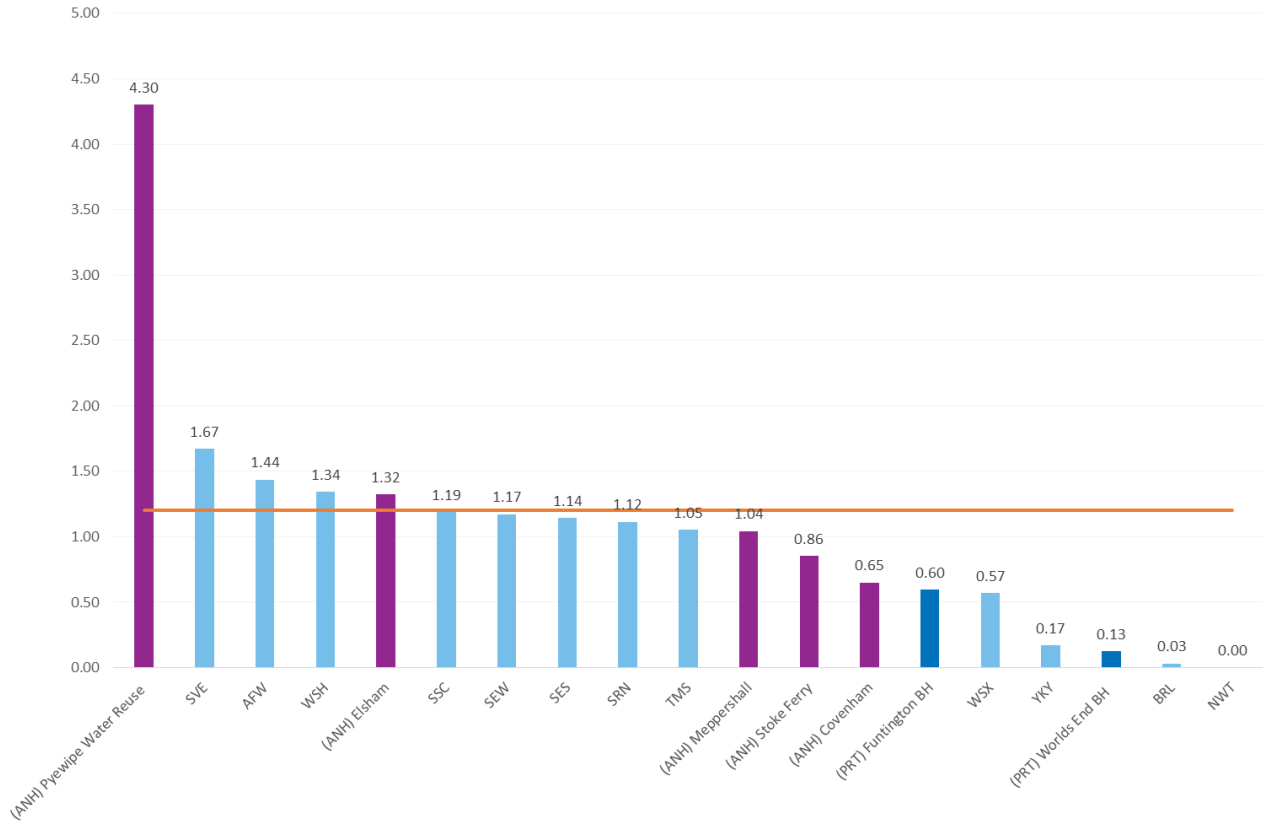
We costed both options, to deliver the full 20.6 Ml/d at £41.4m capex vs. the proposed option at 6 Ml/d. The cost comparison and associated unit rates are shown in the table below.

Table 79 Pyewipe Modular Approach Cost Comparison

Scheme description	Scheme capacity (Ml/d)	Scheme costs Capex (£m)	£m / Ml
All scheme elements delivered at full 2045 capacity	20.6	41.4	2.01
Treatment components of scheme reduced 2025 capacity with civil engineering components only at full 20.6 Ml capacity	6.0	25.3	4.22
Remaining treatment components of scheme delivered in later AMP	14.6	16.7	1.14

In AMP8 the incremental increase to deliver the remaining 14.6 Ml for £16.7m at a unit rate of 1.14m/Ml. We took the decision to defer £16.7m to AMP8 to reduce overall totex and ensure we are only investing in treatment capacity as and when required. The AMP7 costs are therefore an outlier in respect to the industry standard due to nature or the scheme and the approach adopted for phasing the investment. The treatment processes involved in treating final effluent are inherently more complex, with additional treatment stages. This, along with the modular approach we have adopted, explains why our costs appear as an outlier. We do not consider that the enhancement model adequately takes into account this additional treatment complexity. This is discussed further in the Enhancement Cost overview chapter. The graph below shows the comparison of this scheme across companies. The complex nature of the investment warrants a deep dive approach, rather than the modelling approach Ofwat has adopted.

Figure 53 Total SDB Unit Cost of Company



We recognise that even if the scheme delivered full treatment capacity, our costs still appear as an outlier. As noted in our IAP response, the effluent re-use scheme at Pyewipe will be classed as having treatment complexity W6, the highest category Ofwat has. This is due to the reverse osmosis process required. Although the enhancement model uses a simplistic unit rate for all treatment complexities, Ofwat recognises in its base models that treatment complexity is a driver of cost, using it to allow more botex to companies with more complex works. The unit rate of the full build-out option should be compared with other similar complexity sites for benchmarking purposes, for example the proposed re-use or desalination schemes included in other companies' WRMPs.

We address Ofwat's general optioneering challenge earlier in this chapter in the section Challenge due to insufficient evidence of optioneering. The South Humber Bank was not a separate WRZ at the time of developing the unconstrained options set. Unconstrained options for South Humber Bank WRZ were included in the Central Lincolnshire WRZ and East Lincolnshire WRZ.

Unconstrained options included:

- New river abstraction

- New / expanded reservoir storage
- Groundwater and ASR
- Desalination
- Bulk supplies
- Re-use
- Trading
- Tankering.

The Pyewipe option has been split into treatment and transfer for the purposes of allocating correctly the price controls. There are no alternative options for transferring the treated water from the new Pyewipe WTW to the non-potable customers on the South Humber bank due to the direct interdependency with the treatment element of the scheme.

Reduction of 4 Ml/d for the RTS Intra RZ Meppershall PZ £4.017m

This scheme has been sized to deliver single source resilience benefits to 21.7 thousand customers, 0.49% of our population served. Wherever possible we have sized schemes to meet the supply demand balance and single source resilience to customers in the receiving zone, to deliver the most value from the scheme and prevent the need to deliver a duplicate scheme with additional capacity in the future. The resilience uplift is cost beneficial.

11.6.2 Long-term SDB enhancement £2.871m

Ofwat's comments:

Decrease in allowance since the April IAP resulting from the South Lincolnshire reservoir scheme being considered within the regional strategic model. The remaining allowance is based upon the schemes identified as being required in the revised draft WRMP stress testing.

Fenland reservoir, trading option with Severn Trent and innovative ASR investigations. We have reviewed these schemes against the long term assessment included in the revised draft WRMP, table 6.1.

Schemes that were identified as potentially being required in the 2030's include Severn Trent transfer, reuse and the South Lincolnshire reservoir (now included in strategic development). In the absence of further detail we have made an allowance of 50% of the costs to enable development of the schemes that were identified in the stress testing of the revised draft WRMP

Ofwat challenges the schemes included for long term enhancement expenditure in two areas, which we address in turn below:

1. Ofwat states that a reduction is made due to the South Lincolnshire Reservoir now being considered within Strategic Regional Solutions.
   In response to this, we confirm that the allocation of funding for long term enhancement in Our April IAP submission did not include the South Lincolnshire Reservoir allowance; this allowance was included in a separate line for Strategic Regional Solutions.
2. Ofwat challenges the allocation on the basis of the stress testing results presented in the revised draft WRMP, making an allowance only for specific reuse schemes and the Severn Trent Water transfer, excluding desalination, other alternative reuse schemes and a reservoir scheme.

The stress testing we have undertaken gives an indicative view of the likely scale of the challenge at WRMP24, and does not represent a comprehensive supply demand balance assessment and therefore cannot be used to determine at this early stage in the process which options will be selected. By using these outputs to determine now which schemes should be developed, this unduly biases some schemes over others prematurely and precludes schemes from being selected for delivery in AMP8.

There is a high degree of uncertainty around the scale of the challenge at WRMP24, particularly around future sustainability reductions, which is why we propose an adaptive planning approach, where options are developed in parallel until WRMP24 supply demand balance and options appraisal processes have been completed. Ofwat's proposed intervention restricts the ability to deliver best whole life value solutions for customers at WRMP24 / PR24.

In Ofwat's 20 August letter it stated that companies receive expenditure for optioneering as part of base model allowances. The development activity we propose associated with these schemes is over and above WRMP optioneering. Due to the long lead in times associated with these options, enabling and development activity is required to be delivered, ahead of WRMP24. This activity will ensure that options are available to meet deficits in 2025-2030 and there is no risk to the security of supply due to lack of available options. We provide a summary below of the options included in this development allowance. At this stage we do not consider any of these options meet Ofwat's criteria for strategic regional solutions. However, we will continue to review this as we develop the schemes and utilise the reconciliation mechanism within the strategic regional solutions gateway process if necessary.

The investment proposed in this area would not be sufficient to deliver all the activities listed for each scheme, which has been assessed as in excess of £20m. The development programme for all schemes will be progressed at the beginning of the AMP, and schemes will then drop out as the need and required solutions become clearer throughout the WRMP24 process. This adaptive planning approach is fundamental to the delivery strategy for WRMP24 and is similar to the gateway approach proposed by Ofwat for strategic regional solutions. The proposed programme will deliver the flexibility required for WRMP24 whilst ensuring the an efficient level of investment.

Table 80 Adaptive Planning Schemes

Scheme name	Description of scheme	Average Ml/d Capacity Benefit	Implementation Period (years)	Description of Activities Proposed in addition to base WRMP optioneering activity
Kings Lynn Reuse	The option requires additional treatment process to be added at the end of both Kings Lynn and Wisbech WRC. A new pipeline is required to divert the treated effluent upstream of the abstraction point on the River Wissey.	15.8	9	Site selection Water quality sampling surveys Engineering design suitable for planning application Environmental assessment for discharge and abstraction licence
Ipswich Reuse	The option requires additional treatment process to be added at the end of the Ipswich WRC. A new pipeline is required to divert the treated effluent upstream of the abstraction on the River Gipping.	10.7	9	Site selection Water quality sampling surveys Engineering design suitable for planning application Environmental assessment for discharge and abstraction licence
Felixstowe Desalination	This option abstracts water from the sea and treats it at a new reverse osmosis desalination plant at Felixstowe. The option includes abstraction pipelines from the sea and brine discharge pipelines back into the sea.	25	4	Site selection Topographical and ground investigation surveys, outfall dispersion modeling

