Chapter 3
Delivering outcomes for customers

1. Overview

A key feature of our PR19 business plan was to understand the service priorities for customers in North and Mid Wales and focus improvements in these areas. The licence change provided us with an opportunity to look at the service our customers are getting at a level of granularity not seen before, or anywhere else in the industry. This exposed areas where our customers are getting the very best service (e.g. internal sewer flooding and drinking water compliance). It has also shown areas where performance is not as good as our comparators, supply interruptions being the most material area. In response to this we developed a package of measures that directly target those aspects of service where our customers want to see improvements and where we are comparatively worse performers.

In the IAP response we addressed the significant areas of concern that Ofwat had raised about our customer research on the design of our incentives. This involved drawing on best practice from South West Water and South East Water whereby we sought customer views on the design of each ODI. Our response included a combination of increased stretch on targets, removal of rewards where our customers did not agree with them and increasing penalty rates where we were out of the industry range. We also sought independent review to ensure our position was robust.

The draft determination includes a further 47 interventions covering performance commitment definition changes, further stretch on targets, removal of collars and increasing penalty rates, 25 of which were not raised at IAP stage.

We have reviewed these interventions and believe that it's important to consider the package in the round and the spirt of what ODIs are trying to achieve. Therefore we accept the challenge presented by the vast majority of interventions, limiting our representation to just ten of the most material issues. However the cumulative impact of all of the interventions leads to significant risk by making the P10 extremely exposed to the downside (more than double Ofwat's indicative bottom range of -3%). In our response we address the most material issues, for example supply interruptions. However there will inevitably remain challenges with the PC and ODI package for HD given its infancy and very small size which means many of the tests used for HD (eg, normalised ODI rates and use of collars) do not appear to work in the manner expected – leading to a -6% P10 RoRE range.

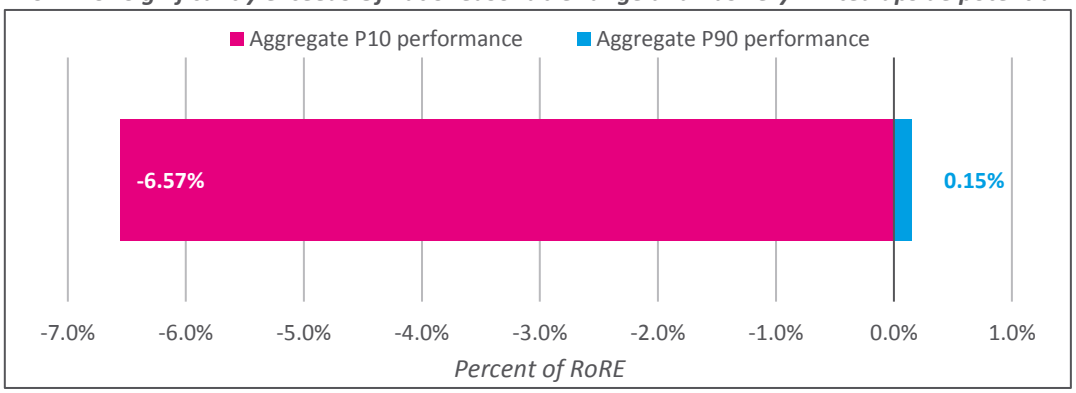
Having considered the problem confronting both ourselves and Ofwat in its assessment of the HD plan, we think there is a compelling case to apply an aggregate cap and collar for HD. This would be consistent with the specific rationale used at PR14 (which we discuss in detail below and in our letter to David Black).

The key principles across all of our representations are fairness and proportionality:

Fairness

- The cumulative impact of the full package of outcomes interventions is significantly tougher in the round than any other company and now results in a RORE range of -6.57% to +0.15% of RORE.

RoRE risk significantly exceeds Ofwat's reasonable range and has very limited upside potential



- Ofwat methodology for setting collars is based on balancing up and downside but the application of the framework significantly penalises companies with predominantly penalty only incentive package. The

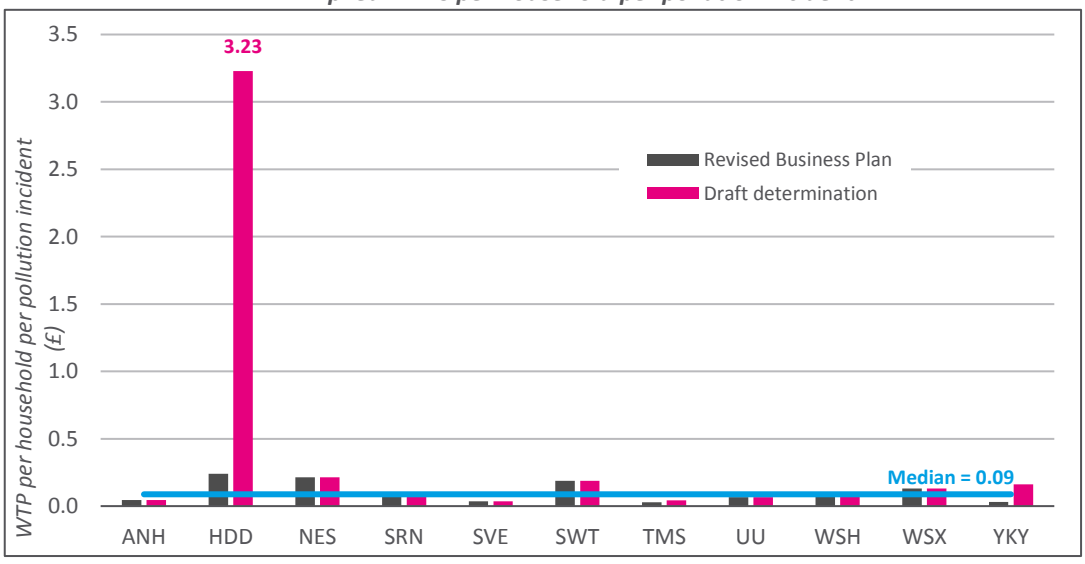
impact of this is that collars have been removed and we are exposed to significant downside risk, far outside Ofwat's expected reasonable range.

- Affordability is an area of our plan where we sought to find innovative and stretching solutions to the affordability issues across our region. The DD interventions have focused in this area despite us explaining the exploratory nature of our commitments and the degree of uncertainty and limited ability to influence customers' financial situations outside of their water bill. We share Ofwat's ambition to help more customers but we feel the balance of interventions across the two affordability measures will have the opposite impact and make a less impactful effect on affordability.
- Several DD interventions on our bespoke PCs are based on comparative performance but only a selection of companies have been used in this analysis, which is distorting our relative performance. Some of this comparative data is of limited quality and reliability.

Proportionality

- The scale of HD means that in many areas we are operating at the level of single digit incidents (particularly in the waste service), so overall penalty or reward is likely to hang off one or two incidents that are disproportionality difficult to prevent and also costly to solve.
- The normalising methods used have a disproportionate impact on us. We understand Ofwat wishes to continue with its current assessment process, however we do think it is important that a final check is carried out by examining what impact those incentives would have on a customers' bill – since this is what will occur in practice in AMP7. This analysis shows that the implied incentive rates for HD are now significantly larger than other companies. This is a function of our size and the effects of normalisation. In several cases the DD put us as a significant outlier when you consider the financial implications of a change in one unit of performance for individual households –the chart below shows pollution incidents as an example.

Implied WTPs per household per pollution incident



This chapter sets out our representations to the DD and is structured in the following way:

Test area	Test questions	Key representation	Relevant narrative
Delivering outcomes for customers	OC1 – well evidenced and stretching performance commitments	PC definitions (support vulnerable customers during an incident, reducing voids)	Section 2.1
		PC targets (low pressure, blockages, struggling to pay, effectiveness of affordability support, supply interruptions)	Section 2.2

Test area	Test questions	Key representation	Relevant narrative
		Other actions (drought risk, bespoke resilience PC, extreme flooding)	Section 2.3
	OC2 – well evidenced incentives for individual PCs and overall package	Overall balance of risk	Section 3.1
		ODI rates (Pollution, Leakage, Supply interruptions, low pressure)	Section 3.2
	OC3 – aligned incentives between customer and investor with necessary protections	collars (supply interruptions, voids)	Section 3.3
	Outcome template - data request	Data and supporting commentary provided	Section 4

2. Well evidenced and stretching performance commitments (IAP test OC1)

This section covers representations on the performance commitment (PC) definitions and targets.

The DD included 17 interventions on PC definitions and targets and we accept around 75% of them. They are set out in the table below for completeness.

PC	Intervention made	HD comment
Supply interruptions	Target update	Adjustment to industry target proposed see 2.2.4
Lead pipe replacement	Target updated Definition updated	Accept Accept
Drought risk	Calculations required to support target	Accept - see section 2.3.1
Extreme flooding	Update and provide commentary	Accept – see section 2.3.3
PSR during incident (minor edit)	Reinstated and definition updated	Accept with slight clarification on response duration – see 2.2.1
Voids	Change definition/form of target Update stretch	Accept with clarification – see 2.1.2 Accept
Source resilience	Withdrawn and request new measure	Accept and new PC proposed - see 2.3.2
Sewer collapse	Target stretched	Accept
Enhancing biodiversity	Allocation across PC changed	Accept
River quality improved	Definition updated Target updated	Accept Accept

The remainder of section 2 sets out the representations on the 5 interventions that we do not accept and is structured in the following way:

Section 2.1 covers representations on PC definitions

Section 2.2 covers representations on PC targets

Section 2.3 sets out responses to Ofwat actions on PC definitions.

2.1 PC definitions

This section covers:

- PSR support during an incident. We accept the intervention but request a minor drafting update to ensure clarity.

- Reduction in the number of void supply points. We accept the intervention but request further detail and an exclusion to be added.

2.1.1 PSR during an incident

We accept the Ofwat intervention to reinstate this measure, retaining it as a non-financial incentive, with a target of 100%.

Ofwat has made an intervention to include the following sentence:

> **"The bottled water alternative supplies process should be triggered within three hours, but it does not require all of the bottled water to have been delivered within the three hours."**

Industry best practice is based on companies making a decision about issuing bottled water to vulnerable customers within 3 hours with an aim to dispatch within 6 hours.

This is our existing policy so we are happy to accept this update even though it appears we would be the only company across the industry being asked to commit to this formally. This seems disproportionate given HD's relatively good performance during both prolonged hot weather and the freeze thaw, but we are happy to accept it. For the sake of clarity and to assist when reporting throughout the 2020-25 period we believe the following the sentence in the definition should be updated to state:

> "The decision to issue bottled water alternative supplies ~~process~~ should be triggered within three hours, but it does not require all of the bottled water to have been delivered within the three hours. The company should aim to have dispatched water within 6 hours."

We also note that there is a sector wider emerging risk on the other PSR measure. This is because the measure is dependent on data share with energy companies. However we understand there are growing concerns relating to GDPR and we will be exploring how this can be resolved via Water UK. We raise this point for completeness and will update Ofwat as and when we have more information on the risk.

2.1.2 Reducing the number of void supply points

The DD included three interventions on voids; HDD.OC.C2 changed the definition from reduction in the number of voids (in absolute numbers) to a proportion of household voids as a percentage of properties; HDD.OC.C3 increases the stretch from our proposed 1% to 31% (in absolute terms) from our current 18/19 position by 24/25. And HDD.OC.C4 increased the incentive rate.

We recognise that we do appear to have a high proportion of voids as a percentage of households compared to other companies and in principle we are happy to accept the sentiment of these interventions but we have a few concerns about the practicalities of calculating performance that we think could be addressed through updates to the definition and target.

The most material concern is the use of the connected property numbers in the denominator. It is not clear what values Ofwat has used in calculating the % improvement, but there are several complexities that should be considered.

- Our connected property forecasts include assumptions about growth, if in reality we see more growth then we will hit the target with a lower number of void properties brought into charge and if we see less growth the inverse will be true. This will be true for all companies but we have significantly more lumpy growth profile given our small size and reduced data history from which to forecast.
- We have an unusual customer profile with several water only customers, several waste only customers and very few combined water and waste customers. Given that the definition states that 1 property brought into charge will count as 1 irrespective of the number of services provided we are unsure what connected properties value Ofwat has used as the total connected properties.

Our proposal is that the definition should be updated to state the number of customers assumed in each year by Ofwat and then each year we can ensure that real improvement has been made rather than simply a change in customer numbers.

We are also concerned about the level of stretch in the target. Part of our concern is that we think there are a higher percentage of genuinely void properties in our region of Wales, which will make it more difficult to reduce the number of voids.

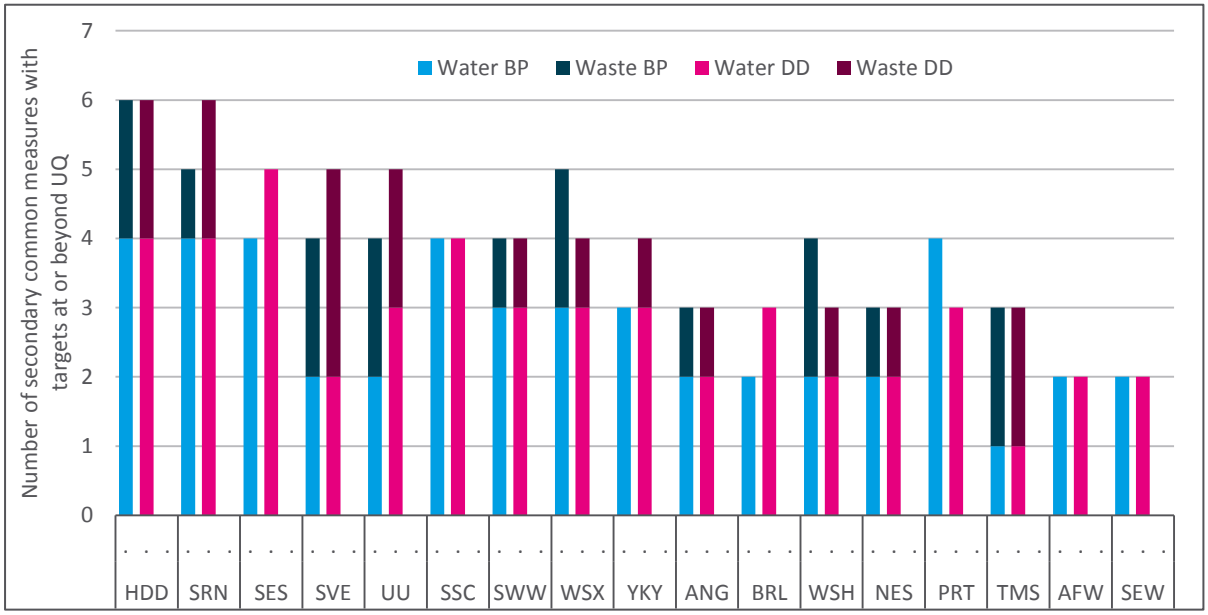
We realise we don't have strong evidence to prove that we have higher genuinely void properties, but given the size of the penalty it means that for each one percentage point missed it represents 7% of our HH retail totex. We would like Ofwat to update the definition to include an exclusion that states:

> "If the company presents robust and assured evidence that the number of properties that are genuine voids means that it is not possible or disproportionately costly to achieve the target then the penalty will not apply."

For example if in 20/21 the company has evidence that more than 5.94% of connected properties are proven to be empty properties then the penalty will not apply. This exclusion should apply each year.

2.2 Ensuring targets are sufficiently stretching

We committed to significant stretch in our business plan across a wide range of service areas. All companies are being challenged on the common and comparative measures, but the chart below also shows that we included the highest number of secondary common measures that will be at or beyond upper quartile in our original plan. The DD has introduced further stretch across our bespoke measures, which overall results in HD having one of the most stretching performance improvements across the sector.



In several cases the interventions are disproportionately stretching, but we accept them in the spirit of ambitious improvements, with the following exceptions:

- Low pressure
- Blockages
- Struggling to pay
- Effectiveness of affordability

2.2.1 Low pressure

In this section we set out our representation on the low pressure target – noting that the proposal to increase our target from 28% to 44% is inconsistent with:

- Customer views;
- Comparative data and the underlying limitations in data accuracy; and

- What is actually deliverable given the characteristics of our region.

The table below sets out the development in this measure throughout the PR19 process.

	Sept plan	IAP assessment	IAP response	DD
Low pressure PC	From 57 to 41 properties at risk	No comment	N/a	Intervention from 57 to 41 in year 1 and 32 by 24/25 Based on relative poor performance

Customer views – revealed and stated

There are four important pieces of customer evidence that we do not believe have been given due consideration in forming a view about the appropriate level of stretch:

- Willingness To Pay – our WTP research found that our customers have a fairly low WTP for resolving low pressure. Collectively, they are only willing to pay £2,224 per property – a valuation which was given in the full knowledge of our relative performance. Overall, water pressure was of medium importance to customers (i.e. not high importance). Noting this WTP is significantly lower than the likely unit cost to solve the low pressure issue, as set out below.
- Customer Research on targets – in our separate performance commitment research our customers also informed us that they were happy with the target - with 73% of households and 80% of business customers finding the 28% improvement commitment in our September plan acceptable.
- Customer complaints – we had a total of 13 complaints during 2018/19 about low pressure and **so far this year (4 months) we've had just one complaint.**
- Post IAP ODI research – in response to the IAP we redesigned our ODIs, seeking customer views on whether incentives should be financial (penalty only or reward and penalty) or reputational. For this measure a majority of customers supported a reputational incentive, indicating lower priority compared to other measures (although Ofwat has intervened to set this as financial).

An increase in our target from 28% to 44% is at odds with customers revealed and stated preferences.

