

Draft Determination Representations

WSH.DD.OC.1

Performance Commitments

Definitions and targets

30 August 2019

Contents

1. INTRODUCTION	3
2. OFWAT'S APPROACH TO SETTING PERFORMANCE COMMITMENT TARGETS	6
3. WT1 WATER QUALITY COMPLIANCE (CRI)	11
4. WT2 SUPPLY INTERRUPTIONS	13
5. EN5 PER CAPITA CONSUMPTION	18
6. SV5 PRIORITY SERVICES FOR CUSTOMERS IN VULNERABLE CIRCUMSTANCES	20
7. RT1 AND RT2 INTERNAL AND EXTERNAL SEWER FLOODING	21
8. EN3 POLLUTION INCIDENTS.....	32
9. RT4 TOTAL COMPLAINTS	37
10. RT5 WORST SERVED CUSTOMERS (WATER).....	39
11. RT6 WORST SERVED CUSTOMERS (WASTEWATER).....	40
12. BL1 CHANGE IN AVERAGE HOUSEHOLD BILL.....	43
13. BL2 VULNERABLE CUSTOMERS ON SOCIAL TARIFFS.....	44
14. FT4 SURFACE WATER REMOVED FROM SEWERS AND EN9 CSO STORAGE SYSTEMS	46
15. FT 5-9 ASSET RESILIENCE.....	49
16. SV4 BUSINESS CUSTOMER SATISFACTION	52
17. WT7 WATER CATCHMENTS IMPROVED	56
18. WT8 LEAD PIPES REPLACED	57
19. EN6 KM OF RIVER IMPROVED.....	58
20. BL6 DELIVERY OF OUR RESERVOIRS ENHANCEMENT PROGRAMME	61
21. BL8 DELIVERY OF OUR WATER NETWORK IMPROVEMENT PROGRAMME	63
22. PROPOSED NEW PERFORMANCE COMMITMENTS.....	64

Annex: IAP Response Ref B2.2.WSH.OC, Performance Commitments Targets and Deadbands

Relevant Supporting Appendices

2A Executive Summary of report on Hydrological overload Flooding, Met Office, July 2019

2B Analysis of Waste Water Flooding Events and Rainfall, Met Office, July 2019

3 Comparative Measurement of Pollution Incidents, Welsh Water, March 2019

1. Introduction

1.1. Purpose and structure of this document

The purpose of this document is to set out our representations on the Performance Commitments (PCs) contained in the Draft Determination, specifically issues with the definitions (mostly minor) and the targets.

Section 1.2 summarises our position on the PCs. Section 2 sets out our representations on Ofwat's overall approach to setting PCs. Our view on PCs is also related to our representations on Ofwat's approach to setting the cost-service frontier as set out in document WSH.DD.MTH.1.

1.2. Our position summarised

The Draft Determination includes the specification of targets for PCs, many of which differ substantially from our Business Plan. There are also changes to the definitions of certain measures which impact upon the delivery of the targets. Finally, Ofwat has intervened on a number of the ODIs, removing many of the financial ODIs on our bespoke measures, and adding financial ODIs in some areas, as well as altering many of the financial ODI rates. Our representations on ODIs are addressed separately in document WSH.DD.OC.2.

Our overall position on PCs remains that our Business Plan proposals are stretching yet achievable, given the particular characteristics of the region within which we operate, and offer an appropriate balance for customers and the environment between performance and cost. They were informed by an extensive consultative and analytical process. We carried out detailed customer research to ascertain what their priorities are. This was combined with Willingness to Pay evidence and cost benefit analysis to produce a suite of targets that, taken together, would stretch the business to improve performance significantly and focus on the things that matter to customers.

In carrying out this process, we gave careful consideration to Ofwat's guidance on PCs, including by considering comparative information, including historical performance and industry comparisons. We set significant reward and penalty rates (with relatively few deadbands) to reinforce our resolve to meet the aspirations of our customers.

Ofwat has disregarded large parts of this exercise, and has set targets for many performance commitments on a different basis, often by placing greater weight on comparison with other companies and giving little or no weight to factors that vary across companies, including customer preferences, historical investment patterns, and operating conditions.

We consider the targets set in our Business Plan to be deliverable, though in many respects this will be very challenging and will involve the commitment of sizeable resources, as reflected in our investment proposals. In the absence of that expenditure, the proposed Business Plan targets would not be deliverable, and by extension neither would the tougher targets included in the Draft Determination.

In responding to the Draft Determination and submitting a revised Business Plan, our Board has again carefully considered our proposed performance targets in light of the challenges and comments in the Draft Determination. However, in some cases, the Board has

concluded that our proposed targets remain stretching and appropriate, and the Board also has serious concerns that it may be asked to ‘sign up’ to particular performance commitments set by Ofwat, even where it does not consider them to be deliverable.

To achieve Ofwat’s proposed targets in these cases would require not just the investment set out in our Business Plan, that has not been ‘allowed’, but significant additional investment. Indeed, even with such investment, we believe some of the DD targets could not be delivered in the next five years.

We are concerned not just that the targets set out in the Draft Determination are undeliverable, but that Ofwat’s over ambitious proposals on targets overall risks undermining the credibility and usefulness of performance targets as a key tool of the regulatory framework. It risks breaking the link between companies’ regulatory commitments and their internal business plans, creating an expectation of financial penalties, and weakening incentives and the trust of customers and stakeholders in water companies.

1.3. Representations on definitions

In reviewing the Outcomes Performance Commitment Appendix we have identified a number of areas of concern with the definitions used for our bespoke performance commitments. In some cases these would impact on our performance commitment levels if they were to be retained.

1.4. Changes to targets

We are accepting many of the PC targets and ODIs, and for selected others we are proposing changes to the DD. This is reflected in the summary table below.

The following table summarises all these issues and references the area of our submission where further detail of our concerns is provided. Those PCs for which we make representations are highlighted in bold.

Reference (by order listed in DD appendix)	Definition/ measure	Target/ deadband	Section ref
Wt1 Water quality compliance (CRI)		X	3
Wt2 Water supply interruptions		X	4
En4 Leakage			
En5 Per capita consumption		X	5
Wt4 Mains repairs			
Wt5 Unplanned outage			
Ft1 Risk of severe restrictions in a drought			
Sv5 Priority services for customers in vulnerable circumstances	X		6
Rt1 Internal sewer flooding		X	7
En3 Pollution incidents		X	8
Ft2 Risk of sewer flooding in a storm			
Rt3 Sewer collapses			
En1 Treatment works compliance			

Sv1 CMex	X	NA	See WSH.DD.OO.1
Sv2 D-Mex	X	NA	See WSH.DD.OO.2
Wt3 Acceptability of drinking water			
Wt6 Tap water quality event risk index			
Wt7 Water catchments improved		X	17
Wt8 Lead pipes replaced	X		18
En2 WWTW 'look up table' compliance			
En6 Km of river improved	X	X	19
En9 CSO storage systems	X	X	14
En7 Bioresources product quality			
En8 Bioresources disposal compliance			
Sv3 Customer Trust			
Sv4 Business customer satisfaction	X	X	16
Sv6 Customers on Welsh language register			
Rt2 Sewer flooding on customer property (external)		X	7
Rt4 Total complaints	X	X	9
Rt5 Worst served customers (water)	X	X	10
Rt6 Worst served customers (waste)	X		11
Bl1 Change in average household bill	X		12
Bl2 Vulnerable customers on social tariffs	X	X	13
Bl3 Company level of bad debt			
Bl4 Unbilled properties			
Bl5 Financial resilience			
Ft3 Energy self-sufficiency			
Ft4 Surface water removed from sewers	X	X	14
Ft5 Asset resilience (Reservoirs)	X		15
Ft6 Asset resilience (water network+ above ground)	X		15
Ft7 Asset resilience (water network+ below ground)	X	X	15
Ft8 Asset resilience (waste network+ above ground)	X		15
Ft9 Asset resilience (waste network+ below ground)	X		15
Ft10 Community education			
Ft11 Visitors to recreational facilities			
Co1 Reportable injuries			
Co2 Employee training and expertise			
Co3 Employee engagement			
Bl6 Delivery of reservoirs enhancement programme	X	X	20
Bl8 Delivery of our network improvement programme	X		21
NEW Bl9 Delivery of our Hereford water supply resilience scheme	X	X	22
NEW Bl10 Delivery of our South Wales Grid water supply resilience scheme	X	X	22
NEW Bl11 Delivery of our new visitor centres	X	X	22
NEP01 Delivery of environmental programme requirements			

2. Ofwat's approach to setting performance commitment targets

2.1. Uniform targets

In our response to the PR19 methodology consultation we signalled our support for the principle of ensuring companies strive to achieve 'upper quartile' standards of performance overall. This does not imply, however, that all companies could or should achieve the same targets for each measure. This is because a) companies are in different 'starting positions' because of their particular historical circumstances and investment priorities, b) companies have different operating conditions that give rise to varying outcomes for the same level of 'performance', and c) as evidenced by customer research results, customers in different regions have different preferences, leading to different priorities and optimum 'packages' of service levels.

To put it another way, companies are essentially operating in separate markets where different market conditions are applicable, so that it is inappropriate to assume that different companies would or should achieve convergence on particular targeted levels of service for individual measures.

In stating that it could see no clear reason why companies should not achieve these same stretching level of performance, Ofwat acknowledges that it would "consider company-specific factors". We argue that it is not reasonable to expect companies to demonstrate that their circumstances are unique in order to benefit from such an adjustment. Firstly, this approach fails to acknowledge that there are many circumstantial factors that affect subsets of companies, but each factor affects some companies more than others within that subset. For example, we are not the only company with problems related to oversized mains pipes following industrial decline, and high levels of manganese in water catchments, but we do think we are more affected by those issues in combination than any other company when it comes to achieving standard levels of customer acceptability contacts for taste, odour and colour.

We put forward evidence as to why our particularly operating circumstances make achieving a common industry upper quartile standard unachievable for the three common targets. Ofwat concludes that this evidence is insufficient, because the evidence we have put forward does not account for other relevant factors that may have an opposite impact on performance levels, or are unique to that company. We did not include information on relevant factors that may have an opposite impact, because we do not consider there are any such factors that would have a material impact. The requirement to prove 'uniqueness' is not reasonable as we are essentially being required to prove a negative (i.e. that other companies are not affected by these factors in the same way).

Ofwat also states that we have not quantified the impact of these factors on performance levels. But this raises the question of what the 'normal' should be for these factors. We know, for example, that our high number of water supply zones, and the rural nature of our operating area, mean that supply interruptions tend to be longer when they occur because of the time taken to reach bursts and the difficulty of rezoning supplies. However, it is inherently impossible to calculate the impact of these factors with any accuracy, and any such calculation would require a baseline against which to compare.

This leads to a further point, that companies often do not have access to the data that would be required to demonstrate the degree to which their circumstances are unique. Such data is usually not available beyond the individual company, and only Ofwat is in a position to request and gather that information at the industry level. For example, we are able to compare our rural areas with more densely populated areas in terms of the impact on supply interruptions or leakage. But we lack the data to be able to extrapolate our findings to other companies and thereby prove that we are different. Ofwat routinely gathers data to inform modelling of cost efficiency across companies, but it does not do so for the purposes of setting performance targets.

We believe that in setting an unreasonably high bar of evidence for companies that have to prove they are unique in relation to the common performance commitments, Ofwat is not acting in accordance with the Welsh Government's Strategic Priorities Statement, which states that:

"We expect Ofwat to challenge companies to deliver for customers on the basis of comparison across companies in Wales and England, and across sectors where appropriate, while making appropriate allowances for differences in the operating and legal environments of companies in Wales, and taking into account variations in the priorities of customers and other stakeholders."

Finally, there is an issue with 'normalisation' of measures across companies. For example, pollution incidents are 'normalised' by length of sewer alone, not accounting for the fact that companies that require higher numbers of pumping stations and treatment works, all other things equal, could be expected to have higher numbers of pollution incidents and exhibit the same 'pollution incidents performance'. Given that the necessary asset base information is available to us, we have constructed a superior model to determine upper quartile performance for each company, given its operating environment. Ofwat uses similar econometric models to derive target cost levels for companies, given differences in their operating environments. We urge Ofwat to carry out the same approach in setting performance commitments, so that these can be equally fair and stretching for all companies.

Although Ofwat has attempted to respond to feedback from companies received at the IAP stage, it has addressed the above points only partially and unsatisfactorily. For these reasons we are resubmitting our PC targets in response to the Draft Determination that reverts to our original Business Plan commitments for those measures where Ofwat's proposed target does not adequately reflect our company's operating environment and where there is a material difference. We provide more detailed rationale and representations in each such case in Section 3.

2.2. Derivation of upper quartile targets for common PCs

Having addressed above the principle of applying uniform targets across the industry, we turn to the way in which Ofwat has derived and calculated those upper quartile targets, which we believe is methodologically unsound. Our arguments revisit and expand on many of the points made in our IAP response, having taken into account Ofwat's consideration of those issues as published alongside the Draft Determination.

In its guidance for Business Plans, Ofwat set out its expectation that each company sets out performance targets for the three common measures based on (at least) the company's forecast of the industry upper quartile performance for those measures. It has then taken the upper quartile of these upper quartile forecasts as the uniform target applicable to the whole industry. This is not the same as taking the upper quartile of what companies believe they can achieve themselves and is an inherently less robust and reliable approach.

An upper quartile calculation provides a ready and understandable metric for a benchmark, but it is a crude one and therefore care should be taken in how it is applied across companies. We have argued that the upper quartile should be adjusted to take account of the size of the upper quartile companies, so that the upper quartile reflects the level of service received by the top quarter of customers. This is particularly applicable in water service measures where the best performers are often small water only companies who have a much simpler network, and often a small number of highly reliable groundwater sources, compared to larger companies.

We made this argument in our original Business Plan and in our IAP response. In the DD, Ofwat have only addressed it in relation to pollution incidents, not supply interruptions or internal sewer flooding. On pollution incidents, Ofwat states "We do not think the upper quartile should be weighted by customer since this assumes that companies have forecast upper quartile performance based on customers, which they do not appear to have done and is inconsistent with our approach to incentivising companies to perform in line with industry leading levels."

Ofwat appears to be making two separate points:

1) That our argument assumes that companies forecast upper quartile levels in their Business Plans based on customers, and they do not appear to have done so.

This does not appear to address our point. Whether or not companies (like us) used a customer weighted upper quartile in their forecast, Ofwat had a choice as to whether to use a 'simple' or 'customer weighted' upper quartile in using these values to reach their view of the applicable uniform target.

2) That weighting upper quartile by customers is "inconsistent with Ofwat's approach"

We recognise that it is inconsistent with Ofwat's conception of "industry leading performance", and this is where we take issue with Ofwat's approach.

Returning to Ofwat's approach more generally, we argued that Ofwat failed to take into account not just the different operating conditions of companies, but the different bases on which companies had set the targets. For example, Yorkshire had set a target/forecast of 3:00 minutes, but with a deadband at 6:00. We argued that this should not be given the same weight as a company that had no deadband, as Yorkshire's commitment to deliver the target in that case was weaker. In line with other companies we also argued that Ofwat had treated the forecasts as if they were company-specific targets of what they believed was deliverable themselves, rather than inherently less reliable forecasts of what they thought might be the future industry upper quartile.

In its DD Ofwat interpreted this feedback as saying that “some companies put forward unrealistic, overly ambitious forecasts, and consider that taking the upper quartile of upper quartile forecasts results in performance levels that are too stretching”. It responds by saying that “forecast levels can be unrealistic in both direction (too high or too low).” We would argue that while this is true it rather misses the point. Our point is rather that companies were directed to set “stretching” targets that accorded with their forecasts of an industry “at least upper quartile” performance level. By taking the upper quartile of this ‘at least upper quartile’ targets, Ofwat is in a sense double counting the expected improvement in the industry performance over time. As a result, the ‘forecasts’ are much more likely to be ‘too stretching’ than ‘too lenient’ compared to outturn performance, particularly in light of the disallowance of any expenditure that may have been included in Business Plans to achieve the forecast targets.

2.3. Achievability of targets

A further point made by a number of companies in their IAP responses is that the proposed targets were not achievable. Ofwat has sought to address this critique in the DD by assessing how “stretching yet achievable the proposed levels are”. For supply interruptions, for example, it says that “the 64% reduction in the upper quartile for 2020-25 (from 2019/20 forecast levels) appears achievable given improvement in earlier periods.”

We would make the following points:

- Historical improvements are a poor guide to the potential for future improvement, due to diminishing returns. Indeed, the greater the historical improvement, the harder it will be to achieve equivalent improvements in the next period.
- Historical improvements were driven by expenditure allowed for performance improvements, which is not being allowed for AMP7 as set out in the Draft Determination (though we contest this).
- Ofwat’s comparison looks at ‘achievability’ in relation to the industry as a whole, or the “better performing companies”. It does not evaluate achievability in relation to specific companies. Having accepted in principle that ‘achievability’ is a relevant consideration, we would argue that Ofwat should examine this at the company level. For example, having said that for supply interruptions the change from the industry average from 8.17 minutes to 4.17 minutes between 2019/20 to 2020/21 looks very challenging, it would be unreasonable to then claim that the improvement proposed in the DD from 12:00 minutes to 05:24 minutes for Welsh Water over the same period is achievable.

2.4. Consideration of customer views

As noted above, our Business Plan PCs targets and ODIs were based upon an extensive customer engagement exercise that was endorsed by our Customer Challenge Group. We set out clearly in our Business Plan documents how we had taken the results into account, with the aim of prioritising investment expenditure and delivering to customers what matters to them most.

Ofwat's DD states that "our draft determinations take into account customers' views on performance levels where these have been based on high-quality customer engagement, as well as historical and forecast performance levels across the sector." Ofwat have not set out where it believes our customer engagement on performance commitments was lacking in quality, contrary to the views of the CCG. We therefore think our customer engagement results deserve recognition. On supply interruptions, for example, customers told us that short supply interruptions of up to half a day were not a concern for them, they do not see reliability of water supply systems as a problem area, and that Willingness to Pay for performance improvements is limited (see September Business Plan submission document 5.1 and 5.2). In order to ensure we were challenging ourselves, we nevertheless set a target of a 33% reduction, from 12 minutes to 8 minutes by 2025.

Willingness to Pay research and cost-benefit analysis was premised on the notion that there is a balance to be struck between service and cost, and that it is right for companies to seek customer views in order to optimise that balance. By not allowing targets to vary in line with each company's customer views and priorities, Ofwat is undermining one of the key pillars of its own PR19 methodology, and renders redundant large parts of the customer engagement exercise carried out at significant cost (not to mention the work of the CCGs).

The representations made below on the individual PCs are made in the context of the above points on Ofwat's overall approach.

3. Wt1 Water quality compliance (CRI)

Summary – definition

We are content with the definition and make no representations in that regard.

Summary – target/deadband

We accept the required target of 0 in each year as this is a compliance measure.

With regard to the deadband, we maintain that 1.50 (2.0 in the first two years of the AMP) does not represent a justified and reasonable level for the deadband on this measure. Ofwat has not addressed the detailed arguments made as part of our IAP response (and those of other companies) on this point.

We maintain our position that an ex post ‘upper third’ approach to the deadband is a sensible approach given the nature of this measure and the objective of incentivising improvements across the industry.

3.1. Background

In our original PR19 Business Plan we proposed a deadband equal, for each year, to the ‘upper third’ level of actual performance of companies in the industry in each given year, with each company weighted by the number of customers. This approach, we argued, is reasonable and appropriate given the fact that the measure is new, and what we think is the inherent volatility of individual companies’ performance against the measure.

In its IAP publication, Ofwat mandated a standard deadband of 1.50 for this measure, calculated as the average of a) the observed upper quartile performance of companies in 2017, and b) the upper quartile of the deadbands proposed by companies. This position was unchanged in the Draft Determination, except that the deadband has been raised to 2.0 for the first two years to provide flexibility for new metaldehyde legislation to be implemented.

3.2. Ofwat’s response to the company IAP representations

Ofwat recognised that a number of companies pointed out that the CRI measure was new and subject to volatility, warranting a wider deadband. Ofwat concludes having analysed the data that the shadow reporting data do not show significant volatility.

We accept that, having analysed, the latest set of data to be published, there is limited evidence that the measure itself *in terms of average industry performance* is volatile.