				Engineering design suitable for planning application Planning application constraints assessment
North Fenland Reservoir	New 50,000Ml bunded pumped storage reservoir fed by a new abstraction taking water at high flows from the Ely Ouse. The scheme includes new intake and pipeline to the reservoir site, a new WTWs and pumping station and supply pipeline into the supply system.	41.6	9	Site selection Ground investigation surveys Topographical surveys Engineering design suitable to support DCO planning application Water quality surveys Stakeholder engagement
Trading options with Severn Trent	There are a number of options for trading with Severn Trent including: cancelling out or reversing the existing potable trade; direct raw water transfer; and effluent reuse. The reverse trading options would require Severn Trent to connect their Rutland WRZ to their Strategic Grid WRZ and requires the development of a new raw water source in the Derwent Valley to maintain their current level of service. The direct raw water option involves Severn Trent providing a new raw water transfer into the River Nene. The source of the transferred raw water would be the Birmingham WRC, where improved tertiary treatment would be required. The reuse options involve Severn Trent providing a new raw water transfer from their Leicester sewage treatment works to our Rutland reservoir.	Up to 36 Ml/d	14-18	Environmental surveys Engineering designs suitable to support planning application
ASR investigations	We have identified a number of potential ASR options as part of unconstrained option development process. The most promising location from a technical hydrogeological perspective is in the Sherwood Sandstone aquifer. The option abstracts water from the River Trent, treats it to potable standard, injects it in to the aquifer via a network of boreholes and reabstracts it again during peak demand or drought events. There is a high degree of uncertainty around the potential benefit of the option.	<40 Ml/d	9	Drilling and testing of pilot borehole(s) to establish scheme feasibility and increase certainty around Environmental assessments and permit applications

11.6.3 Internal Interconnections £94.768m

Ofwat comments:

As part of its package of solutions to enhancing the supply-demand balance and resilience, the company proposes a large internal interconnection programme. We assess this investment through a deep dive. We accept the identified need to address supply-demand deficits. However, the evidence does not sufficiently demonstrate that the programme represents the best value for customers. The benefits beyond those required to satisfy the supply-demand deficit the company presents in its revised draft water resources management plan are not clearly quantified. The company has not set out that is has fully investigated alternative solution types such as third party options and water trading, in a number of its water resource zones. We review the individual solutions selected, make an efficient allowance for some elements and challenge others where selection of preferred solution is unclear. We identify several solutions within the interconnection programme that we propose to be delivered through direct procurement for customer. We allow the company funding to set up and administer direct procurement for customers rather than the funding to construct the whole interconnection solution itself (see section 3.7 below).

We accept that the company has identified a need to address a supply demand deficit within its water resource zones, however, the schemes presented do not represent the least cost solution at a programme level and the evidence that has been provided does not sufficiently demonstrate that the proposed plan represents the best value for customers in the long-term. The benefits beyond those required to satisfy the supply demand deficit presented in the revised draft WRMP are not clearly quantified and in some instances alternative options do not appear to have been fully investigated (such as third party options and trading). The company has not demonstrated that the option of considering alternative future plans while developing solutions to meet the immediate deficits in the form of a bridging plan between least cost and the best value presented has been fully considered at a programme level.

- *We did not find evidence of a clear comparison of cost and benefits between the least cost plan, the best value plan presented and a potential alternative that maintains the interconnections as presented but is downsized to focus principally on resolving the supply demand deficit.*
- *There was insufficient evidence that a sufficient number of customers had been engaged in relation to the benefits and costs of the potential options identified above. It is unclear if the plan as presented represents the fair distribution of investment and intergenerational considerations because the solutions proposed do not appear to be significantly utilised in the short term.*
- *We note that the company requests significant expenditure for the development of the South Lincolnshire reservoir and other long-term options and we are concerned that the proposed delivery of the treatment and interconnections schemes in 2020-25 may limit the opportunity to provide an integrated regional solution at best value to the customer. A phased approach focusing on addressing the immediate deficits in 2020-25 may offer opportunity to deliver better value as greater clarity on the regional requirements will be achieved during this period.*

Ofwat's concerns fall into three broad categories, which we will address in turn, before responding directly to the comments associated with each area of the deep dive assessment.

- **Challenges over scheme capacity, and the justification for our best value plan over least cost £56.59m**

Earlier in this chapter in the section Capacity scope challenge, we provide a description of the approach we adopted for determining capacity, and areas where we took the decision to upsize the interconnector capacity based on delivery of single source resilience or the need to address future uncertainty.

We fully describe the approach we took to appraising the costs and benefits of our best value plan in the WRMP Options Appraisal technical appendix. This report provides a clear comparison of the least cost and best value plans (pg 46 provides a direct comparison). We provide scheme specific justifications for the capacities we have selected in response to Ofwat's deep dive assessment in the table at the end of this chapter. We will continue to work with Ofwat to understand what, if any, further evidence is required in line with the 20 August letter.

- **Challenges relating to our optioneering approach £12.45m**

Earlier in this chapter we provide a description of our WRMP optioneering approach. We provide scheme specific evidence of alternative options we have assessed in response to Ofwat's deep dive assessment in the table at the end of this chapter.

- **Challenges relating to our customer engagement approach**

Our WRMP supply side strategy has been fully tested and is supported by our customers. We have appended the WRMP customer engagement summary report to this submission for reference. We specifically tested the best value plan and the decision to future proof investments to address future uncertainty, which received strong customer support.

- **Challenges relating to cost efficiency £25.728m**

In our IAP we presented information demonstrating the efficient cost of our interconnectors programme[2]. Given the scale of the interconnector programme, rates were obtained from a competitively tendered Request for Information (RFI) and Request for Proposals (RFP) under the OJEU process. This demonstrated the relative efficiency of the costs set out in our Business plan compared to the range of companies' tendered costs and specifically relative to the Upper Quartile cost. We presented this information in relation to both open cut and directional drilling mains laying in addition to evidence on water booster station and reservoir costs.

This evidence was also subject to third party assurance by KPMG[3].

Overall this evidence demonstrated:

- For all four different open-cut mains laying the costs set out in our Plan were lower (i.e. cheaper) than the upper quartile cost from the tender exercise;
- For both scenarios for directional drilling our costs were above (i.e. higher) than upper quartile;
- For both of the two booster pumping stations the total construction costs in our Plan were lower than the upper quartile cost; and
- For the single water storage reservoir our cost was the frontier (i.e. lowest) compared to the costs of the tender exercise.

At the cost assessment meeting held with Ofwat on 1 August 2019, Ofwat suggested that the cost benchmarking submitted as part of the post-IAP submission was referred to as demonstrating our costs were "above industry average". This did not accord with the full evidence submitted and summarised above. We therefore raised a query (ANH-013) on this to which Ofwat responded:

"We note from your document PR19 IAP Water Data Tables (P43) that various interconnector activities are benchmarked between construction company tendered information and the Anglian Water modelled costs. In this document you state that 'This shows that our modelled unit rates as presented in our Plan are well below the average in all cases and can therefore be deemed to represent an efficient level of costs.'

We note from the selected examples presented that for directional drilling the company's estimates are higher than many of the tenders (above the median). This is a frequent activity for the delivery of the programme so would expect to see evidence that the company is delivering this efficiently. Although the other activity costs do appear to be at the lower quartile or better for the selection shown, for such a large programme which involves similar activities, we expect to see evidence of how it has considered achieving the lower tendered costs of the range, including efficiencies in procurement and frontier shifts in delivery. The 10% efficiency applied is consistent with the company specific efficiency factor.

2 specifically pages 43 – 48 of PR19 IAP Water Data Tables commentary
3 Insert reference to the KPMG document

The other areas of concern relating to the interconnection programme are insufficient evidence of the incremental costs and benefits (both SDB and wider benefits) of the best value interconnection plan compared to the least cost interconnection plan (or even least cost plan) for meeting the supply-demand balance deficit. Whilst we recognise that there is potential for wider benefits in areas such as resilience and trading these need to be summarised, presented and quantified.

Related to the above concern we apply a cost challenge for insufficient evidence that the capacity of some of the interconnectors is required, even by 2045. We would expect to see clearer evidence for selecting the chosen sizes of the interconnections, the drivers for these capacities, and where efficiencies have been identified for flexible delivery such as modular assets (example boosters, service reservoirs and pipelines) that can be upgraded when the additional need is more certain (resulting in less investment this period). We also note the potential for duplication with the strategic regional water resource transfer proposed from South Lincs reservoir to Affinity Water.

For a few solutions, in particular those that do not form the core north to south interconnection route the evidence of full optioneering is not clear. This uncertainty about proactive optioneering is particularly noticeable where proposed connections link areas which are adjacent to other incumbent companies' areas where these companies have potential surplus water to trade in their WRMPs."

We address the comments Ofwat makes regarding "other areas of concern" throughout the rest of this Chapter.

We do not agree with the conclusions Ofwat has drawn in the DD analysis regarding cost efficiency.

Ofwat's DD has placed weight solely on the cost comparison for directional drilling in justifying the 10% efficiency challenge across the board. This takes no account of the previously provided open-cut evidence. This emphasis on directional drilling is selective. As set out in the IAP table commentary, Ofwat's DD does not reflect or seek to account for the proportion of activity which each type of benchmarking sought to demonstrate.

For example the benchmarking costs for open-cut activity represented a total length of over 55km of the proposed interconnectors compared to only 500 meters of activity for directional drilling. As set out in our April commentary, open-cut costs represent 98% of the total scheme pipeline costs. This is clear evidence that it is this data which should bear most weight in Ofwat's assessment. Ofwat's assessment also fails to recognise that open-cut techniques are uniformly cheaper for all diameter of pipes than directional drilling.

Directional Drilling is only used for sections of the route where cheaper open-cut cannot be used, for example where pipes cross rivers, railways and motorways, where it is not possible to lay the pipe by the open cut (and cheaper relative to directional drilling) technique.

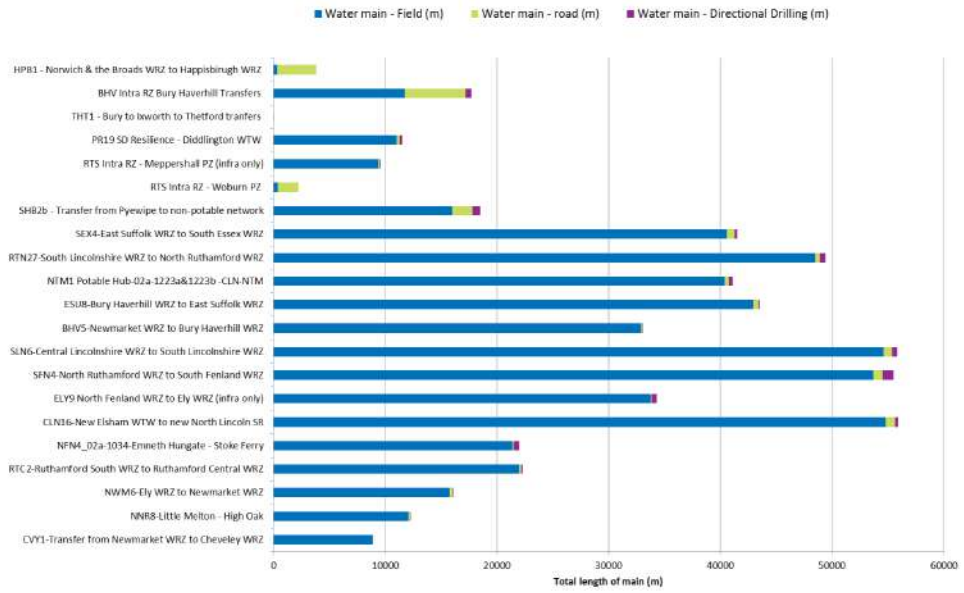
The table below demonstrates that of the total cost of water mains for our strategic interconnector programme 97% (93% fields, 4% roads) relate to costs of open cut and only 3% to directional drilling. In this context we have provided demonstrable benchmarking evidence that our costs for 97% of the water mains laying are below the upper quartile assessment of costs. When assessing the cost for the full length of the interconnector programme on a weighted average basis our costs are £792/m, compared to upper quartile costs of £786/m, a difference of less than 0.7%.