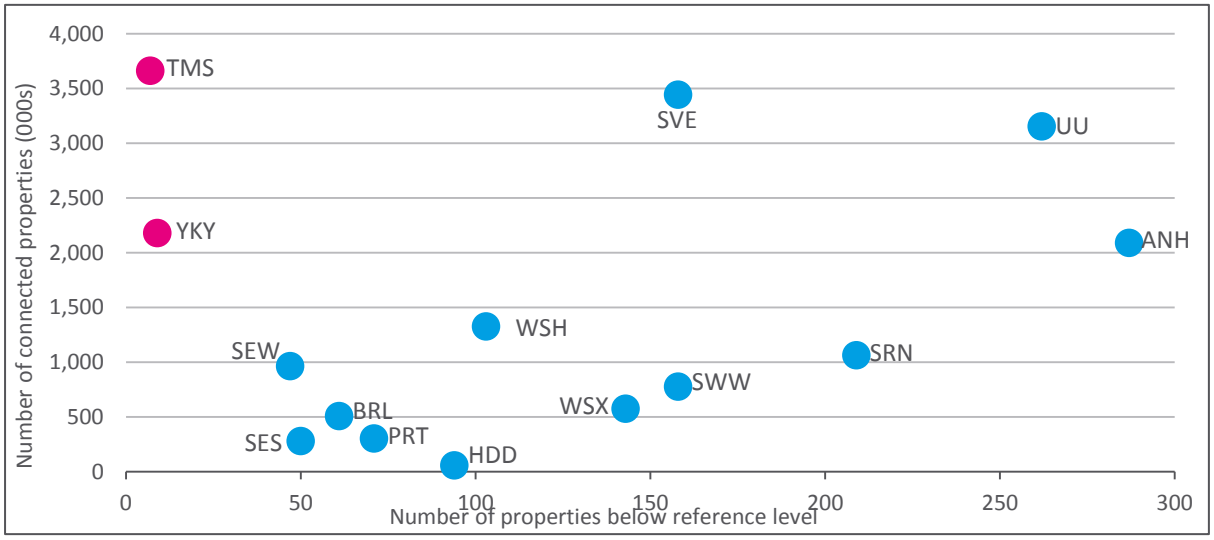
Comparative analysis

In proposing to increase our target from 28% to 44%, Ofwat has analysed the data from those companies that also proposed this bespoke measure and concluded that we are a relatively poor performer. We recognise that setting bespoke targets is challenging and comparative analysis is useful, however there are two issues with the approach adopted which calls into question the validity of the analysis:

- the incomplete data set (despite data being available all companies were not included in this analysis); and
- significant data quality issues which prevents comparability.

We have reviewed the performance across the rest of the sector and note that of the five companies that have not put forward a low pressure bespoke PC, three of them have below-average performance (SWT, SES and WSX). In analysing the different performance levels across the companies, we believe that the data is not being reported consistently. The chart below shows the significant differences across the sector. The most extreme data points are Thames water who have reported seven properties at risk and Yorkshire with nine properties.

Variability between the historical averages in App1 and in 2018/19 Discover Water casts doubt on the data's robustness



We have also analysed the data against pumping head, recognising that the two should be correlated. Our analysis shows there is no correlation with an R^2 of 0.01. The fact that it is not correlated casts further doubt on the accuracy and suitability of the data. The absence of correlation is likely to be linked to (i) variance in the number of pressure loggers companies use to establish performance and (ii) the fact that one aspect of the definition allows companies to remove properties as a result of a one-off burst. There is clearly significant scope for different interpretations of this guidance.

Confidence in the data and its ability to provide meaningful comparative analysis is very low and therefore we don't think it should be relied upon to make the type of significant intervention put forward in the DD.

This issue with data confidence is something we've recognised ourselves and are taking steps to improve our knowledge. During 2018/19 we have installed over 200 pressure loggers across the network to reduce our reliance on inferred data from a small number of loggers (which is an acceptable method specified in Ofwat's former serviceability definition, but clearly less accurate than having specific pressure data spread out across our network). We have calculated the 18/19 performance using the inferred method and then for the short time period where this data exists we have also calculated performance using the newly installed pressure logger data. This results in an increase in the amount of properties at risk, a trend seen by several companies when improving measurement. We therefore think it would be appropriate to restate the measure as a % reduction rather than absolute number of properties. This retains the incentive to improve our data, which is a significant part of our AMP7 strategy.

Our view is that, because of level of engagement and support from our customers for the bespoke PC target, combined with the incomplete and poor quality comparative data used, there should be no interventions made on low pressure target.

Deliverability

Our representation on deliverability has two components – unachievable cost constraints and undeliverable timing expectations. A 44% improvement cannot be delivered along with the rest of the package of stretching improvements at no extra cost. The timing of the DD targets is also unreasonable and depending on the circumstances of each property at risk, unrealistic to deliver 28% improvement in year one and then the further 16% in year two. To set out our representation on this issue we provide more context about our approach to delivering this improvement. The options that we consider to resolve low pressure issues are set out in the table below.

Options for resolving low pressure issues

Intervention	Typical delivery time	Indicative cost per scheme	Applicability Issues	Resolves Section 65 issues?
Operational system changes (rezoning)	3-6 months	<£2k	Rezone options limited in rural, hilly areas. Already exhausted to a large extent	No
Upsizing water mains	8-12 months	£30k - £100k	More suited to urban networks where lengths of reinforcements are shorter. Limited applicability in rural, hilly areas	No
Installing booster pumping stations	12-16 months	£40k - £100k	Most used in rural hilly locations ie up the sides of valleys with no alternative supply routes Requires land purchase and negotiation of future access permissions, new electricity supply (can be significant cost in rural areas), new communication connections, and potentially environmental investigations.	Yes
Property specific pumping or storage solution	12-14 months	£10k	More efficient for single property issues but customers very often unwilling. Requires sufficient footprint within the property and specific legal agreement covering maintenance, electricity costs and liabilities	Yes
Relocating water storage reservoir	18 to 36 months	>£500k	Only viable on cost where storage reservoir needs to be rebuilt for maintenance or water quality purposes.	Yes

The operational solution is considered every time we get a complaint or register low pressure issues, so to a large extent these have already been exhausted but are kept under review. The alternative solutions are increasingly more complex, more expensive and take longer to implement.

Furthermore, not all solutions are available to resolve the type of low pressure issues most frequently experienced in our areas;

- around 70% of the properties at risk fall within Section 65 of the Water Industry Act, which states:

  > "Under Section 65 of the Water Industry Act 1991, a water undertaker is not required to supply water to properties that cannot be supplied by gravity from an existing service reservoir, and which thus receive a level of service below the reference level of 9 l/min at a pressure of 10m available head on the customer's side of the main stop tap."

  This clause was introduced in recognition of the engineering and cost constraints in circumstances where properties are close to (in elevation terms) the storage reservoir.

- the majority of the remaining 30% of customers at risk live at high elevations on the sides of valleys which limits network re-configuration and network reinforcement options. In many cases the only viable solution is re-pumping or building new treated water storage.

The impact of the mix of solutions that we are able to implement is that resolving our customers' low pressure issues will take longer and be at the higher end of the cost range.

We have also considered the most efficient delivery model. At a group level we have experienced significant efficiency savings by having a rolling programme of similar schemes so that we can use an expert team working through the issues across the AMP.

In conclusion requiring such significant improvement in two years is:

- Unfeasible due to the timescales required to get planning permission and other service connections in addition to design, purchase and construction.
- Inefficient as it precludes the use of a single team who can improve the process across the AMP.

On costs, we are making representations on the grounds that the DD intervention cannot be delivered within our overall cost envelope. Ofwat's assessment shows that our costs are relatively efficient and based on these

efficient costs Ofwat's DD would require us to invest around £4m over two years, which is 18% of our annual capex assumption (of £11m/ year) to deliver the DD improvement.

Conclusion

In summary, **we consider that our original target of 28% is both stretching and consistent with our customers' implied and revealed preferences**. To set a target using the limited and unreliable comparative data would unduly penalise us and lead to a measure that is not cost-effective to deliver or feasible within the 2 years specified in the DD. We are also proposing to revise the metric for this measure, to work on the basis of the percentage reduction against the 2019/20 baseline. On this percentage basis, the targets will be as follows.

Targets updated to apply on a percentage reduction basis against 2019/20

2020/21	2021/22	2022/23	2023/24	2024/25
7%	28%	28%	28%	28%

2.2.2 Blockages

Ofwat has intervened to set our improvement equal to the maximum improvement (17%) being offered by any company on the basis that HD are relatively poor performers. The average stretch across the 6 companies who have included this performance commitment is 10%.

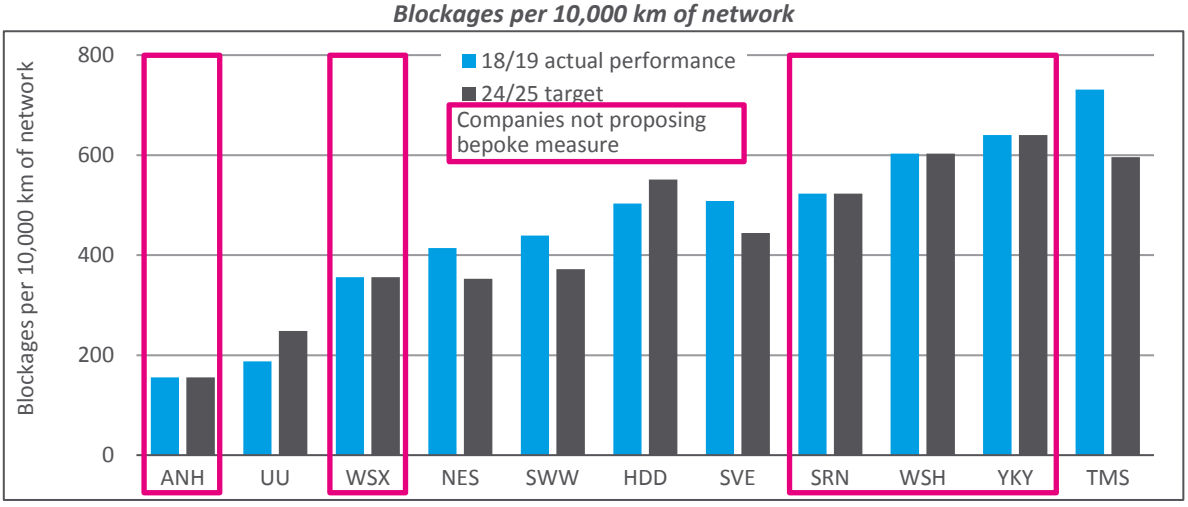
We do not believe this intervention is justified on the basis of:

- the incomplete data set being used to inform the comparative analysis, which if expanded shows our performance isn't poor or lower quartile as suggested in the DD;
- comparative assessments of performance are strongly influenced by our short sewer length, which makes comparison based on normalisation more sensitive to assumptions such as the length of sewer adopted (this point was recognised in relation to pollution incidents). The choice of normalising method also significantly impacts our relative performance position; and
- our customer views.

Incomplete data set

The blockages PC is a bespoke measure and as such a number of companies have not proposed the measure. This is why there are five companies without commitments in this area. Three of these are amongst the current worst performers. By contrast, our performance is not lower quartile but around the industry average when a complete data set is used below.

Blockages per 10,000 km of network

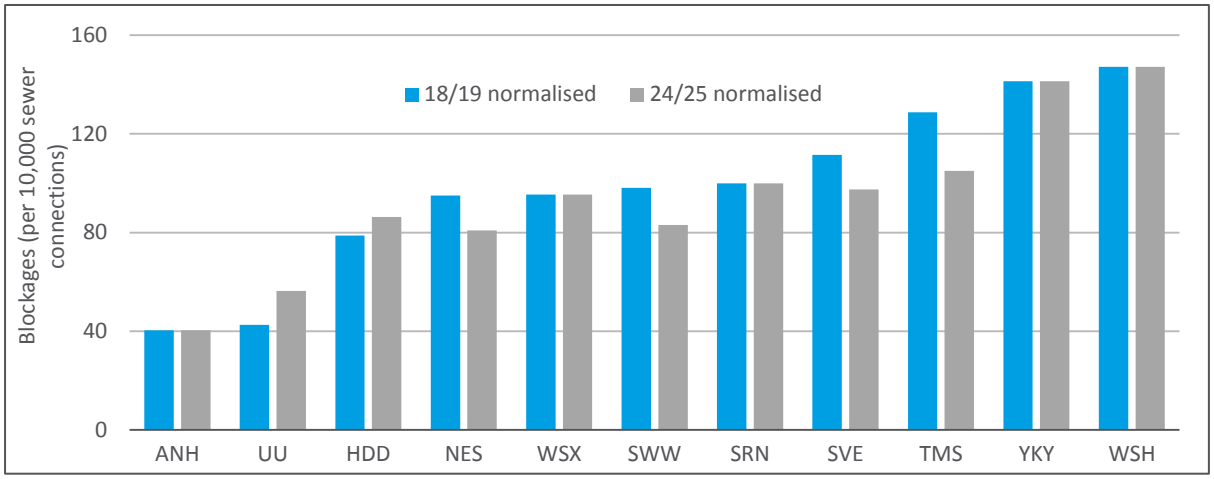


Issues with normalised comparative assessments

Our short sewer length makes comparison based on normalisation more sensitive to assumptions such as the length of sewer adopted. Ofwat have accepted this evidence for pollution but discounted it for blockages even though the issue is the same.

When we compare sector performance according to the number of sewer connections, which we feel is a better normalisation approach as it more closely reflects the root cause of blockages i.e. sewer misuse by customers disposing of fats, oils and non-flushable wipes, we are shown to be the third best performer in the sector. This is a substantial improvement on the sixth place when using a sewer-length comparison.

Blockages per 10,000 connections



Customer views

Amongst our customers, 88% found a target of 300 blockages acceptable, which would have represented stable, i.e. 0% improvement. In doing our research we were transparent that this was an average level of performance compared with the rest of the industry. In addition, customers felt that the size and impact of the blockage should be taken into account when setting the target. Customer impact appears not to have been taken into account when setting the DD as only 3% of our blockages convert into either a pollution or internal sewer flooding incident.

Efficient Delivery

The two most effective means to reduce blockages are to;

- educate customers so that they do not dispose of fats, oils and grease, or flush wet wipes, into our sewers, and;
- clean high risk sewers, i.e. those with a higher likelihood of misuse.

Our cleaning programme is focussed in the areas where blockages cause pollution and sewer flooding events which are service areas that our customers value more highly. Following our root cause analysis on pollution events we have recently increased our planned sewer cleaning programme to approximately 3% of our network per annum. This is a high proportion compared to others – Severn Trent's cleaning rate is around 1%.

Conclusion

We consider that our original target of maintaining our historical rate of improvement (c6%) is appropriate. Using a complete data set shows our performance is not lower quartile and, if the normalisation approach is changed to better reflect the scale variable most closely linked to performance (i.e. number of customers), we are shown to be the third best performer. Given this context, setting our improvement at the highest level is disproportionate, particularly given our customer views and the impact these blockages have on customers and the environment. Furthermore we have accepted interventions HDD.OC.C8 and 9 in which Ofwat has removed

the collar and increased the penalty rate, which both increase the incentive for us to deliver. This is also confirmed in section 3 below.

2.2.3 Affordability PCs

In our business plan we proposed a new innovative affordability measure and also undertook sector-first research to better understand the views of different customer segments about the overall plan. Specifically:

- We created a PC that would reveal a baseline of the effectiveness of our affordability support, which would allow us to drive improvement in the future. There is no company or industry data that we can draw on from which to base a target, as the definition looks at payments made by customers 12 months after the completed a scheme. The first batch of customers came off schemes 1st July 19, so we currently have one month's data.
- We tested acceptability of our plan using new segments including JAMs, albeit recognising that this isn't a defined segment but rather gives additional useful insight.

In putting forward the new PC and research we considered that collecting the information would help drive performance improvements in the future.

However in the DD the data and ideas have been taken to create what is arguably the most challenging combination of affordability metrics in the sector. This is because the interventions (i) effectively doubles the number of customers we have to help (by including JAMs in the denominator of our PCs); and (ii) we need to ensure that the support we provide is the most effective in the sector with 50% not falling back into debt a year after support has ceased.

These interventions do not seem to work coherently:

- we have to double the number of customers we help through schemes defined in the PC definition, of which the majority will be through the social tariff (there are other defined schemes such as payment holidays which is important to some customers such as farming communities however the social tariff is the primary method of help); and
- the social tariff contributions are defined (based on customer WTP to contribute) and therefore to double the number of customers we help we would need to reduce the quantum of support, making it less meaningful and more likely to reduce the effectiveness of our support, putting our other PC at risk.

These interventions are not only disproportionate but also dis-incentivise companies from trying new things at future price reviews.

Below we address the interventions explaining in more detail why they are disproportionate and inappropriate.

PC for helping customers who struggle to pay

The intervention to effectively double the denominator in this PC whilst holding the % supported constant would effectively double our target number of customers we help. This intervention is inappropriate for a number of reasons:

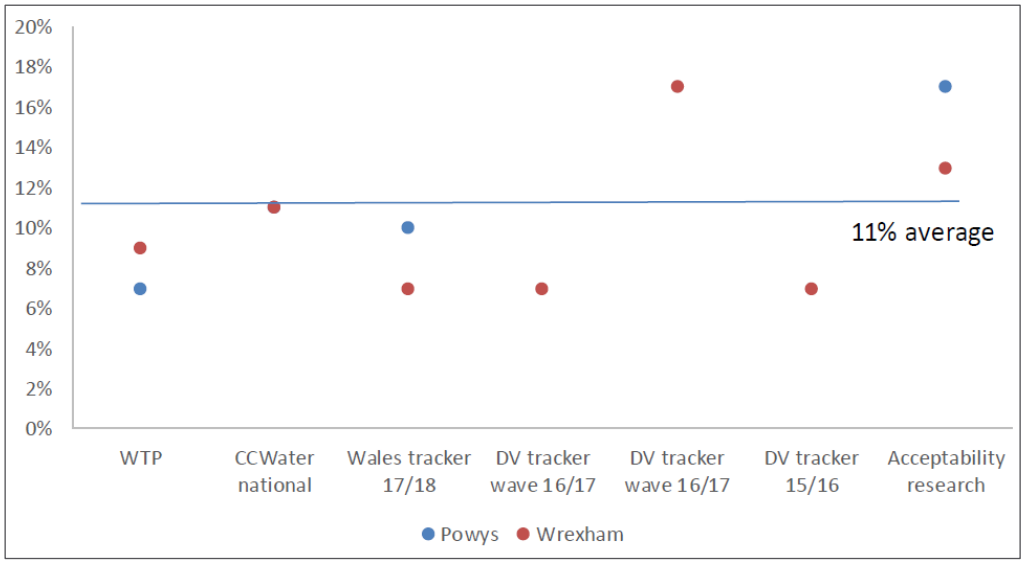
- **Disregards our triangulation of customer insight –** the approach applied by Ofwat places undue weight on single piece of insight (which was based on extremely small sample of customers), disregarding all other data that was used to triangulate the target ;
- **There is a risk that the level of customers needing support may not be that high** – which means the result will be less meaningful help but for more customers and potentially not providing enough support to the customers who most need support;
- **Could undermine the effectiveness of our support** – by reducing the quantum of support we can give via the social tariff

We discuss these points below.