However, the point about volatility is that a) there will inherently be a wide range of outcomes owing to the nature of the measure, driven partly by the size of companies (see below), such that it is unrealistic to expect all companies to achieve an ‘upper quartile’ score such as 1.5, b) that smaller companies are vulnerable to having ‘volatile’ scores, i.e. doing particularly well or particularly badly on CRI, and that this makes using an upper quartile approach to setting the deadband inappropriate.

As we said in our IAP response:

The design of the measure means that there are always likely to be a few companies with particularly low (good) scores (and also some with high scores). This is because of the use as

a multiplier of the 'proportion of population served' by a WTW suffering a compliance failure. So small companies with a small number of relatively large works will have particularly volatile scores from year to year, depending on whether they have any compliance failures at one of their larger works. Assuming on the balance of probability that in any given year a few of them do not have any of those, (and a few of them do), then these companies will determine a (very low) upper quartile level, leaving the rest of the industry in penalty.

Larger companies with a high number of works, each serving a smaller proportion on average of their total population compared to smaller companies, will not suffer from the same volatility. It will not be possible for them to match the performance of the best performing companies on CRI, unless they can achieve a very low number of failures at all of their many works across their area.

In their Fast Track Draft Determination response, Severn Trent agreed that smaller water companies such as HD are exposed to higher levels of CRI score volatility "as the smaller number of assets and population served reduces the averaging component of the calculation (e.g. the HD score moved from 2.8 in 2015/16 to 17.7 in 2016/17)."

In our DD outcomes appendix, Ofwat said that "we discussed with DWI whether CRI disadvantages large or small companies, but did not find evidence this was clearly the case. Therefore we will not accept the evidence that companies are disadvantaged due to size." To be clear, we are not arguing that large companies are disadvantaged compared to small companies on average. But we do think that the best scoring (i.e. upper quartile) companies on CRI will in most cases be represented by a subsection of the smaller companies. It will always be more difficult for larger companies to consistently achieve this level (while smaller companies are more likely to achieve it in good years, but fail spectacularly in poor years).

The measure is also 'volatile' in that the scores can fluctuate due to a wide range of issues outside management control, due to future changes in the Drinking Water Directive, and due to the ability to prove the root cause of failures, particularly on property specific issues. The influence of these variables, which are overlaid on the company's actual 'performance', make Ofwat's methodology in defining a deadband of 1.50 unduly harsh.

The DWI, which has developed the measure and understands the complex dynamics underlying the scoring, has itself recommended the companies should be aiming to achieve an 'industry average' score annually, which is significantly above the proposed deadband values.

We note that a number of other companies have proposed deadband values at 3.0 or above. As submitted previously, we believe an 'upper third' deadband would incentivise consistent improvements across the industry, while allowing for the particular characteristics of the measure.

4. Wt2 Supply interruptions

Summary – definition

We are content with the definition and make no representations in that regard.

Summary - targets

The Draft Determination sets a standard definition for supply interruptions and uniform targets for all companies. These differ from our Business Plan targets as shown below. Following careful consideration of Ofwat’s methodology and the responses to companies’ IAP submissions, we have found no grounds to change our view that our original Business Plan targets are both stretching and achievable, and in the best interest of customers. However, achieving these performance improvements would require approval of the related expenditure set out in our revised Business Plan (unchanged from our original plan):

	2020-21	2021-22	2022-23	2023-24	2024-25
Draft Determination	05:24	04:48	04:12	03:36	03:00
August Business Plan	11:12	10:24	09:36	08:48	08:00

4.1. Background

This is one of three PCs for which Ofwat has set uniform targets across the industry, arguing that there is no clear reason why all companies should not be able to achieve the same high standards of performance.

It has calculated the target on the basis of a ‘calculated upper quartile’, using companies’ own Business Plan targets. These company targets were derived following Ofwat’s guidance that companies should forecast ‘at least upper quartile’ performance, and take into account customer views and cost benefit analysis (and by implication, the costs of achieving improved performance).

Our targets were based on Ofwat’s guidance, as set out in detail in our Business Plan submission. They were challenged both by the Board and by the Customer Challenge Group to ensure they are stretching yet achievable. They were developed following a robust analysis of the required investment, given the specific features of our network and our operating area, investment which was included in our Business Plan but disallowed by Ofwat at the Draft Determination.

At the Draft Determination, Ofwat made an adjustment to the target for the first two years of the AMP having undertaken an analysis of the achievability of the uniform target. However, the targets remain unachievable for us at a company level.

4.2. Principles

We do not accept the following principles that underpin Ofwat’s targets for supply interruptions:

1. That it is appropriate to expect all companies by default to achieve the same absolute performance levels for supply interruptions. We accept that companies should be striving to achieve upper quartile performance on PCs in principle. But the absolute level of performance constituting the target should be adjusted to take into account differences between companies' operating environments.
2. That the applicable targets can reliably be derived by taking the upper quartile of the forecasts of future industry upper quartile performance that companies included in their Business Plans.
3. That the common targets are a) deliverable, and b) reasonable given the financial ODIs attached.

We address each of these points in turn below.

4.3. Factors affecting performance in our operating area

In section 2 we argue that in order for horizontal benchmarks to be fair and robust, allowances should be made for significant differences in operating conditions between companies. These may be inherent features of the areas and populations served by companies (such as topography or population distribution), or external factors that affect performance (such as rainfall patterns). Ofwat's PR19 methodology places the onus on companies to prove that their circumstances are unique. However, in the absence of robust cross-industry data, it is not practically realistic to do so. Instead, we argue that well-documented features of our operating area could reasonably be interpreted as representing an obstacle to achieving industry upper quartile performance levels for this measure in absolute terms.

In our IAP response document (see Annex) we set out some of the factors that we consider adversely affect our performance, leading to a higher marginal cost for improvements. As such, a uniform target leads to inefficient outcomes for our customers. These factors included:

- The relative lack of network connectivity in our region. This is an inherent feature of our area given the distribution of our customers – we have the lowest number of customers per water supply zone in the industry. This means we cannot reroute supplies to zones suffering a supply interruption as easily as many other companies. Indeed some companies, particularly small Water Only Companies, have very compact water supply networks, enabling them to achieve very low levels of interruptions.
- The topography of our area. While network connectivity is theoretically under management control, our topography makes this prohibitively costly, particularly given the low value that customers place on improving our performance on supply interruptions.
- The sparsity of our population. We have 45% higher length of mains per customer than the industry average. Hence we deal with many more bursts per customer (which cause most supply interruptions) than other companies.

In their IAP responses, a number of companies made similar arguments to these. We accept that we may not be unique with regard to any one of the above factors. However, we believe we are likely to be found at the more challenging end of the range of possibilities for each of these, probably to a unique extent.

In the Draft Determination, Ofwat stated that our arguments as to our company specific circumstances were considered inadequate because we were not able to quantify the impact on the interruption time relative to the upper quartile levels. It is unclear however, in the absence of a common benchmark for such factors as network connectivity and population distribution, how such an estimate could robustly be arrived at. What we have done is to set out evidence as to why a common target is inappropriate and undeliverable for us, and to propose a stretching yet achievable performance improvement target, that takes into account our operating conditions, our historical investment patterns, our previous performance improvements, our customers’ preferences, and the investment schemes set out in our Business Plan. To be clear, we believe that our proposed targets represent at least an ‘upper quartile’ level of performance taking into account the above factors. Hence the quantification of the impact of our company specific circumstances on the interruption time relative to the upper quartile levels is as shown below.

	2020-21	2021-22	2022-23	2023-24	2024-25
Ofwat upper quartile	05:24	04:48	04:12	03:36	03:00
DCWW Business Plan ‘upper quartile performance’ given company specific factors	11:12	10:24	09:36	08:48	08:00
‘Impact of company specific factors on upper quartile’	05:48	05:36	05:24	05:12	05:00

4.4. Derivation of upper quartile targets

Even accepting the principle of common targets (which we do not), we believe it is invalid to use an upper quartile of the targets included in company Business Plans as the basis for that common target. Along with many other companies, our IAP response document ‘B2.1.WSH.OC Performance commitments IAP Response’ and ‘B2.2.WSH.OC Performance Commitments and Deadbands’, said that it is wrong to interpret these as *individual companies’* performance forecasts, having set guidance for companies requiring them to set stretching targets on the basis of their own forecasts of upper quartile *industry* performance. Some companies explicitly acknowledged this by setting deadbands around their target.

Ofwat responded by saying that company forecasts could be both too low or too high. But this does not address the key point. It is not that companies have simply made forecasts of their own performance. There is an asymmetry built into these forecasts because:

- Ofwat set a formal expectation that companies forecast the industry upper quartile performance and then set their targets at ‘at least’ this level; and
- There was an incentive mechanism for Business Plans that would reward companies for meeting their expectations and potentially penalising those that did not (through the IAP process). This ‘biased’ companies towards meeting Ofwat’s expectations rather than determining targets that had an above average chance of being delivered. Some companies made explicit the distinction between their Business Plan targets and their expected performance, either by setting deadbands (in the case of Yorkshire for supply interruptions – setting a 06:00 minute deadband against their 02:00 ‘target’), or by simply stating that there was a difference between their industry upper quartile forecast and their ‘anticipated performance’ (in the case of UU for sewer flooding).
- Many companies set their targets on the basis of expenditure in their Business Plans that they considered to be necessary in order to achieve their targets. In most cases this expenditure has been disallowed.

Hence we would argue that the targets are much more likely to be ‘too high’ than ‘too low’.

4.5. Deliverability and reasonableness of targets

One of the arguments made by companies in their IAP responses was that the common target for supply interruptions represented an unrealistic improvement in performance for many companies. Ofwat responded by undertaking an assessment of achievability of the targets against recent industry performance. We would make the following points in response to this:

- i) The point made by many companies was not so much that the proposed Ofwat targets were undeliverable, but that the targets proposed by some companies on which the upper quartile targets were based were themselves unrealistic. For example, Bristol Water, one of the ‘upper quartile’ companies, proposed an improvement from 12.2 minutes in 2019-20 to 1.8 minutes in 2024-25, an improvement of 85%. This relates to our second bullet point under section 4.4 above.
- ii) Ofwat’s analysis ignores the reality of diminishing returns to investment that seeks to improve performance. By way of illustration, during AMP6 we have invested to reduce supply interruptions, by *inter alia* purchasing more tankers and emergency fittings, and introducing best practice. This has indeed reduced interruptions significantly. To achieve further such reductions in AMP7 we will need to implement more costly solutions such as mains replacement and, where possible, supply zone interconnections.
- iii) Ofwat’s achievability assessment looks across the industry and not at individual companies. Ofwat states that “the 64% reduction in the upper quartile for 2020-25 (from 2019/20 forecast levels) appears achievable given improvement in earlier

periods.” However, the improvement required for us to achieve the target for 2020 would be 75%, on top of a projected 43% improvement from 2014/15 to 2019/20.

The implication is that for individual companies, any ‘lack of achievability’ of the common target reflects a failure to improve in previous periods, and that the ODI underperformance payment that would apply is a penalty for that failure which serves as an incentive to improve more rapidly. However, we forecast to meet our target for supply interruptions agreed with Ofwat at PR14. The financial penalty that we anticipate for supply interruptions in AMP7 on the basis of the DD, cannot therefore be justified with regard to historic failure to improve. In our view the only sound approach is to look at what can reasonably be achieved by way of improvement, challenging the company to do better given the cost of the associated investment and the priorities of customers, and taking into account the company’s operating circumstances. This is the approach we followed in our Business Plan.

5. En5 Per capita consumption

Summary – definitions

We are content with the definitions and make no representations in that regard.

Summary – targets

We are proposing to retain the targets put forward in our April Business Plan as shown below.

	2020-21	2021-22	2022-23	2023-24	2024-25
Draft Determination	1	2	3	4	6
August Business Plan	1	1	2	3	5

5.1. Background

In our original Business Plan we put forward a PCC target that constituted a 4.1% reduction from 2019-20 to 2024-25. Given the opportunity to reconsider our targets at the IAP stage, we took into account the latest data, and amended our targeted reduction to 4.4%. This was on the assumption that our Project Cartref scheme and other related investments would be fully funded.

Ofwat in the DD has intervened to stretch our target further to a 6.3% reduction by 2025, stating that these reductions are levels “that are consistent with the rest of the industry for per capita consumption”, specifically an upper quartile percentage reduction. Project Cartref has only been partly funded.

5.2. Draft Determination and our response

In the Draft Determination (Outcomes policy appendix page 28), Ofwat states that “we consider that cross-company comparisons are valuable to identify company performance levels that are outliers”. We consider that while our customers’ PCC level is greater than the industry average, we are not an outlier, and the difference is not a concern given our supply demand position. While Ofwat also states that “company-specific factors are also relevant”, in our case these factors have been ignored and the target has been determined on the basis of cross industry comparison of percentage reductions.

As set out in our IAP response (see Appendix), we don’t believe that a cross industry comparison is appropriate in our case. The rationale for the intervention is unclear in the DD, except that Ofwat states “the company has limited supply demand balance issues which is part of our rationale for intervening.” It is unclear why the lack of supply demand balance deficits, except in two small supply zones, forms part of a rationale for intervening at a company level, imposing unnecessary costs on the business and its customers.

It may be that Ofwat is intervening simply to ensure “stretch”. But PCC is not an indicator of ‘service performance’ in itself, in the same way as supply interruptions or sewer flooding. A lower level of PCC does not unambiguously constitute a better outcome for customers and the environment, given that consuming water is part of the service provided to customers.

We therefore believe that intervening simply in order to ensure “stretching” targets in the case of PCC does not have the same validity for PCC as it does for other service focused PCs.

For this and the above reasons, we believe that Ofwat’s proposal in the Draft Determination to consider the case for requiring companies to go further and deliver a 10% reduction of the 2020-25 period “or forward looking upper quartile performance” (see Delivering Outcomes for Customers Policy Appendix page 29) would not be appropriate for us. Furthermore, the comparison makes between the levels of PCC in England and Wales compared to “other European companies” is invalid. A number of significant factors should be taken into account when making comparisons of water consumption between England & Wales and the rest of Europe. Most significantly, almost all households are metered in other parts of Europe, whereas only about 50% of households in England and Wales are metered. Metering will tend to reduce consumption due to greater customer awareness of high use, undue consumption and leakage from fittings. The quoted PCC reductions by Affinity and Yorkshire are also linked to their proposed increases in household customer metering.

Finally, Ofwat states that “PCC levels in WRMPs are for planning purposes only... and may not reflect a stretching level of performance.” The PCC target contained in our WRMP represented a significant reduction that was the result of an extensive process of consultation with stakeholders over many years. Through its inclusion in the WRMP this target was formally approved by Welsh Ministers. It is also a clear point set out in the Welsh Government’s Strategic Priorities Statement that targets set for Welsh companies need to reflect the particular circumstances within which they operate. We believe this places the onus on Ofwat to justify a deviation from this agreed target, on a more robust basis than simply applying an upper quartile industry comparison.

6. Sv5 Priority services for customers in vulnerable circumstances

Summary – definition

We make a minor representation to clarify the definition.

Summary - targets

No representations – target is accepted.

6.1. Definition

The definition of the contact metrics states:

“Attempted contact: the percentage of distinct households on the PSR that the company has attempted to contact over a two year period

“Actual contact: percentage of distinct households on the PSR that the company has actually contacted over a two-year period”

A proportion of PSR registered customers are on the register via a data sharing arrangement. We can only validate customers on the register where we are the source of the registration. In other cases the source company is responsible for the validation under the ‘tell us once’ principle. The source companies send us monthly updates on their data. We will continue to work closely with data sharing companies to ensure that the data they provide to us is regularly checked and up to date.

We propose to report these measures as the percentage of households on the register where we are the source of the registration that the company has contacted or attempted to contact. Ofwat may wish to update the definition to clarify this.

7. Rt1 and Rt2 Internal and external sewer flooding

Summary – definitions

We are content with the definitions and make no representations in that regard.

The Draft Determination sets a standard definition for internal sewer flooding and uniform targets for all companies. The definition has been changed from the one that has applied during AMP6, notably to remove the exclusion of severe weather events. External sewer flooding, which is considerably more common but less serious than internal sewer flooding, is not a required PC for PR19 but there is a new standard definition across the industry, and is a new regulatory measure for us.

Summary - targets

For internal sewer flooding, Ofwat has set a common target across companies of 1.34 incidents per 10,000 connections by 2025. This differs from our Business Plan target as shown below.

Following careful consideration of Ofwat’s methodology and the responses to companies’ IAP submissions, we have found no grounds to change our view that our April Business Plan targets for internal sewer flooding and external sewer flooding are and in the best interest of customers given a) the change in the definition to include severe weather events and b) our operating environment which is particularly affected by severe weather events.

Internal sewer flooding

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
April Business Plan (per 10,000 connections)	1.91	1.86	1.81	1.77	1.72	1.67
Draft Determination (per 10,000 connections)		1.68	1.63	1.58	1.44	1.34
August Business Plan per 10,000 connections)	1.91	1.86	1.81	1.77	1.72	1.67

External flooding

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
April Business Plan (per 10,000 connections)	28.1	27.5	26.9	26.3	25.7	25.1
Draft Determination (per 10,000 connections)		26.7	25.29	23.89	22.48	21.08
August Business Plan (per 10,000 connections)	28.1	27.5	26.9	26.3	25.7	25.1

Owing to the fact that similar factors apply to both internal and external sewer flooding in terms of the factors that affect our performance relative to other companies, we are addressing both measures in the same section here.

7.1. Background

Internal sewer flooding is one of three PCs for which Ofwat has set uniform targets across the industry, arguing that there is no clear reason why all companies should not be able to achieve the same high standards of performance. We disagree, not least because a company's operating circumstances have a significant impact on performance against this measure, particularly now that incidents relating to severe weather events are not excluded.

Ofwat has derived the target on the basis of a 'calculated upper quartile', using companies' Business Plan targets. These targets were derived following Ofwat's guidance that companies should forecast 'at least upper quartile' performance, and take into account customer views and cost benefit analysis.

Our targets were based on Ofwat's guidance, as explained in detail in our Business Plan submission. They were developed following a robust analysis of the required investment, given the features of our network and our operating area. They were challenged both by the Board and by the Customer Challenge Group to ensure they are stretching yet achievable. Given the opportunity to reconsider our targets following the IAP in April, we took the most up to date information on our performance and adjusted our targets accordingly.

Ofwat rejected our IAP targets. The reasons for rejecting them were as follows:

- For internal flooding Ofwat justify their rejection by saying that we did not provide evidence in the form of industry comparative data on severe weather. Ofwat say they "... consider that company specific adjustments are only appropriate where evidence presented is compelling and quantifiable. Whilst the company states it is

disadvantaged by more common severe weather events leading to flooding it does not provide any empirical evidence for its justification.”

- For external flooding Ofwat acknowledge that DCWW’s performance has improved in recent years but reject our argument that cross-company comparisons should be treated with caution for this new measure. Ofwat say *“The Company has not provided any additional information to justify retaining its performance commitment levels. Although it has improved in the past, the company’s poor comparative performance on external sewer flooding and its proposed levels would not change this. Therefore we will intervene to set more stretching levels”*.
- In setting flooding targets beyond that supported by the evidence of our customer willingness to pay Ofwat says that their *“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. We are satisfied that our decisions provide strong customer protection and appropriately incentivise the company”*.

7.2. Principles

We do not accept the following principles that underpin Ofwat’s targets for internal sewer flooding:

1. That it is appropriate to expect all companies by default to achieve the same absolute performance levels for supply interruptions. We accept that companies should be striving to achieve upper quartile performance on PCs in principle. But the absolute level of performance constituting the target should be adjusted to take into account differences between companies’ operating environments.
2. That the applicable targets can reliably be derived by taking the upper quartile of the forecasts of future industry upper quartile performance that companies included in their Business Plans.
3. That the common targets are a) deliverable, and b) reasonable given the financial ODIs attached.

We address each of these points in turn below.

7.3. Factors affecting performance in our operating area

Since April we have been seeking further evidence as to the way in which factors affecting internal and external sewer flooding performance impact on us more than other companies. We now have access to the new 2018 UK climate change projections (UKCP18), unavailable at the time of our original Business Plan submission. We commissioned a report from the Met Office on rainfall patterns and forecasts which forms the basis of this section. The full report is provided in Supporting Appendix 2A and 2B.

This new evidence shows that our operating area is more frequently affected by flood causing weather events compared with other companies and that this risk is increasing over time.