Table 81 Breakdown of costs for water mains in our strategic interconnector programme

	Proportion of water main costs	WRMP total length (km)	Our plan costs (£/m)	Upper quartile cost (£/m)
Open cut - fields	93%	531.046	773	777
Open cut – roads	4%	18.407	967	942
Directional drilling	3%	5.714	1,953	1,161
Totals	**100%**	**555.167**	**792**	**786**

For completeness, the following diagram demonstrates the proportion of open cut versus directional drilling for each of the scheme:

Figure 54 Water main length (m) allocation per scheme split by surface type (field, road) and directional drilling



This reinforces our view that for the vast majority of water mains activity (i.e. open cut) in the interconnectors programme we are more efficient than our upper quartile benchmarking. We note that for the sub-component of mains which relate to directional drilling our cost are not at the upper quartile level. However, overall the total costs of the mains programme (i.e. the combination of all activity) generates a cost below that of the upper quartile. On this basis Ofwat's 10% challenge to the totality of the interconnectors programme at DD is unacceptable.

- **Challenge on ability to deliver a strategic regional solution and consideration of a phased approach**

Finally, Ofwat raises concerns that the proposed delivery of the treatment and interconnection schemes in 2020-25 may limit the opportunity to provide an integrated regional solution and suggest that a phased approach focusing on addressing the immediate deficits in 2020-25 may offer opportunity to deliver better value as greater clarity on the regional requirements will be achieved during this period.

We have specifically designed our 2020-25 investment strategy to give flexibility around a strategic regional solution to deliver best value for customers. The additional resource delivered by a South Lincolnshire Reservoir would be available to support a transfer to Affinity, via new infrastructure (not in our 2020-25 proposals) and support any additional deficits in our region that may materialise at WRMP24 via the interconnector transfers delivered in AMP7.

However, without the interconnector upsizing, our ability to move water internally would be limited, and would likely require new pipelines immediately adjacent to those constructed in AMP7; this would be economically inefficient as well as more disruptive to local communities and the environment.

The suggestion of adopting a phased strategy that just addresses immediate deficits presents feasibility issues. The best value combination of interconnector schemes enables the delay of resource development in East Suffolk which is selected in the least cost plan. If the interconnector schemes were sized to specifically address only immediate deficits, the pipeline capacities would vary greatly along the route, limiting the ability to offset resource development and provide the flexibility to ensure the delivery of the best value future strategic resource option.

The strategy does require higher capacities going west to east to address the deficits in East Suffolk, despite some of the deficits along the route being relatively smaller. The scheme capacities have been selected in combination to ensure the entire interconnector system can move water around the region from areas of surplus to areas of deficit effectively, to address both immediate and foreseeable future deficits.

Detailed responses to Ofwat comments on interconnector schemes

Scheme description	Challenged option size?	Challenged option selection?	Requested Totex (£m)	Allowed Totex DD (£m)	Ofwat Comments at DD	Anglian Water Response at DD
CLN16-New Elsham WTW to new North Lincoln SR	Y	Y	72.77	53.05	This scheme is considered as a candidate for DPC delivery and therefore is removed from the interconnection allowance with a separate development allowance made in note 1a above. We make a challenge to this scheme based upon the insufficient evidence the company provides for the consideration of alternative trading options with Yorkshire Water or Severn Trent Water identified within the rejection log in the revised draft WRMP supply side development document.	This option is for the infrastructure to transfer the existing resource from East Lincolnshire WRZ (CLN15) and the new potable resource from Elsham WTW (CLN13a) further south. Our Lincolnshire WRZs are in surplus after the benefits of the demand management programme are realised. A trade with neighbouring water companies is more expensive and has fewer environmental impacts compared with developing local resources. CLN16 provides us with the opportunity to continue to work with Yorkshire Water and Severn Trent Water to develop trading options which could be alternatives to the Pyewipe Water Reuse scheme either in the short term or longer term. This section of the WRMP enables the solution for Single Source Supply Resilience at Welton and Newton WTWs. These provide mitigation to 1,858 (0.10%) and 21,483 (1.13%) properties respectively in the event of a sustained loss of output.
SLN6-Central Lincolnshire WRZ-South Lincolnshire WRZ	N	N	30.91	27.82	No comment	No Comment
RTN27-South Lincolnshire WRZ to North Ruthamford WRZ	N	Y	55.95	45.32	We challenge this scheme due to the uncertainty regarding the feasibility of third party options involving the Canal and Rivers Trust and Severn Trent Water. Variants of these options are being considered for the strategic transfer of 50 Ml/d to Affinity Water and there is insufficient justification for	This option is not just required to meet deficits in Ruthamford North WRZ but it transfers resource from Lincolnshire WRZs to Ruthamford North WRZ, where a proportion is redistributed across Ruthamford WRZs via existing infrastructure. The rest is transferred across to Fenland WRZs and further east.

					assigning these options as potential future resource options when the proposed option expenditure in the zone is significant. We are concerned that the opportunity for an integrated approach to a regional strategic solution may be limited by the proposed solution.	Our feasible option set includes five trading options with Severn Trent Water which were included in our EBSD model. These options are not available until later in the plan (AMP9) as they require significant investment by Severn Trent Water to make the resource available and so are not available to meet AMP7 needs. Our interconnectors will provide us with greater opportunity to trade with Third Parties and neighbouring water companies as we will be able to consider new resource options as regional solutions rather than only satisfying local deficits. We still require assurances about the reliability of the yields offered by the Canal and River Trust options particularly in severe drought. We will continue to work with the Canal and River Trust and Severn Trent Water via the Trent Working Group which we established to explore imports. This includes imports for our own needs and those with Affinity Water if required for strategic transfers into their system.
SFN4-North Ruthamford WRZ to South Fenland WRZ	Y	N	50.05	36.03	We challenge this option based on sizing and note some inconsistency in the representation of the option because it is listed as 40 Ml/d average capacity in the PR19 documentation but named as a 35 Ml/d option in the revised draft WRMP supply side development document.	This option has a capacity of 40Ml/d, which is the capacity used to cost the option and within our EBSD modelling, shown within the WRP Planning Tables and the Average Capacity in Table 6.206 in the Supply-side options development report. Unfortunately there is a 'typo' in the option name used in the various tables in the supply-side options report which includes the suffix of (35Ml/d). This will be corrected for the version of this report re-issued with the Final WRMP. This option has been upsized from 22 Ml/d to 40 Ml/d because the stress testing showed that increasing the capacity of the transfer would allow existing/new resources (e.g. South Lincolnshire Reservoir) to be fully utilised and

						transferred east towards Norfolk in more severe drought scenarios. It could also be used to manage further sustainability reductions in East Anglia, some of which are already becoming realised (as notified by the Environment Agency).
NFN4_02a-1034-Emneth Hungate - Stoke Ferry	Y	N	13.66	9.84	We challenge this option based upon sizing and note that the option to transfer 11 Ml/d (NFN8) appears to be higher cost than the 20 Ml/d (NFN4) option in the revised draft WRMP supply side development document.	The cost shown in Table 6.114 of the supply-side options development report for NFN8 (10Ml/d transfer) was not correct. This option does have a lower capex than NFN4. This will be corrected for the version of this report re-issued with the Final WRMP. This section of the WRMP provides a solution for Single Source Supply Resilience at Stoke Ferry WTW. This provides mitigation to 9,513 (0.50%) properties in the event of a sustained loss of output.
ELY9 North Fenland WRZ to Ely WRZ	N	N	23.70	21.33	No comment	No comment
NWM6-Ely WRZ to Newmarket WRZ	N	N	15.14	13.63	No comment	No comment
CVY1-Transfer from Newmarket WRZ to Cheveley WRZ	N	Y	2.52	1.20	We challenge this option based upon the insufficient evidence the company provides for consideration of third party and trading options identified in the rejection register in the revised draft WRMP supply side development document. Due to the relatively small deficit that is required to be resolved over the long-term we make an allowance based upon the 2020-25 SDB enhancement unit cost retaining the proposed 1 Ml/d benefit.	Cheveley WRZ is our smallest WRZ and only just meets the de-minimis threshold for the population for a WRZ (5,000). It is totally discrete from the rest of our treated water network and supplied by a single WTW. The impacts of licence caps and drought reduce the available resource, creating local deficits which led us to define this area as a separate WRZ, as agreed with the Environment Agency. We have modelled two alternative transfer options into this zone. However, due to its size and discrete nature, the opportunities to identify third party options is limited. No options have been raised through the trading platform. We have worked with Cambridge Water to identify any potential trading options and at the moment there are none identified

						for this specific part of our network. However, our interconnectors will provide opportunities to trade with Cambridge Water in other areas of our system in the future. In order to move any potential trades to discrete systems like Cheveley we would need to provide connectivity via one of the transfer options modelled. This scheme enables a solution for Single Source Supply Resilience investment at Lower Links WTW. This provides mitigation to 2,779 (0.15%) in the event of a sustained loss of output.
BHV5 -Newmarket WRZ - Bury Haverhill WRZ	N	N	20.85	18.76	No comment	This scheme provides a solution for Single Source Supply Resilience at Barrow Heath and Rushbrooke WTWs. These provide mitigation to 15,025 (0.79%) and 11,266 (0.59%) properties respectively in the event of a sustained loss of output.
ESU8-Bury Haverhill WRZ to East Suffolk WRZ	Y	Y	25.80	14.66	We challenge this option based upon sizing and we note that in the long term a relatively low deficit of 3 Ml/d is forecast. From review of the options presented we consider that ESU9 (10 Ml/d) may better match the requirements in this zone. We therefore base the allowance upon the ratio of totex for option ESU9 (10 Ml/d) to ESU9 (20Ml/d) presented in the revised draft WRMP supply side development document (Table 6.64). We additionally challenge because the company plans significant investment in the East Suffolk and South Essex zones but provides insufficient evidence for consideration of transfer options from neighbouring companies in this area.	The East Suffolk WRZ has an increasingly baseline deficit, which exceeds 8 Ml/d by 2045. The South Essex WRZ (which this interconnector ultimately reaches) has an immediate baseline deficit, which exceeds 17 Ml/d by 2045. In South Essex WRZ, one of our WTWs is a shared asset with Affinity Water. We currently have an arrangement for us to take 70:30 of the output of the WTW. However, due to Affinity's needs from 2025 onwards we have agreed to revert back to a 50:50 share which is reflected in both company WRMPs. This drives early deficits in our plan. We have worked with Essex and Suffolk Water and Affinity Water to develop trading options in this area. Essex and Suffolk Water did not have resource to trade in this area when we approached them however we have continued to work with them to develop a potential 'put and take' trading option for a third party bulk supply from their

						system. This opportunity to trade would only be available if we have an interconnector between the East Suffolk WRZ and South Essex WRZ. This scheme enables a solution for Single Source Supply Resilience investment at Alton WTW providing mitigation to 30,458 (1.6%) properties.
SEX4-East Suffolk WRZ to South Essex WRZ	Y	Y	24.36	17.76	We challenge this option based upon sizing and because the company plans significant investment in the East Suffolk and South Essex zones but provides insufficient evidence for consideration of transfer options from neighbouring companies in this area.	See comment above This scheme enables solutions for Single Source Supply Resilience investments at Ardleigh, Gt Horkesley and Raydon WTWs. This provides mitigation to 2,852 (0.15%), 8,176 (0.43%) and 4,440 (0.23%) properties respectively in the event of a sustained loss of output.
HPB1 - Norwich & the Broads WRZ to Happisburgh WRZ	Y	Y	7.35	4.76	We challenge this option based upon its significant cost, the potential for a reduced capacity and the insufficient justification the company provides for the rejection of alternative options. We note only a single feasible option has been considered. The company presumes that groundwater abstractions would not be viable but it is not clear that this is confirmed by the EA. To reflect the potential challenge in this zone we apply an efficiency challenge (10%), rather than the 2020-25 SDB enhancement unit cost.	As part of the supply-side option development process, we completed a review of the Environment Agency's Catchment Abstraction Management Strategies (CAMS) to assess availability of new resource options. This resulted in the rejection of options such as new groundwater abstraction in catchments that are currently over-abstracted or over-licenced. The Environment Agency signed off this assessment as part of the early course screen of the unconstrained options. It is also important to note that the Happisburgh (and North Norfolk) WRZs are subject to further Environment Agency action on abstraction, including additional sustainability reductions not included in WRMP19. There is a significant risk of duplicated costs if we install a reduced capacity. This scheme provides a solution for Single Source Supply Resilience at Ludham WTW. This provides mitigation to 1,719 (0.09%) properties in the event of a sustained loss of output.