Disregards the triangulation of different data sources

Our PC was introduced to target those customers who are likely to be in water poverty, which we estimated to be 11% of our population. In identifying the 11% we triangulated a range of data sources, as shown in the chart below (ref appendix 1 our customer compendium):

Percent of customers who find their bills unaffordable



In recognition of the fact that customers answer the question about struggling to pay differently, we took the average percentage of customers who find their bill unaffordable across the above items, which equalled 11%.

This is consistent with the emphasis from the PR19 methodology of triangulating different data sources. The latest (July 2019) CCW research concludes that the percentage of customers in HD operating area struggling to pay is 12% with 75% finding their bill affordable compared to an industry average of 72.5%.

Our concern with the DD approach is that it effectively places a 50% weighting on a single source of information, despite other evidence to the contrary. This means all other sources of insight are effectively being disregarded.

This is also a concern given research quotas were not set using the Just About Managing (JAM) segment as it is not a recognised group within market research best practice. We wanted to gain more insight into this often forgotten group, but did not set quotas on getting a representative sample. The result is that a 7% increase in the struggling to pay percentage has been based on the voice of 0.2% of our customer base.

A more appropriate approach would be to incorporate this insight into our triangulation, which would take the number of customers we need to help to 13% of our customer base.

There is a risk that the level of customers needing support may not be that high

One of the reasons we triangulated different data sources is that there is uncertainty over what proportion of customers need support. By setting a target at the highest possible level (i.e. 18% of customers need support), it might result in a situation whereby we cannot succeed because 18% is higher than the number of customers who are struggling to pay.

Identifying 18% of our customers and getting them on to a support scheme is a remarkable challenge that appears to be unique to HD, a company with the lowest bill in the UK. We are committed to helping customers who need support and since the acquisition we have considerably increased our activity and presence in the community across more than 20 events and through partnerships we have increased the number of customers receiving support from 0.3% to 1% of our customers over the last 12 months. We are continuing with all of this work and in addition there are a number of other initiatives we are pursuing to increase awareness/take up of affordability schemes, such as:

- partnership working with local housing associations to promote schemes to tenants;

- promotion through Hospitals/Health surgeries to display posters & leaflets, etc; and
- collaborative working with Fire Services and promotion of our schemes through home safety checks.

We have continuously attempted to engage with our customers to raise awareness but struggled, particularly in the Powys area. For example, using socio-demographic data we have identified around 4000 customers who could potentially benefit from and qualify for financial support. We have completed the first mailshot, sending 250 letters to customers in Powys, which has resulted in an uptake so far of just one customer. Based on this uptake rate across the potential 4,000 customers it will mean just 16 additional customers identified. We have seen much higher uptake rates across other area so the Severn Trent Group, where this method has been very successful, which could be because there aren't as many customers needing support as suggested. We will continue to look for opportunities and use different channels but this recent experience demonstrates the challenges we face with response rates. It also underscores the importance of triangulating different data sources to identify those that need help.

The intervention would undermine the effectiveness of our support

This PC specifies the variety of support schemes that all contribute to making a customer's bill more affordable. Following a review of the tools and assuming the 18% is correct, the only way we could realistically deliver a 70% increase in customers supported (i.e. increasing the number of customers we help from around 7000 to 12000 – which is 13% of our entire customer base) is by reducing the amount of bill discount. This would allow us to support more customers albeit with a lower discount off the bill. Such an approach runs counter to the insight from our co-creation with customers on water poverty.

Our joint research with SVE, in combination with poverty experts, has identified the range of bill reductions needed to have a meaningful impact on our customers' lives. For example, 26% of Wales customers on the previous H2H reduction of only 30% reduction felt it "made no difference" to long-term affordability. We also have to consider that the majority of our customers would only see this reduction against the water element of the bill – the sewerage element being billed by DCWW. Whilst we passport these customers across without the need for them to apply for both schemes, the sewerage reduction offered by DCWW is still only 30% and Welsh Water's bill is much higher.

The social tariff is also fixed – after extensive research and peer review our customers told us that they are prepared to contribute £1.75 for single serve and £3.50 for combined bill payers. It would not be possible to change this contribution.

The implication of the DD intervention is that instead of helping 73% of the struggling to pay customers the social tariff will help 46%. This is comparatively still very high.

Conclusion

The intervention to effectively double our target is not only disproportionate but also dis-incentivises companies from proposing and collecting new insight at future price reviews. The intervention would also:

- **Disregard our triangulation of customer insight** and place undue weight on single piece of insight (with low sample size), disregarding all other data that was used to triangulate the target;
- **There is a risk that level of customers needing support may not be that high** – this could both have the unintended consequence of resulting in less support for those who need it most and is setting us up for failure through the reliance on one piece of evidence; and
- **Could undermine the effectiveness of our support** – by reducing the quantum of support we can give via the finite limits of the social tariff.

For this reason we consider that a more appropriate way to take into account the insight from the JAMs is to use that insight in our triangulation of the number of customers who need help. That would **take our target from 11% to 13%.**

PC on effectiveness of our affordability offering

Our business plan included an innovative, bespoke measure that sought to shine a light on the effectiveness that our support offerings have over the longer term. Only Southern water has a similar performance commitment but that looks at the immediate 12 months after completing a scheme rather than the longer term impact on affordability. We responded to the IAP challenge to set a numerical target, by setting a target of zero improvement on the basis that the aim of this measure was to gather insight and drive improvements to the way we offer support to customers, and to reflect the fact that we have no data from which to forecast performance.

We understand that this may have been interpreted as unambitious and could have been read as our plan was to achieve zero percent of customers still paying their bill 12 months after support has stopped. That is not our aim, but the intervention to require 30% increasing to 50% by 24/25 of customers to maintain full payments is unsubstantiated and we believe unrealistic, setting us up to fail on what was supposed to be a bold first step to really driving improvements for our customers. Based on the limited information we have available combined with expert judgement we have reset our target to improve from 0% to 10% improvement by 24/25.

We are making representations on two grounds:

- Consistency and fairness in Ofwat's approach to setting targets on other innovative measures; and
- The lack of empirical evidence from which to set an achievable target given the limited extent to which customers' financial circumstances are within our control.

Consistency and fairness

There were two other companies, who committed to innovative measures relating to affordability and vulnerability and as the table below shows, in both cases zero improvement was accepted by Ofwat. In both cases we would argue that delivery of the commitment is more in the companies' control than the measure we are proposing.

Bespoke measure	Input or outcome	Target improvement committed by company	Ofwat IAP feedback	Ofwat DD feedback
Successful applications for assistance received by the independent advice sector/ third parties (**Wessex**)	Input	0%	Pass	n/a
Addressing Vulnerability (**Portsmouth**)	Perception	0%	Pass	n/a
Effectiveness of affordability support (Hafren Dyfrdwy)	Outcome	0%	Fail	30% rising to 50% improvement

In addition to this, we are by no means an outlier on the number of customers finding our bill unaffordable (which is ultimately what this measure is getting at). The latest independent research carried out by CCW shows that we are above average at 75% finding it affordable compared to an industry average of 72.5%.

Lack of empirical evidence

Our proposed measure requires a minimum of 24 months to have passed before the measure can be calculated. Only 13 of the required 24 months have passed, which presents us with a conundrum about how to baseline performance and then forecast an ambitious but realistic improvement. The DD didn't include any reasoning for the selected 30% improvement expected in year 1 growing to 50% by year 5. In an attempt to address the information void we have analysed HD data and any available data from our group systems. We also carried out a desk top review and consulted CCW to identify any relevant data sources, but none were found (again demonstrating how innovative this is).

- Of the 120 customers who have completed 12 months on a payment scheme, **after one month**, 30% of them are continuing to make payments. Clearly we would expect this number to reduce after 12 months of customers paying bills without our support.

- Social tariffs are seen as long term support for customers who can't afford full charges due to their circumstances. They are typically not effective tools to rehabilitate customers back into paying full charges. Unless there is a real change in a customer's circumstances then their ability to pay is unlikely to change. At group level we have had around a quarter of customers needing to stay on a social tariff since the launch in 2015. If this trend is mirrored in the HD operating area then it will reduce the number of customers who will feed into this measure, making it even more uncertain and potentially volatile year on year.
- Following extensive research the bill reductions we will be offering will be c70% but up to 90%, which is much higher than that experienced by the customers included in this 120 sample (as former DVW customers received up to a maximum of 30% reduction). Therefore moving into AMP7, customers coming off a social tariff will see a bigger jump which is another reason why 30% is likely to be an overestimation.
- We are continuously trying to improve our support schemes and do update the process and criteria to reflect updates to industry recognised best practice. Part of the purpose of this measure is to enable us to try different support tools/ processes and then expose the impact of those changes. The DD intervention disincentivises this and puts us at a disadvantages to other companies who will be able to run trials without it having negative reputational impact.
- From experience at a Severn Trent group level the two main reason for customers coming off a social tariff also suggest the current 1 month data showing 30% effectiveness is an over estimation. The reasons are: is because either:
    - we have not been able to reengage with them to assess their needs following the completion of a scheme (25% of this sample) – this is for reasons such as they have moved house, changed their contact details and not updated us or simply don't want to talk to us. This percentage is likely to grow when we look at performance 12months after. This re-contact issue is something that Ofwat recognised in their intervention to the industry wide PC on growth of the PSR where Ofwat recognised the challenge faced by companies and updated the assumption to require companies to attempt 90% but requiring at least 50% re-contact; or
    - because they are failing to pay the minimum payments (45% of this sample). This percentage is likely to be higher after 12 months.

The combination of all of these reasons, makes us conclude that 30% of customers continuing to pay is the absolute best we can expect based on performance 1 month after scheme completion and the reality is likely to be much less than that.

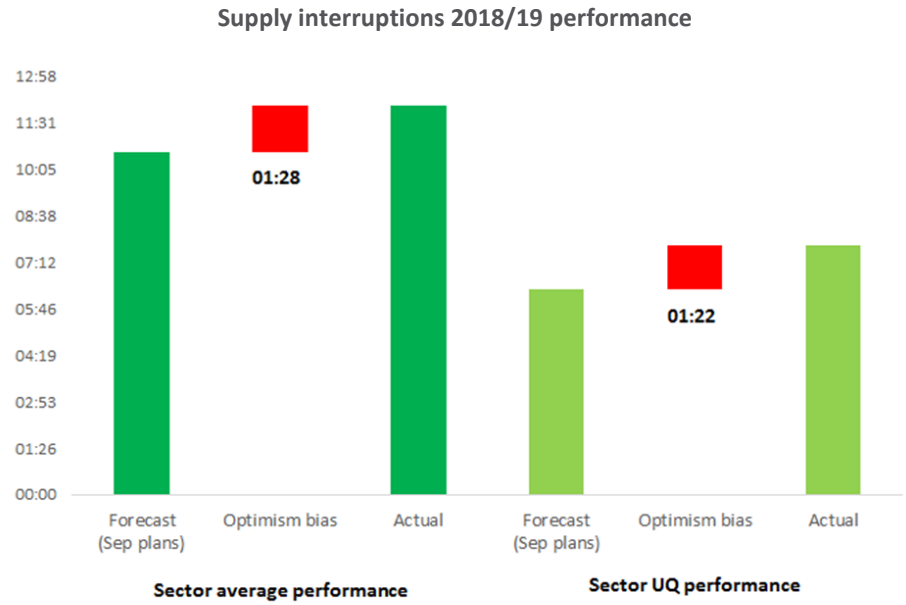
24 months won't have elapsed until July 2020 and we will still be largely blind to the baseline performance, coupled with the fact that the impact of the new social tariff and larger discounts which will start April 2020 won't be having a material impact for a while, we still think it is reasonable to start year 1 with 0% improvement and increasing to 10% improvement by 24/25. We accept that the empirical data to justify this 10% improvement target is extremely limited, but that is always the case with innovative measures. We believe that this is a fair balance between the zero % improvement accepted for other companies and the unrealistic targets set in the DD.

2.2.4 Supply interruptions target

We support the concept of the UQ ambition and the need for our sector to continuously push forward the standards of service that we deliver to our customers. However the use of the forecast UQ (3:00 by 24/25) raises significant concerns about deliverability given that the actual UQ has ranged between 06:18 and 07:43 in this AMP. In fact only one company has achieved less than 03:00 during that time.

Although the introduction of a glide path is welcome, it still doesn't address the fundamental issue that the forecast UQ has been set at a level that will be undeliverable for the majority of companies. This is because it requires a 50%+ improvement for the vast majority of companies. Based on current performance, every company except Portsmouth would fail supply interruptions in the first year of AMP7. Such an outcome would be hugely damaging to the reputation of the sector and not be reflective of poor performance as every company could be delivering best ever levels but against an unattainable target.

We recognise that the target included in the Draft Determinations has been set on the basis of company forecasts from the September plans. However these forecasts suffer from optimism bias. This can be illustrated by comparing what companies said they would deliver for 2018/19 in their September plans with what they actually delivered. This is presented below for both average performance and UQ performance.



The above analysis shows a clear and consistent optimism bias in company forecasts of approximately 1 min 30 seconds, or 20%. Given that this bias arose when 6 months of performance data was already known, this bias could be even larger in practice.

This analysis demonstrates that there is a clear and compelling case for adjusting the proposed UQ target to account for the known optimism bias and promote a more realistic but still very stretching target. To ensure consistency with the PR19 methodology we propose that the bias should be calculated on the UQ measure, as opposed to sector average. This would lead to a small uplift to the targets of 1:22 each year, as set out in the table below. We note that this target would still require a very significant improvement on current performance (based on current performance only two companies would meet the target) however it would more realistic than the current target.

Required action	20/21	21/22	22/23	23/24	24/25
DD target	05:24	04:48	04:12	03:36	03:00
Optimism bias	01:22	01:22	01:22	01:22	01:22
Revised UQ target	06:46	06:10	05:34	04:58	04:22

2.3 Other actions

2.3.1 Drought risk actions

In response to IAP action HDD.OC.A21 we provided a detailed report on our Drought Risk Assessment and a spreadsheet showing how we had calculated a company level risk score from zonal risk scores. We also confirmed that we used our Water Resource Management Plan analysis of drought risk (at a 1 in 200 year return period) across our four new water resource zones.

A follow-on intervention was included in the draft determination under the same reference. We have summarised our response in the table below to each of the points:

Required action	What provided at IAP	Draft Determination Response
The company should provide a full set of intermediate calculations at a zonal level, underlying the risk calculation (for both baseline levels and performance commitment).	Atkins technical report on Drought resilience. Calculations to show how we determined company level from zonal level risks	The intermediate calculations at a zonal level are available if required (given Ofwat's query response -ref 1, we have not submitted them) The explanation of our calculation method is set out below.
The company should confirm that its performance commitment levels are reflective of its water resources management plan (WRMP) position. (This should include the potential that it will have access to drought orders and permits)	A statement that the drought risk score was reflective of our final WRMP and our new Water Resource Zones	We confirm that our performance commitment levels are reflective of our, now published, final WRMP and Drought Plan position. We do not have any drought permits or drought sources in our supply zones.
The company should confirm which programmes of work will impact its forecasts. The company should confirm which schemes will impact its forecasts.		Our leakage reduction and water efficiency programmes, set out in Table 6 of final WRMP, have a marginal impact by reducing distribution input. However they do not alter the risk score which remains at zero. We have no water resource schemes in our WRMP, as shown by Table 6 of our final WRMP

Explanation of our method to calculate drought risk

We have used the data from our final water resource plan to determine the risk scores.

A. Baseline forecast

(see "Intermediate Base Forecast" tab in "Drought risk population at risk calculations.xls")

Item	Source
Water Resource Zone Water available for use	fWRMP Table 4: Baseline supply demand balance. Row 13BL Total Water Available For Use **PLUS** fWRMP Table 10: Drought plan links and Deployable Output Overview. Row11: scenario 141 1 in 200, Column P Drought Plan: Additional Yield from Further Supply Measures
Zonal Dry year demand + Target headroom	fWRMP Table 4: Baseline supply demand balance. Row 11BL Distribution input **LESS** 10% (assumed savings from temporary use bans 10%) **PLUS** fWRMP Table 4: Final planning water supply. Row 16BL Target Headroom
Resultant Supply-demand balance	"Water available for use" **less** "dry year demand plus headroom"
Risk score	If supply demand balance > 0 then risk score = zero

B. Commitment *(ie including leakage and water efficiency savings)*

(see "Intermediate Calc Commitment" tab in "Drought risk population at risk calculations.xls")

Item	Source
Zonal Water Resource Zone Water available for use	fWRMP Table 9: Final supply demand balance. Row 13FP Total Water Available For Use **PLUS** fWRMP Table 10: Drought plan links and Deployable Output Overview. Row11: scenario 141 1 in 200, Column P Drought Plan: Additional Yield from Further Supply Measures

Zonal Dry year demand + Target headroom	fWRMP Table 9: Final planning water supply. Row 11FP Distribution input **LESS** 10% (assumed savings from temporary use bans 10%) **PLUS** fWRMP Table 9: Final planning water supply. Row 16FP Target Headroom
Supply-demand balance	"Water available for use" **less** "dry year demand plus headroom"
Risk score	If supply demand balance > 0 then risk score = zero

Note – We do not have any drought permits or drought sources in our supply zones so the additional yield from further supply measures is zero for all zones.

– Given the scale of our surplus in all zones, even if we assume zero impact from temporary use bans the drought risk score remains zero.

2.3.2 Bespoke resilience PC actions

In the IAP response we proposed a resilience PC which we explained was a first step towards developing a fully risk based metric during AMP7. Ofwat has rejected this proposal and action HDD.OC.A1 requires us to propose a new metric that:

- has a clearer line of sight to the main resilience challenges faced by the company; and
- shows improvement in the short term.