UKCP18, published in November 2018, updated the UKCP09 projections of changing weather patterns. It gives more detailed rainfall projections across a wider range of climate change scenarios and predicts significant sea level rises especially along the coasts of the south of England and the south and west of Wales by the end of the century. It highlights the increasing risk for the densely populated areas of South Wales that will be vulnerable to the combined effects of rapid runoff from steep sided, highly populated valleys north of Cardiff, Swansea and Newport, and high sea level rise along the Severn Estuary, an area which experiences the second highest tidal range in the world.

On the basis of these revised forecasts we commissioned the Met Office to report on the comparative impact of severe weather on our flooding performance now and in the future. Their report was delivered in July this year. The study provides evidence that our operating area has experienced the highest annual rainfall of any sewerage company in England and Wales for almost every year since 2000. The study also demonstrated a relationship between two-day rainfall totals that exceed 20mm and the occurrence of flooding in our area.

The Draft Determination makes the point that most of our sewer flooding incidents are caused by 'other causes' (mostly blockages) as opposed to 'hydraulic overload' causes. It therefore dismisses our arguments about being disproportionately affected by rainfall. However, this fails to understand the connection between blockages and rainfall. Our own analysis shows a clear relationship between rainfall and 'other cause' flooding incidents – see Figures 1 and 2 below. This is intuitively explained by the fact that many sewer blockages are partial. In relatively dry weather conditions, they do not necessarily cause a flooding incident. However, in wet weather the blockage is sufficient to cause flooding. Hence we do believe that our arguments below concerning rainfall patterns are directly relevant to our performance.

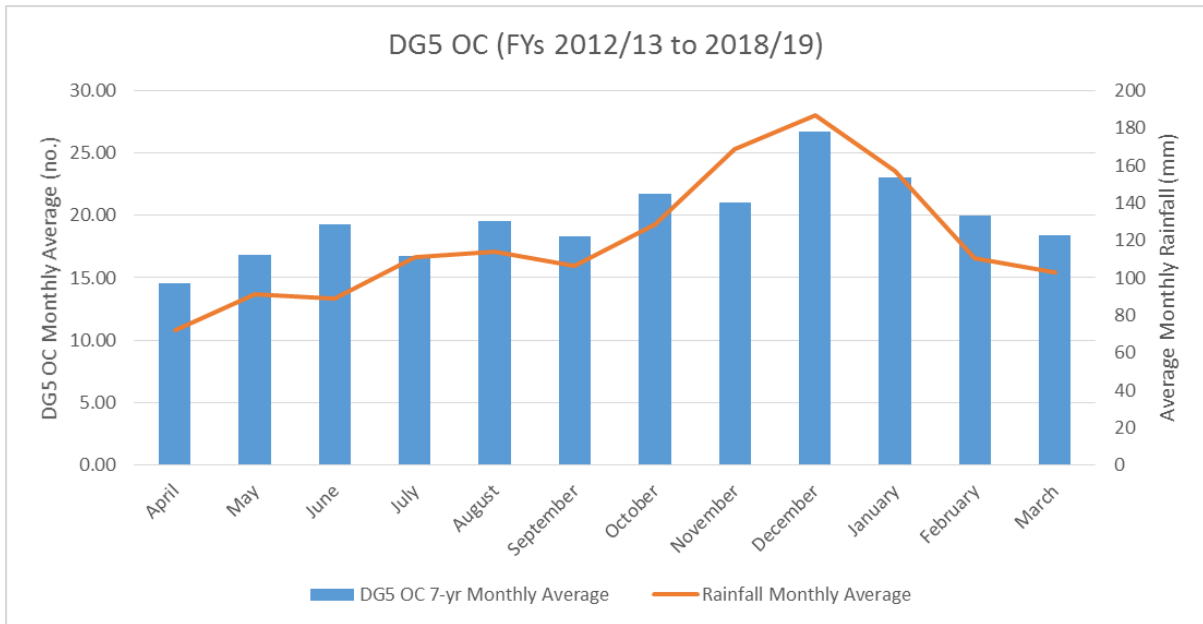


Figure 1 – Historic average monthly rainfall vs average monthly internal flooding due to other causes (financial years 2012/13 to 2018/19)

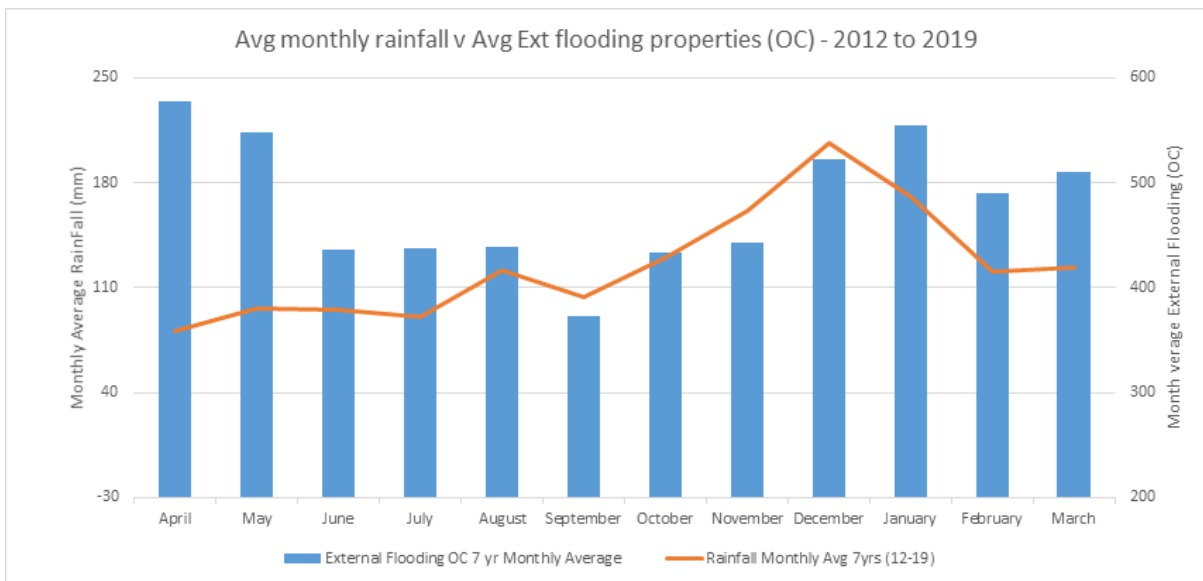


Figure 2 – Historic average monthly rainfall vs average monthly external flooding due to other causes (financial years 2012/13 to 2018/19)

The Met Office study shows that our area generally experienced the largest number of two-day rainfall events that exceed 20 and 30mm since 2000 compared with other companies. The comparative results are shown below for each water company area.

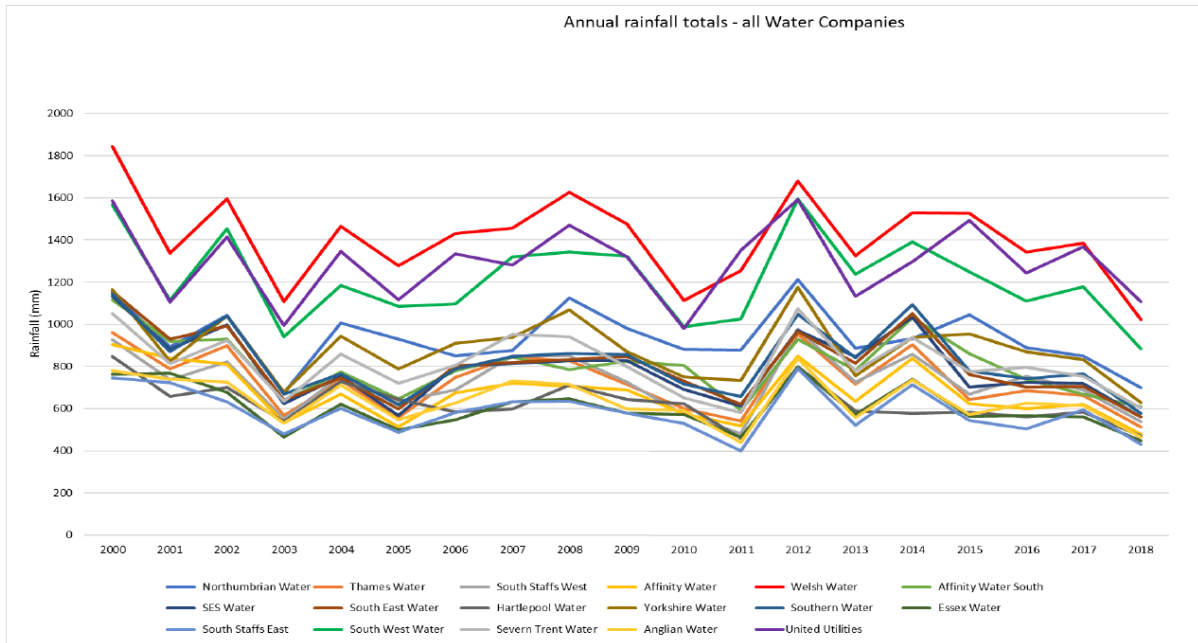


Figure 3 – Annual Rainfall for all Water Companies (2000-2018)

(Note Welsh Water’s area is shown in red)

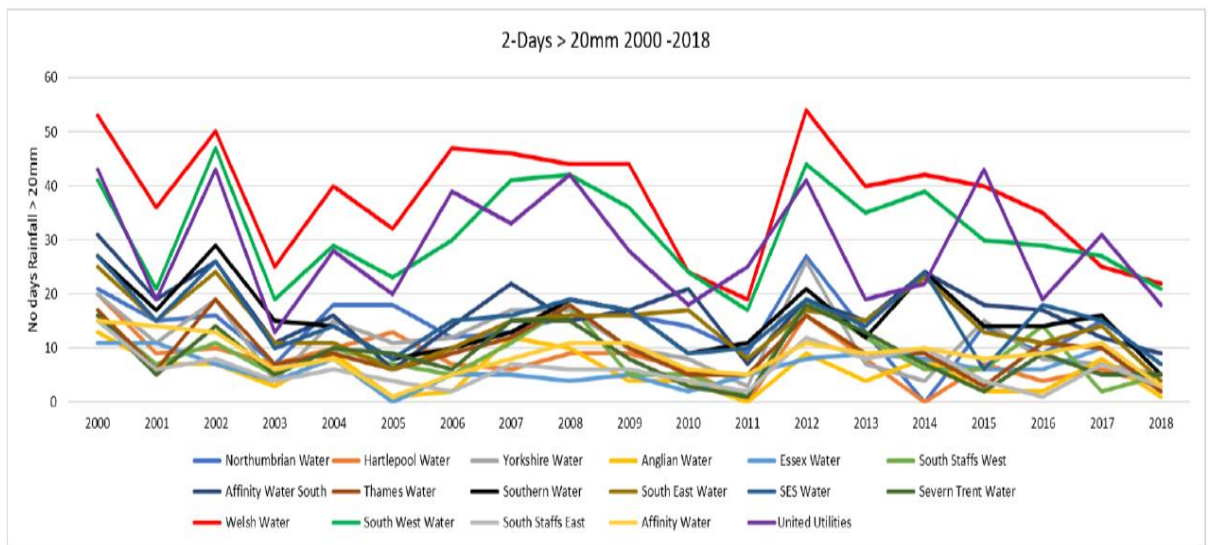


Figure 4 – No of Rainfall Events >20mm for all Water Companies (2000-2018)

(Note DCWW’s area is shown in red)

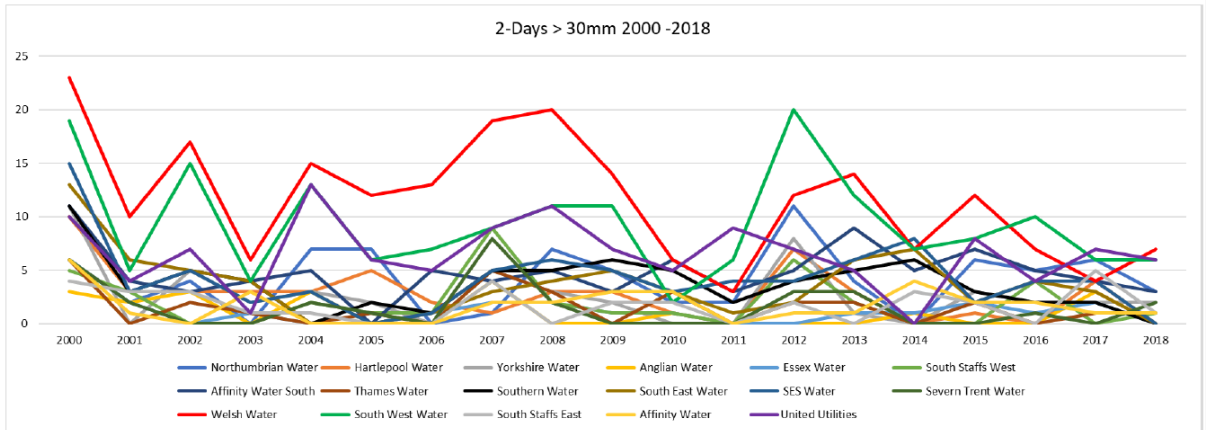


Figure 3 - No of Rainfall Events >30mm for all Water Companies (2000-2018)

(Note DCWW’s area is shown in red)

The Met Office study also shows that the likelihood of such future flooding events will increase more in western and coastal areas like Wales, particularly in the densely populated areas of South Wales and in the mountains surrounding other urban centres such as Aberystwyth and Bangor, as compared to parts of the UK that do not face the west coast.

In addition, Met Office figures suggest that the expected level of rainfall in a 1:50 year storm will be higher in Wales than other parts of the UK, and the increase in the future will also be greater in Wales. The figures below demonstrate this (note – each grid square represents an area of 25 x 25km).

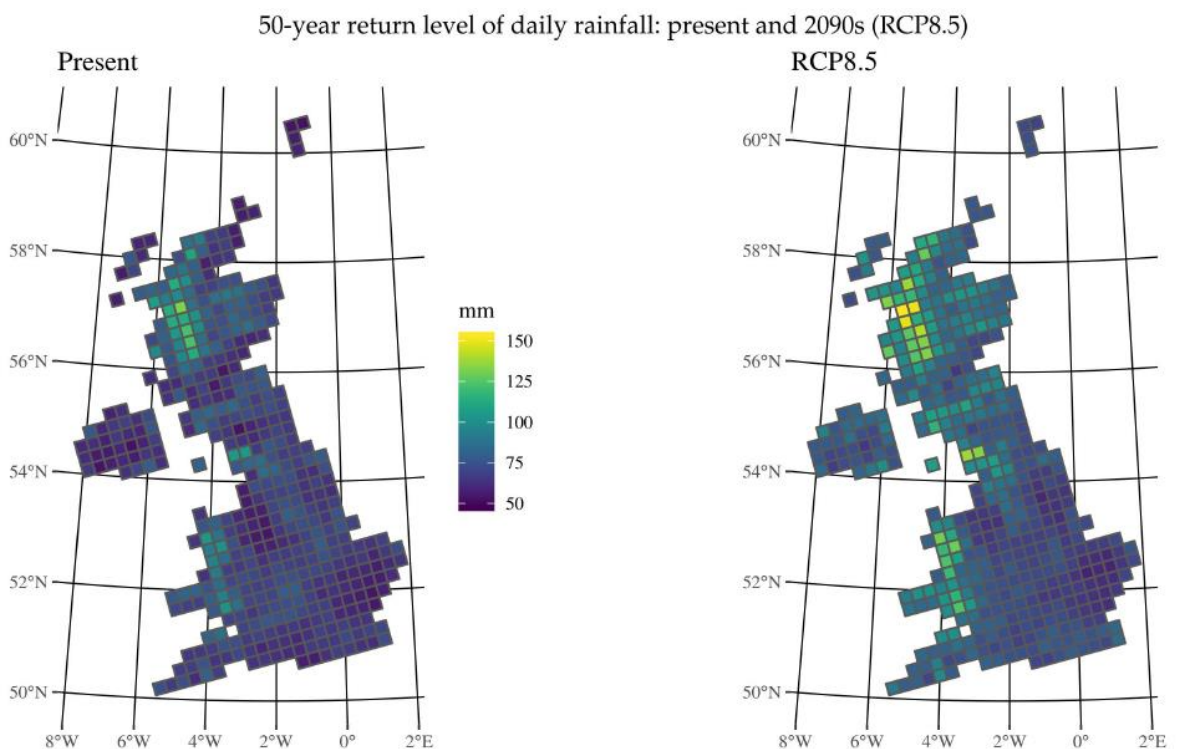


Figure 4 – predicted rainfall for a 1:50 year storm in the present and the 2090s under a high emissions scenario

Relative change in 50-year return level of daily rainfall from present to 2090s (RCP8.5)

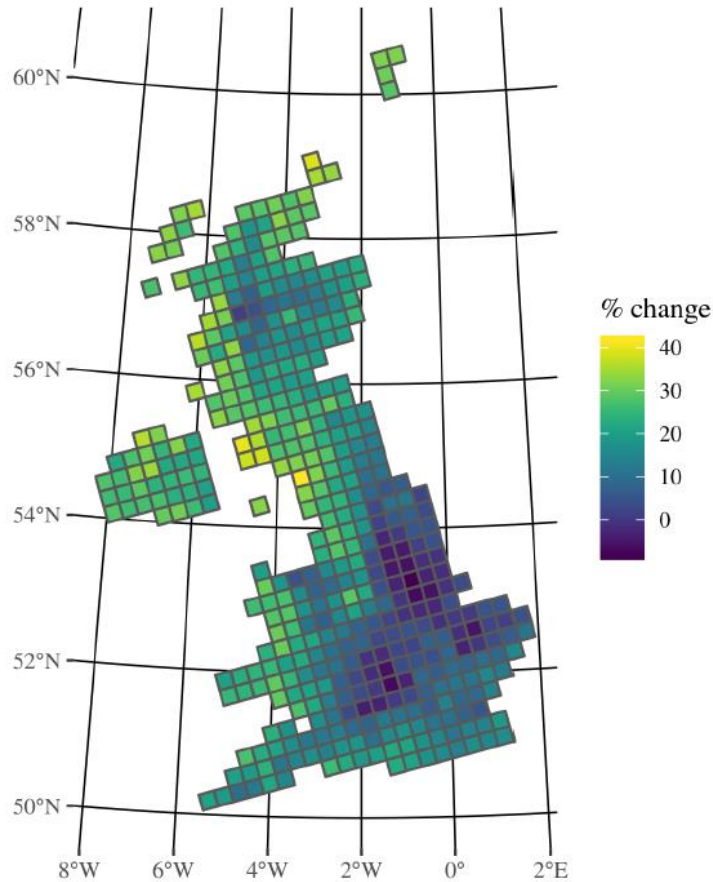


Figure 5 – predicted relative change in rainfall level for a 1:50 year storm in the present and the 2090s under a high emissions scenario

As a further point, the data demonstrate that severe rainfall events of more than 40mm daily rainfall will get more frequent across most of the UK, but their frequency will increase more in western parts of the UK than in more eastern areas. See Figure 6 below.