NTM1 Potable Hub-02a-1223a&1223b -CLN-NTM	Y	Y	13.11	1.92	We challenge this option based upon its significant cost, the potential for a reduced capacity and the insufficient justification the company provides for the rejection of alternative options, including third party and trading options. We note only a single feasible option has been considered. We also note that Sherwood sandstone aquifer recharge option is moved for consideration in Ruthamford North as RTN12 but not is not required there. The company states the option has small deployable output benefits but this could potentially be sufficient for the Nottinghamshire zone with its relatively low deficit. Due to the relatively small benefit that is required from this option over the long-term we make an allowance based upon the 2020-25 SDB enhancement unit cost (£1.2m/Ml/d) using the 1.6 Ml/d benefit (noting only 1.01 Ml/d is required until 2040).	1.58 Ml/d is required by 2044-45. Our Nottinghamshire WRZ is discrete from the rest of the Anglian Water system in Lincolnshire. A large number of unconstrained options were considered, with 15 included in the constrained options list and 4 evaluated as feasible, including two imports. The Sherwood sandstone aquifer recharge option has been discounted as a supply-demand option as the Deplyable Ouput (DO) benefits are likely to be low. The scope of the aquifer recharge option requires 90km of pipework, a new surface WTW to treat the water to be discharged into the ground plus new treatment facilities to treat the abstracted groundwater, therefore this option would have significantly higher capex and operational costs compared to the 41km of pipework required for Option NTM1. Imports would also required extensive new pipework and would therefore have higher capex and operational costs.
BHV Intra RZ Bury Haverhill Transfers	Y	Y	15.21	2.64	We challenge this option based upon its significant cost, the potential for a reduced capacity and the insufficient justification the company provides for the rejection of alternative options. We note only a single feasible option has been considered and therefore make an allowance based upon the 2020-25 SDB enhancement unit (£1.2m/Ml/d) cost using the 2.2 Ml/d benefit (Revised draft WRMP 2019 Technical Document: WRZ Summaries September 2018, Figure 6.3.5, p139).	This option has been sized to deliver single source supply resilience benefits as well as addressing the immediate supply demand deficit.

RTC2-Ruthamford South WRZ to Ruthamford Central WRZ	Y	Y	8.34	5.40	We challenge this option based upon sizing and the insufficient justification the company provides for the inclusion of only two feasible options of significantly different size, 12 and 70 Ml/d.	The costs included in PR19 are for a 7Ml/d capacity transfer which is the maximum utilisation in the Dry Year Critical Peak (DYCP) WRP Planning Tables.
SD Resilience - Diddlington WTW	Y	Y	2.20	0.48	We challenge this option based upon sizing and the insufficient justification the company provides for the rejection of alternative options. We note only a single feasible option has been considered and therefore make an allowance based upon the 2020-25 SDB enhancement unit cost (£1.20m/Ml/d) using a 0.4 Ml/d benefit to represent a worst case scenario considering that the deficit is relatively small in this area (Revised draft WRMP 2019 Technical Document: WRZ Summaries September 2018, Figure 4.5.4, p100).	This option has been sized to deliver single source supply resilience benefits as well as addressing the immediate supply demand deficit. As this option is largely for resilience purposes, it is unlikely that there would be cheaper alternative to connecting to our existing network (and resources).
RTS Intra RZ - Woburn PZ	Y	Y	3.58	3.12	We challenge this option based upon sizing and the insufficient justification the company provides for the rejection of alternative options. We note only a single feasible option has been considered and therefore make an allowance based upon the 2020-25 SDB enhancement unit cost (£1.2m/Ml/d) using a 2.6 Ml/d benefit representing the challenge early in the period (Revised draft WRMP 2019 Technical Document: WRZ Summaries September 2018, Figure 2.5.5, p60).	This option has been sized to deliver single source supply resilience benefits as well as addressing the immediate supply demand deficit. As this option is largely for resilience purposes, it is unlikely that there would be cheaper alternative to connecting to our existing network (and resources).
NNR8-Little Melton - High Oak	Y	N	3.95	2.84	We challenge this option based upon sizing.	This option has been sized to take into account longer-term changes and for single source resilience, as well as addressing the immediate supply demand deficit.
THT1 - Bury to Ixworth to Thetford transfers	Y	N	0.71	0.51	We challenge this option based upon sizing.	This option requires reversing existing infrastructure, the capacity used in the EBSD model is the actual capacity of the existing pipeline.

RTS Intra RZ - Meppershall PZ	Y	Y	3.22	0.84	We challenge this option based upon sizing and the insufficient justification the company provides for the rejection of alternative options. We note only a single feasible option has been considered and therefore make an allowance based upon the 2020-25 SDB enhancement unit cost (£1.2m/Ml/d) using a 0.7 Ml/d benefit (Revised draft WRMP 2019 Technical Document: WRZ Summaries September 2018, Figure 2.5.4, p59). The related treatment allowance associated with metaldehyde has been assessed in section 1a.	This transfer option and the associated treatment (RTS Intra RZ - Meppershall PZ Non infra only) scheme has been sized to deliver single source resilience benefits, as well as addressing the immediate supply demand deficit. As this option is largely for resilience purposes, it is unlikely that there would be cheaper alternative to connecting to our existing network (and resources).
SHB2b - Transfer from Pyewipe to non-potable network	N	Y	15.96	12.93	We challenge this scheme based the insufficient evidence the company provides for the consideration of alternative trading options with Yorkshire Water or Severn Trent Water identified within the rejection log for Central Lincolnshire WRZ. We also note that the company identifies potential water quality concerns that will need to be resolved for this option to be viable.	This option is just the infrastructure from the Pyewipe water reuse scheme (SHB2b) into the non-potable network. The treatment element is included in SHB2a. Therefore there is only one option.
Total allowance			**409.31**	**294.823**		
Total allowance (adjusted for DPC candidate schemes)			**336.54**	**241.771**		

12 FOCUS AREA - LEAKAGE

12.1 Overview

We are the leading company in the sector on leakage, have continued to push forward the leakage frontier in AMP6, and have shared the benefits of the investments and innovations we have made with the sector as whole.

As the leading company in the sector, we are in a unique position:

- Firstly, because maintaining our existing low level of leakage comes at a higher marginal cost. This needs to be recognised in Ofwat's base cost allowances.
- Secondly, because, as we continue to drive forward the frontier in AMP7 and seek to realise the ambitions in our WRMP to push our performance to globally-leading levels, we will help all customers in England and Wales benefit from reduced leakage levels. Delivering frontier shift in this way should be facilitated through Ofwat's incentive framework, in line with the position set out in its Final Methodology.

Addressing both of these points is necessary in order for enhanced performance levels for leakage to be set in ways that stretch the frontier, whilst ensuring it remains feasible for a company operating at the frontier to achieve them.

More widely, adjusting the DD position is essential if the wider goals for ambitious leakage reduction, which are shared by Government, Ofwat, customers and companies, are to be achieved.

The practical impact of Ofwat's policy on leakage in its DD is that it fails to recognise the higher costs of maintaining our current leakage performance, fails to reflect the costs of improving from this strong base to our PCL, and fails to incentivise the achievement of even lower levels of leakage beyond that. This is illustrated in the fact that - under Ofwat's DD - were we to achieve the industry forecast upper quartile level of leakage for every year in AMP7, this would still lead to a net underperformance penalty of over £35m in AMP7. Ofwat set out in our DD that we earned outperformance payments for our frontier performance during AMP6, but does not provide justification for the maintenance of our current performance being unfunded.

Table 82 Enhancement Investment Summary (our required botex adjustment is shown in our leakage cost adjustment claim)

	April Plan (£m)	DD Ofwat position (£m)	Representation (£m)
Capex	70.654		70.675
Opex	6.285		6.022
Totex	76.939	69.245	76.697

12.2 What is Ofwat saying?

12.2.1 Botex cost adjustment

At IAP, our cost adjustment claim for £147.86m to maintain frontier performance received a 'partial accept' assessment. Ofwat highlighted that we had provided evidence to justify adjusting costs, but reduced the overall allowance on the basis of comparing our current performance with the upper quartile leakage level, and applied a 15% efficiency reduction. Ofwat therefore made a cost adjustment allowance of £54.75m. However, the formula used to calculate this allowance contained an error (using Log 10 rather than natural log as the basis to calculate the cost adjustment allowance). Correcting for this error gave an allowance of £126.07m using Ofwat's IAP methodology. We highlighted this as a mathematical error to Ofwat before the submission of our IAP Response and this was recognised by Ofwat.

Despite the justification for the claim being accepted by Ofwat at IAP, and Ofwat using a methodology to calculate the allowance, our full cost adjustment claim was then rejected in its entirety at DD. Ofwat then stated that we did not present evidence of unique circumstances to justify taking a different approach to leakage reduction to the rest of the industry, contradicting its earlier IAP assessment. The DD also cites that our frontier performance is recognised through the enhancement allowance that we put forward to further enhance performance. Critically, this confuses the fact that our cost adjustment claim was about the additional costs incurred in maintaining our current frontier performance.

12.2.2 Enhancement

At IAP, Ofwat made an allowance of £36.48m for leakage enhancement against £76.939m requested in our Business Plan. This difference was due to the use of an industry-wide unit cost which did not reflect the rising marginal costs of leakage improvement. We highlighted this in our April IAP response. At DD, Ofwat allowed our leakage unit costs minus a 10% company specific efficiency challenge. On this basis Ofwat allowed 90% of our enhancement (£69.245m). Ofwat stated in our DD that enhancement expenditure is allowed from the upper quartile position for those companies that have a performance commitment more stretching than the forecast industry upper quartile (196Ml/d for ANH).

"For leakage our expectation for base service levels is that an efficient company should achieve industry forecast upper quartile performance by 2024-25 in both normalised measures (per property and per kilometre of main). This performance is funded through the base allowance. We allow enhancement costs only where a company's performance commitment goes beyond the forecast upper quartile threshold." PR19 draft determinations: Anglian Water draft determination, page 25.

The enhancement expenditure for Anglian does not allow this, as the model makes an allowance for the 23.35Ml/d, and not the 27.189Ml/d by which our performance commitment level exceeds the forecast upper quartile level. Even if botex was assumed to fund upper quartile performance (which we dispute), there remains a 3.84Ml/d shortfall in the enhancement allowance.

Ofwat's previous approach at IAP combined both industry average costs and ODI rates to determine units for leakage allowances. Our IAP response challenged this approach. The removal of using ODI rates and using companies' unit rates is welcomed.

However, Ofwat has applied a company specific efficiency factor of 10% to our unit rate on the basis that our unit rates (£3.30m Ml/d) are above the industry median cost (£2.03m Ml/d). This results in a reduction of £7.69m of leakage reduction expenditure. This efficiency factor should be reversed as it fails to recognise the key point that a frontier company's costs will necessarily be higher than the industry median.