In order to address this intervention we have re-examined our key risks, carried out a benchmarking exercise across all companies bespoke resilience PCs, engaged independent resilience experts and as a result are proposing a bespoke PC that will track the activity that will deliver improved resilience by protecting customers from a dam failure. After considering the advantages and disadvantages of the options we have decided that this is the most appropriate PC for the following reasons:

- Reservoir safety is our top companywide risk;
- It is the aspect of resilience where we have carried out the most engagement with our customers;
- We are driving a significant reduction in risk across AMP7; and
- Several other companies have similar PCs which will allow some comparability and it is clearly considered by Ofwat to be an acceptable focus area as it has been accepted for several other companies.

The definition is set out below.

Improving reservoir resilience

Purpose – this performance commitment measures the progress the company is making in addressing the legally binding safety works raised under Section 10 of the Reservoir Act 1975 in a timely manner.

Benefits – delivery of the reservoir safety programme will reduce the individual and societal risks presented by reservoir failure. It will also ensure that the company has resilient raw water supplies in the future.

Performance commitment definition and parameters

<table>
<tr><th>Unique Reference</th><th>PR19HDD_B8</th></tr>
<tr><td>Detailed definition</td><td>This performance commitment measures the percentage completion of the “matters in the interest of safety” raised by the independent Reservoir Inspecting Engineer as part of the statutory (Section10) inspections for each of the 11 reservoirs that are due for inspection during 2020-25. Satisfactory completion will be determined by regulators NRW.

The Section 10 reports are a thorough review of the safety of the dam against today’s design standards. These reports itemise all findings and identify which works are required to render a reservoir safe. These works are termed “measures in the interests of safety”. 100% of these must be corrected within the prescribed timescale which is no longer 3 years following the date of the inspection. The inspection due dates vary between 2019 and 2022, so all “matters of safety” will have to be addressed by latest December 2025.

When the formal inspections are carried out we will have a firm indication of the detailed matters in the interests of safety for each reservoir. To score our performance, our planned approach is to treat each reservoir equally, so that each reservoir contributes in equal weight to the 100% overall score. The total number of matters of safety for each of the 11 reservoirs will be scaled to account for 9.1% of the total 100%. This means that each time all matters in the interests of safety for a reservoir are signed off then the company will have achieved 9.1% completion. This is set out in the table below. Societal risk reduction will be achieved following the completion of these works.</td></tr>
<tr><td>Additional detail on measurement units</td><td>Delivery will be assessed in reporting years and will include all reservoirs where the 3 year delivery period has concluded or if the Section 10 matters of safety have been signed off by NRW. The due dates are outlined below:
<table>
<tr><th>Assessment year</th><th>Applicable reservoirs</th><th>% complete</th></tr>
<tr><td>2020/21</td><td>None</td><td>0</td></tr>
<tr><td>2021/22</td><td>Marchwiel (due Dec 2018)</td><td>9.1%</td></tr>
<tr><td>2022/23</td><td>Ty Mawr, Pendinas, Cae Llwyd (all due Dec 2019)</td><td>36.4%</td></tr>
<tr><td>2023/24</td><td>None</td><td>36.4%</td></tr>
<tr><td>2024/25</td><td rowspan="2">Penycae Lower, Penycae Upper, Nant-y-Geifr, llyn Cfynwy, Nant-y-Frith, Pant Glas, Pen-y-Gwely (due December 2025)</td><td>68.3%</td></tr>
<tr><td>2025/26</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Specific exclusions</td><td>A forecast position for 24/25 will be given based on activity completed to date, but the target is based on at least half of the reservoirs being complete within the 24/25 report year. A final assessment will be given as part of the 25/26 APR as due dates could be up to December 2025.</td></tr>
<tr><td>Reporting and assurance</td><td>An annual progress review will also be given by the HD Supervising Engineer as part of the annual report, this will include the % completion of the matters in the interest of safety that have been addressed or are in progress. Final sign off of all matters of safety will be done by the Independent Construction Engineer as part of the established statutory requirements, which is closely regulated by NRW.</td></tr>
<tr><td>Measurement unit and decimal places</td><td>Percentage. 1 d.p</td></tr>
<tr><td>Measurement timing</td><td>Reporting year</td></tr>
<tr><td>Incentive form</td><td>Reputational</td></tr>
<tr><td>Timing of incentive payments</td><td>n/a</td></tr>
<tr><td>Price control allocation</td><td>Water Resources</td></tr>
<tr><td>Frequency of reporting</td><td>Annually</td></tr>
<tr><td>Any other relevant information</td><td>This is a reputational only measure as it is not designed to be a measure for non-delivery as Ofwat have already accepted the evidence that there is already sufficient statutory</td></tr>
</table>

	instruments in place to ensure this. Instead it is to demonstrate improved resilience of one of the highest risk asset groups across the company.
Links to external documents	n/a

Performance commitment level

	Unit	Company forecast	Committed performance level				
		2019-20	20-21	21-22	22-23	23-24	24-25
PC level	%	n/a	0	9.1	36.4	36.4	68.3
Enhanced underperformance collar	n/a	n/a	n/a				
Standard underperformance collar	n/a	n/a					
Standard underperformance collar	n/a	n/a					
Underperformance deadband	n/a	n/a					
Outperformance deadband	n/a	n/a					
Standard outperformance cap	n/a	n/a					
Enhanced outperformance cap	n/a	n/a					

Incentive rates

Incentive type	Incentive rate (£m/unit)
Under performance payment - standard	n/a
Under performance payment - enhanced	n/a
Out performance payment - standard	n/a
Out performance payment - enhanced	n/a

We acknowledge the concerns raised about the previously proposed source resilience PC, but we are strongly of the view that there is merit in developing it further. In our IAP action we clearly failed to articulate the long term plan for both developing the metric into a fully risk based measure but also the long term activities that we plan to undertake to improve resilience. It is important to recognise that our system level understanding is significantly less mature than other companies due to the licence change and boundary realignment and inconsistency of data between our two distinct regions. We also have a further challenge to find a way of improving resilience incrementally to avoid lumpy expenditure which disproportionality affects our customers' bills due to our small size. This makes it even more important that we get our long term strategy right, grounded in strong empirical data. A very high level snap shot of this is set out in the table below.

We have submitted further evidence and action plan in the 22 August action response to action HDD.LR.A2.

AMP6	AMP7	AMP8
Address WTW asset health risks	Address Reservoir Safety risks	Pending study results we are likely to need to address network resilience in combination with a more ambitious lead replacement programme
Develop risk assessments and improve ERM reporting	Complete studies on ERM risks Develop partnerships and external interdependencies Complete hydraulic modelling to complete the network risk assessment and then combine into a system risk to service metric.	Develop dynamic risk assessments using telemetry installed during AMP7

2.3.3 Sewer flooding - extreme storms

The DD included an intervention linked to action HDD.OC.A38, requiring us to provide more information about how we are ensuring we are compliant with the guidance. In section 4.2.1 of our IAP response and in appendix 4.5 and 4.6 we included both an updated RAG assessment showing our good progress in reporting in line with the definition. We also provided an update, which included the criteria/assumptions, report on whether we have used a buffered approach or 2D overland modelling and details of the rainfall parameters used and submitted it in section 3S.13 of the APR19 submission.

We have been transparent with the assumptions that we have taken and compared to other companies our models are well established, but we do recognise that there is further scope for improvement in the definition and we are fully committed to working with the industry to develop and improve the guidance further.

3. Outcome delivery incentives (IAP test OC2)

In this section we respond to the interventions on the design of our ODIs. This is focused on the implications at an aggregate level before discussing our specific representations. This section is structured as follows:

- In Section 3.1 we review the implications of the **incentives in the round** and show that the consequence of the combined decisions creates more risk than any other company and is disproportionate for us;
- In section 3.2 we highlight a small number of issues with the **interventions on ODI rates**, whereby the approach to normalisation means that the incentive rates for very small companies are extremely high when viewed on a per customer basis. We then highlight the specific representations on a small number of incentive rates; and
- In section 3.3 we make **representations** against the removal of two penalty collars, which runs counter to the treatment of every other slow track company and creates material risk for HD.

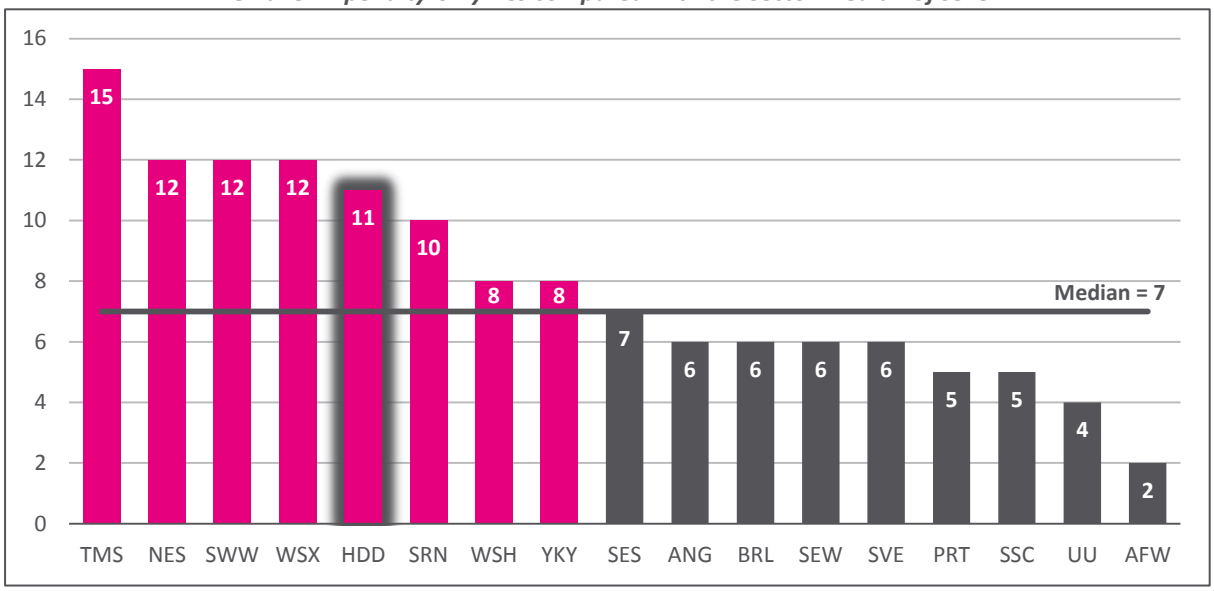
3.1 Our ODI package in the round

Across the slow-track draft determinations, there have been 85 interventions on ODIs, with 15 (18%) of these being made to our package. The combined effects from ratchetting targets, increasing penalty rates and removing collars is disproportionately burdensome and would require us to carry significantly more risk than any other company. Having remodelled the RoRE impact to reflect the full ranges of changes made, our own assessment finds that the range has moved materially and now lies between -6.57% and +0.15%.

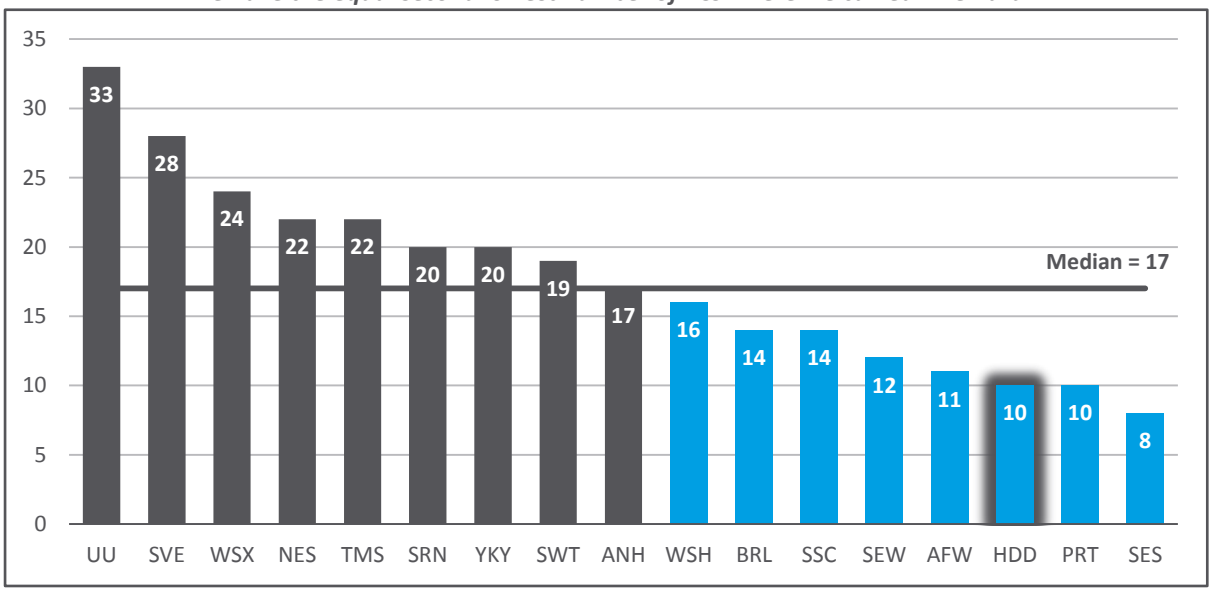
The DD reports that the changes to our ODI package would revise our RoRE range to between -2.07% and +0.3%, in place of the range in our revised Business Plan that was between -2.04% and +0.5%. **However, the revised range is not correct as it does not fully account for the removal of penalty collars and the conversion of a further two PCs from non-financial to financial incentives, as well as the increases in ODI rates.**

One of the main reasons why the DD changes result in such a narrow upside is the limited availability to earn outperformance across our package – of the 21 measures with financial ODIs, more than half are penalty-only. Based on the DD's we have the over a third more penalty-only measures than the sector average.

We have 11 penalty-only PCs compared with the sector median of seven



We have the equal second lowest number of PCs where we can earn reward



Creating a package of ODIs that is so strongly weighted to the downside is unlikely to drive the best long term outcome for customers. It will encourage short term solutions that seek to minimise penalties in the near-term, instead of allowing us to take considered steps that would deliver transformative and lasting change.

The risk level is also excessive compared with the other companies in the sector. A further consequence of this narrow upside potential is that our aggregate outperformance would not have to fall too far below the P90 level before it becomes impossible to earn a positive return from ODIs.

The reason why our RoRE range has moved so materially is that:

- the significant increases applied to three of our incentive rates are divorced from the WTP values of our customers or elsewhere in the sector due to the approach to normalisation, which doesn't work for very small companies – our response focuses on the most material issues; and
- the removal of penalty collars on water supply interruptions is disproportionate given (i) it is financially material and we present the information to demonstrate this, (ii) all other slow track companies have retained the penalty collars on SI or even had them added (iii) our evidence supports company-specific

circumstances that places more risk on us than any other company (due to our small size, system configuration and geography).

Having considered the problem confronting both ourselves and Ofwat's in its assessment of the HD plan, we think there is a compelling case to apply an aggregate cap and collar for HD. This would be consistent with the position from PR14 that argued an aggregate cap and collar was required to address two issues:

> 1. There was therefore a degree of uncertainty in companies' P10 and P90 estimates of outcome delivery rewards and penalties; and
> 2. Provide a further safeguard to customers and companies, and reduce the need to intervene more systematically to reduce the risks associated with individual new incentives.
>
> **Ofwat, Final price control determination notice: policy chapter A2 – outcomes**

The issues described by Ofwat above at PR14 remain just as relevant for HD today due to our infancy and unique size. We discuss this below:

Uncertainty in companies' P10 and P90 estimates

One of the key drivers for an aggregate cap and collar at PR14 was the uncertainty about estimates of company performance. At PR19 these concerns for most companies have largely gone away due to the availability of four years of historical data for nearly every measure. Where companies have new measures then these typically have P10 and P90 caps and collars to provide additional customer protection.

The position of HD is very much different to every other company. When the licence of HD was varied in 2018 to ensure both SVE and HDD reflected national boundaries, the Welsh licence changed significantly. This involved the removal of customers in Chester, a predominantly urban area, and the addition of customers in Powys, a highly rural area.

The transfer of customers has meant that performance under the HDD licence is significantly different to performance under the old Dee Valley licence (as it relates to different customers). This means there is no historical data set that can be reliably drawn upon to estimate P10 and P90 performance. Instead, with only 9 months of historic data for HDD we have had to make assumptions to derive P10 and P90 estimates.

This means there will inevitably be a higher degree of uncertainty about our P10 and P90 estimates relative to every other company. What this suggests is there is merit in exploring a more bespoke and pragmatic solution.

Reduce the need for more systematic interventions

The other key driver for an aggregate cap and collar at PR14 was that it reduced the need for Ofwat to review and intervene on many more measures – i.e. it reflected a proportionate approach to safeguarding customers and companies.

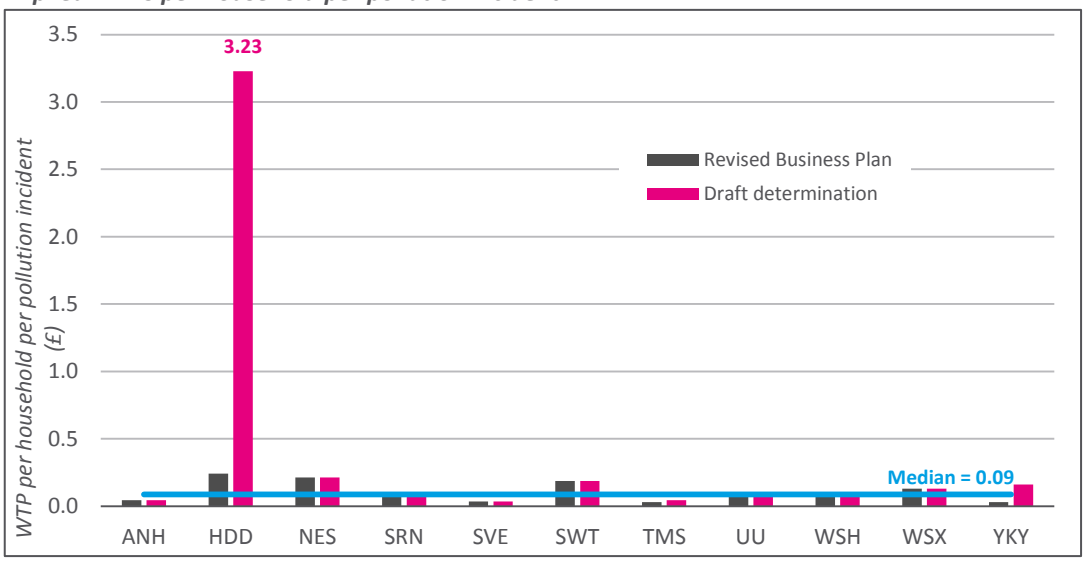
For HD there are two particular issues that make the use of an aggregate collar (and cap) compelling:

- the approach used for normalisation of incentives doesn't work in a way that is suitable for very small companies like HD; and
- the P10 estimate is extremely negative and rather than setting many individual collars a more pragmatic approach would be to set an aggregate collar.