Relative return period of 40 mm daily rainfall in 2090s vs present day (RCP8.5)

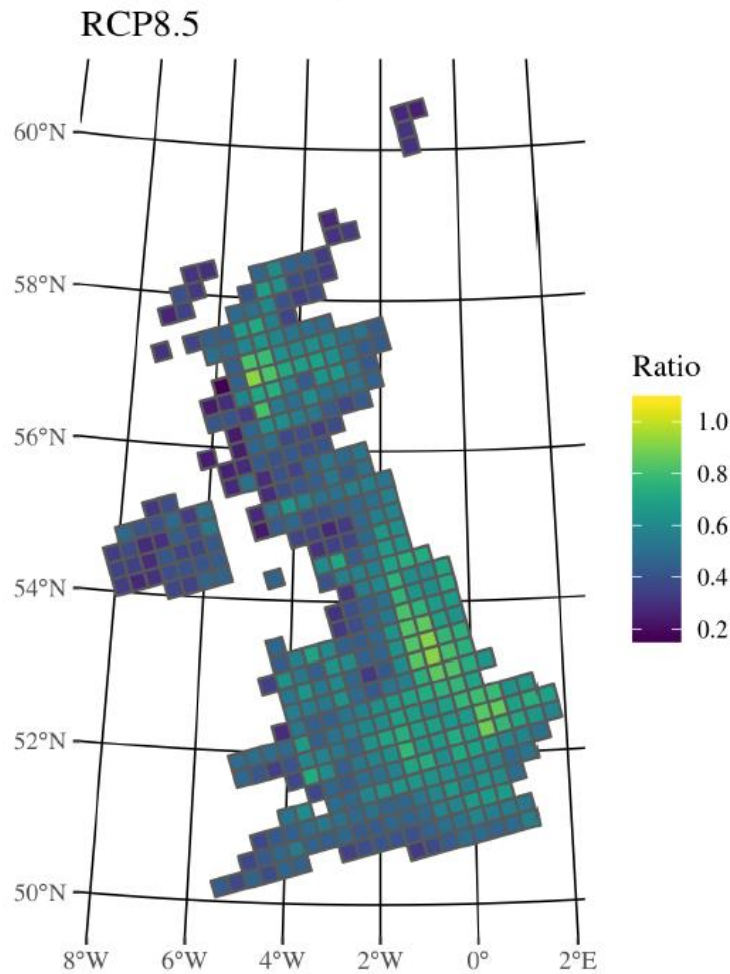


Figure 6 – predicted ratio of the return period for a 40mm rainfall event today compared with the 2090s under a high emissions scenario

Note – In Figure 6, darker colours indicate a more negative outlook, rather than a more positive one in previous Figures.

In summary, we believe that our customers are more vulnerable to flooding caused by either hydraulic overload or other causes (blockages) in comparison with the areas served by other WASCs both now and increasingly in the future. The data shows that:

- i) Heavy rainfall is a significant driver of ‘other cause’ sewer floodings (mostly blockages).
- ii) We have higher numbers of >20mm rainfall events (and indeed those above 30mm) than other companies;
- iii) The numbers of these rainfall events will increase in frequency faster in Wales than in other companies’ operating areas;
- iv) The predicted level of rainfall in particularly severe (1:50 year) storms is higher in Wales and is likely to increase more in Wales than in other parts of the UK.

7.4. Derivation of upper quartile targets

Even accepting the principle of common targets (which we do not), we believe it is invalid to use an upper quartile of the targets included in company Business Plans as the basis for that common target. Along with many other companies, our IAP response document 'B2.1.WSH.OC Performance commitments IAP Response' and 'B2.2.WSH.OC Performance Commitments and Deadbands', said that it is wrong to interpret these as *individual companies'* performance forecasts, having set guidance for companies requiring them to set stretching targets on the basis of their own forecasts of upper quartile *industry* performance. Some companies explicitly acknowledged this by setting deadbands around their target.

Ofwat responded by saying that company forecasts could be both too low or too high. But this does not address the key point. It is not that companies have simply made forecasts of their own performance. There is an asymmetry built into these forecasts because:

- Ofwat set a formal expectation that companies forecast the industry upper quartile performance and then set their targets at 'at least' this level; and
- There was an incentive mechanism for Business Plans that would reward companies for meeting their expectations and potentially penalising those that did not (through the IAP process). This 'biased' companies towards meeting Ofwat's expectations rather than determining targets that had an above average chance of being delivered. Some companies made explicit the distinction between their Business Plan targets and their expected performance, either by setting deadbands (in the case of Yorkshire for supply interruptions – setting a 06:00 minute deadband against their 02:00 'target'), or by simply stating that there was a difference between their industry upper quartile forecast and their 'anticipated performance' (in the case of UU for sewer flooding).
- Many companies set their targets on the basis of expenditure in their Business Plans that they considered to be necessary in order to achieve their targets. In most cases this expenditure has been disallowed.

Hence we would argue that the targets are much more likely to be 'too high' than 'too low'. Finally, with regard to external sewer flooding, this is a new measure, and it is clear from the work of the industry data comparability group that companies have not to date been recording incidents in the same way. This suggests that the existing figures, and company forecasts, should be treated with a high degree of caution when it comes to making comparisons, both for absolute figures and percentage reductions.

7.5. Deliverability and reasonableness of target

One of the arguments made by companies in their IAP responses was that the common targets represented an unrealistic improvement in performance for many companies. Ofwat responded by undertaking an assessment of achievability of the targets against recent industry performance. We would make the following points in response to this:

- i) Ofwat fails to take into account the projected deterioration in the measure simply resulting from factors such as urban creep, growth and climate change. According to our modelling (used to estimate the risk of flooding in a severe storm) the number of

customers at risk of flooding in a 1:50 year storm if we do not invest is estimated to increase by 11.7% over 5 years to 2023 and 24.2% over the 25 years to 2043. The actual increase depends on the flood depth used in the modelling.

When this deterioration is added to our Business Plan targets the effect is to increase the real performance improvements required so that they are close to those in the Draft Determination. This is shown in the table below.

Percentage improvement 2020-25	Not taking account of anticipated deterioration		Taking account of anticipated deterioration	
	Business Plan	DD	Business Plan	DD
Internal sewer flooding	12.5%	30%	24.2%	41.6%
External sewer flooding	10.7%	25%	22.4%	36.7%

- ii) Ofwat’s analysis ignores the reality of diminishing returns to investment that seeks to improve performance. Where in the past we may have been able to improve performance significantly and cost-efficiently by replacing sections of hydraulically overloaded sewer pipes, this now often require large-scale SUDs style schemes. This is in line with government legislation and policy in Wales, which encourages us to develop collaborative, sustainable, longer-term solutions that provide better protection for customers further into the future, as well as wider benefits for communities. These solutions do tend to take more time to implement. For example, our Greener Grangetown scheme in Cardiff took six years to deliver from its launch in 2012 to completion in 2018, but resulted in widespread benefits beyond those we could have delivered in isolation (improvements to parking, cycling, highway safety and urban regeneration). We took this approach into account in setting our AMP7 and AMP8 targets, which we believe are aligned with the best interests of customers and the environment over the long-term.
- iii) Ofwat’s analysis fails to take into account the impact of the change in the definition of the measure. As explained above, we think that the inclusion of severe weather events will impact our score disproportionately. This makes the required improvement of 30% for internal sewer flooding more difficult to achieve.

8. En3 Pollution incidents

Summary – definition

We are content with the definition but suggest adding some further information for clarification.

Summary - targets

For pollution incidents, Ofwat has set common targets across companies of 19.5 incidents per 10,000km of sewer by 2025. This differs from our Business Plan target as shown below. Following careful consideration of Ofwat’s methodology and the responses to companies’ IAP submissions, we have found no grounds to change our view that our original Business Plan targets are both stretching and achievable, and in the best interest of customers. Achieving these performance improvements would require approval of the related expenditure set out in our Business Plan):

Pollution incidents per 10,000 km of sewer	2019-20 forecast	2020-21	2021-22	2022-23	2023-24	2024-25
April Business Plan	26	25	24	23	22	21
Draft Determination		24.5	23.7	23.0	22.4	19.5
August Business Plan	26	25	24	23	22	21

8.1. Definition

We propose adding the following text to the section of the definition section “Additional detail on measurement units”:

The total number of pollution incidents (Category 1 – 3 pollution incidents in England or High and Low impact incidents in Wales) in a calendar year emanating from a discharge or escape of a contaminant from a company sewerage asset affecting the water environment. This does not include incidents impacting on air or land. Incidents affecting amenity of the water environment, e.g. Bathing Waters, are included. Pollution incidents from transferred/adopted private pumping stations or transferred/adopted private rising mains (transferred in 2016) will be included from 1st January 2021. Pollution incidents attributed to the clean water distribution system and water treatment works are not included in this total pollution incidents sewerage definition.

Sewer length refers to the length of wastewater network reported in the most recent Annual Performance Report.

We propose adding the following links to the section of the definition “Links to relevant external documents”:

<https://www.ofwat.gov.uk/wp-content/uploads/2017/12/20171129-Incidents-and-their-classification-the-Common-Incident-Classification-Scheme-CICS-23.09.16.pdf>

Incidents and their classification: the Common Incident Classification Scheme (CICS), Ref: 04_01, Issued 23/9/2016 by the Environment Agency

<https://cdn.naturalresources.wales/media/682038/gn019-incident-categorisation.pdf?mode=pad&rnd=13154106486000000>

Incident Categorisation, Ref: GN019, Issued October 2017 by Natural Resources Wales

8.2. Targets: background

This is one of three PCs for which Ofwat has set uniform targets across the industry, arguing that there is no clear reason why all companies should not be able to achieve the same high standards of performance.

It has calculated the target on the basis of a ‘calculated upper quartile’, using companies’ own Business Plan targets. These company targets were derived following Ofwat’s guidance that companies should forecast ‘at least upper quartile’ performance, and take into account customer views and cost benefit analysis (and by implication, the costs of achieving improved performance).

Our targets were based on Ofwat’s guidance, as set out in detail in our Business Plan submission. They were challenged both by the Board and by the Customer Challenge Group to ensure they are stretching yet achievable. They were developed following a robust analysis of the required investment, given the features of our network and our operating area, investment which was included in our Business Plan but disallowed by Ofwat at the Draft Determination.

Given the opportunity to reconsider our targets at the IAP stage, we reviewed the latest data on performance, and revised our target to take this into account, moving our 2025 target down from 24 to 21. We also submitted a detailed proposal as to how Ofwat could more accurately compare company performance, by taking into account not just variations in the length of sewer, but the differences in the numbers of different assets associated with pollution incidents – see below.

8.3. Principles

We do not accept the following principles that underpin the DD targets for pollution incidents:

1. That it is appropriate to expect all companies by default to achieve the same absolute performance levels for supply interruptions. We accept that companies should be striving to achieve upper quartile performance on PCs in principle. But the absolute level of performance constituting the target should be adjusted to take into account differences between companies’ operating environments.

2. That the applicable targets can reliably be derived by taking the upper quartile of the forecasts of future industry upper quartile performance that companies included in their Business Plans.
3. That the common targets are a) deliverable, and b) reasonable given the financial ODIs attached.

We address each of these points in turn below.

8.1. Factors affecting performance in our operating area

In our IAP response (see Annex) we stated the following:

Whilst we support the use of horizontal benchmarking between companies for pollution incidents, we do not accept the validity of the simplistic measure adopted by Ofwat, and specifically the use of length of sewer alone to “normalise” between companies. Pollution can occur at sewage treatment works, combined sewer overflows, rising mains, pumping stations, storm tanks and surface water outfalls, as well as from sewers. Further, the prevalence of such assets varies considerably between companies across the industry. It is therefore unfair to use the simple per-sewer-length measure for horizontal benchmarking, because it will be disadvantageous for some and advantageous for others.

In response Ofwat stated that “our approach to measuring this performance commitment is aligned to the Environment Agency and Natural Resources Wales measures on the Environmental Performance Assessment and as such we consider it suitable. We understand that the EPA is currently being reviewed but is unlikely to change to a multi-asset approach, as such we consider the current definition suitable.”

We accept that the measure, normalised by km of sewers, is appropriate for use for public reporting purposes. However, this does not address the point that for the purposes of setting fair and stretching targets *across companies*, and deriving an upper quartile level of performance as a benchmark, using only length of sewer to set normalise performance commitments is seriously flawed. There are quantifiable factors, using known data that could be used to compare performance on a more robust basis to reveal underlying ‘true’ performance. We developed a detailed methodology as to how company performance could be compared, taking into account the numbers of treatment works, pumping stations and other relevant assets, as well as length of sewer. This was submitted alongside our IAP response, and received the support of the NRW as an approach. It is resubmitted here as Supporting Appendix 3.

The two tables below are excerpts from the report. The first shows the difference between the number of incidents for each company in 2017, compared to the UQ number of incidents on a ‘per km of sewer’ basis. The second shows the difference between the number of incidents for each company in 2017, compared to the UQ number of incidents on the basis of the more accurate multi-asset normalised basis.

Industry Performance Score- Current Approach

	Actual 2017 Incidents	UQ Incidents Current Approach	Difference
Northumbrian	51	71	140%
United Utilities	171	215	126%
Wessex	83	83	100%
Southern	123	110	89%
Dŵr Cymru	102	86	84%
Anglian	223	182	81%
Thames	303	241	80%
Severn Trent	285	223	78%
Yorkshire	227	124	55%
South West	167	48	29%

Industry Performance Score- Proposed Approach

	Actual Incidents 2017	UQ Incidents Proposed Approach	Difference
Northumbrian	51	71	140%
Dŵr Cymru	102	114	112%
Wessex	83	87	105%
Anglian	223	223	100%
United Utilities	171	162	95%
Southern	123	105	85%
Severn Trent	285	218	76%
Thames	303	222	73%
Yorkshire	227	125	55%
South West	167	69	41%

We continue to believe that such an exercise could and should be conducted to derive upper quartile targets for all companies. This approach has received the support of the NRW.

8.2. Derivation of upper quartile targets

Even accepting the principle of common targets (which we do not), we believe it is invalid to use an upper quartile of the targets included in company Business Plans as the basis for that common target. Along with many other companies, our IAP response document 'B2.1.WSH.OC Performance commitments IAP Response' and 'B2.2.WSH.OC Performance Commitments and Deadbands', said that it is wrong to interpret these as *individual companies'* performance forecasts, having set guidance for companies requiring them to set stretching targets on the basis of their own forecasts of upper quartile *industry* performance. Some companies explicitly acknowledged this by setting deadbands around their target.

Ofwat responded by saying that company forecasts could be both too low or too high. But this does not address the key point. It is not that companies have simply made forecasts of their own performance. There is an asymmetry built into these forecasts because:

- Ofwat set a formal expectation that companies forecast the industry upper quartile performance and then set their targets at ‘at least’ this level; and
- There was an incentive mechanism for Business Plans that would reward companies for meeting their expectations and potentially penalising those that did not (through the IAP process). This ‘biased’ companies towards meeting Ofwat’s expectations rather than determining targets that had an above average chance of being delivered. Some companies made explicit the distinction between their Business Plan targets and their expected performance, either by setting deadbands (in the case of Yorkshire for supply interruptions – setting a 06:00 minute deadband against their 02:00 ‘target’), or by simply stating that there was a difference between their industry upper quartile forecast and their ‘anticipated performance’ (in the case of UU for sewer flooding).
- Many companies set their targets on the basis of expenditure in their Business Plans that they considered to be necessary in order to achieve their targets. In most cases this expenditure has been disallowed.

Hence we would argue that the targets are much more likely to be ‘too high’ than ‘too low’.

8.3. Deliverability and reasonableness of targets

One of the arguments made by companies in their IAP responses was that the common target for pollution incidents represented an unrealistic improvement in performance for many companies. Ofwat responded by undertaking an assessment of achievability of the targets against recent industry performance. We would make the following points in response to this:

- i) The point made by many companies was less that the proposed Ofwat targets were undeliverable, but that the targets proposed by some companies on which the upper quartile targets were based were themselves unrealistic.
- ii) Ofwat’s analysis ignores the reality of diminishing returns to investment to improve performance. For pollution incidents, up until now we have been avoid potential pollutions through improved practices and responding more effectively to pollution incidents when they arise. Moving forwards, in order to reduce incidents further, we will need to put in place more complex and costly monitoring of our assets as well as investment schemes to upgrade assets where necessary.
- iii) Ofwat’s achievability assessment looks across the industry and not at individual companies.

In the case of pollution incidents, we agree that it is right to target a significant reduction in incidents. But we believe that the target should be set on the basis of the asset data available to enable an accurate comparison across companies based on a more sophisticated modelling approach.

9. Rt4 Total complaints

Summary – definitions

We agree that the definition should be aligned with CC Water’s definition, but it should be updated from the DD to reflect the new CC Water definition that has been introduced for 2019-20, which excludes unwanted contacts.

Summary – targets

We do not believe that the DD target has been derived on a reasonable basis. It needs to be adjusted to account for the fact that WaSCs provide two services and are therefore likely to attract more contacts and complaint per connection than WoCs, and also to exclude unwanted contacts in line with CC Water’s proposed revised definition.

9.1. Definition

Our Business plan definition included written and telephone complaints from household customers per 10,000 connections, but not complaints received via social media and live chat.

In the DD, Ofwat revised the definition to reflect the 2018-19 CCWater definition, which includes unwanted contacts and written complaints, and also includes complaints received via social media and chase contacts (customers calling back to check on the status of an issue, for example).

CC Water’s definition has changed for the 2019-20 year to exclude unwanted contacts (most of which are in fact not ‘complaints’, but more accurately described as any telephone contact not invited by us), but retain complaints received via social media and live chat. If this is not done, then the number of minor “unwanted contacts” will swamp the level of genuine “complaints” from customers, rendering the performance commitment largely meaningless.

We agree with Ofwat that our definition should be aligned with CC Water’s definition, not least because to be reporting against two different measures would be operationally problematic. To be aligned with the new CC Water definition, we propose to revise the definition to exclude ‘unwanted contacts’.

9.2. Targets

The DD sets the performance commitment level on the basis of an upper quartile assessment of the performance level between 2014-15 and 2017-18, with a 10% annual frontier shift.

Ofwat’s assessment also appears to have used companies’ number of complaints per connected property across both WaSCs and WOCs on the same basis. We do not believe this is valid, as WaSCs are providers of two services, whereas WOCs only provide one service. Therefore it is reasonable to expect WaSCs to attract more complaints than WOCs per connected property, as it could receive complaint in relation to a sewer flooding incident as well as a supply interruption.

Therefore we believe that when making an industry comparison Ofwat should either:

- Determine the upper quartile performance for WaSCs based on the WaSCs performance (and for WOCs based on the WOCs performance; or
- Normalise the number of complaints by the unique number of services before determining the upper quartile level of performance. The value can then be renormalized to the number of connected properties.

Based on the new CC Water definition, we have challenged ourselves and set a stretching target as in the table below. This is based on our current performance for complaints (excluding unwanted contacts), applying a 10% improvement per year, and adding an estimate for social media contacts.

Complaints per 10,000 connections	2020/21	2021/22	2022/23	2023/24	2024/25
Proposed targets	199	178	160	143	128

We then performed a cross check to ensure this is truly stretching relative to the rest of the industry, consistent with Ofwat’s approach in the DD but taking into account the point above about single versus dual customers.

To do so we took the upper quartile of the performance from 2014-15 to 2017-18 industry performance, and adjusted for the number of services provided under the current definition (including unwanted contacts), extrapolating forward with a frontier shift.

The upper quartile level of performance for 2014-15 to 2017-18 for unwanted contacts and written complaints is 393 complaints per service per 10,000 connections. Given our ratio of single to dual service customers, this is equivalent to 728 complaints per 10,000 connections on average. We applied a 10% frontier shift per year for 2020/21 to 2024/25 which reduces the number to 655 complaints per 10,000 connections. We adjust the data to remove an estimate of unwanted contacts based on the most recent year’s data, to align with the proposed new CC Water definition. The proportion of contacts excluded from the definition is 66%, reflecting the proportion of unwanted contacts in the most recent year’s data.

The table below shows the resulting ‘cross check’ comparative performance level, and confirms that our proposed target levels go beyond this level.

	2020/21	2021/22	2022/23	2023/24	2024/25
“Cross check” stretching target	221	199	179	161	145
Proposed targets	199	178	160	143	128

10. Rt5 Worst served customers (water)

Summary – definition

We note the change made to the definition in the DD, and highlight that this will have an impact on our targets.

Summary – target

We propose either to revert to our original definition, or otherwise revise the targets. We will need more time to robustly calculate the applicable target given the DD definition and therefore we have include this as TBC in table OC2.1.

10.1. Representations on definition

We have noticed that one of our criteria (point 2) for identifying a property as worst served has been altered (see table below). Our original definition was carefully designed to capture a more focused number of truly ‘worst served’ customers. But we assume that this change has been made for the sake of ease of understanding. Clearly the change to the definition will impact on the number of customers counted in the measure. We estimate that it will be of the order of a doubling of the number, but we will need more time to fully work through the impact on our current result and to robustly derive revised AMP7 targets.

We would welcome engagement with Ofwat on the detailed definition of this measure. In the meantime we will progress work required to estimate with accuracy the impact of the revised definition on our targets for AMP7.