12.2.3 Performance Commitment Level

At IAP, Ofwat stated that our performance commitment level for leakage should reflect the leakage ambition in our WRMP. In our April IAP Response we explained that this would go against the principles that companies performing ahead of upper quartile should not find themselves in penalty. Rather, companies performing ahead of upper quartile should be rewarded for improving performance, and performance and reporting in AMP6 should not unduly affect performance under the AMP7 regime. We also commented that we should be able to achieve the WRMP ambitions in the most efficient and effective way for our customers, thus focussing on the outcome (reduced demand) , rather than the output (reduced leakage). We proposed a PCL which reflected 15% below industry forecast upper quartile, targeting 169.6Ml/d by the end of the AMP. At DD, Ofwat confirmed that we had provided sufficient evidence to support this as our PCL.

12.2.4 ODI rates

At IAP, Ofwat requested additional evidence to support our standard and enhanced ODI rates, and requested further evidence to support the use of a deadband, cap and collar for the leakage Performance Commitment. In our IAP Response we stated that we were confident that the incentive rates reflect customers' priorities and preferences for service improvement. Our willingness to pay research, which informed the incentive rates, was recognised by Ofwat as having been innovative and robust, as reflected in the 'A' rating received for customer engagement in the IAP. In our IAP

response we provided further evidence of the extensive customer support for our incentive rates based on robust willingness to pay research and wider customer engagement including our Be the Boss survey. At DD, Ofwat:

- Applied a 'tiered' underperformance penalty rate to reflect recovery of the enhancement allowance if we fail to deliver our performance commitment level.
- Reduced the enhanced ODI rate to +/-£0.800m per Ml/d from +/-£0.941m per Ml/d, with an enhanced cap at 1% return of regulatory equity.
- Changed the threshold to reach enhanced performance based on a methodology that assumes the frontier will shift at the rate of the historical upper quartile from the level of the best performing company, and weighted 50:50 based on frontier per property and per km of main leakage.
- Removed deadbands, on the basis that Ofwat believed we did not supply customers with sufficient technical information to make an informed judgement and a reduction in incentive to improve performance, despite rating highly our approach to customer engagement and outcomes (achieving an A and B rating for each of these areas respectively in the IAP).

12.3 Why change is needed

12.3.1 Modelled botex

Ofwat's policy position is that Botex modelling has upper quartile leakage performance built in. This is not correct. As the NERA report on funding leakage reduction (appendix 6a of our IAP response) highlights, Ofwat's base allowances do not allow funding of leakage reduction to attain more "stretching" PR19 targets. The sums allowed by Ofwat's Botex models only fund companies to deliver the average leakage position over the period considered by Ofwat's models (2011/12 to 2017/18). No variables are factored into the model to account for improving performance, nor is there any recognition of the costs involved in maintaining leakage at levels below the industry average for this period. Ofwat's single unit cost approach fails to recognise the different marginal costs faced by companies due to their existing level of performance. The NERA report raised this point, highlighting for example that:

"*at high levels of leakage, companies may implement "find and fix" processes and pressure management that have low marginal costs. Then, once all leakage reduction achievable through such measures has been achieved, companies may resort to more ambitious and innovative solutions (e.g. accelerating their mains replacement programmes) to achieve more ambitious leakage reduction targets. Hence, companies face an "upward sloping supply curve" of leakage reduction projects, with an increasing marginal cost of leakage reduction as they target lower levels of leakage.* "

Upper quartile performance is not inherently built into Ofwat's model. Given the inputs are based on historical company performance it is clear that it is average performance, rather than upper quartile performance that is reflected in Ofwat's modelling. It follows that Ofwat's models do not reflect increasing marginal costs of reducing leakage as leakage levels reduce. It is therefore incorrect to state that upper quartile performance is reflected in Ofwat's base modelling.

12.3.2 Treatment of enhancement allowance

Ofwat states in the DD that enhancement expenditure is only permitted from the upper quartile to a companies' performance commitment level. The application of this principle in the DD presents two issues, one relating to the validity of this policy and one relating to an error in its application.

Validity of Ofwat's policy

The policy applies to companies performing above upper quartile, regardless of their current baseline performance. Our forecast outturn performance for 2019-20 is 184ML/d, whereas the enhancement allowance policy is based on the level of improvement from the forecast industry upper quartile of 196Ml/d. We understand that Ofwat has taken this approach to capture all companies' costs through both base modelling, (which Ofwat claims covers all companies' performing up to the upper quartile level) and enhancement allowances (which applies to performance beyond the upper quartile), and thus disallow any cost adjustment claim (as all costs are, supposedly, covered by modelled base costs and enhancement costs).

This approach fails to recognise the higher marginal costs associated with having a leading level of leakage at the start of the AMP and maintaining this throughout the AMP. It also fails to recognise that the costs of reducing leakage and the costs of maintaining current performance should be considered separately. To elaborate, if the leading company were to make no further improvement in performance, it would still face higher costs in maintaining a leakage level below that of other companies that have higher levels of leakage. Ofwat's assessment assumes that companies' costs are reflected in base modelled costs up to upper quartile and enhancement reflects performance from this level during the AMP. However this is not the case for us, as we are already performing at a level beyond the forecast industry upper quartile, and the cost of maintaining (not improving to) this level is not reflected in the DD.

Error in application

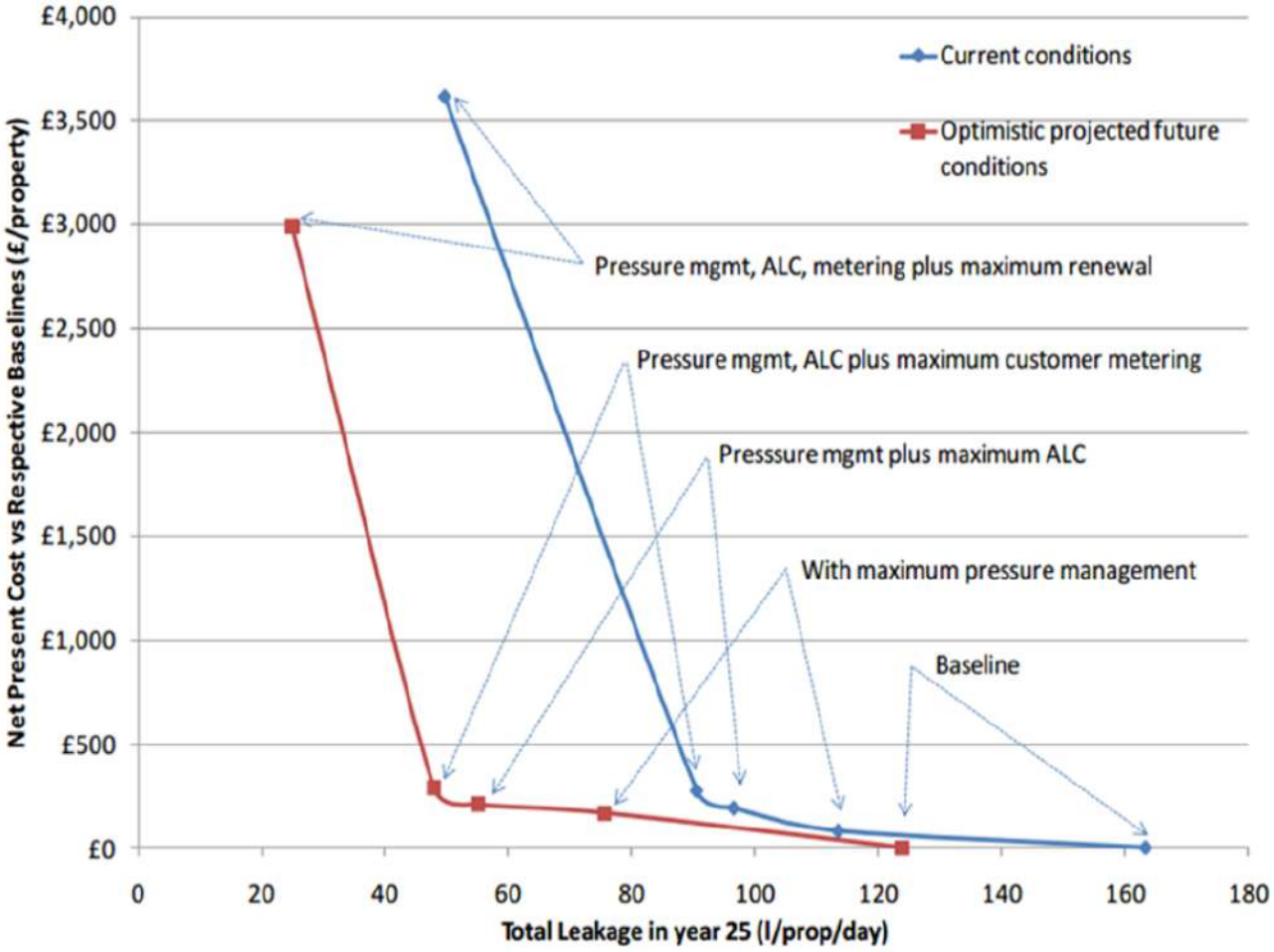
The enhancement model does not apply Ofwat's policy of providing an allowance for performance between upper quartile and the performance commitment level. Ofwat's leakage assessment model builds the enhancement costs for reducing leakage by the minimum of the difference between upper quartile and PCL and the benefits proposed in business plans for enhancement expenditure. Because our enhancement case proposed a leakage reduction of 23.35Ml/d and this is less than the 27.189ML/d difference between our forecast performance and upper quartile, the lower figure has been used to calculate our enhancement allowance. Under Ofwat's policy that base modelling allows performance up to upper quartile, there is a 3.839Ml/d 'gap' in leakage reduction which does not receive enhancement expenditure, nor is it reflected in base models under Ofwat's assumption that modelled base costs reflect upper quartile performance.

Application of efficiency factor

Ofwat applies a 10% leakage efficiency factor to leakage enhancement expenditure. We do not accept the basis of Ofwat's rationale for applying this 10% efficiency factor for leakage at DD. Ofwat applies this factor as a result of our unit cost for leakage reduction being higher than the industry median cost. The use of the median cost for deriving the costs of delivering leakage performance at the frontier fails to recognise the nature of activities and related costs associated with reducing leaks at the frontier compared to the average or median.

In our IAP response, we set out the economic basis for our leakage costs and the evidence as to why these costs would be expected to increase as companies reduce leakage further. We also presented industry evidence that demonstrated the increasing marginal cost of leakage activity. The application of the median cost test ignores this relationship, which the UKWIR figure below evidences clearly.

Figure 55 UKWIR figure on leakage unit cost as baseline leakage levels are driven down



Cost adjustment claim

As enhancement expenditure does not cover costs to maintain leakage at an industry leading level, and modelled base allowance is based on industry average costs (not upper quartile costs), our cost adjustment claim remains valid. We have adjusted the claim to reflect the new baseline for performance at the start of the AMP as 184ML/d instead of 172ML/d, and to incorporate an extra year of cost and leakage data. We have applied the same approach that Ofwat used in its IAP assessment, where the justification for this claim was accepted.

12.3.3 Incentives to move beyond the frontier

Achieving our WRMP ambitions will require leakage levels below our performance commitment level, which in turn will support the long term resilience of water resources in our region. Ofwat's assertion is that the costs associated with achieving a leakage level beyond a company's performance commitment will be recovered through the ODI mechanism. However, the ODI rates applied at DD to deliver the necessary reduction in performance do not factor in marginal costs, and are insufficient to manifestly recover the costs of doing so.