We have reviewed the DD interventions and whilst we support the principle of normalisation, the way it has been applied has a disproportionate impact on us and our customers. We understand Ofwat wishes to continue with its approach, however we do think it is important that a final check is applied – and that is to consider what the impact on individual customers bills is, as this is what will occur in practice. What this analysis reveals is that the implied incentive rates for HD are now significantly larger than any other company. In several cases the DD

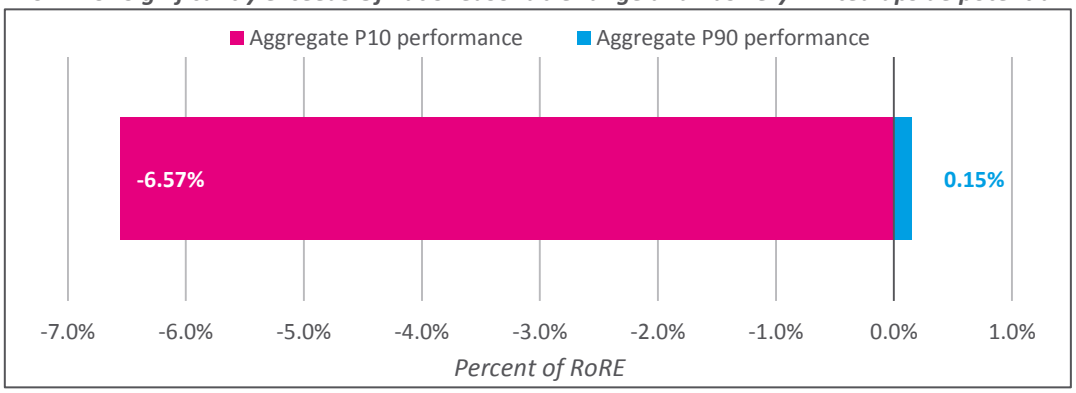
put us as a significant outlier when you consider the financial implications of a change in one unit of performance for individual households –the chart below shows pollution incidents as an example.

Implied WTPs per household per pollution incident



The cumulative impact of the intervention on incentive rates; and the removal of nearly every penalty collar for HD is that our RoRE range is significantly tougher in the round than any other company. As illustrated below it now results in a RORE range of -6.57 to +0.15% of RORE.

RoRE risk significantly exceeds Ofwat's reasonable range and has very limited upside potential



One solution to this problem would be to assess our incentive rates in isolation from every other company (and identify a more suitable basis for normalisation). However with only a very short window to assess DD representations and issue Final Determinations, we don't think this would be the best use of Ofwat's time. Instead we think a more appealing and pragmatic solution would be to introduce an aggregate penalty collar that protects us against this extreme downside. In designing the collar we think the most logical solution would involve setting this at the industry average of -2.6%.[1] Although our P90 is very small, for completeness we think this should be set at a symmetrical level of +2.6%.

3.2 ODI rates

The DD makes a number of interventions that result in a material increase to the incentive rates. The rationale for these interventions is that when normalised our rates look low. However the approach to normalisation

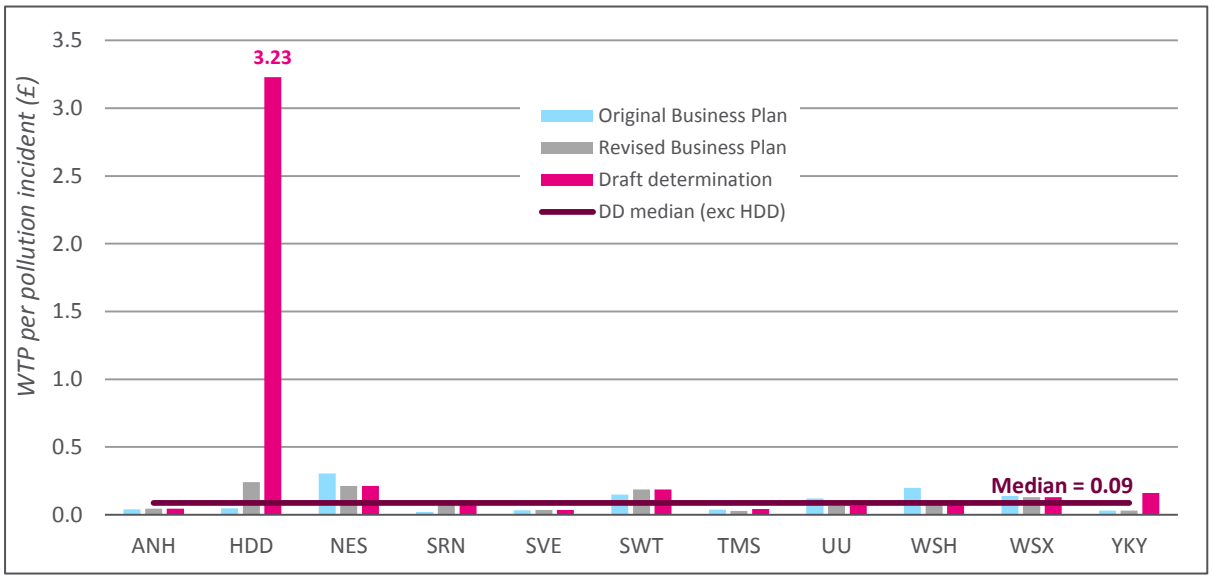
[1] PR19 draft determinations: Aligning risk and return technical appendix, p. 19.

doesn't work for very small companies and generates incentive rates that are significantly higher than any other company. We understand Ofwat wishes to continue with its normalisation approach, however we do think it is important to do one final check – and that is to examine what would be the impact on bills since this is what will occur in practice (so best to do the analysis now rather than waiting for this to flow through into bills via the in-period ODI submission and assessment process).

This analysis can be observed by normalising the incentive on a per customer basis. It is logical to think that while rates may vary from one company the next – as a reflection of income differences, regional economic activity and localised factors – such variations are not going to be overly pronounced.

Our analysis has identified two PCs where the approach applied in the DD is particularly problematic. It would result in ODI rates that are clearly divorced from the rest of the sector – there are other areas where this disconnect arises, but we've chosen to focus on the two PCs where the effect is material. The two effected areas are leakage and pollutions; with the chart below illustrating this point but the results are set out in the specific representations.

The DD's revised ODI rates imply individual WTP rates that are clearly divorced from the rest of the sector



Overall, it's inconceivable that our customers have WTPs that are between 16 and 36 times higher than elsewhere in the sector.

Below we summarise our methodology for the analysis before presenting the specific representations.

Box 1 – Normalising incentive rates on a per customer basis – pollution incidents

Background

We have looked to establish the reasonableness of the proposed ODI rate for pollutions by comparing it with the rates for the rest of the sector. To normalise for the different sizes of each company we have presented the incentive rates on a per customer basis. This is because we would expect that across England and Wales customers would have a similar WTP for service improvements.

We note that in the IAP and DD Ofwat has sought to normalise the performance targets, however this gives a value per sewer length and not customer. Such an approach can help compare performance but does not provide a reasonable basis for comparing incentive rates, particularly for very small companies like HD that have unusual characteristics.

In simple terms, we were seeking to recreate individual willingness to pays (WTPs), or implied WTPs, for a one unit change in service levels – i.e one pollution incident not one pollution incident per 10,000km of sewer.

The logic for this is twofold. Firstly, recreating the WTP make sense given the expectations that our plans would be grounded in customer research, and that ODI rates in particular would draw on what our customers had told us is important and what they are prepared to pay for changes in service levels. Secondly, the valuations placed on single incidents is a rational basis for comparison because these can be readily understood and valued by customers, rather than the hard-to-digest concept of incidents per 10,000km of sewer where there's no clarity on how many actual pollution incidents are involved in the customer's valuation.

Method

Step 1 – converting the normalised penalty rate into a per incident value

The published penalty rates for each companies have all been expressed as the rate per incident per 10,000km of sewer. These rates need unpicking to see what customers are collectively willing to pay of a one unit change in total performance, before we can establish what each customer is prepared to pay.

In unpicking these numbers, it's important to keep in mind the scaling effect that is present in the normalised rates. For example, if a company had a 20,000km network with customers willing to pay £5 for one fewer incident, then the normalised valuation would be £10. This relationship can be seen in the table below, where a 1 unit change in overall performance results in normalised performance changing by 0.5 incidents per 10,000km so the total ODI payment remains at £5 irrespective of the approach taken.

	Aggregate approach	>—— conversion step ——>	Normalised approach
Performance change	1 incident on total 20,000km network	$1 \times \left({}^{10,000}/_{20,000}\right)$	0.5 incidents per 10,000km
Applicable ODI rate	£5 per incident on total network	$1 \times \left({}^{20,000}/_{10,000}\right)$	£10 per incident per 10,000km
Total payment	1 x £5 = £5		0.5 x £10 = £5

As the table shows, converting an aggregate ODI rate into a normalised valuation is a case of multiplying the aggregate rate by the total network length and then dividing through by 10,000. As we need to carry out this process in reverse, we've taken the normalised ODI rate for each company, multiplied it by 10,000 and divided through by that company's total network length. Using the penalty rates published in the DDs, the results of these calculations and the data used are as follows:

	(A) **Normalised penalty** (£/incident/10,000km)	(B) **Sewer length** (km)	(C) **Aggregate penalty rate** (£/incident)
Source/calculation:	*Published in DDs*	*Published in Business Plans*	$Column\ A \times \left({}^{10,000}/_{Column\ B}\right)$
ANH	445,078	76,855	57,911
HDD	2,000	512	39,055
NES	365,457	30,200	121,011
SRN	314,862	40,169	78,385
SVE	610,000	95,001	64,210
SWT	115,000	17,694	64,994
TMS	1,270,000	109,474	116,009
UU	760,000	77,906	97,554
WSH	214,900	36,689	58,573
WSX	270,000	35,792	75,437
YKY	868,000	52,495	165,349

Step 2 – extracting the aggregate WTP valuation

With Step 1 having provided us with the aggregate penalty rate for each company, the next step is to convert these into WTP valuations that each of the company's customers are collectively prepared to pay. We've used a simplified step here that applies the PR19 methodology for setting ODI rates to equal 50% of the WTP valuations, and runs this in reverse. As shown in the following table, this sees the aggregate penalty rates doubled, to arrive at aggregate company-wide WTP valuations.

	(A) **Aggregate penalty rate** (£/incident)	(B) **Aggregate company-wide WTP** (£/incident)
Source/calculation:	*Column C in previous table*	$Column\ A \times 2$
ANH	57,911	115,822
HDD	39,055	78,110
NES	121,011	242,023
SRN	78,385	156,770
SVE	64,210	128,420
SWT	64,994	129,988
TMS	116,009	232,018
UU	97,554	195,108
WSH	58,573	117,147
WSX	75,437	150,873
YKY	165,349	330,698

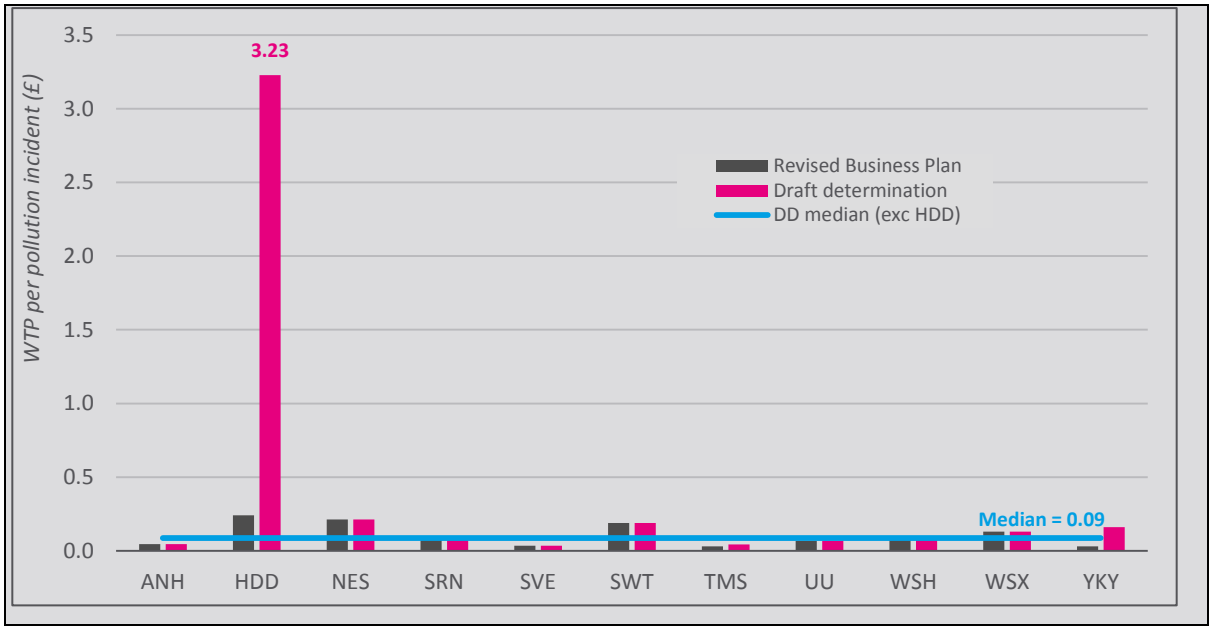
Step 3 – establishing the WTP of individual households

The final step of the analysis sees us convert the aggregate company-wide WTP valuations into values for individual households, simply by dividing the overall WTP by the number of households, as shown below.

	(A) **Aggregate company-wide WTP** (£/incident)	(B) **Number of households**	(C) **Individual WTP** (£/incident per household)
Source/calculation:	*Column B in previous table*	*Published in Business Plans*	$Column\ A / Column\ B$
ANH	115,822	2,540,181	0.05
HDD	78,110	24,190	3.23
NES	242,023	1,137,192	0.21
SRN	156,770	1,823,210	0.09
SVE	128,420	3,673,473	0.03
SWT	129,988	692,505	0.19
TMS	232,018	5,352,795	0.04
UU	195,108	2,903,899	0.07
WSH	117,147	1,311,348	0.09
WSX	150,873	1,151,260	0.13
YKY	330,698	2,057,263	0.16

Results

The results of our analysis are plotted in the chart below, which alongside values calculated from the DDs are the values calculated from the company's revised Business Plans. This not only shows the extent to which the DD has caused our rate to become an outlier – it is 36 times greater than the median post-DD value for the other companies – but also demonstrates that it is the DD intervention made that has caused our valuation to become an outlier.



3.3 Specific representations

In the DD Ofwat has made 13 interventions on ODI rates and two interventions on ODI type. Although we note that there are issues with the normalisation approach when applied to incentive rates, we are only making representations against the incentive rates for four ODIs, where the intervention creates an untenable risk position – pollution, leakage, supply interruptions and low pressure.

3.3.1 Pollutions ODI rate

The DD has intervened to raise our incentive rate for pollutions from £149 per incident per 10,000km of waste network to £2,000 – over a 13-fold increase. The reasons given for this intervention were:

- although we've increased rate relative to our original business plan, the proposed rate remains below the reasonable range that Ofwat has established;
- we've not used the additional valuation research to set the ODI rate, but instead proposed a rate that does not appropriately control for the difference in risk-increment between companies from one pollution incident;
- the approach therefore materially understates the resulting ODI rate; and
- we didn't provide sufficient reassurance that we understand the root cause of incidents and have a robust and continuous improvement process to embed learning and ensure improvements.

Below we respond to the reasons given for the intervention to increase the penalty rate, demonstrating why they are inappropriate and we set out the basis for our view that a rate of £149 per incident per 10,000km is appropriate and provides a higher degree of customer protection than most, if not all, other companies.

Background on the ODI rate proposed in the revised Business Plan

Making sure that the results were not distorted by company size

In the IAP, there were three associated actions set in the IAP assessment. To address these actions, we compared our new rates (post-triangulation) with those in the rest of the industry as set out in Ofwat's comparison in the IAP. Our view was that, given we are small company, we needed to use an appropriate normalisation method to ensure that the results were not distorted by company size. We concluded that by converting the ODI rates for the normalised performance increment into per-actual-incident rates, we could drill down into the value that individual households actually place on these incidents. This was designed to give a view that is more in line with how customers actually experience the issue.

HDD.OC.A37	ODI rates	**Pollution incidents PC:** The company should explain why its proposed rates differ from our assessment of the reasonable range around the industry average (as set out in **'Technical appendix 1: Delivering outcomes for customers'**) and demonstrate that this variation is consistent with customers' underlying preferences and priorities for service improvements in pollution incidents. The company should also provide the additional information set out in **'Technical appendix 1: Delivering outcomes for customers'** to allow us to better understand the causes of variation in ODI rates for pollution incidents and assess the appropriateness of the company's customer valuation evidence supporting its ODI. The company should explain and evidence how its proposed ODI rate for Pollution incidents is coherent with the rates proposed for all other sewerage PCs (including internal sewer flooding, sewer collapses) and demonstrate how the package of ODIs across the relevant group of PCs appropriately incentivises performance in the long and short-term.

We were conscious that our approach was a departure from Ofwat's method for assessing reasonableness. So, we sought independent advice from Frontier Economics, who concluded:

- HDD has recognised that its original ODI rates were generally low compared to the rest of the industry.
- HDD has renormalised some of Ofwat's ODIs rates to better control for company size. It has normalised rates using a 'per incident per household' approach for all measures. We consider this approach to be appropriate. First, it results in an outcome whereby HDD's ODI rates do increase, which addresses one of Ofwat's key challenges that HDD's rates were too low, and it does so in a way which can still be linked to industry benchmarks, using an appropriate normalisation which expresses results on a meaningful basis. Also, we note that Ofwat has already used this approach for some other measures – including external sewer flooding – which suggests that it views this approach as being reasonable and fit for purpose for measures which are similar in nature.
- In instances where its updated ODI rates are still lower than Ofwat's lower bound, it has used Ofwat's larger lower bound estimate instead. We consider this to be a pragmatic approach because it has the effect of increasing HDD's RoRE range (in line with Ofwat's feedback) whilst still ensuring that its rates are in line with the rest of the industry.