	Original definition	Ofwat DD
Detailed definition of performance measure	<p>This measure identifies those properties (household or non-household) who consistently receive a poor level of service.</p> <p>The measure consists of three elements:</p> <ol style="list-style-type: none"> Properties that have had their water supply repeatedly interrupted over a 2 year period. Those properties who have had their water supply interrupted at least once in year one and experienced more than two interruptions in year two. Properties that have had their water supply repeatedly interrupted over a 3 year period. Those properties who have had 	<p>This measure identifies those properties (household or non-household) who consistently receive a poor level of service. The measure consists of three elements:</p> <ol style="list-style-type: none"> Properties that have had their water supply repeatedly interrupted over a 2 year period. Those properties who have had their water supply interrupted at least once in year one and experienced more than two interruptions in year two. Properties that have had their water supply repeatedly interrupted over a 3 year period. Those properties who have had their water supply interrupted at least once in year one, year two and year three.

	<p>their water supply interrupted at least once in year one, experienced up to two interruptions in year two and experienced two or more interruptions in year three.</p> <p>3. Properties that receive low pressure below the agreed level of service for 3 years or more: Those properties captured on the Low Pressure longstanding register.</p>	<p>3. Properties that receive low pressure below the agreed level of service for 3 years or more: Those properties captured on the Low Pressure longstanding register.</p>
--	---	---

11. Rt6 Worst served customers (wastewater)

Summary – definition

We make representations on some of the details of the measure as included in our Outcomes performance commitment appendix that we believe are unjustified.

Summary – target

We accept the intervention on the targets for this measure.

11.1. Representations on definition

We propose minor changes to two detailed elements of the definitions for this measure.

i) Modelling requirements

Draft Determination

The PR19 Draft Determination has included the following clause in relation to modelling and the ‘worst-served customers’ measure:

The modelling assumptions and standards used for this measure will be at least compliant with the latest CIWEM Urban Drainage Group (UDG) Code of Practice for the Hydraulic Modelling of Urban Drainage Systems and for the representation of antecedent conditions, the CIWEM UDG (2016) Rainfall Guide. Model runs will be at least 1, 5, 10, 20, 30 and 50 years and include relevant durations including at least 60 and 1440 minutes. Runs will be completed for both summer and winter scenario.

This is a revision to the text in our PR19 definition. As written, it implies that modelling to this standard is necessary for any downgrading of flood-risk. The specification for model runs are to a level that is not required for this measure.

Our response

The modelling requirements as set in the DD are broadly consistent with our new specification for hydraulic modelling. However, hydraulic modelling is only partly relevant to this specific measure. Hydraulic modelling would not be applicable where the flood risk is due to 'other causes'.

In addition, this measure is limited to the highest levels of flood-risk only. Whilst model runs in higher return periods (e.g. 20, 30 years) would typically be used in traditional scheme design, they would not be required to verify hydraulic protection above a 5-year standard (which would be sufficient to downgrade risk below worst-served level). We will undertake hydraulic modelling in standard design, when a physical scheme is required. But the definition as written requires us to undertake hydraulic modelling even when it would be unnecessary and a waste of customers' money.

Proposal

We propose that the existing Draft Determination text is amended to:

The modelling assumptions and standards used for this measure will be in accordance with the latest Dŵr Cymru Modelling Specification. This is based on best practice, referencing industry standard guidance. The requirement for modelling, its complexity and the subsequent level of verification will be determined by the cause of flooding, level of risk and nature of intervention.

- ii) Requirements for downgrading of risk

Draft Determination

The PR19 Draft Determination includes the following clause in relation to downgrading of flood-risk and the removal of customers from the 'worst served' register:

A downgrading of risk can only be completed once a physical scheme has been successfully delivered and commissioned that addresses the underlying problem and significantly mitigates the impact on the property.

Our response

Requiring completion of a physical scheme before downgrading risk is inconsistent with our methodology for the measure, which has been reviewed and agreed by our Reporter. Our target profile includes allowances for removal through better information (e.g. investigations proving the property is not at risk of sewer flooding) and timing out (if the property has not flooded for 11 years). If downgrading of risk can only be achieved through physical schemes, this constrains our management of the measure and risks incentivising the delivery of nominal schemes that are not required in order to achieve targets.

Proposal

We propose that the relevant text is amended to:

A downgrading of risk can only be completed once:

- *A physical scheme has been successfully delivered and commissioned that addresses the underlying problem or significantly mitigates the impact on the property*

- *Investigations have been completed proving that the property is not at risk of sewer flooding; or*
- *The property has not flooded for 11 years.*

The mechanisms above are consistent with our policy document and accompanying methodology statement covering this measure, both of which have been reviewed and agreed with our Reporter, and are available on request. We believe these are consistent with previous Ofwat guidance, both on the removal of flood-risk status through 'better information', and on downgrading of risk if flooding has not occurred for a certain period. A physical scheme may not be required, for example if subsequent investigations confirm flooding resulted from highway drainage, culverted watercourses or private infrastructure. Including a provision for 'timing out' of risk would also provide consistency with the Draft Determination definition for the Rt5 measure relating to 'worst-served customers for water service'.

12. B1 Change in average household bill

Summary – definition

We make representations on some of the details of the measure as included in our Outcomes performance commitment appendix.

Summary – target

We accept the intervention on the targets for this measure.

12.1. Representation on definition

We have reviewed the definition provided and would like to propose some changes to the wording to provide greater clarity as shown below.

	Ofwat DD	Our proposed revision
Detailed definition of performance measure	<p>The percentage increase in the average household bill from the bill in 2019-20.</p> <p>The company has committed to keeping bill increases below inflation as measured by the CPIH (consumer price index including owner occupiers' housing costs). This will be measured as the average inflation over the reporting year.</p>	<p>The percentage increase in the average household bill from the bill in 2019-20.</p> <p>The company has committed to keeping bill increases below inflation as measured by the CPIH (consumer price index including owner occupiers' housing costs). This will be measured as the average inflation over the reporting year.</p>
Additional detail on measurement units	None	<p>The average household bill numbers will be the figures calculated at the time the scheme of changes are published, that is, in the February preceding the relevant charging year.</p> <p>The inflation measure is the change in CPIH from November 2018 (106.9) to the November CPIH used to set the charges in the average household bill calculation.</p>

13. B12 Vulnerable customers on social tariffs

Summary – definition

We clarify the applicable definition below.

Summary – target

We propose to set an appropriate AMP7 target once the outcome of the Final Determination is known.

13.1. Definition of measure and target

In the DD Ofwat states that “the company’s proposed performance levels within App1 do not reconcile with the number of customers receiving social tariffs and number of customers receiving Water Sure and WaterSure Plus in App4 (Lines 12 and 15). We are intervening to use the sum of these two lines in App4 as the performance levels for this performance commitment”.

We can explain the fact that the two things do not reconcile, and propose to revert to our original Business Plan approach as the basis for the PC targets.

In App4 Line 12 is:

- The total number of customers who receive bill discounts through a company run social tariff scheme (mainly **Help U**, plus Water Collect and Water Direct), less the number of overlapping WaterSure Wales customers (see line 15) and customers who benefit from hardship funds (our Customer Assistance Fund – covered in Line 17).
- Duplicates arising from the small number of customers who receive more than one discount are removed.
- The above figure is calculated on an annual average basis, to be aligned with the calculation of the metrics.

App4 Line 15 is:

- The number of customers on the **WaterSure Wales** tariff calculated on an annual average basis.
- The values have changed from WSH-IAP-AV-005 for all years as the annual average number has been used for the business plan tables to be aligned with the calculation of the metrics.

The reasons why the App1 target does not reconcile with Lines 12 and 15 of App4 is therefore explained by the fact that the App1 target (in accordance with our PC measure) only includes HelpU and WaterSureWales (social tariffs), not including customers who are on Water Collect or Water Direct (assistance schemes) unless they also benefit from a social tariff. Hence our proposed definition avoids duplication.

Please note that:

- i) The number of customers on social tariffs will fluctuate day to day as people are accepted onto the schemes or move out of the area. We therefore believe it is important to clearly specify the point in time when the measure will be reported, rather than counting the number “who are benefitting or have benefitted” over the course of the year. We propose to report the number of customers on social tariffs as at 31 March each year.
- ii) We also wish to ensure it is clear that any new social tariff schemes introduced during the period should be included. We therefore propose to include the following wording: *“Any new social tariff scheme (that provide alternatives to standard tariffs for a subset of customers on affordability grounds) introduced during the period will also be included.”*

A proposal for the revised definition in Ofwat’s format is provided below.

Vulnerable customers on social tariffs	Draft Determination	Proposal
Detailed definition of performance measure	The number of customers who are benefiting or have benefitted from the company’s social tariffs in the reporting year. This includes both the HelpU social tariff scheme and the WaterSure scheme. For the purposes of this performance commitment, each household will only be counted once.	The number of customers on social assistance tariffs as at 31 March each year. This includes both the HelpU social tariff scheme and the WaterSure scheme, and any new social tariff schemes that may be introduced. For the purposes of this performance commitment, each household will only be counted once. For the avoidance of doubt, the number excludes Water Collect, Customer Assistance Fund and Water Direct customers unless they are also on a social tariff.

13.2. Targets

As explained elsewhere (see WSH.DD.RR.1) the Draft Determination is not financeable for Welsh Water and so does not enable us to commit to the level of foregone revenues to fund social tariff growth that we had envisaged in our original Business Plan. In these circumstances, the final Business Plan target can only be set once the Final Determination has been received and the financeability of the business has been assessed.

14. FT4 Surface water removed from sewers and En9 CSO storage systems

Summary – definitions

These two measures are linked and therefore are best dealt with in a single section here.

We accept the new measure En9 for CSO Storage.

We make representations on the changes to the definition of Ft4 (surface water removed from sewers) made by Ofwat in the Draft Determination. We propose to remove the exclusion of NEP delivery requirements from this measure, accepting that there is a risk of 'double penalties', and retain the original total delivery target. However we propose to amend the profile of the delivery.

Summary - targets

En9: The profile of the targets does not match the design, development and delivery of the programme as agreed with NRW. Hence we are proposing a change to the profile of the targets.

Ft4: We propose to change the flat profile proposed in the DD to a profile that reflects our latest view on delivery.

14.1. Draft Determination decisions

For CSO improvement schemes listed in the NEP under 7CDC0435 (schemes identified as a result of the new storm overflow assessment framework), we set out in our Business Plan how we intend to use a combination of approaches including surface water removal in order to deliver our programme.

Ofwat have acknowledged this but introduced a new measure of CSO storage systems that will measure the projects delivered in terms of "equivalent storage volume" in m3 (En9). This should be "equal to the total volume of storage commissioned as part of the conventional CSO scheme or an equivalent volume that would have been necessary should an alternative approach not have been followed". Ofwat also say that such "alternative approaches could include working with a range of stakeholders in the catchment to improve surface water management" and that the new performance commitment is "designed to return allowed costs to customers based on non-delivery". Ofwat have also set a delivery profile for this performance commitment based on delivering about 20% of the AMP7 target in each year of the AMP programme.

The DD also altered the definition of Ft4 (surface water removed) from a measure based on 'roof top equivalents' to the volume removed based on the impermeable area disconnected and the seasonally adjusted rainfall rate for that area. It also makes the PC an annual rather than cumulative measure. Finally it excludes schemes to deliver requirements under the NEP, "including any alternative schemes delivered for the CSO storage En9." The target does not appear to have been adjusted to reflect this. Ofwat states that "we have not intend[ed] to change the stretch, collars or caps".

14.2. Our response

En9 – CSO Storage

We acknowledge that our CSO improvement schemes listed under 7CDC0435 (schemes identified as a result of the new storm overflow assessment framework) are uncertain in terms of actual outputs and that customers should be protected from non-delivery of projects if the eventual agreed programme is less than that predicted at the time of the Business Plan submission. Consequently we accept the new measure.

However, the delivery profile included in the Draft Determination does not match the agreement reached with NRW on how we will develop and deliver our AMP7 programme. As we set out in our IAP response we expect to agree a prioritised list of sites based on the storm overflow assessment framework with NRW. We will then develop the actual solutions designs over the first 2-3 years of the AMP with delivery of the actual schemes in the last two years of the AMP. Consequently we propose to alter the delivery profile for the measure to that shown below.

We also believe it is appropriate that the (penalty only) ODI is end-of-period on a cumulative basis.

En9 CSO Storage	Unit	Company forecast	Committed Performance Levels (cumulative)				
		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Performance Commitment Level	Cubic Metres	n/a	0	0	0	13,500	27,049

Ft4 – Surface water removed

We are content with the change in the unit of the measure, and the change from a cumulative to an annual measure. However we do not accept that excluding schemes delivered under the NEP from this measure, including those delivered under 7CDC0435, is appropriate. We appreciate that Ofwat’s rationale for making this change may have been to avoid ‘double counting’ in our PCs of the delivery of NEP schemes, and avoid the risk of a ‘double penalty’ should we fail to deliver relevant NEP schemes.

However, measuring the total amount of surface water removed is an important measure for us and our stakeholders in its own right, both as a measure of how we are adapting to climate change and implementing sustainable and environmentally friendly solutions, and as a measure of progress towards our long-term Welsh Water 2050 goals. We are willing to accept the implications in terms of potential ‘double penalties’ (there are no financial outperformance payments) on Ft4 and En9 in order to retain the measure as originally conceived. Therefore we wish to remove the exclusion.

This means that there is no need to change the target in terms of the m3 ‘delivered’ over the AMP. However, we do wish to change the profile of the delivery, to align the delivery to the CSO storage programme referenced above, given that a significant proportion of the programme will consist of the delivery of these NEP requirements. The resulting PC target is presented below, along with the equivalent cap and collar.

Revised Ft4 profile including NEP schemes	2020-21	2021-22	2022-23	2023-24	2024-25
Delivered through NEP (m3/yr)	0	0	0	720,250	720,250
Delivered through other drivers (m3/yr)	141,900	141,900	141,900	141,900	141,900
Total delivery profile and PC target (m3/yr)	141,900	141,900	141,900	862,150	862,150
Underperformance Collar (m3/yr)	117,810	117,810	117,810	715,785	715,785
Outperformance Cap (m3/yr)	165,990	165,990	165,990	1,008,515	1,008,515

If the proposal to remove the exclusion is not accepted, then the PC target would need to be reduced significantly to reflect the proportion of surface water removed through the delivery of NEP schemes in AMP7. The difficulty is that at this point the proportion that will be delivered through NEP is unknown and hard to predict with any precision. For the avoidance of doubt, this is not our preferred outcome.

15. Ft 5-9 Asset resilience

Summary – definition

We make representations on some of the details of the measures included in our Outcomes performance commitment appendix.

Summary – target

We have identified an error in our calculation of our Business Plan target for one of the asset resilience measures, and propose a new target to correct for this.

Ft7 - Asset Resilience (water network+ below ground)

	2020/21	2021/22	2022/23	2023/24	2024/25
April Business Plan targets	47%	47%	50%	53%	56%
Draft Determination	47%	47%	50%	53%	56%
August Business Plan	68%	68%	70%	71%	73%

For the other measures, we are content with the commitment levels on the assumption that the changes to definition can be agreed.

15.1. Access scoring criteria

We note the intervention that has been made across four of the five measures in relation to the access element of the resilience scorecard.

Our definition	DD definition
<p>100% - Access by a normal vehicle is possible in all conditions</p> <p>A reduction in % score is applied on a sliding scale, dependent on type of vehicle required and/or conditions when access can be achieved.</p>	<p>100% - Plans in place to have all necessary access within 1 hour within all conditions (i.e. severe snow, flood etc.)</p> <p>50% Plans in place to have all necessary access within 1 hour in most conditions</p> <p>0% - Other</p>

We acknowledge that our original definition left room for judgement in its application, but we cannot accept the amendment proposed by Ofwat. This element has been scored by considering the number of days in the year on which sites can be accessed. Due to the rural nature of our operating area there are many locations that cannot be accessed within an hour from the normal bases of our operators, especially our reservoir assets. We have assessed the change in our baseline score that would result in adopting this definition. Many of our sites would drop from 100% to 0% access resilience with Ofwat’s proposed definition. The figures below show the impact on the overall measures:

	Start AMP7 score in BP	Revised start AMP7 score
Reservoirs	92.2	78.8
Water (above ground)	83.5	81.2

Water (below ground)	68.0	66.5
Waste (above ground)	77.7	71.3
Waste (below ground)	Definition not altered	

With the proposed definition there would be no way in which we could reach our long-term aspiration of meeting 100% resilience against this scoring methodology, without spending resources unnecessarily on relocating operators, which would be highly inefficient. We have set a long term aspiration to meet 100% resilience on all critical assets so it is important that our scoring criteria is aligned realistically with this aspiration.

We would like to have consistency between the two network measures so would propose that the water (below ground) access resilience criteria is reset to our original proposal. This recognises that there is a significant difference between accessing pipes and accessing assets such as treatment works.

We propose the following scoring criteria for the following measures: Reservoirs, Water (above ground) and Waste (above ground).

100% - Plans in place to have all necessary access within 4 hours in all conditions (i.e. severe snow, flood etc.)
95% - Access is restricted in severe weather so can take between 4-24 hours to access on occasion
50% - Problems with the access route (e.g. road subsidence or disputes with a landowner) that can disrupt regular access.

We would like to propose the following wording for the Reservoirs measure.

100% - Plans in place to have all necessary access within 12 hours in all conditions (i.e. severe snow, flood etc.)
95% - Access is restricted in severe weather so can take more than 12 hours to access on occasion.
50% - Problems with the access route (e.g. road subsidence or disputes with a landowner) that can disrupt regular access.

15.2. Water (below ground) scorecard

We have discovered an error in the spreadsheet used to calculate the baseline for the Water (below ground) resilience targets in the Business Plan submission. This means that we need to rebaseline our performance commitment. Our revised (higher) commitment levels are as follows:

2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
68%	68%	68%	70%	71%	73%

15.3. Minor comments relating to definitions

Measure	Section	Comment
Ft5 Asset resilience (reservoirs)	Detailed definition of performance measure	In all but one of the definitions the statement: Critical assets are reviewed on an annual basis and added/removed from the list if they meet/do not meet the criteria. We would like to request that this is also included in the definition relating to reservoirs.
Ft8 Asset resilience (waste network + above ground)	Detailed definition of performance measure	The SEMD criteria is missing the statement 0% is applied if the site fails to meet any of these criteria.
Ft9 Asset resilience (waste network + below ground)	Detailed definition of performance measure	The criteria for control resilience is missing from the table.

16.Sv4 Business customer satisfaction

Summary – definition

We believe some text needs to be removed to address an inconsistency.

Summary – target

Given that Ofwat has not accepted the application of a deadband on this measure, we wish to revert to our original Business Plan target of 4.4 on this measure.

16.1. Definition

The definition included in the DD includes the text “This score is then divided by five to convert to a satisfaction score multiplied by 100 and reported to the nearest whole percentage.” However, the unit of measure is “Numeric sore out of five to one decimal place.”

We propose that the text is removed as shown below.