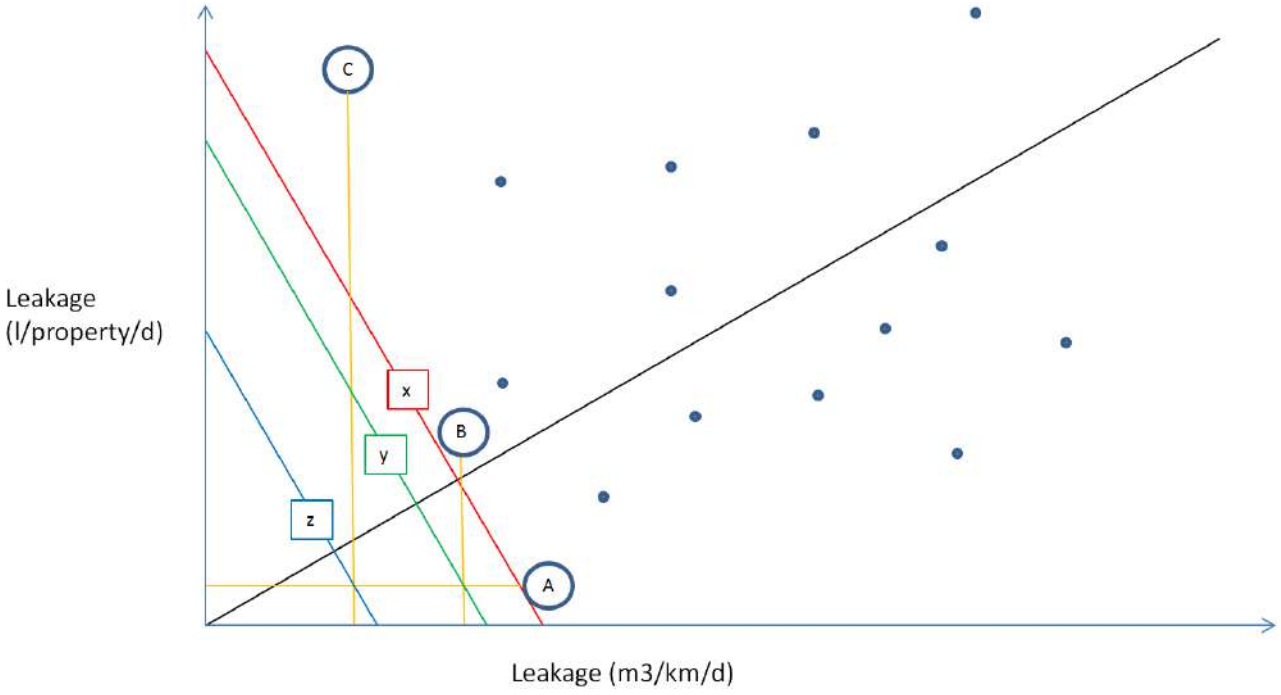
This is evident from Ofwat's enhancement allowance, which allows a leakage unit cost of £2.97m/ML/d (or £0.803m/Ml/d per year) to improve performance from forecast upper quartile to 169.6 Ml/d. However, the incentive rate to improve performance beyond this level is £0.219m/Ml/d per year. On a glidepath to the level of leakage to achieve our WRMP we would receive an outperformance payment of just £15m for the AMP (approximately £1.25m/Ml/d based on a PCL of 161Ml/d, and a three year rolling average leakage target of 149.2Ml/d). This is much lower than the marginal cost to reduce leakage and does not support the financing of leakage performance

to our WRMP level nor does it incentivise the attainment of these levels of performance. As we have highlighted earlier in this representation, the unit cost for improvement increases as the level of leakage decreases. Therefore, the ODI should, at the very least, reflect the unit rate applied in in our enhancement case.

Ofwat's approach to applying the enhanced threshold value for leakage performance is flawed and risks setting the enhanced threshold at a level which is unachievable. It is driven by company geographies, rather than being based on evidence of future frontier leakage performance.

By setting frontier performance on a m^3/km/d basis and l/property/day basis separately and only subsequently normalising the final frontier level, Ofwat sets an enhanced reward threshold where a key driver of frontier leakage performance is the property/km of main ratio of the two leading companies which is outside of company control. The graph below demonstrates this in two scenarios (note performance levels shown here are illustrative only).

Figure 56 Illustrative example of how the enhanced reward threshold is set



Scenario 1 – Company A is forecasting to have the lowest leakage on a per property basis in 2020-21, so Ofwat uses this company's forecast as the basis to calculate the per property frontier in each year of AMP7. In the chart, 'A' illustrates Ofwat's view of frontier performance on a per property basis. Company B is forecasting to have the lowest leakage on a km of main basis in 2020-21, so Ofwat uses this company's forecast as the basis to calculate per km of main frontier in each year of AMP7. In the chart, 'B' illustrates Ofwat's view of frontier performance on a per km of main basis. Line Y therefore represents the normalised frontier which is set on a 50:50 ratio of the per property and per km of main frontier performances. Line Y represents the level of leakage that a company must achieve to be eligible for an enhanced outperformance payment.

Scenario 2 - Company A is forecasting to have the lowest leakage on a per property basis in 2020-21, so Ofwat uses this company's forecast as the basis to calculate the per property frontier in each year of AMP7. In the chart, 'A' illustrates Ofwat's view of frontier performance on a per property basis. Company C is forecasting to have the lowest leakage on a km of main basis in 2020-21, so Ofwat uses this company's forecast as the basis to calculate per km of main frontier in each year of AMP7. In the chart, 'C' illustrates Ofwat's view of frontier performance on a per km

if main basis. Line Z therefore represents the normalised frontier, which is set on a 50:50 ratio of the per property and per km of main frontier performances. Line Z represents the level of leakage that a company must achieve to be eligible for an enhanced outperformance payment.

In scenario 2, the threshold to be eligible for enhanced outperformance payments is more stretching than in scenario 1. This is despite company C being further from the frontier performance set by leading company A, than company B is (represented by the distance of each company from line x), simply by virtue of company C having a lower property density per km of main than company B. This demonstrates how the closer the two frontier companies operate to the km of main vs property best fit line, the less stretching the enhanced threshold will be. If a company with an urban region (high property/ km of main ratio) and a rural region (low property/ km of main ratio) are the two frontier companies, the enhanced threshold will be more stretching than if they were less urban and less rural respectively. This is not a sound basis on which to determine frontier performance. Even if company geography did not have this impact on the frontier threshold, Ofwat does not provide a sound basis on which to determine the per property and per km of main frontier levels, and then apply an additional stretch through the process of normalising across both measures, such that the enhanced threshold is set at a level which is beyond the frontier performers across both measures.

This point is demonstrated by Hafren Dyfrdwy's leakage levels. Because of the highly rural nature of this HD's region, it is simultaniously forecasting to be the second best performer on leakage per km of main (4.779m^3 per km of main), and the second poorest performer on a leakage per property basis (120.056l per prop per day). On a normalised basis, HD would therefore be performing close to the average company, but were Anglian excluded from setting the km of main frontier, HD would set this frontier. The forecast frontier level should not be so significantly swayed by a company performing close to average performance on a normalised basis (and for whom therefore, reaching frontier performance is practically unachievable).

12.4 Why it matters?

Our customers confirmed that they were willing to pay for an enhanced reward to achieve our stretching leakage performance. To match our customers' appetite, our plans for leakage are extremely ambitious, going well beyond anything seen elsewhere in the UK. The National Infrastructure Commission's "Preparing for a Drier future" report highlighted the importance of a twin track approach to ensuring resilient water supplies, including driving down leakage by 50% by 2050. Leakage reduction is a key part of our long term plans for the region, as set out in our Strategic Direction Statement. It is also important for the industry as a whole that we continue to push the leakage frontier, helping the industry to achieve more stretching performance commitment levels. This will ultimately benefit all customers in England and Wales.

The incorrect reflection of Botex through the cost adjustment claim, and enhancement expenditure, means the cost of maintaining the base level which we are aiming to stretch from is not reflected in the DD.

In addition to this, the outperformance incentive rate proposed by Ofwat at the DD is lower than the unit cost of reducing leakage; therefore the incentive regime as currently set out does not sufficiently finance the future reduction of leakage to the levels in our WRMP.

Ofwat's approach fails to recognise the clearly presented relationship between increasingly improving levels of leakage and increasing costs. This results in a material under-allowance for costs of moving the leakage frontier forward.

12.5 How to fix it?

12.5.1 Botex cost adjustment

We have updated the cost adjustment model for this representation based on our predicted 2019-20 outturn performance. As stated in our IAP Response, we are expecting our outturn performance to be 184Ml/d as a three year average. Based on this figure, we have adjusted our cost adjustment claim to £136.922m. We have used the same model that Ofwat used to derive its figure for the leakage allowance at IAP, adjusting the inputs such that it compares our outturn figure against

211ML/d as per our business plan rather than upper quartile. This £137m reflects the additional costs incurred in maintaining leakage at our outturn level throughout the whole AMP which are not captured in base models. Improving performance is treated separately through enhancement and the ODI mechanism.

12.5.2 Enhancement costs

We maintain the position set out in our September Plan and our IAP Response that enhancement expenditure will support the reduction in leakage from our 2019-20 outturn performance by 23.35Ml/d. We have revised our PCL for the final year of AMP7 to 160.65Ml/d. This will mean that the enhancement expenditure covers only genuine enhancement and does not overlap with the recovery of costs for maintaining leakage at a level lower than the rest of the industry (which are covered by our cost adjustment claim). We have built our approach such that enhancement and base expenditure do not fund performance beyond our performance commitment level, aligning with Ofwat's approach. We have made a £0.263m adjustment to the enhancement opex figure to reflect the new RPE.

We expect Ofwat to remove the 10% efficiency challenge based on the median cost in the Final Determination, as it fails to recognise the previously clearly presented relationship between increasingly improving levels of leakage and increasing costs.

12.5.3 Performance commitment level

Our customer engagement has shown that this is clearly an area where we should be maintaining our frontier performance and we must continue to drive down leakage to meet the requirements of our WRMP. We are therefore maintaining our commitment to deliver a 23Ml/d reduction in leakage by the end of the AMP, and will reset our performance commitment level such that it falls to 160.65ML/d by the end of the AMP instead of the 169.6ML/d proposed in the DD. Whilst we have revised our performance commitment level, our aim to deliver the more stretching levels of leakage set out in our WRMP remains. We recognise that performance beyond our PCL should be incentivised through outperformance payments rather than being funded through base or enhanced cost allowances, subject to an appropriate incentive mechanism in the ODI.

12.5.4 ODI rates

Underperformance payment

We recognise that the purpose of the tier 1 underperformance rate is to act as a customer protection measure should the benefits identified in the leakage enhancement case not materialise. This tiered performance rate should reflect the unit cost of our enhancement expenditure. Ofwat calculates the tier 1 penalty based on the standard ODI formula and also applies an additional rate to recover the costs of the enhancement expenditure allowed to reach this performance. Ofwat assumes no incremental costs within the standard incentive formula, presumably because these are reflected in the cost recovery element of the formula. Ofwat combines the standard underperformance penalty rate (£0.439m/Ml/d) and the cost recovery rate (£0.401M/Ml/d) to reach the tier 1 underperformance penalty rate.

- Underperformance penalty rate [£0.439m/Ml/d] = incremental benefit [0.439] – incremental cost [0] x 50%
- Cost recovery rate [£0.401m/ML/d] = (Enhancement expenditure [69.25m] / benefit from enhancement [86.25ML/d])*50%

Adding values 1 and 2 gives Ofwat's proposed tier 1 unit rate of £0.840m/Ml/d.