The process of establishing values, assessing reasonableness and selecting the proposed ODI rate

Our customer research for pollutions sought valuations for individual incidents, rather than changes per 10,000km of sewer network – with just 513km of network we would have struggled to have meaningful conversations otherwise. Our WTP research established that our customers had, at the company-level, a collective WTP of £8,036 per incident – a value that led to us proposing an ODI rate of £4,018 per incident in our original Sept 2018 Business Plan.

At the IAP, this rate was assessed to be below the reasonable range for the sector. We considered including pollutions in the additional post-IAP research, but time constraints meant that we were unable to develop a way that would be meaningful for customers. Instead, we assessed the original rate for reasonableness on the range of sector valuations per-household per-actual-incident. This established that our valuation was in fact above the reasonable range, and so we lowered the proposed rate to align with the upper bound of this range. Hence we proposed a rate of £2,909 per incident.

Normalising the ODI rate

The Business Plans reporting requirements expected us to provide the proposed ODI as a rate per-incident per-10,000km of sewer network. So, the rates seen in the original and revised Business Plans were £206 and £149

respectively. It's important to draw out that our small network causes our ODI rates at the normalised level to look artificially low. This is because one actual incident for us translates into 19.5 incidents per 10,000km.

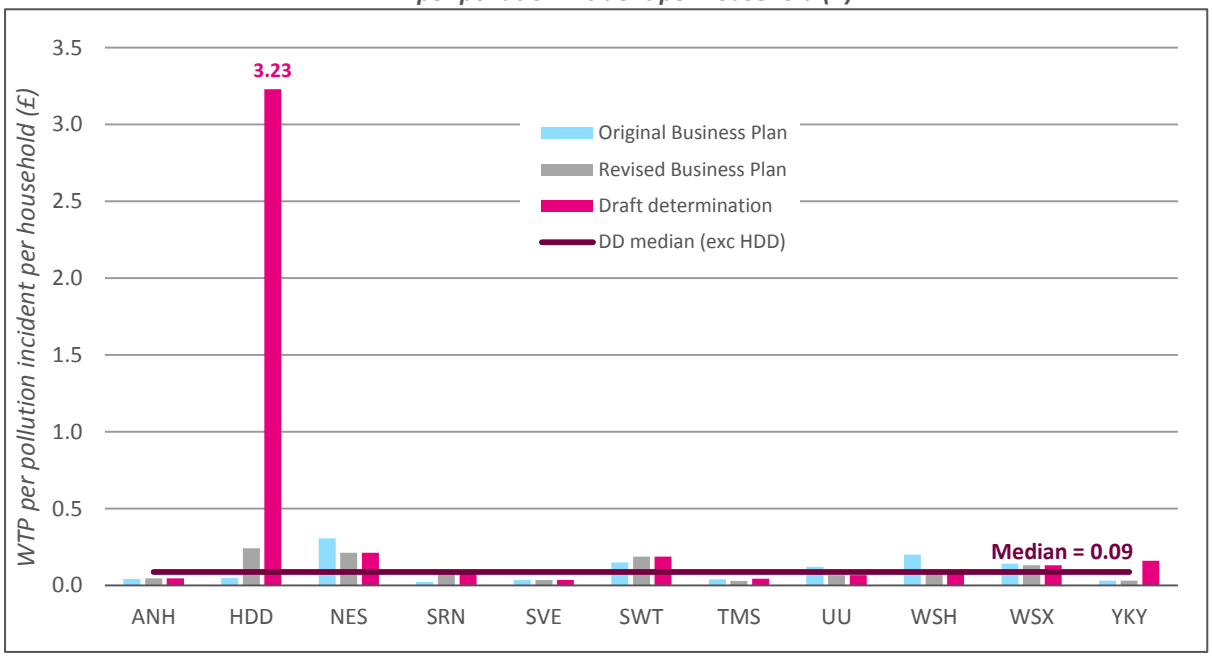
By contrast, if TMS with its 109,474km of sewer network had a per incident ODI rate of £2,909, then its normalised ODI rate would be £31,841, and it would need to see over 213 actual incidents before it would register 19.49 incidents per 10,000km.

Concerns with the implied underlying customer valuations

In considering the revised ODI rate proposed in the DD, we have reviewed the underlying value it implies our customers place on an actual pollution incident. Our expectation is that the value customers place on an actual pollution incident should not differ greatly across the sector simply because of variations in the size of company that provides waste services. We consider that an actual pollution incident is something that customers would readily understand, unlike abstract concepts (from the customer's perspective) of incident per set-distance of sewer length.

This review has given us cause for concern because of the pronounced difference in customer valuations compared with the rates planned elsewhere in the sector. When we convert the proposed penalty rates into a per-incident per-customer WTP value – see Box 1 earlier in this chapter on how we've gone about this – it gives a value of £3.23. Not only is it by far the highest such valuation in the sector, it is also 36 times larger than the sector median, as can be seen in the chart below.

WTP per pollution incident per household (£)



The extent of this disconnect is exemplified when we consider our customers in Powys. Were these still Severn Trent customers, each household would have an implied WTP value per incident of approximately £0.03 per actual incident. But now they're our customers the DD is implying that this rate has risen over 92-times to reach £3.23. Given the way in which customers understand pollutions – i.e. on a per incident basis – this change cannot be adequately justified and is therefore inappropriate.

Root cause and continuous improvement

In the IAP there were two associated actions set in the IAP assessment. When responding to the IAP we interpreted this to require an overview across all PCs not specific responses.

HDD.PD.A7	Required	Hafren Dyfrdwy should produce and provide additional evidence that it has identified: • the drivers of its past and current outcomes performance, including financial and reputational performance commitments; • lessons learnt from good and poor past and current performance; • the performance gap between current performance and proposed performance in the 2020-25 business plan; and • the measures planned or already in place to ensure deliverability of the 2020-25 business plan.
HDD.PD.A8	Required	Hafren Dyfrdwy should produce and provide an action plan that sets out: • how Hafren Dyfrdwy will continuously monitor performance against PR14 and PR19 performance commitments, including how this relates to section 3 of the Annual Performance Report and what evidence it will look for beyond itself and the sector; • how Hafren Dyfrdwy will identify drivers of performance and lessons learnt from both good and poor performance; • how Hafren Dyfrdwy will identify measures to improve performance and integrate these into its business; and • how Hafren Dyfrdwy will ensure that this is a continuous rather than one-off process.

In the DD, Ofwat clearly stated that they had expected our response to be specific to each of the 28 performance commitments. We address this misunderstanding below, providing specific details relating to pollution incident continuous improvement process.

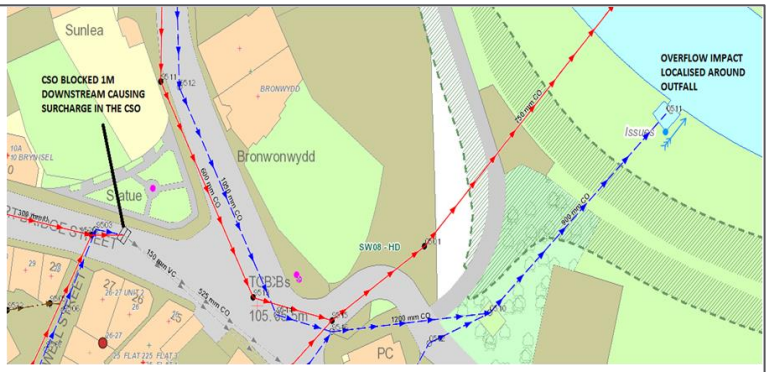
Our Pollution root cause analysis checklist was first developed in 2015 as part of our Community of Practice initiative. This is where experts from all parts of the business process come together as a virtual problem solving team.

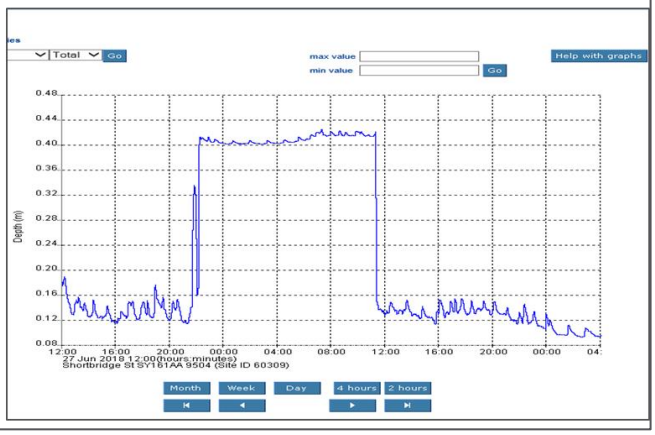
We have continued to improve the categorisation, for example allowing multiple root causes to be considered, and in autumn 2017 we implemented Airsweb. This system enables field staff to upload key facts and information from wherever they are and has improved reporting functionality.

The data entered into Airsweb is supported by a 'storyboard' to enable further analysis and understanding. An example story board is set out below.

Example Storyboard, Short Bridge Street Newtown

	Details
Incident address	26 SHORT BRIDGE STREET, SY16 1AA
Incident date	28.06.2018
Storyboard date	18.07.18
NIRS number	1803675
SAP order number	11926384
PIRS ref	3608
CSO / asset name	CSO SHORTBRIDGE STREET
Grid ref X,Y	x310954 y291563
Cat 1,2,3,4	4





Date	Time	Incident Timeline comments
		Telemetry Alarm
28/06/2018	12:05	arrived onsite
	12:15	located and lifted cso mh at x310954 y291561
	12:20	pollution confirmed cso blocked and going over site agent informed
	12:40	hpwj d-s from cso mh approx 1 metre to clear fat/rag/debris
	12:45	blockage cleared and pollution stopped
	13:00	located outfall at x311071 y291583 and carried out impact assessment and applied pads and booms at the outfall

The root cause analysis reveal that the most common cause of pollution relates to issues at Combined Sewer Overflows (CSO). In a drive towards continuous improvement we have developed a CSO Golden Measure process. This is a proactive maintenance regime, which allows us to physically inspect and monitor the condition of our CSO's at a frequency informed by root cause analysis but with a minimum of once per year. This is also coupled with CSO monitoring.

CSO inspection process in addition to CSO monitoring by telemetry

Golden measure inspection process on CSO's	No. CSO's with frequency
Monthly	8
Quarterly	4
6 Monthly	5
Yearly	5
Total	22

The root cause analysis indicates that the second most common cause of pollution is foul sewer blockages. Our planned sewer cleansing programme is sized and targeted partially by the root cause analysis. In Hafren Dyfrdwy our planned cleansing schedules are 15km per annum which represents 3% of our network.

Furthermore the root cause analysis process identifies specific site actions to try to prevent or mitigate issues re-occurring. Examples of these lessons learned are given below;

Incident (6181): Inspections need adjusting to be more frequent due to the poor gradient of the sewer causing insufficient self-cleansing velocities thus increasing the likelihood of blockages downstream of the CSO.

Incident (6103):

- temporary action - Secure a hire pump ASAP to ensure the station always has two operational pumps;
- process change recommended - If a hire pump cannot be brought to site immediately, ensure the failed pump is set as duty and the healthy pump is set as standby; and

- alarm handling workstream underway by the community of practice, all failures linked to alarm handling from HD used to set scope of project. From a planning point of view - understand fully the alarm that is being handled and the potential consequences of extending.

Conclusions and way forward

The ODI rate proposed by the DD cannot be justified in terms of the WTP of individual households place on actual individual pollution incidents. There does not appear to be any compelling evidence to support the DD position that customers now value these incidents 92 times more than they would have done if they'd remained Severn Trent customers.

We've reviewed this latest analysis, which has the benefit of drawing on relevant post-DD data for the other companies, to inform our thinking on the best way forward. We did consider whether we should set our ODI using either the sector median or the SVE valuations, but found these had individual WTP values that were lower than the values underlying our revised Business Plan. The individual WTP per incident value that sat behind our revised Business Plan was £0.24, compared with £0.03 for SVE and a sector median of £0.05.

We do have a well-established root cause analysis process which is part of a governance process which ensures we look to continuously improve and therefore do not feel that a multiplier applied to the rate is justified.

Therefore, we consider that the appropriate way forward would be **to retain the ODI value of £149 per incident per 10,000km of sewer**. With its underlying per household valuation of £0.24 per incident it remains the highest valuation in the sector. It should also be recognised that due to our small network length every time we have one pollution incident, we will see a penalty that is 19.5 times the published ODI rate of £149.

3.3.2 Leakage ODI rate

In the DD, our leakage incentive rate has been increased to £202,000 per MLD, compared with our IAP response of £4,591 per MLD. The reasons given for this intervention were:

- although we've increased the rate relative to our original business plan, the proposed rate remains below the reasonable range that Ofwat has established;
- we've not used the additional valuation research to set the ODI rate, but instead set it at 0.5 standard deviations below the industry average on a £ per household per megalitre a day basis; and
- the approach does not take account of differences in incremental performance between companies implied by a 1 MLD reduction in leakage and therefore materially understates the resulting ODI rate.

Below we respond to the three reasons given for the intervention to increase the penalty rate, demonstrating why they are inappropriate. We have updated the rate from our resubmitted plan to correctly triangulate the customer views and have increased our rate from £0.005m/ Mld to £0.070m/ Mld and set out the evidence to show that this provides sufficient customer protection.

Background on the ODI rate proposed in the revised Business Plan

Making sure that the results were not distorted by company size

In the IAP, there were two associated actions. To address these actions, we compared our new rates (post-triangulation) with those in the rest of the industry as set out in Ofwat's comparison in the IAP. Our view was that, given we are small company, we needed to use an appropriate normalisation method to ensure that the results were not distorted by company size. We concluded that normalising on a 'per MLD per household' basis was appropriate because it is more in line with how customers actually experience the issue.

HDD.OC.A17	ODI rate	**Leakage PC**: The company should explain why its proposed rates differ from our assessment of the reasonable range around the industry average (as set out in **'Technical appendix 1: Delivering outcomes for customers'**) and demonstrate that this variation is consistent with customers' underlying preferences and priorities for service improvements in leakage. The company should also provide the additional information set out in **'Technical appendix 1: Delivering outcomes for customers'** to allow us to better understand the causes of variation in ODI rates for leakage and assess the appropriateness of the company's customer valuation evidence supporting its ODI.

Given the departure from Ofwat's IAP approach for assessing reasonableness, we also sought independent advice on the appropriateness of our approach. The view from Frontier Economics was that:

- HDD has recognised that its original ODI rates were generally low compared to the rest of the industry.
- HDD has renormalised some of Ofwat's ODIs rates to better control for company size. It has normalised rates using a 'per incident per household' approach for all measures. We consider this approach to be appropriate. First, it results in an outcome whereby HDD's ODI rates do increase, which addresses one of Ofwat's key challenges that HDD's rates were too low, and it does so in a way which can still be linked to industry benchmarks, using an appropriate normalisation which expresses results on a meaningful basis. Also, we note that Ofwat has already used this approach for some other measures – including external sewer flooding – which suggests that it views this approach as being reasonable and fit for purpose for measures which are similar in nature.
- In instances where its updated ODI rates are still lower than Ofwat's lower bound, it has used Ofwat's larger lower bound estimate instead. We consider this to be a pragmatic approach because it has the effect of increasing HDD's RoRE range (in line with Ofwat's feedback) whilst still ensuring that its rates are in line with the rest of the industry.

The process of triangulation, assessing reasonableness and selecting the proposed ODI rate

When we came to set the ODI rate, we found that our post triangulation value lay markedly outside the reasonable range based on the value per-MLD per-household view discussed above. Consequently, the rate that was then put forward was aligned to the lower-bound of that range. Having revisited this approach following the DD, we have identified that while the ODI rate originally proposed in Sept 2018 Business Plan was below the lower bound; the post triangulation value was above the range. On that basis, we should have moved the revised ODI to the upper, rather than lower, bound.

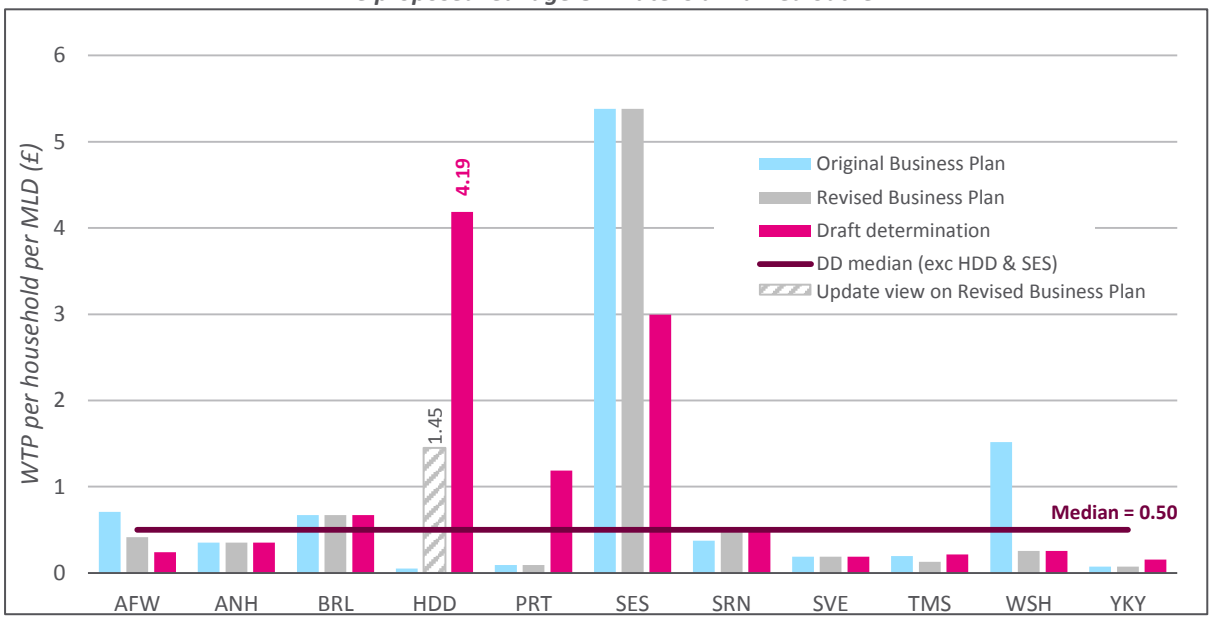
An updated view of the proposed ODI rate

We have recalculated the rate, which results in a penalty rate of £69,931 per MLD. This is in line with the upper-bound of the reasonable range. By comparison, the ODI proposed in the DD is £202,000 and looks to have drawn on the results from the additional research undertaken post IAP, rather than the triangulated value. Nevertheless, we maintain (i) that it's absolutely critical for the proposed ODI rate to make necessary adjustments to align with a reasonable range for the sector, and (ii) that reasonableness should be assessed on a rate per household per MLD basis.