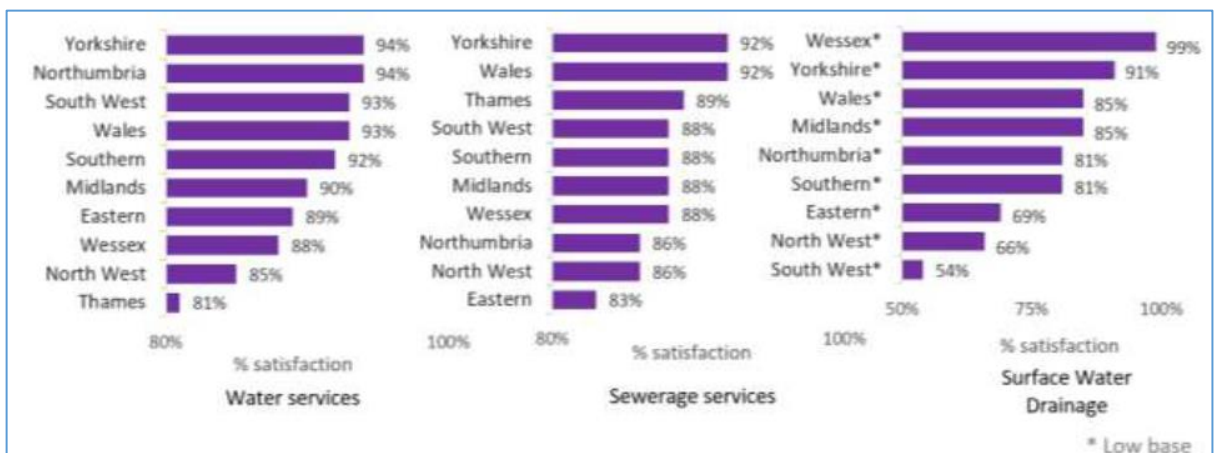
	Draft determination	Proposed definition
Detailed definition of performance measure	<p>This performance commitment measures the average customer score out of five from four quarterly business customer satisfaction surveys. The company will undertake a survey of 250 business customers per quarter (1,000 in total per year). It will survey a sample from all customers, not just those who have contacted the company.</p> <p>The satisfaction score is calculated as follows:</p> <ul style="list-style-type: none"> • A score of five for a very satisfied score down to a score of one for a very dissatisfied score. • the average of these scores is the satisfaction score, which is calculated based on the results from the four surveys in the reporting year. Any customer which states don't know or refuses to answer are not included in the calculation of the 	<p>This performance commitment measures the average customer score out of five from four quarterly business customer satisfaction surveys. The company will undertake a survey of 250 business customers per quarter (1,000 in total per year). It will survey a sample from all customers, not just those who have contacted the company.</p> <p>The satisfaction score is calculated as follows:</p> <ul style="list-style-type: none"> • a score of five for a very satisfied score down to a score of one for a very dissatisfied score. • the average of these scores is the satisfaction score, which is calculated based on the results from the four surveys in the reporting year. Any customer which states don't know or refuses to answer are not included in

	<p>score. This score is then divided by five to convert to a satisfaction score multiplied by 100 and reported to the nearest whole percentage.</p> <p>The survey should be planned and carried out following social research best practice (e.g. any applicable sections of a relevant code such as that published by the Market Research Society).</p>	<p>the calculation of the score.</p> <p>The survey should be planned and carried out following social research best practice (e.g. any applicable sections of a relevant code such as that published by the Market Research Society).</p>
--	--	---

16.2. Target and deadband

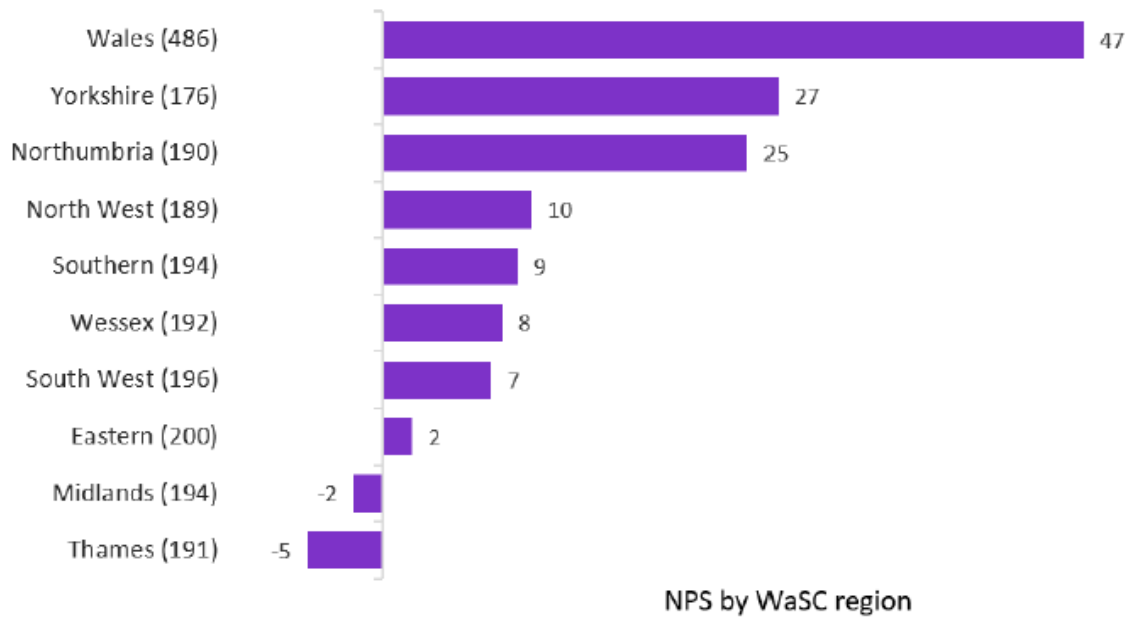
In our original Business Plan we proposed a target of 4.5 for this measure with a deadband at 4.4. We explained that 4.5 was a very difficult score to achieve. Although our App1 table reports that we have achieved 4.5 in two of the last four years 2014-15 to 2017-18, the percentage scores were in fact 89% not 90% (4.45 rounded up to 4.5 in App1). We now have the final score for 2018-19 which was 88% (or 4.4, below the forecast of 4.5 included in App1).

We believe that a score of 90% represents best practice and industry leading performance, and hence is deserving of a financial reward as we are helping to shift the industry frontier. In the last few years we have a score at or slightly below this level, and have at the same time been rated top by CC Water for business customer satisfaction in its Testing the Water report. We are also rated as the top business retailer in the MOSL Market Performance Report.



Net satisfaction with wholesale services by WaSC – Source: CC Water Testing the Waters 2018

Figure 18: Likelihood to recommend water wholesaler by WaSC region



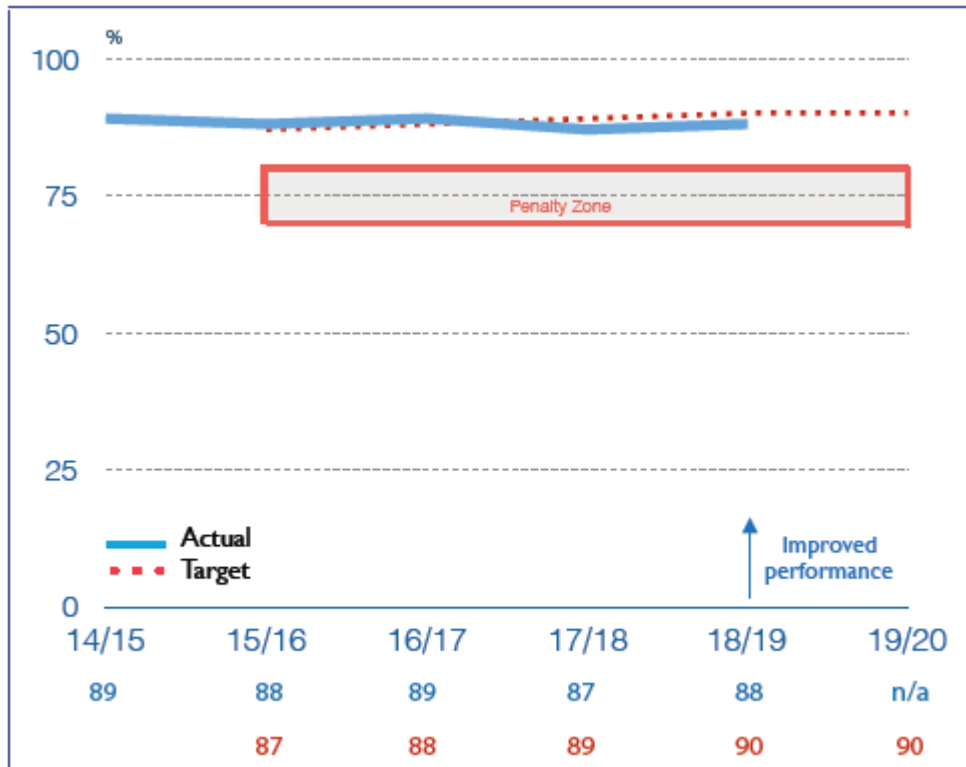
Q. How likely would you be to recommend [the wholesaler] for the clean water supply services they provide?

Base: All respondents

Net Promoter Score by region, Source: CC Water Testing the Waters 2018

MPS Performance - Retailers with < 5,000 SPIDS						
Retailer	Financial Year 2018-19			As of Sept 2018		Performance Trend Indicator
	Rank	Annual Performance	Total Tasks	Mid-Year Performance	Mid-Year Rank	
Dwr Cymru Welsh Water	1	97.8%	6,760	97.6%	1	-
Tor Water	2	92.8%	530	64.3%	9	↑
Three Sixty Water	3	92.4%	158	94.3%	3	-
ADSM	4	90.9%	4,161	95.9%	2	↓
The Water Retail Company	5	89.1%	5,604	86.2%	4	↑
Smarta Water	6	86.5%	399	73.3%	7	↑
First Business Water	7	85.4%	3,641	84.1%	5	-
Aquaflow Utilities	8	84.1%	580	69.8%	8	↑
Regent Water	9	72.1%	595	77.1%	6	↓
Hafren Dyfrdwy	10	58.9%	326	42.1%	10	↑
Market-Wide Performance		90.5%	22,754	90.2%		

Market performance – Source: MOSL Market Performance Report 2018-19, p.31



Current performance (in blue) against PR14 target (in red) - Source: Dŵr Cymru Annual Performance Report

For this reason we believe a score of 4.4, or 88% customer satisfaction, is stretching. We believe that the company is appropriately incentivised if financial ODIs are set around this value. We do not accept that a financial penalty for a score of 4.4 would be appropriate.

17. Wt7 Water catchments improved

Summary – definition

We accept the proposed definition.

Summary – targets

We propose a change to the profile of the targets, for the reasons set out below.

17.1. Proposed change to targets

We note the intervention that has been made to our target for water catchments improved to adjust the profile of delivery, with the reasoning that “There is no reason that performance cannot be measured each year and greater benefits will be realised if delivered more quickly. We have based this on equal improvement each year.”

This change is not appropriate. While we will be measuring progress each year and delivering environmental benefits in the early years of the period, the definition of this commitment is tied to the regulatory designation of Safeguard Zones, which is lengthier.

The process of removing Safeguard status starts with the completion of catchment investigations. We are scheduled to complete all investigations by 31st March 2020. The outline timetable for each catchment following this is:

- Years 1 & 2: Identify and agree catchment measures and develop the action plans
- Years 3-5: Deliver Actions (annual review of progress against measures, undertaken in Q4 of each year). Measure benefits (recognising that there is usually a lag between delivery and environmental improvement)
- Year 5/ End of AMP: Sign-off of schemes as ‘completed’.

This timetable shows that, although we will be working in several catchments at once, the formal sign-off that benefits have been delivered and Safeguard zone status can be removed will take until the final year of the period. This is why our profile shows all 5 zones being removed at the end of the period.

	2020/21	2021/22	2022/23	2023/24	2024/25
DD	22	21	20	19	18
Proposal	23	23	23	23	18

18. Wt8 Lead pipes replaced

Summary – definition

We propose a small clarification on the definition of this measure.

Summary – targets

We accept the targets on the assumption that the change in definition is accepted.

18.1. Proposed change to definition

We propose the following change to the definition provided in the section “Additional detail on measurement units”.

The second and third paragraphs currently read as follows:

“The company owned communication pipe and customer owned supply pipe are not counted separately. Both pipes need to be replaced to count towards this measure.

Only in the case where the company can demonstrate that customers have refused to have their supply pipes changed can the replacement of a communication pipe alone at a property count towards this measure.”

We would like to clarify that we anticipate that there will likely be instances where we only replace the supply pipe at a property, particularly those delivered through our partnerships with the Welsh Government Arbed scheme. Where this scheme identifies a property with a lead supply pipe they will notify us of this situation and we will send an inspector to review the material used for the communication pipe. Replacement of communication pipes has been more widespread than replacement of supply pipes so we anticipate identifying a number of locations where the communications pipe has already been replaced. If it is identified that the communications pipe is made from lead then we will replace this. We suggest altering the wording of this section of the definition to read:

“The company owned communication pipe and customer owned supply pipe are not counted separately. Where both the supply pipe and the communications pipe are replaced, this will count as one replacement, not two.

For communication pipe only replacements: only in the case where the company can demonstrate that customers have refused to have their supply pipes changed, **or where the customer supply pipe has been identified as not being made of lead**, can the replacement of a communication pipe alone at a property count towards this measure.

For supply pipe only replacements: Only in the case where the company can demonstrate that the communication pipe is not made of lead can the replacement of a supply pipe alone at a property count towards this measure.”

19. En6 Km of river improved

Summary – definition

We make representations on the definition included in the DD, as we do not believe it is aligned with the way the NEP is managed in Wales.

Summary – targets

Our representations on the definition mean that the targets will also need to be restored to our original Business Plan targets.

19.1. Definition

In our Business Plan we proposed a bespoke outcome-based cumulative performance commitment which would evidence how we safeguard the environment through the delivery of statutory Environmental Improvement schemes as directed by the National Environment programme (NEP) and the Water Industry National Environment Programme (WINEP).

In the Draft Determination the definition has been amended to read, ‘The cumulative length of river improved as a consequence of regulatory and legislative drivers for the delivery of ‘green’ schemes that were confirmed by Natural Resources Wales (NRW) and the Environment Agency (EA) under the NEP and the WINEP as at 1 April 2019.’ This changes the measure from an outcome based measure to an output based measure.

There are “green” schemes across both AMP periods of our 10 year NEP agreed with the NRW. We have a mechanism with both NRW and EA which signs off an updated version of the NEP every year and this allows us to deliver the most affordable, environmentally beneficial schemes. There is a commitment that any efficiency through delivery of NEP schemes in AMP7 will mean that confirmed schemes for AMP8 will be brought forward accordingly. The definition set out in the DD will not allow us to recognise this in the performance commitment.

We propose that the DD definition is changed to reflect the definition as presented in 5.3 PR19 Performance Commitment definitions, September 2018, as follows: “The length (in km) of river with improved water quality, as a result of Welsh Water action (cumulative within the AMP), as a consequence of the regulatory and legislative drivers as confirmed and agreed with the NRW and EA under the WINEP and NEP through the annual sign off process”. We have reflected this in the table below.

We believe this is the most appropriate way to represent our environmental outcomes as defined by the NEP/WINEP. It reflects our phased approach to delivering our obligations over a 10-year period as agreed with both Welsh Government and supported by NRW (as confirmed in their summary response to our plan provided in the CCG annex)).

We note that changes to the NEP agreed in the future with NRW may mean that we bring forward schemes that have fewer km river improved than the schemes deferred to AMP8, and recognise that this may result in financial ODI penalties.

19.2. Exclusions

In the draft determination, there are two exclusions applied to this measure

- “Amber” schemes not confirmed by NRW and EA under the NEP and the WINEP as at 1st April 2019.
- NEP schemes covered by the company’s other performance commitment (CSO storage) schemes.

We propose that these exclusions are removed from the performance commitment as we believe this measure should show the outcome achieved for the environment by the company, and not be based on the inclusion / exclusion of outputs

The proposed changes are summarised in the table below, following Ofwat’s format for definition (rows in the DD table not replicated here are unchanged).

	DD definition	Proposed definition
Detailed definition of performance measure	<p>The cumulative length of river improved as a consequence of regulatory and legislative drivers for the delivery of 'green' schemes that were confirmed by Natural Resources Wales (NRW) and the Environment Agency under the NEP and the WINEP as at 1 April 2019. The measure includes improvements resulting from WINEP/NEP Water Quality and Water Resources schemes. The driver codes associated with WINEP/NEP eligible for consideration in assessing performance are:</p> <ul style="list-style-type: none"> • WINEP – WFD_IMPg, WFD_ND, HD_IMP, U_IMP1 • Water Quality NEP – W_CSM_IMP, W_WFD_PD_IMP, W_WFD_PG_IMP, W_WFD_FP_IMP, W_I_IMP4 • Water Resources NEP – WFD_IMP_WRHMWB <p>"Improved" has the same meaning as in the Environment Agency’s and NRW’s technical PR19 environmental guidance document. It includes any action that improves any parameter where there is a driver within the river length but does not</p>	<p>The length (in km) of river with improved water quality, as a result of Welsh Water action (cumulative within the AMP), as a consequence of the regulatory and legislative drivers as confirmed and agreed with the NRW and EA under the WINEP and NEP through the annual sign off process. The measure includes improvements resulting from WINEP/NEP Water Quality and Water Resources schemes. The driver codes associated with WINEP/NEP eligible for consideration in assessing performance are:</p> <ul style="list-style-type: none"> • WINEP – WFD_IMPg, WFD_ND, HD_IMP, U_IMP1 • Water Quality NEP – W_CSM_IMP, W_WFD_PD_IMP, W_WFD_PG_IMP, W_WFD_FP_IMP, W_I_IMP4 • Water Resources NEP – WFD_IMP_WRHMWB <p>"Improved" has the same meaning as in the Environment Agency’s and NRW’s technical PR19 environmental guidance document. It includes any action that improves any parameter where there is a driver within the river length but does not necessarily change the overall class of the river length.</p>

	necessarily change the overall class of the river length. The length can only be counted once the Environment Agency and/or NRW has agreed all schemes to achieve the improvement have been delivered and each scheme meets the requirements. NRW combine works within the same water body to produce one water body length, this length is taken from the highest upstream treatment works. Information from the WINEP can also be sorted to combine works and also produce one length for a water body. Where schemes included in this performance commitment will improve multiple parameters on the same stretch of watercourse, the length cannot be counted until all schemes are delivered.	The length can only be counted once the Environment Agency and/or NRW has agreed all schemes to achieve the improvement have been delivered and each scheme meets the requirements. NRW combine works within the same water body to produce one water body length, this length is taken from the highest upstream treatment works. Information from the WINEP can also be sorted to combine works and also produce one length for a water body. Where schemes included in this performance commitment will improve multiple parameters on the same stretch of watercourse, the length cannot be counted until all schemes are delivered.
Specific exclusions	'Amber' schemes that were not confirmed by Natural Resources Wales (NRW) and the Environment Agency under the NEP and the WINEP as at 1 April 2019. Each length of river can only be included once in the 2020 to 2025 period. NEP schemes covered by the company's other performance commitment (Combined sewer overflow storage systems).	'Amber' schemes that were not confirmed by Natural Resources Wales (NRW) and the Environment Agency under the NEP and the WINEP as at 1 April 2019. Each length of river can only be included once in the 2020 to 2025 period. NEP schemes covered by the company's other performance commitment (Combined sewer overflow storage systems).
Incentive type	Underperformance payments	Underperformance and outperformance payments

19.3. Targets

To be consistent with our representations on the definition and the exclusions above, we believe that the targets as set out in our Business Plan should be retained.

	2020/21	2021/22	2022/23	2023/24	2024/25
Draft Determination	0	5	5	25	382
August Business Plan	0	5	25	25	418

20. B16 Delivery of our reservoirs enhancement programme

Summary – definition

We propose a small change to the definition to provide greater clarity.

Summary – targets

We propose a small change to correct an error.

20.1. Representation on target

We have noticed a mistake in the profile of the PC target for this measure.

The following values are provided in the DD:

2020-21	2021-22	2022-23	2023-24	2024-25
8	13	17	26	26

We can see how this has been derived. In response query WSH-DD-OC-006 we provided the following table of outputs:

2021	2022	2023	2024	2025
8	5	4	9	3

The DD values are therefore generated as a cumulative total of the above figures.

The confusion has arisen because the figures given in the query response were for calendar years rather than financial years. So the delivery of 8 reservoirs in calendar year 2021 is an indication of 8 reservoirs completed by December 2021, i.e. in financial year 2021/22. The correct profile of delivery should therefore be as follows:

2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
0	8	13	17	26	29

20.2. Representation on definition

We note a comment in the “Additional detail on measurement units” section: “The full list of included schemes is provided in [link to definition document to be included in Final Determination].”

As set out in our April Business Plan submission, we are committing to the delivery of 29 reservoir enhancement schemes, and this measure is intended to incentivise delivery of this commitment. The list of highest priority reservoirs to be addressed is the result of a statutory process of Section 10 inspections and the defined Portfolio Risk Assessment (PRA) process. Should this process result in a change in priorities, for example due to a new urgent priority becoming clear, we would agree the resulting changes to the list of 29 schemes with

the responsible regulator, Natural Resources Wales (NRW). We propose to maintain a list of the approved 29 schemes on our website.

21. B18 Delivery of our water network improvement programme

Summary – definition

We propose a small change to the definition to provide greater clarity.

Summary – targets

We accept the target.

21.1. Definition

The definition in the DD includes the following:

“This performance commitment captures the company’s obligations to meet the 17 notices served on it by the Drinking Water Inspectorate (DWI) in 2017-18 to address concerns about discoloration of water.”

We propose to amend this as follows:

“This performance commitment captures the company’s obligations to meet the 17 notices served on it by the Drinking Water Inspectorate (DWI) in force as at 1 April 2020 to address concerns about discoloration of water.”