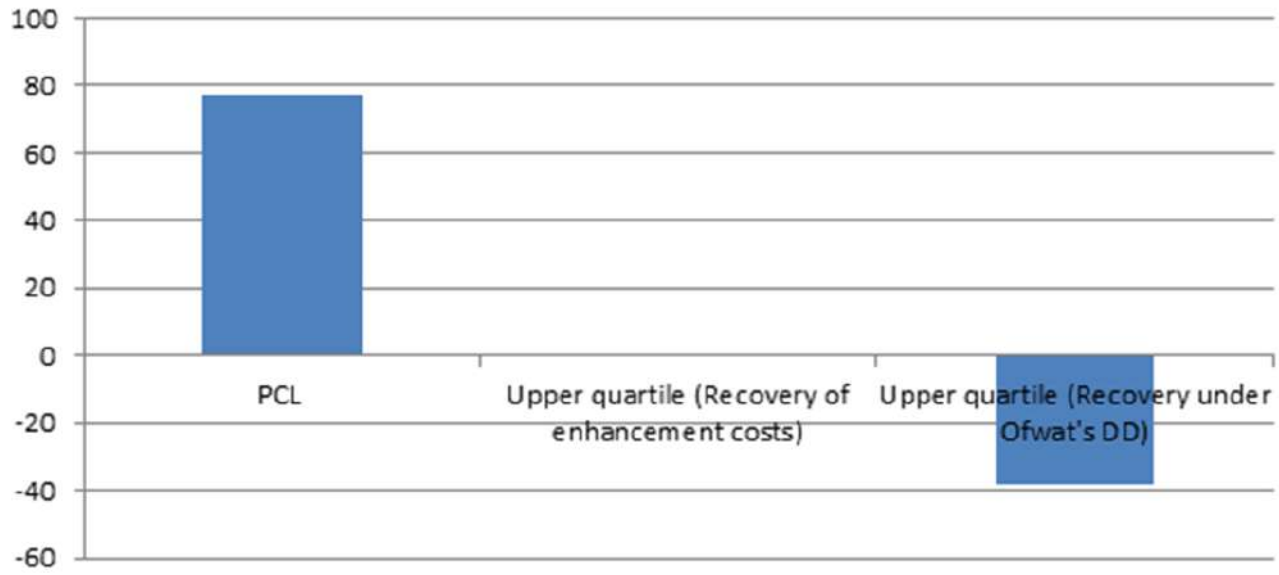
Ofwat's application of this rate is flawed, given the approach it takes to leakage costs overall. Ofwat sets out in its methodology that upper quartile performance is allowed through the base allowance (196Ml/d), and that the enhancement allowance covers costs to reach our performance commitment level (170Ml/d). However, under Ofwat's DD proposal, we would not be treated equitably when compared to other companies on base costs. This is because, under Ofwat's approach (which we dispute), were we to achieve upper quartile performance (196Ml/d), our

allowance would be the botex allowance minus the implied incremental benefit (due to the application of both the standard underperformance penalty rate and the cost recovery rate in the tier 1 underperformance penalty).

This is demonstrated in the chart below. This shows Ofwat's cost allowance relative to Botex in three scenarios. Firstly where we achieve our performance commitment level, and therefore recover all of our allowed enhancement expenditure with none returned through the tier 1 penalty/ cost recovery mechanism. Secondly, where we achieve upper quartile performance and cost recovery of the enhancement expenditure applies. In this scenario we only recover the allowed Botex and no enhancement expenditure as this is all recovered through the tier 1 cost recovery mechanism. Thirdly, where we achieve upper quartile performance and Ofwat's DD penalty mechanism applies. In this scenario there is a net recovery of less than the allowed Botex because both the enhancement cost recovery mechanism and a standard underperformance penalty rate applies.

As the chart shows, we would be in a less favourable position than other companies for achieving upper quartile, simply by virtue of having a performance commitment which is beyond upper quartile. If we continue to perform at our base level of 184ML/d we should not be allowed to recover enhancement costs, but neither should we be in a net penalty position once enhancement costs are factored out.

Figure 57 Total cost recovery (£m) against a baseline of the botex allowance



To fix this issue, the tier 1 performance rate should reflect the recovery costs for the enhancement expenditure only. The tier 1 penalty collar should apply between our current performance level (184Ml/d) and our new, more stretching performance commitment level (161Ml/d). This is only the case provided Ofwat accepts our cost adjustment claim to maintain our AMP6 outturn performance of 184Ml/d, and allows the enhancement expenditure required to acheive 161Ml/d. This will ensure that customers are protected from non-delivery of this enhanced performance, whilst ensuring we are not penalised for our existing performance being better than upper quartile.

The tier 1 underperformance rate should not include incremental benefit in the calculation and be set at **£0.548m/ML/d** as shown in the calculation below:

- Cost recovery rate [£0.548m/ML/d] = (Enhancement expenditure [£76.7m] / benefit from enhancement [70ML/d])*50%

Outperformance payment

Ofwat states in "PR19 Draft determinations: Anglian Water Outcomes performance commitment appendix" on page 9 that:

"The company will earn outperformance payments for going beyond its performance commitments. This, alongside totex sharing of any additional expenditure, should cover any costs to reach the lower levels of leakage expected in its water resource management plan. "

This highlights the fact that Ofwat expects outperformance payments and totex sharing of additional expenditure should be sufficient to finance the reduction in leakage to our WRMP level. However, Ofwat has not factored incremental costs of reducing leakage into the outperformance payment rate calculation, which must be done in order to claim that sufficient costs will be recovered through the ODI mechanism to reach the level of leakage set out in our Water Resources Management Plan. Because this has not been taken into account, the outperformance payments we would earn in reaching our WRMP leakage level fall far short of the costs of achieving this reduction. These costs have not been reflected in Botex or enhancement costs and so must be reflected in the outperformance payment rate to reach the lower leakage levels required in our WRMP. We propose applying the same incremental cost as that for our enhancement expenditure. This embeds within the ODI a highly stretching efficiency challenge as it means we must reduce leakage at a unit rate equivalent to our enhancement expenditure which covers a higher level of leakage, (and it has been demonstrated that unit costs of leakage reduction increase as the level of leakage decreases).

To reflect the statement in Ofwat's DD the standard outperformance payment should be **£0.767m/Ml/d** calculated as calculated below:

Outperformance payment rate [£0.767m/Ml/d] = incremental benefit [0.439] x 50% + incremental cost [1.096] x 50%

Enhanced outperformance payments

The method Ofwat has used to calculate the enhanced threshold is not an acceptable basis on which to forecast future frontier performance. We do not accept the use of this to determine our enhanced outperformance threshold. Instead, the enhanced threshold should apply at the level we proposed in our April IAP response. This would represent industry leading, and even a globally leading performance level. It would require us to break new frontiers in our war on leakage. The sharing of knowledge in how we reached that level would benefit all customers in England and Wales.

12.6 Summary

Taken together, our proposed approach to leakage and the incentive package associated with it is highly stretching. It reflects both our current frontier performance and the ambition to drive down leakage to the levels set out in our WRMP. The DD position fails to recognise the higher costs of maintaining our current leakage performance, fails to reflect the costs of improving from this strong base to our PCL, and fails to incentivise the achievement of even lower levels of leakage beyond that. This is illustrated in the fact that were we to achieve the industry forecast upper quartile level of leakage for every year in AMP7, this would still lead to a net underperformance penalty of over £35m in AMP7.

The following should be reflected in our FD:

- Botex cost adjustment allowance of £137m reflecting the costs to maintain leakage at our AMP6 outturn performance level.
- A £76.7m enhancement allowance reflecting the costs of improving performance from our baseline to 161ML/d
- A revised performance commitment level for the end of AMP7 of 161ML/d
- Update the tier 1 underperformance penalty threshold to 184Ml/d for each year of AMP7
- An outperformance payment threshold at the level of leakage required by our WRMP reaching 146.2Ml/d by the end of AMP7.
- Update the tier 1 underperformance penalty rate to be £0.548m/ML/d
- Update the standard outperformance payment rate to be £0.767m/Ml/d

13 FOCUS AREA - DPC

13.1 Introduction

This section presents our response to Ofwat's DD on potential Direct Procurement for Customer (DPC) schemes within our PR19 Business Plan.

13.2 Recap of IAP and Post-IAP Position

We outlined the rigorous and robust approach taken to DPC assessments within our September Plan and April IAP Response. Ofwat has openly endorsed our methodology and approach to DPC assessment across the three test areas set out in Ofwat's DPC Guidance Document, specifically scale of investment, discreteness and value for money.

As outlined in our September Plan and our April IAP Response, our assessments demonstrated that only the South Lincolnshire Reservoir scheme is suitable for DPC as it provides more value for customers than "in-house" delivery. Elsham, North Fenland to Ely and Pyewipe Re-use schemes, which were reassessed at IAP, were deemed less suitable.

Following our IAP Response, a meeting was held with Ofwat on 24th May 2019. At that meeting Ofwat outlined the opportunities and merits for the sector as a whole in being able to test the efficacy of the DPC approach to filtering suitable DPC schemes on a smaller project. We recognised this position and wrote to Ofwat on 29th May 2019 proposing a way forward to test the treatment plant element of the Elsham treatment and transfer scheme as a standalone project through DPC assessment process. A copy of the letter can be referenced in Annex 13a.

13.3 Ofwat's approach at DD

Ofwat's approach to DPC at DD remains unchanged. There is still an expectation for company business plans to consider DPC where this is likely to deliver greatest value to customers.

The table below summarises the high level difference between our April IAP response and Ofwat's DD assessment for DPC.

Table 83 Comparison of Anglian and Ofwat DPC views

	Requested at IAP	Agreement Post-IAP	DD Assessment
South Lincolnshire reservoir	Suitable for DPC	Suitable for DPC	Suitable for DPC
Elsham treatment & transfer scheme	Not suitable for DPC	Treatment element to be taken through DPC	Full scheme to be taken through DPC
North Fenland to Ely transfer	Not suitable for DPC	Not suitable for DPC	Not suitable for DPC
Pyewipe re-Use treatment & transfer	Not suitable for DPC	Not suitable for DPC	Not suitable for DPC

In its DD, Ofwat reconfirmed that there is sufficient evidence that the proposed Reservoir in South Lincolnshire, or a similarly sized alternative scheme, would be suitable for delivery by DPC process.

Ofwat agreed that both the North Fenland transfer scheme and Pyewipe non-potable re-use scheme are likely to offer greater value for customers if delivered through a traditional in-house procurement process and therefore are not considered for DPC delivery.

Ofwat remains unconvinced by our assessment that the Elsham Treatment and Transfer scheme would offer greater value for customers if delivered through a traditional in-house procurement process. Ofwat expects Anglian Water to develop the full Elsham transfer and treatment scheme, not just the treatment element, through a DPC process. Ofwat has allowed £8.262 million at the

DD and acknowledge a further 1% of the contract value is to be added in the Final Determination. We estimate this to be a further £1.728m. This is funding to set up and administer direct procurement for customers rather than the full funding to construct the whole interconnection solution.