Concerns with the implied underlying customer valuations

We have reviewed the value our customers would need to place on 1 MLD of water in order to justify the revised ODI rate proposed in the DD. When we convert the proposed sector penalty rates into a per-customer WTP value it gives us value of £4.19 per household per MLD. Not only is this the highest valuation used in the DD in the sector, it is also 8.4 times larger than the sector median, as can be seen in the chart below.

The proposed leakage ODI rate is a marked outlier



Note – analysis is focused on those companies that have consistently reported their ODI rates on the correct basis

Customer understanding

Our expectation is that the value customers place on 1 MLD of water is unlikely to differ because of the size of the company providing them with water services.

The vast majority of customers will have limited awareness of company size or the volume of water that the company inputs into distribution which means the current normalisation method would be an abstract concept for customers to value service improvements.

We think that a volume of water, such as a megalitre, is something that customers would be able to comprehend, either as physical volume or an amount relative to their own use and consumption. Furthermore, the amount of water lost from individual leaks is unlikely to vary by company size, but by technical factors for each pipe such as size of main, material type, failure mode, pressure and flow rate – technical factors that in general or not influenced by company size. When repair work is undertaken in different parts of the country on parts of the network that have similar technical characteristics, these repairs are likely to stop a similar volume of leakage, not a similar percentage of Distribution Input.

Counter-intuitive valuations

There are further weaknesses with the logic that expects customers to value a fixed volume of water more highly simply because the company supplying them happens to be smaller. We think this is unlikely to be the case for the following reasons:

- Neighbours would have to place completely different values on the same volume of water. For example, there are a number of instances where the boundary between two companies lies halfway down a street. Taking Thames and SES as an example, if the customer happens to be on the SES side, their implied value of 1 MLD of water is £3.00, but their TMS-supplied neighbour places only a fraction of the value on the same volume of water at £0.22.
- Customers that move house would, overnight, have to change the value they place on a volume of water simply because they're now supplied by a different company.
- If the valuation exercise is extended to even smaller companies the distortion in valuations become even more pronounced. Using Cholderton and District Water Company available data to illustrate it shows that at the upper and lower bounds of the acceptable range Cholderton customers would be expected to place a value of £130 to £310 on 1MLD reduction in leakage.

WTP values become distorted for smaller companies – Cholderton Water example

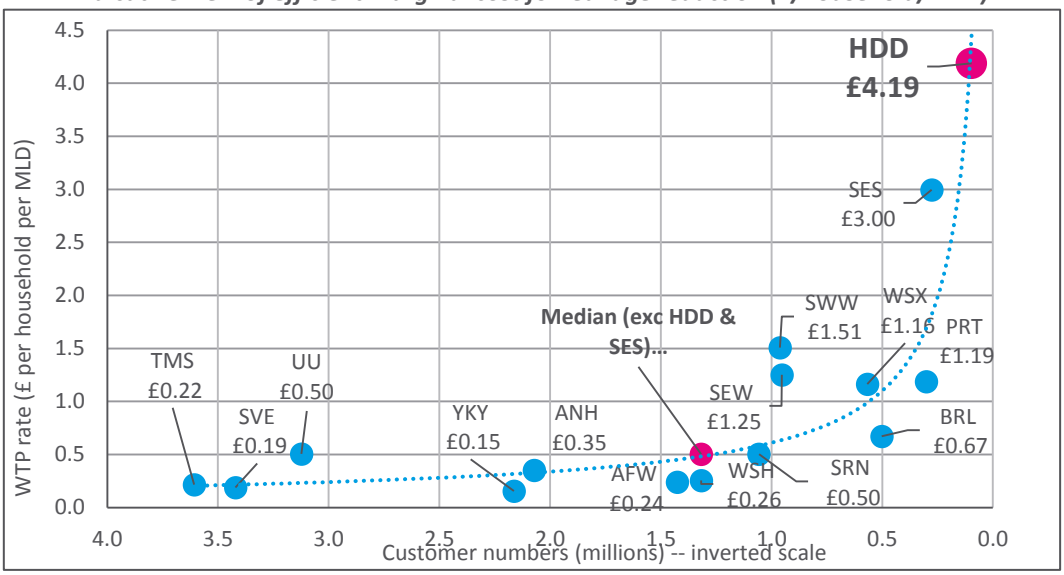
£ per household	IAP ODI range (per 1%DI)	IAP ODI range (per MLD	WTP/MLD (2 x ODI rate)
Range lower	0.99	129.50	259.00
Rage upper	2.37	309.00	618.00

Note – Cholderton Water has a DI of 280 ML a year, equivalent to 0.77 MLD

We have further concerns about the ODI rate when we consider the implications for marginal costs. On that basis, the WTP valuations implied by the ODI rates should, for most of the sector, set out the marginal benefit and provide a read-across of the marginal cost. These results should be true both in aggregate and on a per household basis.

If we use the per-household view of these numbers, we can compare the marginal cost valuations across the companies. Given the costs represent a post-efficiency view, it is rational to expect them to be relatively similar across the sector on a per megalitre basis. As described above if two completely different sized companies have a leak on a similar sized distribution main, similar volumes of water will be lost - the size of the company is not a factor. It is also reasonable to expect that the cost of repairing a similar sized leak should be relatively comparable across the sector, notwithstanding differences in circumstances such as the complexity of the system, access and ability to reroute supplies for a sufficient period to allow a cost effective repair.

Indicative view of efficient marginal cost for leakage reduction (£/household/MLD)



Note – analysis is focused on those companies that have consistently reported their ODI rates on the correct basis

This relationship suggests there is an exponential relationships between cost and the inverse of company-size, which would mean that small companies are significantly less efficient than large companies.

These results contradict our own in-the-round experience and Ofwat's assessment of relative efficiency which puts the two smallest companies (HDD and PRT) at the efficiency frontier.

Impact on RoRE range

The impact of this large valuation impacts the individual P10 penalty risk, resulting in downside exposure of -0.54% of RoRE that – because we're the only company in the sector to have this as a penalty-only measure - has no counterbalancing potential to earn rewards from outperformance.

Conclusions and way forward

The ODI rate proposed by the DD is underpinned by an implied per-customer valuation that is by far the highest in the sector and excessively larger (8.4 times) than the sector median. These values also imply small companies are exponentially less efficient than large companies, which is counter to Ofwat's own assessments. Furthermore, the proposed rate appears to have been selected using just one piece of our research, meaning it has not been triangulated and it has not been calibrated against the reasonable per-household per-MLD range.

The result is that we are exposed to an unduly large downside risk of -0.54% of RoRE that, as a penalty-only measure, has no prospect of earning from outperformance.

Applying the Ofwat methodology and using our customer research we think the **ODI rate should be set at £69,931 per MLD**. This is in line with our view on the reasonable range upper-bound of £1.15 per-household per-MLD. We consider this to be much more appropriate than either our IAP triangulated value or the rate proposed in the DD, as these sit 46% and 289% above the reasonable upper-bound. This would be the sector's second highest incentive rate per-household per-MLD. Our revised rate implies WTP valuations and marginal cost estimates that are no longer outliers and much more consistent with the per-household per-MLD valuations elsewhere in the sector.

3.3.3 Water supply interruptions ODI rate

In the DD, Ofwat has intervened to increase the ODI rate from £0.02m to £0.047m/min/prop on the basis that:

- we didn't provide sufficient reassurance that we understand the root cause of incidents and have a robust and continuous improvement process to embed learning and ensure improvements; and
- due to concerns about deliverability.

In addition we have also been set a requirement to provide detail on incidents as part of our annual reporting, which we are accepting.

Below we respond to the two reasons given for increasing for the penalty, and we provide more evidence to address Ofwat's concerns to justify why the rate should not have multiplier applied.

Root cause analysis and continuous improvements

As described in our representations on pollution incidents, the IAP there were two associated actions set in the IAP assessment. When responding to the IAP we interpreted this to require an overview across all PCs not specific responses. In the DD, Ofwat clearly stated that they had expected our response to be specific to each of the 28 performance commitments. We address this misunderstanding below, providing specific details relating to supply interruptions continuous improvement process.

Root cause and continuous improvement

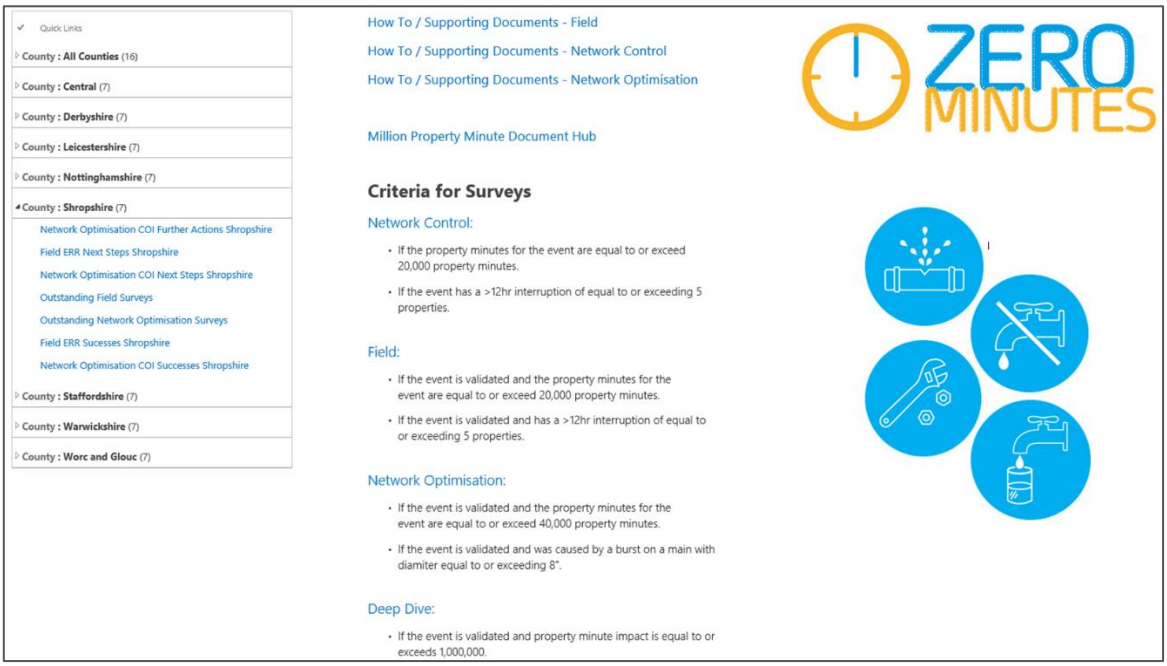
The root cause analysis for supply interruption events in Powys was implemented in 2013. The purpose was to identify cause of interruption and contributory factors that delayed or hindered our response. This insight was reviewed and action plans agreed at regional steering group meetings on a monthly basis. Whilst all interruption events have an initial cause assigned (for example mains burst or power fail) our more in-depth root cause analysis is designed to elicit insight from the three key sections involved in supply interruption management;

- **Network Optimisation**; to identify the underlying cause and the action necessary to mitigate or prevent further incidents. Often leading to capital investment requests.
- **Network Control;** to assess our response and understand if and how we lost time in rezoning supplies or getting the right resources to site. This led to improvement activity to process, behaviour and network capability.
- **Field teams**; to assess site specific factors, for example repair complexity, and provide a different view on if and how we lost time in restoring supplies. This led to improvement activity to process and behaviour.

Teams were accountable for undertaking their own reviews for small to medium sized events with a central team assessing larger events. The Event Response Reviews were collated to provide an overall view of themes that needed widespread improvement activity or drive investment planning, for example re-focusing mains renewal on high interruption impact PVC and Asbestos Cement mains.

In September 2017, as part of our culture of continuous improvement, we reviewed the effectiveness of process. We concluded that there was an opportunity to further improve the insight and way in which the information was being used to drive improvements. The updated system allows better sharing and searching of data through the use of a shared database. This has been in use for 18 months in Powys and since July 18 in Wrexham.

Screenshot of the current Supply interruptions database



Note: Hafren Dyfrdwy root cause investigations stored under Shropshire with Wales flag until planned system upgrade

An example is shown above. As part of the continuous improvement culture, we are currently developing the functionality to improve the way we are monitoring improvements.

We have used the key themes from our root cause analysis to improve the econometric, hydraulic and geographic information analysis. We included the results of this analysis in our response to the Initial Assessment of Plans – see Appendix 4.3 Supply Interruptions Supporting Evidence.

We are making further representations on the removal of the supply interruptions collar in section 4.1.1.

Deliverability concerns

The other rationale given for increasing the incentive rate was due to concerns about deliverability and the belief this should be remedied by increasing our incentive rate.

The target for the supply interruptions PC has been set on the basis of forecast comparative information. In reaching this target no account has been taken of factors that impact how quickly a company can identify and respond to a supply interruption – notably topography and the location of customers.

We agree that delivery of this target is going to be a challenge, which was part of the evidence base we presented which set out why rural hilly companies face a tougher challenge than small urban companies on this measure. We have a detailed understanding of the stages throughout the cycle of a supply interruption event and this is a key part of our strategy for improving service. The analysis that we presented in appendix 4.3 of the April resubmission is being used to target the areas having the biggest impact on the overall duration of the interruption. We are looking at implementing changes such as tanker locations to reduce travel time, operational practices and communication between operation and customer service teams. We are also looking to learn from best practice across the industry.

All of these improvements will lead to a reduction in supply interruptions but due to the characteristics of our network and inability to reroute supplies it does mean that we will continue to be exposed to a few complex incidents dominating the annual performance. This is discussed further in section 4 where we make representations on the need for a penalty collar.

Conclusions and way forward

There is clear evidence that performance on supply interruptions is influenced by factors beyond management control – notably the topography of the area served and the location of the population (ie, density). Although other companies have rural areas, HD doesn't have high urban areas that can offset this issue.

Given the above points the decision to both apply an extremely stretching target and then argue that there are deliverability concerns which justify a higher penalty is extremely punitive. Although we can understand (and have accepted) the desire to have a consistent UQ target for this measure, not taking into account network configuration when making further adjustments to the incentive package does not achieve a fair balance of risk between companies and customers. We have set out the evidence to show that we do learn from past events and have an embedded process and culture of continuous improvement. We therefore consider that Ofwat should not apply any uplift to the incentive rate and **retain the rate at £19,871 per minute**.

3.3.4 Low pressure penalty rate

In the DD, our the incentive type for low pressure has been changed from non-financial to penalty-only with an incentive rate of £3,130. Although the DD does not make clear whether this rate is to be applied on a percentage or per property basis, we have assumed the latter in line with the PC definition.

The reason given for the intervention is that, "The company does not provide sufficient evidence of customer benefit for this being changed to a reputational outcome delivery incentive."

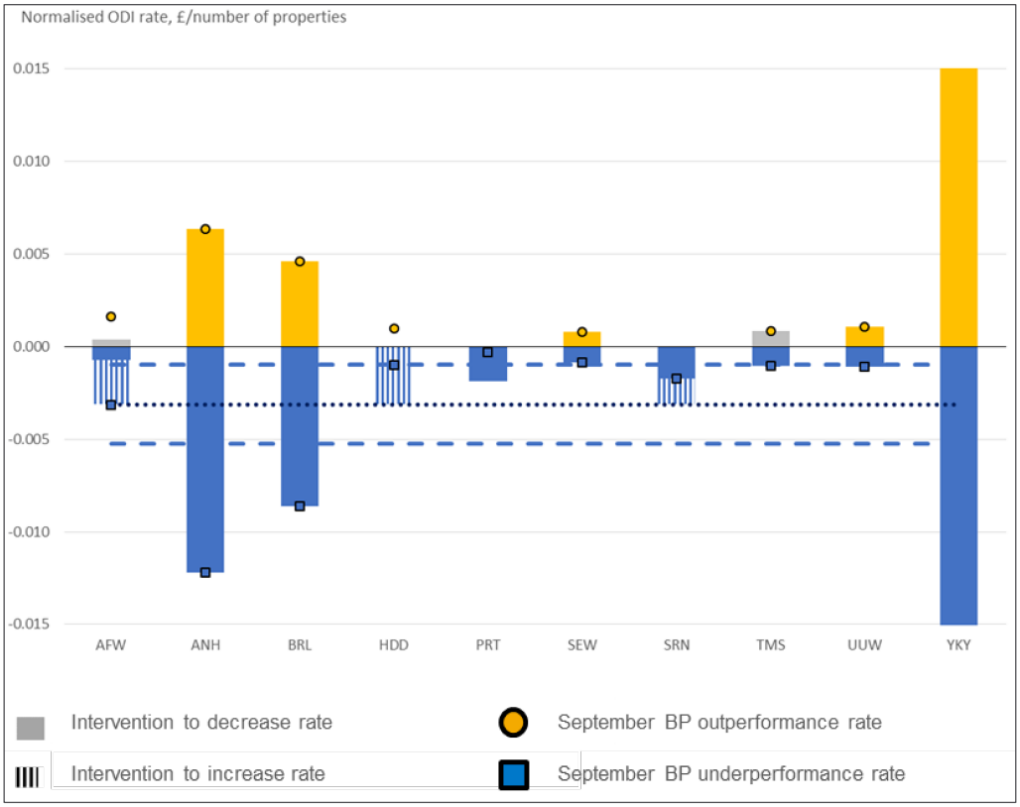
Background on the revised Business Plan proposal

Our proposal to have a non-financial incentive for low pressure was based on 52% of customers preferring this as a reputational measure. We took this decision even though there was no action identified at the IAP, in order to ensure consistency across bespoke PCs, which were moved to reputational incentives where the majority of customers preferred a non-financial incentive.