22. Proposed new Performance Commitments

22.1. Introduction

Three new PCs are proposed to provide customer protection for the resilience schemes that we are including in our revised plan.

The proposed PCs and the linked schemes are as listed in the table below:

Name of PC	Reference	Link to representation documents
Delivery of our Hereford water supply resilience scheme	PR19WSH_BI9	WSH.DD.CE.5
Delivery of our South Wales Grid water supply resilience scheme	PR19WSH_BI10	WSH.DD.CE.4
Delivery of our new visitor centres	PR19WSH_BI11	WSH.DD.CE.7

The three sections below provide proposed definitions and PC levels for each of these.

22.2. Delivery of our Hereford water supply resilience scheme

Purpose: This commitment incentivises the company to deliver a scheme to improve the resilience of the water supply or to return the expenditure in full to customers.

Benefits: The supply system in Hereford will become more resilient against low probability risks, reducing the risk of prolonged interruptions to supply to 117,000 customers in the area.

Definition

Unique Reference	PR19WSH_BI9
Detailed definition of performance measure	Has the company delivered the project to improve the resilience of water supply in Hereford?
Additional detail on measurement units	None
Specific exclusions	N/A
Reporting and assurance	No specific requirements
Measurement unit and decimal places	Text stating either “delivered” or “not delivered”. Delivered = 0, Not delivered =1
Measurement timing	Reporting year
Incentive form	Revenue
Incentive type	Underperformance payments
Timing of underperformance and outperformance payments	End of period
Price control allocation	100% water network plus
Frequency of reporting	Annual
Any other relevant information	NA
Links to relevant external documents	NA

Performance commitment levels

	Unit	Company forecast	Committed performance level					
			2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Performance commitment level	£m	NA	NA	NA	NA	NA	NA	“Delivered”
Enhanced underperformance collar	£m		NA	NA	NA	NA	NA	NA
Standard underperformance collar	£m		NA	NA	NA	NA	NA	NA
Underperformance deadband	£m		NA	NA	NA	NA	NA	NA
Outperformance deadband	£m		NA	NA	NA	NA	NA	NA
Standard outperformance cap	£m		NA	NA	NA	NA	NA	NA
Enhanced outperformance cap	£m		NA	NA	NA	NA	NA	NA

Incentive rates

Incentive type	Incentive rate (£m/unit)
Underperformance payment - standard	-6.801
Underperformance payment - enhanced	NA
Outperformance payment - standard	NA
Outperformance payment - enhanced	NA

22.3. Delivery of our South Wales Grid water supply resilience scheme

Purpose: This commitment incentivises the company to deliver a scheme to improve the resilience of the water supply or to return the expenditure in full to customers

Benefits: The supply system in South Wales will become more resilient against low probability risks, reducing the risk of interruptions to supply to over 50,000 customers in the Western Cardiff area.

Definition

Unique Reference	PR19WSH_BI10
Detailed definition of performance measure	Has the company delivered the project to provide a bi-directional transfer of 30MI/d between the West (TCUS) and East (SEWCUS) conjunctive use systems?
Additional detail on measurement units	None
Specific exclusions	N/A
Reporting and assurance	No specific requirements
Measurement unit and decimal places	Text stating either “delivered” or “not delivered”. Delivered = 0, Not delivered = 1
Measurement timing	Reporting year
Incentive form	Revenue
Incentive type	Underperformance payments
Timing of underperformance and outperformance payments	End of period
Price control allocation	100% water network plus
Frequency of reporting	Annual
Any other relevant information	NA
Links to relevant external documents	NA

Performance commitment levels

	Unit	Company forecast	Committed performance level				
		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Performance commitment level	£m	NA	NA	NA	NA	NA	“Delivered”
Enhanced underperformance collar	£m		NA	NA	NA	NA	NA
Standard underperformance collar	£m		NA	NA	NA	NA	NA
Underperformance deadband	£m		NA	NA	NA	NA	NA
Outperformance deadband	£m		NA	NA	NA	NA	NA
Standard outperformance cap	£m		NA	NA	NA	NA	NA
Enhanced outperformance cap	£m		NA	NA	NA	NA	NA

Incentive rates

Incentive type	Incentive rate (£m/unit)
Underperformance payment - standard	-9.954
Underperformance payment - enhanced	NA
Outperformance payment - standard	NA
Outperformance payment - enhanced	NA

22.4. Delivery of our new visitor centres

Purpose: This commitment incentivises the company to deliver a scheme to construct a new visitor centre.

Benefits: More people are able to benefit from access to recreational facilities.

Definition

Unique Reference	PR19WSH_BI11
Detailed definition of performance measure	Has the company delivered the project to construct a new visitor centre at the Llanishen / Lisvane reservoirs site?
Additional detail on measurement units	None
Specific exclusions	N/A
Reporting and assurance	No specific requirements
Measurement unit and decimal places	Text stating either “delivered” or “not delivered”. Delivered = 0 , Not delivered = 1
Measurement timing	Reporting year
Incentive form	Revenue
Incentive type	Underperformance payments
Timing of underperformance and outperformance payments	End of period
Price control allocation	100% water resources
Frequency of reporting	Annual
Any other relevant information	NA
Links to relevant external documents	NA

Performance commitment levels

	Unit	Company forecast	Committed performance level				
		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Performance commitment level	£m	NA	NA	NA	NA	NA	“Delivered”
Enhanced underperformance collar	£m		NA	NA	NA	NA	NA
Standard underperformance collar	£m		NA	NA	NA	NA	NA
Underperformance deadband	£m		NA	NA	NA	NA	NA
Outperformance deadband	£m		NA	NA	NA	NA	NA
Standard outperformance cap	£m		NA	NA	NA	NA	NA
Enhanced outperformance cap	£m		NA	NA	NA	NA	NA

Incentive rates

Incentive type	Incentive rate (£m/unit)
Underperformance payment - standard	-6.150
Underperformance payment - enhanced	NA
Outperformance payment - standard	NA
Outperformance payment - enhanced	NA

ANNEX

IAP Response

Ref B2.2.WSH.OC

Performance Commitment Targets and Deadbands

1 April 2019

Contents

1.	INTRODUCTION	3
2.	WSH.OC.A9 CRI DEADBAND	4
3.	WSH.OC.A10 SUPPLY INTERRUPTIONS TARGET	6
4.	WSH.OC.A12 POLLUTION INCIDENTS	10
5.	WSH.OC.A16 PER CAPITA CONSUMPTION	11
6.	WSH.OC.A19 SEWER FLOODING (INTERNAL)	13
7.	WSH.OC.A29 TREATMENT WORKS COMPLIANCE DEADBAND	15
8.	WSH.OC.A31 ACCEPTABILITY OF WATER	16
9.	WSH.OC.A32 EXTERNAL SEWER FLOODING	21

1. Introduction

This document covers our responses to the IAP Actions concerning our Performance Commitment targets, plus two deadbands for compliance measures where the formal target is 100% compliance.

In this response document, a number of important points of general principle are relevant on a number of occasions. In particular, we have concerns across several performance commitments that:

- the level of performance targeted for a company must have sufficient regard to the particular operating circumstances of that company's area;
- Ofwat's approach to calculating the upper quartile, forecast level of service can be too influenced by the results for very small companies – our approach which sets upper quartile with reference to customer numbers is more robust; and
- the very heterogeneous operating environments of companies would be expected to result in markedly differing marginal costs of service improvements. In that case, setting a uniform level of service target risks creating very inefficient outcomes for the customers of some companies, where the marginal cost of seeking to deliver Ofwat's target greatly outweighs the marginal benefit to customers, thereby misdirecting resources which could be better used to deliver other priorities for the customers of that company.

Further information on these and other methodological points is contained in the accompanying response paper B2.1.WSH.OC Performance Commitments IAP Response.

2. WSH.OC.A9 CRI DEADBAND

Summary of response

We do not believe that 1.50 represents a justified and reasonable level for the deadband on this measure. Details of our reasoning are provided below. We have retained our original approach of a deadband equivalent to the 'upper third' level of performance in any given year's outturn CRI results.

2.1. Background

In our original PR19 submission we proposed a deadband equal, for each year, to the 'upper third' level of actual performance of companies in the industry in each given year. This approach, we would argue, is reasonable and appropriate given the fact that the measure is new, and what we think is the inherent volatility of individual companies' performance against the measure.

In its IAP publication, Ofwat has mandated a standard deadband of 1.50 for this measure, calculated as the average of a) the observed upper quartile performance of companies in 2017, and b) the upper quartile of the deadbands proposed by companies.

2.2. Our position on 1.50 as a deadband

While Ofwat states that its approach provides a reasonable balance between allowing for volatility of a new measure and stretching company performance, we would argue that in reality this is not the case. It results in a deadband value that seems likely on current evidence to be unachievable for most companies in most years. This is because:

- Using the deadbands proposed by companies on an equal footing does not take into account that some set much higher penalty rates than others, (it is easier to set a 'tighter' deadband with lower penalty rates).
- Using a single year's performance as the basis for setting an upper quartile absolute measure (rather than relative) for the next 5 years is to ignore the fact that this is a new measure that appears quite volatile and may take a while to 'bed down'. Irrespective of the actual value chosen, picking an absolute measure creates the risk that, after a couple of years, it turns out to be inappropriately high or obviously too low. A relative measure has the obvious advantage that it automatically re-calibrates over time in line with the out-turn performance of the industry.
- The design of the measure means that there are always likely to be a few companies with particularly low (good) scores (and also some with high scores). This is because of the use as a multiplier of the 'proportion of population served' by a WTW suffering a compliance failure. So small companies with a small number of relatively large works will have particularly volatile scores from year to year, depending on whether they have any compliance failures at one of their larger works. Assuming on the balance of probability that in any given year a few of them do not have any of those, (and a few of them do),

then these companies will determine a (very low) upper quartile level, leaving the rest of the industry in penalty.

Larger companies with a high number of works, each serving a smaller proportion on average of their total population compared to smaller companies, will not suffer from the same volatility. It will not be possible for them to match the performance of the best performing companies on CRI, unless they can achieve a very low number of failures at all of their many works across their area.

2.3. Conclusion

CRI is a kind of composite measure, very different in its nature to other more traditional performance measures. As such we believe greater consideration needs to be given to the appropriate deadband level that better takes into account the newness of the measure and the volatility. Some kind of rolling measure on a relative basis would seem to merit consideration.

Note: All aspects of ODIs are dealt with in separate doc Ref B2.4.WSH.OC.

3. WSH.OC.A10 SUPPLY INTERRUPTIONS TARGET

Summary of response

We have given careful consideration to the feedback provided by Ofwat in the IAP. However, we do not consider that there is a case for re-visiting our performance targets, and have accordingly left them unchanged. The principal reasons for this decision are as follows:

- we do not accept the validity of Ofwat’s upper quartile target of 3.0 minutes by the end of the AMP7 period;
- in order for horizontal benchmarks to be fair and robust, allowances should be made for significant differences in operating environments. The relative lack of network connectivity in our region combined with the sparsity of our population puts us at a significant disadvantage on CML performance; and
- there is no support from customers for significant further reductions in CML. See the evidence set out in our Business Plan (Ref 5.2: PR19 Performance Commitments).

3.1. The Basis for Ofwat’s Upper Quartile Target of 3 minutes by 2024/25

We do not accept the validity of the target of 3 minutes for the following reasons.

First, Ofwat’s methodology for calculating the upper quartile is to count the number of companies. Since there is considerable size variation across the industry, we think that this measure is potentially misleading, because it is customers that count, not companies. In other words, a fair upper quartile measure would count the number of customers in each company. Otherwise, there is a possibility that the number of customers served by companies that are at the upper quartile or better could be anything from, say, 60% to 6% or less. This issue affects Ofwat’s calculation of the upper quartile for CML. Three of the four companies with the lowest targets are small water only companies, and the other is a medium-size WASC, Yorkshire Water. Our calculations show that an upper quartile assessment based on customers rather than companies would be somewhat higher.

Second, and in any event, we do not think that Yorkshire’s target of 2.0 minutes by 2024/25 is relevant to the calculation of a reasonable industry benchmark target. Although the target appears “stretching”, Yorkshire are proposing a deadband three times higher, at 6.0 minutes, which is a very different proposition to a target of 2.0 with no deadband.

3.2. Our Operating Area is Different and Gives Rise to Relatively High Levels of CML

Put crudely, customers lose their water supply because pipes burst, alternative delivery routes are unavailable, and it takes a period of time to restore service. All water companies are confronted with the challenge of minimising loss of supply in the first place, and finding ways to restore it as quickly as possible.

That challenge is greater for us for several reasons. First, due to the topography of our area and the sparsity of our population we have more bursts per customer than average. This is not because we do not look after our mains: on the contrary, our performance on bursts per

length of main is better than average. It is because we have more mains per customer. The following table presents the relevant evidence for 2017/18.

	Bursts per '000 km	Mains Length '000 km	No of Bursts	Connected Properties ('000)	Mains length per '000 properties	Bursts per 10,000 props
ANH	129.2	38.4	4,964	2,196	17.5	22.6
SRN	133.0	13.9	1,849	1,114	12.5	16.6
NES	162.6	25.9	4,213	2,019	12.8	20.9
SVE	124.2	46.5	5,778	3,612	12.9	16.0
TMS	272.0	31.5	8,557	3,826	8.2	22.4
WSH	151.5	27.6	4,181	1,434	19.3	29.2
NWT	106.5	42.1	4,484	3,313	12.7	13.5
WSX	161.0	11.9	1,922	615	19.4	31.2
YKY	216.0	31.7	6,846	2,305	13.7	29.7
AFW	175.2	16.7	2,923	1,500	11.1	19.5
BRL	179.0	6.8	1,222	536	12.7	22.8
PRT	70.1	3.3	234	320	10.4	7.3
SES	61.5	3.5	214	291	11.9	7.3
SEW	186.2	14.6	2,722	1,013	14.4	26.9
SSC	127.0	8.5	1,078	736	11.5	14.7
HDD	110.4	2.6	290	105	25.0	27.7
SWB	152.0	18.2	2,771	1,044	17.5	26.5
Total	157.8	343.9	54,249	25,980	13.2	20.9

Source: PR19 Business Plans

Our burst rate, at 151 per 1,000km, is 4% better than the industry average, but on a per customer basis the rate is 40% higher than the industry average. This is due to the fact that our length of main per customer is 45% higher than the industry average.

Second, the effect of the higher burst rate is compounded by the relative non-availability of back-up delivery routes in our supply systems. Companies operating in smaller, more densely populated areas have found it economic to link water sources and integrate networks, which has the benefit of greater intrinsic delivery security than we are able to offer. Many of our systems are discreet, single supply source delivery networks, which severely limits the scope for mitigating the effect of bursts on service continuity in those areas. Evidence of the effect of “connectivity” on CML is provided below, for 2016/17 (a comparatively “normal” year) and 2017/18 (the year in which “Storm Emma” had a massive impact on performance.)

Using data at Leakage Control Area (LCA) level, we examined the relationship between a connectivity score – measured as $((\text{Main Length}/\text{No of Valves}) * (\text{Main Length}/\text{No of Tees}))/\text{No of LCA Properties}$ then divided into six bands – and CML. The following table presents the results for the two years.

Customer Minutes Lost by Connectivity Band

Year	Connectivity band (1 = high connectivity)			
	1	2	3	4 to 6
2016/17	6.4	11.7	30.9	67.6
2017/18	13.8	29.7	130.6	333.3

As the table shows, in LCAs where we have greater network connectivity (more tees and valves) our CML performance is orders of magnitude better.

We do not have the same granular data for other companies' networks. However, we are able to look at connectivity at a more aggregate level. The following table examines the average size of water resource zones across the industry in terms of properties. Our average is comfortably the lowest, at less than 30% of the average for the industry as a whole. Ofwat will be aware that for water resource management planning purposes "zones" have a specific definition that captures "connectivity" between sources and properties. Thus, for example, in the Yorkshire area, which is much more densely populated than Wales, a failure in a trunk main delivering water from one treatment works need not lead to a loss of supply for the properties that usually receive water from that source, because of the scope for "re-zoning". Similarly Wessex, the other company with a high rate of bursts per customer, has only a single water resource zone. As we understand it, this reflects a very significant resilience enhancement scheme funded in AMP6 to create a new ring-main to join up their previous separate supply grids.

	Connected Properties (‘000s)	Water Resource Zones	Properties per zone (‘000s)
ANH	2,196	28	78.4
SRN	1,114	14	79.6
NES	2,019	7	288.4
SVT/HDD	3,717	15	247.8
TMS	3,826	6	637.7
WSH	1,434	24	59.7
NWT	3,313	6	552.2
WSX	615	1	615.4
YKY	2,305	2	1,152.7
AFW	1,500	8	187.5
BRL	536	1	536.1
PRT	320	1	319.8
SES	291	1	291.4
SEW	1,013	8	126.6
SSC	736	2	367.9
HDD	105	4	261.1
SWB	1,044	28	78.4
Total/Av	25,980	128	203.0

Source: PR19 Business Plans

We should stress that the lack of connectivity in our area is not due to a reluctance to link zones where this makes economic sense. On the contrary, in the course of preparing our periodic water resource management plans we look at all practicable options to address zone deficits, including potential inter-zonal transfers. In general, these types of options are constrained by the geographic and topographical features of our region. For example, a scheme that would effectively link the South Meirionnydd and Tywyn zones was looked at for the purposes of the 2014 plan, but was found to be 7 times more expensive than the preferred AMP6 supply side option.

However, other schemes to provide connectivity between zones have been developed and promoted within our plans where they have been shown to be economically justifiable. In AMP 7 we are planning to make permanent a temporary link that was put in place between the Lleyr Harlech and Barmouth zones during the 2018 drought. We also have plans that would lead to a merger between our Vowchurch and Hereford zones (though these are currently being challenged by Ofwat). However, notwithstanding these limited examples of inter-connection that are planned or have taken place in our region in recent years our systems remain relatively fragmented, so the probability of a mains burst leading to a loss of supply for customers is commensurately higher than in other areas of England and Wales.

4. WSH.OC.A12 POLLUTION INCIDENTS

Whilst we support the use of horizontal benchmarking between companies for pollution incidents, we do not accept the validity of the simplistic measure adopted by Ofwat, and specifically the use of length of sewer alone to “normalise” between companies. Pollution can occur at sewage treatment works, combined sewer overflows, rising mains, pumping stations, storm tanks and surface water outfalls, as well as from sewers. Further, the prevalence of such assets varies considerably between companies across the industry. It is therefore unfair to use the simple per-sewer-length measure for horizontal benchmarking, because it will be disadvantageous for some and advantageous for others.

This problem can be overcome by using a multi-asset approach to the measurement of performance. Our report (see Appendix) sets out a methodology for achieving this. We have discussed this material with Natural Resources Wales (NRW), and they have indicated that they will be writing to Ofwat expressing support for this alternative approach.

In any event, we do not accept Ofwat’s derivation of “upper quartile”. The methodology involves counting the number of companies, but since there is considerable size variation across the industry, we think that this measure is potentially misleading, because it is customers that matter, not companies. In other words, a fair upper quartile measure would reflect the number of customers in each company.

As a separate matter, new internal information is now available on the basis of which we have made revisions to the targets presented in our September 2018 Business Plan. Having commenced implementation of some of the initiatives that we had planned for AMP7, we are in a position to be more confident regarding their effect on our pollution performance. The following table presents the changes, expressed using Ofwat’s measure of incidents per 10,000 km of sewer:

	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Business Plan Forecast	29	28	27	26	25	24
Revised Projection	26	25	24	23	22	21

On the basis of our updated forecasts, we estimate that our projected performance is at or better than industry upper quartile (whether calculated using our preferred approach or Ofwat’s), when assessed on a multi-asset basis as set out above, and can therefore be regarded as “stretching” without any further adjustments.

5. WSH.OC.A16 PER CAPITA CONSUMPTION

Summary of response

In view of further information available on the efficacy of our Project Cartref trials, we have revised our targeted reduction from 4% to 6%.