Ofwat recognises at DD the need to create a regulatory mechanism to manage uncertainty as a result of change. If a change in external factors dictates that a scheme is no longer demonstrating value for money through DPC, a scheme may pass from DPC back to a traditional in-house procurement process

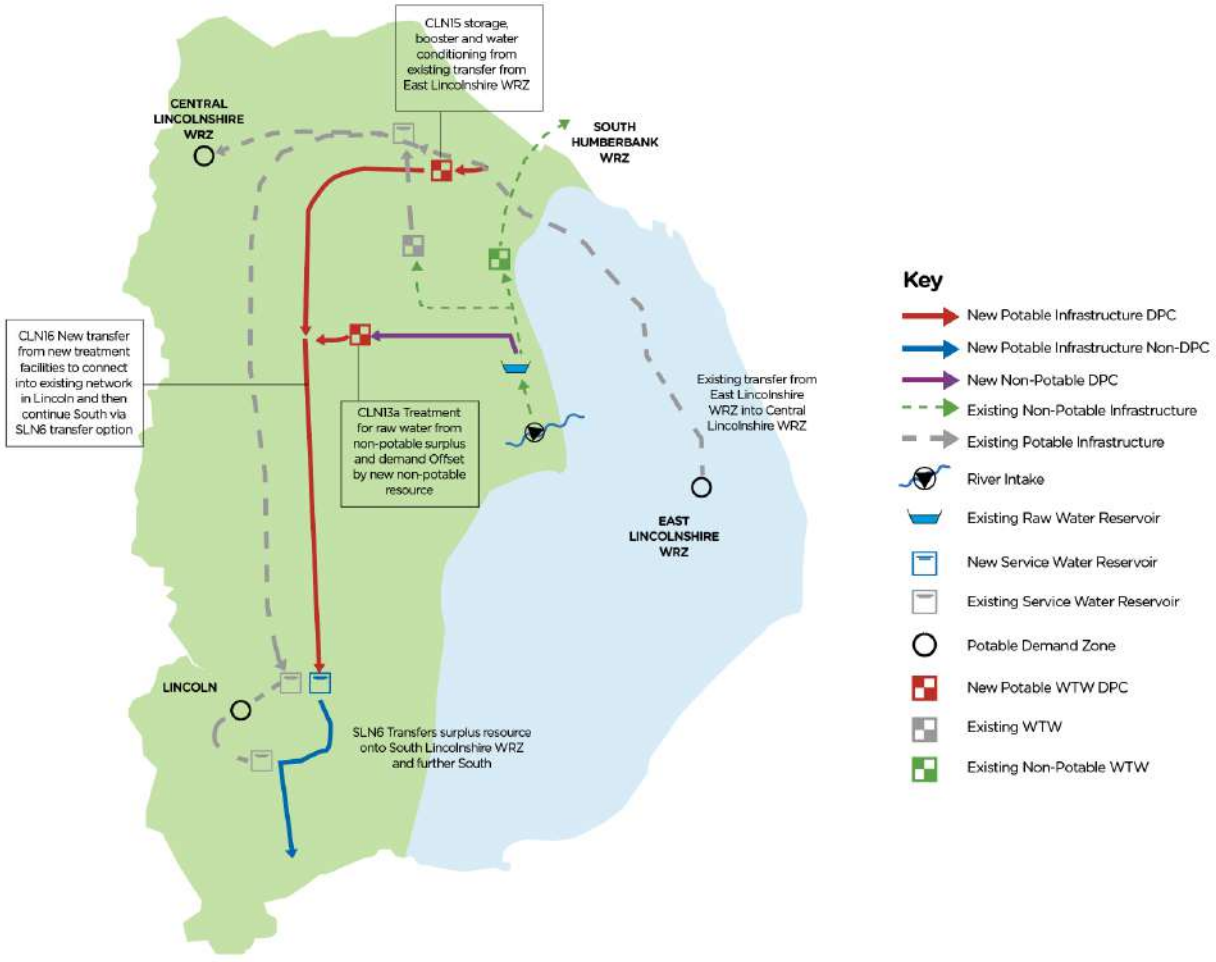
13.4 Our response

We were surprised with Ofwat's position on the Elsham treatment and transfer scheme within the DD as this does not reflect the agreed post April IAP position as outlined in our letter to Ofwat of 29th May 2019.

We acknowledge, however, the importance of testing the DPC process and recognise this as an opportunity ahead of our AMP8 strategic regional solutions. We have therefore adopted Ofwat's proposals for DPC delivery in full within our DD Representation and have allowed for all elements of the Elsham Treatment and Transfer scheme to be developed through DPC process. We have reflected this change in App21.

The figure below illustrates what will be developed through the DPC process:

Figure 58 Elsham DPC Schematic



Notwithstanding, we still recognise the challenges associated with adopting a DPC approach to the Elsham transfer and Treatment scheme in full and we reiterate these challenges below.

13.4.1 Discreteness Assessment

The Elsham treatment and transfer scheme was considered less suitable for DPC under the discreteness criteria due to being a critical supply demand asset and highly integrated with other Anglian operations. A few examples of the discreteness challenges are listed below:

- We recognise that it will be complex to manage the multiple physical interfaces associated within this scheme on an on-going basis, i.e. upstream, downstream and local/existing assets connections. For example there are three discrete inputs of water at different levels of treatment and from different Anglian Water sources.
- A key element of the scheme is to increase the resilience to our existing network and it is therefore an integral part of our operations. Delivery through DPC has the potential to reduce operational flexibility, which will impact on our ability to manage resilience events and the timing of planned outages.
- Commercial arrangements, such as expected minimum use and penalty-based cost structures, also have the potential to reduce the flexibility of use. We are concerned that there could be constraints on future option development (e.g. constraining deployment) and future trading agreements (e.g. inter-regional transfer) as there may be limited options to move additional traded water due to the lack of commercial or operational flexibility.

We need to fully understand the risks DPC delivery presents to our on-going operational management and system control during the next stage of the DPC assessment. A full review of the discreteness assessment completed by KPMG for our Original Plan was included in our Annex 11c of our September 2018 Plan.

13.4.2 Delivery & Gateway Timescales

We identify that there are also potential risks associated with the delivery timescales for DPC and the necessary investment to deliver the requirements set out in our WRMP. The proposed gateways and timings for DPC delivery present the following challenges:

- Delivery timescales are already challenging, and as such we have already set up a new delivery mechanism (the Strategic Pipeline Alliance). By 're-starting the clock' on the procurement process there is a significant risk of delay to the programme.
- As the Elsham scheme sits at the upstream end of our interconnectors, providing water, this could present regional risks to security of supply.

To enable the scheme to be delivered the outline plan would need to be achieved. We have already commenced on the hydraulic modelling of the systems and the final routings of the pipelines. Our initial plan is detailed in the table below. The timescales below are extremely challenging as the procurement process will take one year to complete.

Table 84 DPC Delivery and Gateway Timescales

Gateway	Outline Plan	Pre Gateway Activity	Gateway Outputs	5 case Model
1	April 2020	Preliminary design and mains route planning. Undertake Environmental Impact Assessments. Identification of potential locations of treatment plant. Refine costs based on actual route of mains and potential location of treatment plan Validate scope to be provided under the project.	Route and location agreed that take into account planning and EIA restrictions, Updated scope and costs.	Strategic Outline Case

		Refine plan through collaborative planning approach		
2	September 2020	Continue develop of the design through existing procurement routes. Undertake route surveys and site investigation. Develop operational interface management strategy	Agreement of boundary points for contract and operation strategy	
3	January 2021	Appoint financial advisors Appoint legal advisors	Assessment of market for the DPC contract Refine scope, costs and boundary points	
4	April 2021	Develop tender documentation Develop outline business case Obtain planning permission for preferred site.	Agreed scope and tender documents Refine value for money and discreetness tests	Outline Business Case
5	April 2022	Plan OJEU procurement process Establish contract management team Secure land and issue notices to lay pipelines. Final value for money test against bidders proposals. Develop full business case	Go/No Go decision. Contract let DPC provider. Three years design and construction period	Full Business Case
6	By April 2025		Meet obligation date for Restoring Sustainable Abstractions (RSA) obligations. Beneficial use. AW receives water from the CAP provided. First contract payment made.	

It is assumed the CAP provider will not be required to provide metaldehyde treatment.

To enable the above programme to be achieved, we will need to utilise our existing supply chain alliances.

We need to work collaboratively to overcome the delivery and gateway challenges presented with taking the full Elsham Treatment and Transfer scheme through DPC delivery. Through this collaboration, we need to ensure we have effectively considered the potential trade off between efficient delivery for customers, resilience and meeting the WRMP timetable of obligations.

In our Plan we have allowed for the costs as stated by Ofwat on the DD in the Model Ref FM_E_WW_SDB_ST_DD, tab Deep Dive ANH.

Table 85 DPC Development allowance

Design costs as percentage of total scheme costs	6%
Design costs (£m)	6.812
Pre-tender costs (£m)	1.0
Management costs (£m)	0.45
DPC development allowance (£m)	**8.262**

We also note that tender costs at 1% of the overall scheme costs should be included in the allowance above which will be amended accordingly in the final determination. We therefore expect an additional £1.728m to be added to this element of our plan. The revised cost will therefore be £8.262m+£1.728m = 9.990m.

Finally, we note that the accounting treatment of DPC arrangements and its effect on credit ratings may have unforeseen and unintended negative impacts. This requires careful consideration and resolution before the Final Determination.

13.4.3 Uncertainty mechanism

We agree with Ofwat's proposal to create a regulatory mechanism to enable us, if required, to deliver the Elsham treatment and transfer scheme via traditional in-house procurement.

However, we are confused by the discussion on the form of the uncertainty mechanism in 'PR19 draft determinations: Delivering customer value in large projects'. This discussion contemplates two options for the uncertainty: firstly, a Notified Item and, secondly, a process which resembles the 'logging up' process from previous regulatory contracts. The discussion presents these as alternatives when in those previous frameworks both applied. That is, companies could log up relevant expenditure at the end of the price control period, and the Notified Item merely provided for that process to be brought forward such that the adjustment was made in-period. Whichever mechanism was used, companies' costs were subject to the same level of detailed scrutiny by Ofwat such that only efficient costs were allowed.

If a Notified Item is proposed as the sole uncertainty mechanism for DPC costs, we do not support this. There is a high probability that, on its own, the costs of the Elsham scheme might not pass the IDOK materiality threshold. Furthermore, we recall the hostile approach which Ofwat has traditionally adopted towards company IDOK references. We therefore regard the IDOK process as an unreliable mechanism for enabling legitimate change and one which would not, on is own, provide sufficient mitigation against the risk of a very substantial unfunded commitment. Both of the uncertainty mechanisms discussed in 'PR19 draft determinations: Delivering customer value in large projects' would need to be in place.

We note that for other parts of the DD, where Ofwat is providing for the return of allowed funding from the company to customers, Ofwat has proposed uncertainty mechanisms which are relatively simple and enable change to be applied in-period. Rather than a Notified Item, we would prefer an alternative mechanism for DPC that delivers these same benefits.

Detail of the DPC uncertainty mechanism was omitted from the DD and we should have an opportunity to comment on Ofwat's final proposal before it appears in the Final Determination. We would be happy to meet with Ofwat during the autumn to discuss the appropriate form of this mechanism.

13.4.4 Accounting Treatment and other uncertainties

We also note the importance of ensuring the right accounting treatment for DPC. IFRS16 states that such assets should be expected to be added to the balance sheet and therefore result in an increase in debt. Yet this is an accounting adjustment, not an increase in economic liability for Anglian Water, and so regulatory approaches, including the assessment of the gearing outperformance sharing mechanism, need to be adjusted accordingly. In particular, any increase in debt related to DPC should be excluded from the calculation of the gearing outperformance sharing mechanism. As this is a new process for Ofwat and companies, we would welcome the opportunity to discuss the range of issues around accounting and other aspects of the treatment of DPC costs with Ofwat as this develops.

Anglian Water Services Limited
Lancaster House
Lancaster Way
Ermine Business Park
Huntingdon
Cambridgeshire
PE29 6XU

www.anglianwater.co.uk

LED612/11/17