We do not accept Ofwat’s assessment of PCC targets as a “performance commitment” as such, including the implicit assertion that “stretch” a valid objective, for the following reasons:

- For PCC, unlike most other performance measures, it is not unambiguously the case that movement in one direction or another is always ‘a good thing’. Water in Wales is a precious and valuable resource, and we firmly support its efficient use. But it does not follow that incremental reductions in PCC are always in customers’ interests, nor that increases are invariably to be frowned upon. For example, customers in Wales are encouraged to reduce their use of single-use plastic, including bottled water, and to make more use of tap water.
- In any event, we reject the validity of ‘like-for-like’ cross-industry comparisons. In the first instance, there are differences in measurement and reporting between companies. Even if a common basis were used, there are large variations across England and Wales in terms of water resource constraints and future supply-demand challenges. The demand management costs that might be justified as part of an optimisation exercise involving PCC reductions in one region may make little or no sense in another. This would mean charging customers more to pay for measures to force them to use less for no purpose. While our reported PCC figures are slightly higher than the average for the rest of the industry, we consider that they are at an appropriate level for our region, striking a fair balance between the interests of customers and the environment.

That said, independent of the IAP process, we have made changes to our PCC forecasts to take account of new information. As described in B2.a8.WSH.CE.A1 Project Cartref Investment Case, the pilot activities for Project Cartref have indicated that further reductions in PCC will be achievable as the project is rolled-out over the AMP7 period.

Accordingly, instead of the 4% reduction in PCC we had targeted in our Business Plan, we have now increased this to 6%. The revised targets for PCC on a three-year rolling average and year on year basis are therefore as follows:

	2020/21	2021/22	2022/23	2023/24	2024/25
Business Plan Forecast (3 year rolling average)	145	144	142	141	139
Revised Projection (3 year rolling average)	144	143	142	140	138
Revised Projection (year on year)	143	141	140	138	136

It remains our long term goal to reduce PCC to 100 l/h/d by 2050. As we move through AMP7 we will re-evaluate this target in the light of the new experience we (and other

companies) have gained. In particular, since significant further reductions in PCC may require widespread adoption of certain types of fittings by households, as well as necessitating potentially significant changes in cultural attitudes to water and personal behaviours, we will want to collect evidence as to whether that is what our customers want. Whilst we are fully committed to the long term importance of maximising the efficient use of water, there are important differences between our circumstances and those of some of the companies in England, especially those located in the comparatively dry and densely populated South East, so we will want to be certain that our strategy reflects priorities in Wales.

6. WSH.OC.A19 SEWER FLOODING (INTERNAL)

Summary of response

In view of further information on our performance in 2018-19 we are making a change to our targets. However, following careful review of the information contained in the IAP, we are not accepting Ofwat's calculated upper quartile values, for the reasons set out below.

At the time that we were preparing our Business Plan during the summer of 2018 Ofwat's internal sewer flooding measure was still comparatively new, and subject to a degree of uncertainty, especially around those parts of the new definition that differed from the old one, namely the inclusion of flooding of lean-to structures and "unsubstantiated claims".

Some nine months on, we have a better understanding of what the new measure means in practice. As a consequence, we are better placed to make forecasts of performance and have revised our figures accordingly, as set out below.

	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Business Plan targets	300	294	288	283	280	273
Revised targets	280	274	268	263	260	253
Revised targets (per 10,000 connections)	1.91	1.86	1.81	1.77	1.72	1.67

Note that these targets are contingent on the associated enhancement funding which is subject to a separate challenge by Ofwat.

We have carefully considered Ofwat's view that we should go further, which would entail a significant additional reduction in our targets of more than 20% on average. However, we have decided not to adjust our targets further in line with Ofwat's proposals for the following reasons:

- We do not think that a uniform "upper quartile" target for the industry is appropriate for this measure, because operating circumstances and customer priorities vary. A particular source of disadvantage for us is the fact that flooding due to severe weather events is now included in the measure, and such events are more common in our area than in most of England. We note that, though we are unable to demonstrate this because we do not have the breakdown of other companies' flooding totals, this is something that Ofwat is in a position to collate;
- In any event, we do not accept Ofwat's derivation of "upper quartile". The methodology involves counting the number of companies, but since there is considerable size variation across the industry, we think that this measure is potentially misleading because it is customers that matter, not companies. In other words, a fair upper quartile measure would count the number of customers in each company; and

- we do not have customer support for making further reductions, which can only be achieved at high marginal cost, as set out in our Business Plan (Ref 5.2: PR19 Performance Commitments). The additional cost of seeking to achieve Ofwat’s proposed uniform service level in our particular circumstances would not be good value for money for our customers and would risk diverting resources away from higher priorities that they have.

7. WSH.OC.A29 TREATMENT WORKS COMPLIANCE DEADBAND

We have carefully considered Ofwat’s feedback, reviewed up-to-date evidence, and concluded that we will adjust our deadband to 99% for each year of AMP7.

8. WSH.OC.A31 ACCEPTABILITY OF WATER

Summary of response

We have carefully re-considered our AMP7 targets in the light of the IAP feedback and other updated evidence. We have decided to leave the targets for Acceptability of Water unchanged from our Business Plan proposals, for the reasons set out below.

The achievement of improvements in Acceptability of Water is particularly difficult for us as compared with the rest of the industry because of our geology, topography, and history, factors which are outside our control. Specifically, the interaction between the high natural concentrations of manganese in our raw water and the prevalence of cast iron pipes in our network, all against the backdrop of steady reductions in demand associated with long term industrial decline since the 1970s, has created conditions under which discolouration incidents are comparatively frequent;

That said, we are targeting a 28% reduction in customer contacts between 2017/18 and the end of AMP7 which we consider to be very stretching given that all of the 'easy wins' on this measure have already been achieved in the early part of AMP6. We also note that it compares favourably with other companies' plans for AMP7; and

Although discolouration does raise some modest concerns for customers, the support for significant investment to achieve further improvements in this measure is limited. Further, cost benefit analysis supports a level of performance in the range of 2.0 – 2.4 contacts per 1,000 population, well above the average for the rest of the industry. Until and unless we have evidence that our customers do want us to go further, and would consider the additional cost involved to be good value for money, we do not see a case for targeting even more stretching targets by the end of the AMP7 period.

8.1. The Principal Cause of Discolouration

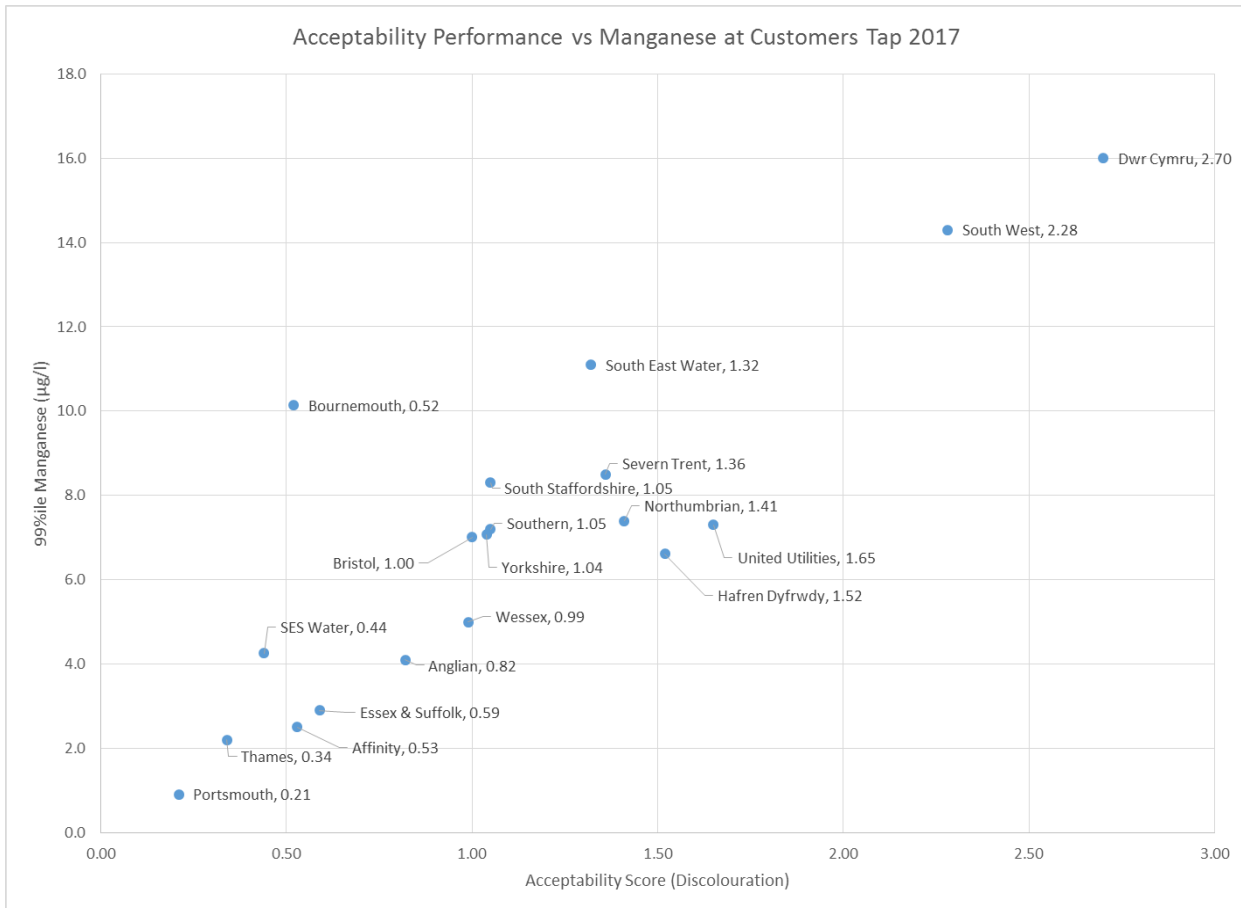
Manganese occurs naturally in raw water in particular locations. This is oxidised in the water treatment process and is present in small concentrations in the final water output from treatment works. The internal corrosion of mains that are cast iron also creates deposits in our mains. As water flows through pipes at a slow speed a bio-film can form on the inside of the pipes. This is harmless and transparent so does not cause a problem in itself if undisturbed.

However, if there is a high level of manganese and iron in the water then this can react and stick to the bio-film. If the water is hard (as is typically the case for groundwater sources in the South East of England) then the calcium carbonate can form a protective barrier, preventing particles from sticking to the film.

Originally pipes were designed to operate at sufficient velocity that they would self-clean. However, over time, in many locations, demand has dropped and we now have pipes that are oversized for the volumes that they deliver so that the water is not running at the velocity that was originally assumed. This allows the film and particles to build up. Sudden changes in velocity, triggered by a valve operation, 3rd party usage or a burst main can disturb the particles which then flow through to customers' taps. The problem is exacerbated in unlined cast iron mains as the internal corrosion adds to the discolouration.

Evidence on the Relationship between Manganese in Water and Customer Contacts

The following chart shows that there is a very strong correlation across the industry between the residual concentrations of manganese in drinking water and customer contacts.

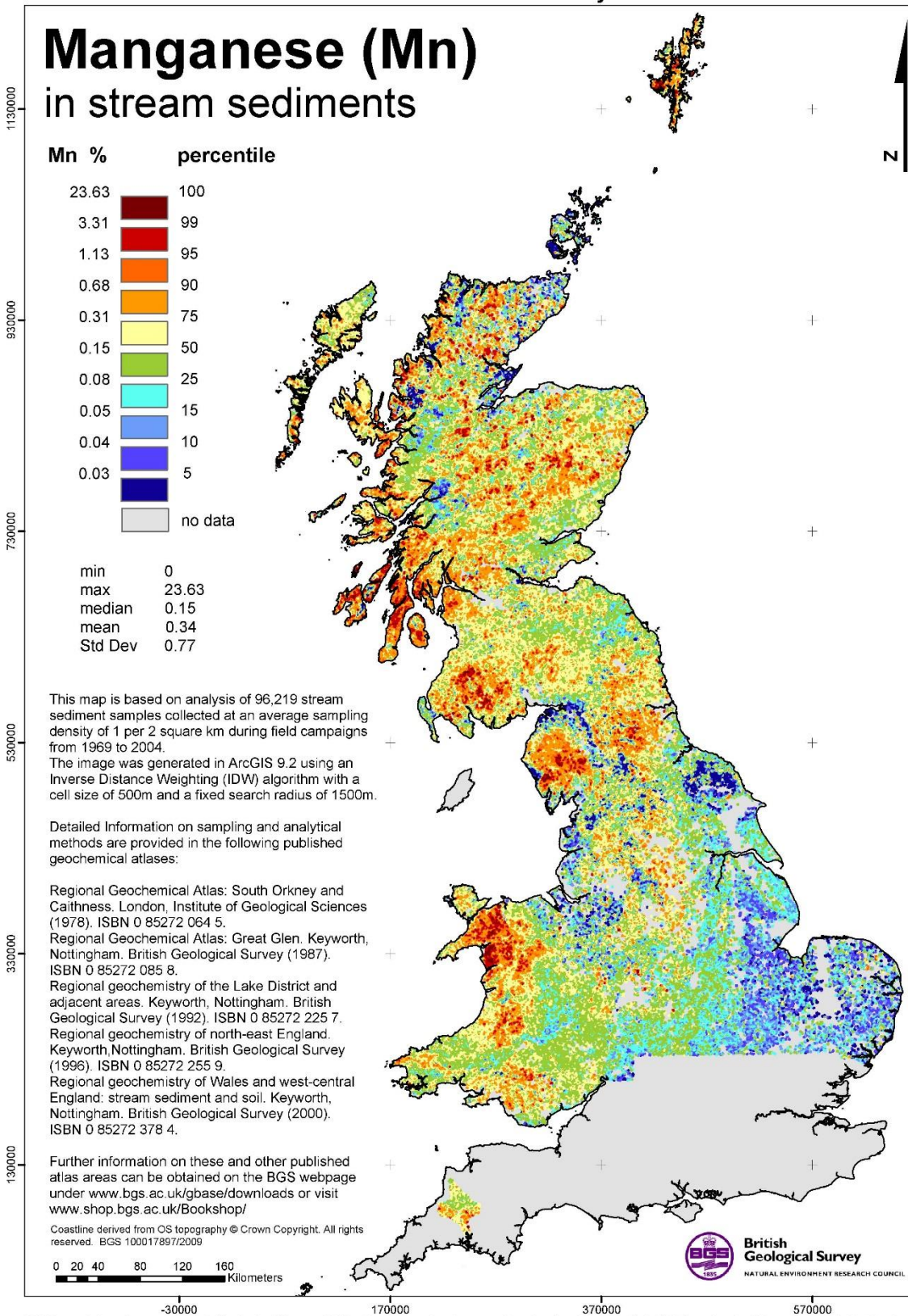


The Uneven Prevalence of Manganese across England and Wales

Unfortunately water companies are not required to collect and publish data on concentrations of manganese in raw water, so we are not able to demonstrate that high levels of manganese in drinking water are primarily caused by high levels in the source water (water treatment typically removes over 95% of manganese in order to achieve compliance with manganese standards, but a small proportion remains in the water that is distributed to customers).

However, the British Geological Survey publishes information on manganese concentrations in streams. The following map illustrates the general observation made above, namely that manganese concentrations tend to be higher in Wales and certain parts of the north of England, and lower in the South and East of England.

G-BASE - Geochemical Baseline Survey of the Environment



Bibliographic reference: British Geological Survey, 2009. *Manganese in stream sediments: Great Britain. G-BASE Geochemical Map.* Keyworth, Nottingham, UK.

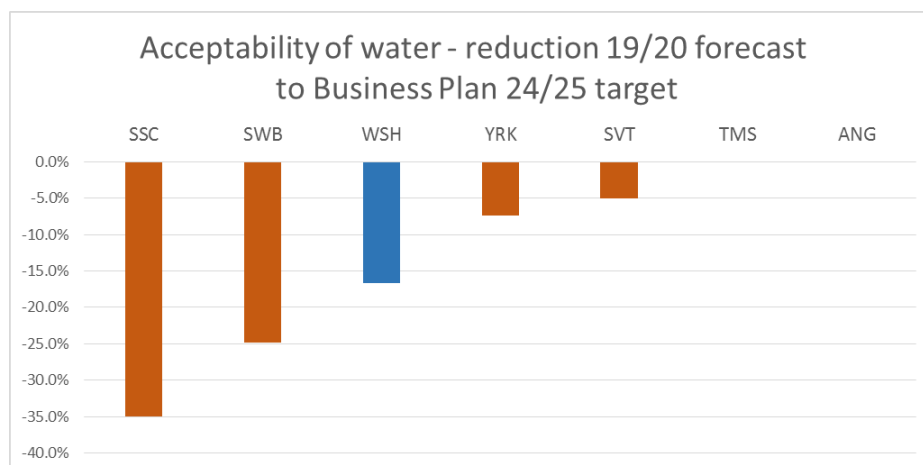
8.2. Why Can't Manganese Be Completely Removed in Water Treatment?

Manganese exists in two main forms in the environment, the most prevalent is the particulate manganese dioxide MnO₂ but under anaerobic conditions, such as at the bottom of an impounding reservoir, this form can be reduced to the soluble Mn²⁺ form. Further, this form can then react to form complex compounds with dissolved organic carbon compounds such as the humic and fulvic acids prevalent in our upland waters. While the particulate form can be relatively simple to remove as part of a standard coagulation and filtration process, the soluble form required oxidation by chlorine at an elevated pH and further filtration. These processes are not an absolute barrier and should be considered to be circa 99.9 % removal for the first and 90% for the second process. This second process is less efficient due to the rate of oxidation, the impact of the complexation with organic compounds and the effectiveness of a single stage sand filter following oxidation. In summary, complete removal of manganese is not possible using the treatment processes available to water companies, so trace concentrations will always be present in the distribution system (see “Speciation of Manganese in Drinking Water”, a report produced in 2014 for the Drinking Water Inspectorate, especially chapter 4).

8.3. Why we consider that our targets are already stretching

As explained in our Business Plan (see Ref 5.2: PR19 Performance Commitments), we have already achieved significant improvements in this measure through implementation of operational practices. This has helped us to reduce the rate of contacts per 1,000 population from 3.53 in 2014/15 to 2.79 in 2017/18.

Comparison with other companies’ plans for AMP7 shows that our rate of improvement is competitive with the rest of the industry. The following chart shows rate of improvement that we propose, compared alongside the other companies that use a comparable measure for acceptability of water.



In addition, although we continue to look for new operational initiatives that could improve performance further, we have already been employing all of the existing mitigating actions available to water companies during the AMP6 period, including mains flushing programmes, mains conditioning (PODDS), trickle caps and operations training centres. We

have therefore concluded that significant further gains will require considerable expenditure under the auspices of our Zonal Study programme, as set out in detail in our Network Quality Legal Obligations investment case Ref B2.16.CE.A1]. The evidence from early implementation of this approach shows that very considerable reductions can be made in the rate of customer contacts (as well as other service benefits). For example, the Whitbourne zone was one of our worst performing areas in terms of discolouration. It was characterised by large lengths of iron water mains coupled with relatively low rural population as well as a large number of customers being supplied at the ends of the network. Although the age of water mains in this area were not particularly old, it was clear that iron deposits that had formed from the internal corrosion of the water mains was having an impact on our customers. Water in this area is moderately aggressive using the Langelier index which will contribute towards the corrosion of unlined iron mains.

Following the completion of the zonal study interventions in this zone in 2016 the number of contacts received for discolouration has reduced from 218 in 2014 to just 28 in 2018, as set out in the following table.

	2012	2013	2014	2015	2016	2017	2018
Discolouration Contacts	209	165	218	154	140	83	28
Rate/1000 customers	13.74	10.85	14.33	10.12	9.20	5.46	1.84

9. WSH.OC.A32 EXTERNAL SEWER FLOODING

Summary of response

We have carefully considered the IAP feedback, but have decided to make no changes to our Business Plan forecasts for the reasons set out below:

- We reduced total external flooding incidents (within and outside of property curtilages) by 31% between 2012/13 and 2017/18. The question of whether there is “stretch” in our AMP7 projections has to be viewed against this backdrop;
- As we explained in our Business Plan (see Ref 5.2: PR19 Performance Commitments) our customer research shows that although external flooding causes some concern, it is not seen as a very significant issue. Further, cost benefit analysis does not support a reduction in performance below 3,700 incidents at this time. It would therefore not be in customers’ interests to target a much bigger reduction in AMP7;
- We think cross-company comparisons have to be treated with some caution at this stage, because this is a new measure with historically quite differing reporting methods being used by companies. It will take some time and a process of independent horizontal audit before we arrive at robust and consistent reporting data across the sector, which should be available to inform decisions for AMP8.