Concerns with the proposed ODI penalty rate

The DD appears to have set our ODI rates to align with the mid-point or average of the reasonable range for ODI rates, as set out in the chart below. The analysis also shows that the ODI rate that we'd originally proposed in our September Business Plan was consistent with the lower bound in this reasonable range. What is not clear is why the DD has determined it is necessary to align our penalty with the middle of the range, rather than revert to the original rate that the IAP has stated that there was, "*No concern*," with the ODI rate and that no action was required. The impact of this decision is that we are being asked to carry an undue additional amount of risk (227% more risk) on the ODI rate (and does not take account of the elevated risk that we'll be taking on from revised targets, as discussed above in section 2).

Ofwat normalised view of ODI rates, interventions and reasonable range based on April business plan data



Solution

We consider that the appropriate decision would be to use the original penalty value of £956 per property set out in our September Business Plan. This is a rate that would remove the undue additional risk arising from the DD proposed rate, would be aligned with the reasonable range comparison above (lower bound) , and would use a rate that the IAP had no concerns with.

As we now intend to set the PC on a percentage improvement basis, we need to make sure that our proposed ODI is consistent with this new measurement metric. Our expectation is that, once we've gone through the steps of updating our records, we will have around 100 properties with relevant low pressure issues. This means that rather than having an ODI rate of £956 per property, **the rate will now be £956 per 1% reduction** against the baseline number of properties – (with 100 properties a 1% reduction will equate to a one-property reduction)

4. Aligned incentives between customer and investor with necessary protections (IAP test OC3)

In our revised IAP we had included a number of mechanisms to manage material upside and downside variations. In the DD Ofwat has made 15 interventions on the protection mechanisms we had put in place to achieve a fair balance of risk. In our DD response we have decided to accept the majority of these in the interests of pragmatism however we are making representations against two of these; supply interruptions and voids collars.

4.1 Penalty collars

4.1.1 Supply interruptions

The DD has removed the penalty collar we proposed for water supply interruptions. The rationale for removing the collar is that Ofwat considers the measure is not financially material and we, therefore, would need customer support for the use of a collar (consistent with Section 7.4 of the Outcome Appendix).

The consequence is that we now face extremely significant risks on this measure. For example, just two complex incidents could have an impact greater than 10% of RoRE under the current proposal. This is in sharp contrast with every other slow track company, where penalty collars have been maintained and Ofwat has even intervened to give companies collars if they didn't have one in the first place. Not only are we unduly exposed to severe weather, our size means we have a major risk that a very small number of incidents can cause performance to deteriorate at a rate that larger companies would likely call a black swan event.

At the IAP, the action for supply interruptions was for us to "…*provide further evidence to justify the application of a collar and the specific level it should be set at*." The extent of the financial impact from extreme weather or complex single incidents is pronounced – even more so when our size is taken into account. It means just a few complex incidents become exacerbated by our topography which makes large-scale interconnectivity prohibitively costly. We described this in detail in appendix 4.3 of our IAP response. The consequence for supply interruptions performance is clear – **in 2018/19 our performance of 01:33:44 came off the back of just only two problematic incidents.**

Below we demonstrate that the collar is appropriate given (i) the measure is financially material; (ii) we are more exposed to risk due to our operating region.

Financially material

In Section 7.4 of the Outcomes Appendix, the framework for when penalty collars are used is set out. Specifically the following rules are noted:

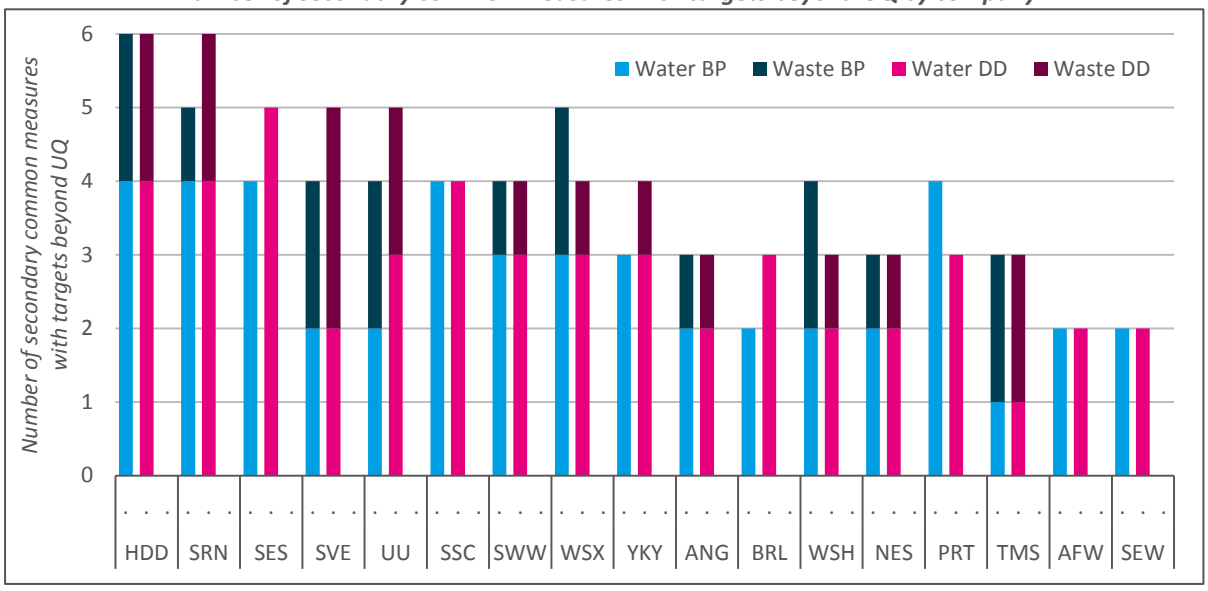
- a measure is considered financially material based on the potential P90 level (ie, based on the scope for rewards). Put another way, if a company does not have a high projection of potential for rewards or it has a penalty only measure then it is considered to be immaterial even if the scope for penalties is very significant;
- the rationale for only setting a collar if the P90 is material is to ensure that it acts as a counter balance, as such no penalty only incentives could have a collar (unless there was customer support);
- any overall downside risk is then considered by conducting a review of the overall incentive package.

Although the logic of this approach might have some appeal where the package of ODIs is reasonably balanced and the P10-P90 analysis is updated appropriately, this is not the case for us. We have more downside risk than any company and yet the penalty collar framework is locking us out from including those measures needing protection against material risk – under the framework collars cannot be applied to measures that are penalty only (although the DD notes collars could be used following customer engagement[2]). So, we end up with the fewest penalty collars to protect against downside risk.

When designing our ODIs, we engaged with customers on the type of incentive that should apply for each and every measure. This led us to a situation where we have more penalty-only ODIs than any other company, as illustrated in the figure below. In fact, many of our penalty-only arrangements are on those common measures where other companies typically have the ability to earn rewards for outperformance.

[2] We note that there is an exception whereby collars could be used if there is customer support. However given that this rule was only articulated in the DD, we are effectively left with a month to carry out the required customer research. Such an undertaking is not realistic in mid and north Wales, where online panels do not exist and we need to undertake door-to-door research.

Number of secondary common measures with targets beyond UQ by company



The issue for us is further compounded by the very limited scope for rewards where they are available. This reflects the significant stretch we have signed up to, and the fact that performance across many key measures is either determined by regional factors or we have very few incidents. This point is perfectly illustrated by the aggregate RoRE range, which we calculate to be -6.57% to +0.15% when the full suite of DD interventions is applied. The challenge that we face is that, because of our limited upside potential there is no case for applying the caps on material upside potential that would allow us to introduce penalty collars to mitigate the downside.

In summary, we're effectively prevented from having penalty collars (i) because the framework rules generally do not allow for collars on penalty-only measures; and (ii) because we have limited overall scope for rewards, there is not a case in aggregate for having collars. Such an approach not only seems counter-intuitive but also unduly punitive. It is also inconsistent with the approach on CRI, where every company will have a collar on this penalty-only measure.

Limiting company exposure

Assessing exposure

In the DD Outcomes Appendix, it is recognised that there is a need to limit company's exposure to risk. An assessment is made against the overall P10, and where it falls below the -3% threshold, those measures that are responsible are identified and P10 payments are limited. This is "*…in order to reduce the P10 percentage of RoRE to lower levels of downside risk for a number of companies as part of our work on limiting companies' downside exposure*.[3]"

At a high level this approach is sensible, however it depends on the P10 and P90 analysis being appropriate and correctly identifying the impact from the DD interventions. However, the P10-P90 analysis undertaken by Ofwat omits key information – notably:

- removing the supply interruptions collar but not updating the view of P10 performance to reflect the removal of this collar; and
- converting the incentives for two bespoke PCs to financial, thereby increasing the number of PCs contributing to P10 risk.

The key issue is the absence of the supply interruptions collar. To illustrate the materiality, if we simply apply our performance from last year calibrated using the AMP7 incentive rates, this shows we would face a penalty of £4.1m to £4.3m. While this would be a relatively small amount for other companies in our sector, it is a big deal for us – it is equivalent to 12-13% of the whole appointed business's RoRE. It's worth noting that this is a

[3] Ofwat (July 2019), "*PR19 draft determinations – Delivering outcomes for customers policy appendix*"

level of performance that we can expect to see about 40% of the time (in the last 10 years, there have been four years with such performance). So, we can expect to see this type of performance twice during AMP7. As this was captured in our view of P10 performance in 2020/21 and 2022/23, it meant that it was collared-out in our reported P10/P90 analysis.

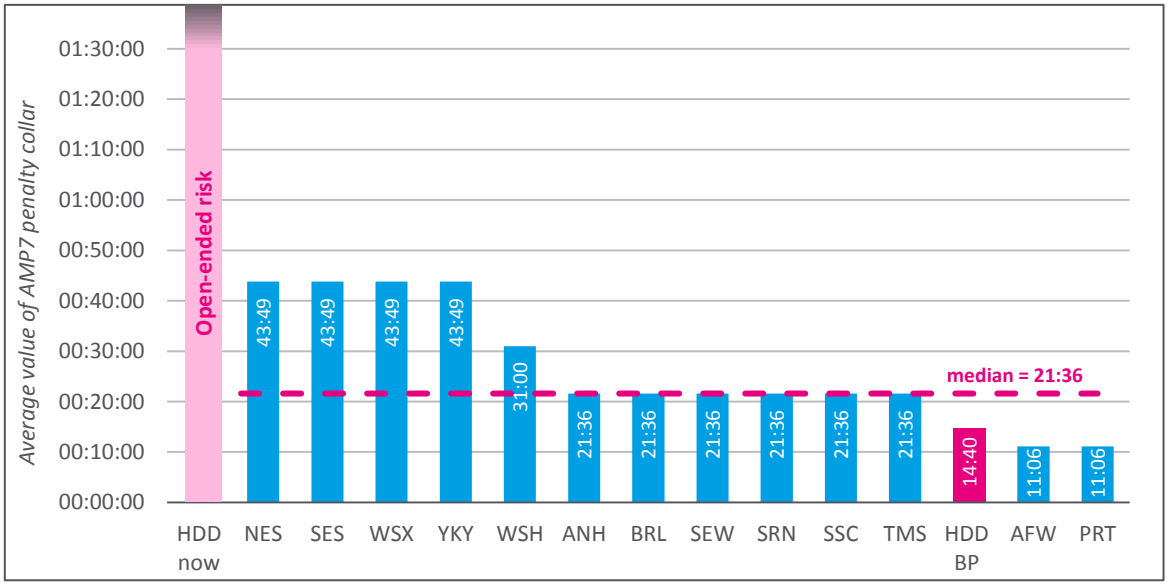
We note that additional interventions to protect against undue risk are not without precedent. A good example appear in the DD intervention on the proposed supply interruptions ODI rate for PRT, which stated:

> "We are intervening to address the issues identified and increase the underperformance payment rate. Applying our approach to setting ODI rates would result in a significant increase in the underperformance payment rate. However, **this performance commitment is a material contributor to a downside financial risk to the return on regulatory equity**. When combined with the rest of the outcome delivery incentive package, we consider the financial exposure to the company resulting from this performance commitment's underperformance payment rate would be disproportionate. As such, **we are moderating our intervention** on the underperformance payment rate to reduce the financial exposure from this underperformance payment rate."

Comparative exposure

This extreme level of open-ended risk is even more pronounced when compared with the sector – following the DDs, all slow track and significant scrutiny company have downside protection in place on this measure – as the chart below sets out.

Company exposure on supply interruptions – AMP7 averages



Additional risk from not being a small urban WoC

We have observed that the most challenging PC targets were put forward by the small urban WoCs and so have played a significant role in determining the UQ targets for AMP7. To understand the potential underlying reasons for this, we have updated our econometric analysis to test the underlying factors. We have sought to understand:

- geographical-related features have a significant effect on the ease with which bursts can be located and repaired, as well as the practicality and cost effectiveness of mains reinforcement that would allow supplies to be rerouted when needed;
- in more sparsely populated areas, the cost of reinforcing the network by connecting it with alternative sources can be prohibitively high, whereas large population centres are more likely to have such interlinked networks;

- rural areas inevitably have more volatile demand which causes greater pressure variations along the mains network is more variable. This contrasts with the urban areas that have larger and denser populations with sufficient demand diversity to level out overall demand variability.
- smaller, more widely distributed communities means a greater number of booster pumping stations – assets known to cause a significant number of supply interruptions.

The results of our econometric analysis (which is set out in Appendix 3.3) demonstrates that, despite the challenge of congestion in built-up areas, companies operating in more rural areas face greater challenges controlling supply interruption. This is predominantly because the rural companies have less interconnectivity and rezoning opportunities. Based on these models alone, the evidence suggests that the HDD performance should be 15 mins.

Nevertheless, we continue to support the application of sector-wide UQ targets, and so we've looked to find a reasonable way to mitigate some of the risks from operating an extremely rural network. We believed the application of deadbands would have been an appropriate tool, but that was rejected in the DD. Risk mitigation is required and this could be achieved by reinstating the penalty collar.

Solution

Given the extreme risk and the material financial implications from supply interruptions following the DD, there is a clear need to limit our exposure on this measure. As done elsewhere in the sector, this can be achieved by applying penalty collars on this measure. As noted above, this would not be a unique move, rather it would be consistent with the approach taken on the penalty-only CRI measure.

In considering the level at which we think the collar would be appropriate, we've taken the opportunity to assess the additional information available to us from the DD. Having considered the collars applied elsewhere in the sector, our collar should be set at the sector median value seen across the slow track and significant scrutiny companies. This provides a suitable level of protection against the undue financial risk on the downside and is appropriate given the effective capping of the upside at zero outperformance. The applicable collars in each year would be set at 21:36 minutes.

4.1.2 Voids

DD proposal and background

The DD had intervened to convert this measure from being a non-financial to become fully financial with both penalty and reward. The reason for this was,

"*The company does not provide any evidence to justify the exclusion of underperformance payments on this performance commitment. There is a clear customer benefit in identifying voids as they lower customer bills. This direct financial benefit to customers justifies underperformance and outperformance payments*."

The DD has also set out the rates that will apply, with respective penalty and reward rates of £0.146 and £0.079m per 1% and that the targets are now being set on a percentage basis (ie, the number of void properties as a percentage of all properties).

In terms of the incentive arrangements for this measure, original Business Plan set this out a reward-only ODI. We included an outperformance element to provide protections against bad-debt risk. However, we did not propose penalty arrangements as this would disincentivise their identification given that the need to bring a void into charge is unknown until the point of discovery.

The feedback at the IAP was, "*The company should provide evidence to demonstrate that an outperformance payment would benefit customers and that it is designed in such a way that does not create perverse incentives with respect to the timely and accurate registration of void sites*."

The additional work we undertook to prepare for our revised Business Plan included further research into customer support for financial incentives on PCs. This research found that 53% of our customers thought this

bespoke measure should be reputational, and so we revised voids to be a non-financial ODI to take account of this new insight.

Limiting exposure

The revised arrangements for this measure present us with an additional, unexpected level of risk. The risk arises because, at least in the immediate term additional void properties could be found as we go through the process of refining our data and records. So, should we identify more properties in this way, then our targets immediately become much more challenging. A further risk is that a significant proportion of voids properties may be genuine voids and therefore do not need bringing into charge, thereby making the targets even more challenging to attain.

The impact of this risk is clear from the level of penalty that we would face if we miss our target by one percentage-point. A penalty amount of £0.146m might look small on first inspection, but this is worth 0.5% of the entire appointed business's RoRE and comes from a retail measure.

Solution

We think that a sensible way to mitigate this risk is by using a penalty collar. The appropriate level for this collar, for each year of AMP7, is the current voids rate of 5.94%. This is because it will (i) mitigate undue risk, (ii) make sure we are robustly incentivised to pursue the challenging targets, and (iii) ensure that we do not face a perverse incentive that discourages us from identifying additional void properties.

We also think that it will be appropriate to set a reward cap, so that the package retains balance once the penalty collar is in place. The simplest way to achieve this balance would be to set the cap and collar to be set at identical distances from the end-of-AMP target of 4.50%. On this basis, the reward cap would be set at 3.06% in each year of AMP7.

5. Remedies for bringing PCs and ODIs package back into balance

If the PCs and ODIs package is going to drive our focus on areas that really matter to customers, then it needs to provide balance with stretching and realistic targets, incentives that reflect value and worth to our customers and provide suitable protections against the extreme risks that lie beyond management control.

Our view is that the package proposed by the DD is not too far away from where it needs to be, in that it only requires some targeted fine-tuning to achieve a suitable level of balance. With this in mind, we have identified a four-part integrated solution that would readily deliver this. This consists of:

- Apply an aggregate cap and collar at +/-2.6% of RoRE (industry average);
- adjust the PC targets in the following way; for **low pressure** retain our planned stretch, for **blockages** increase to industry average, for **struggling to pay** clarify that the updated targets result in us helping 13% of the relevant customers and update **effectiveness of our support** to rise to 10% by 24/25 and supply interruptions to reflect industry wide optimism bias in the UQ forecasts;
- for **supply interruptions**, **leakage** and **pollutions** to have respective ODI rates of £19,871 per minute, £69,931 per MLD and £149 per incident per 10,00km of sewer network; and
- restoring the **supply interruptions penalty collars** at the industry median of 21:36 minutes and introducing a collar for voids at 3% higher than the target.

These changes would give a revised aggregate RoRE range of -2.3% to +0.3%. Not only is this a significant improvement on the -6.57% and +0.15% range that the full DD would deliver, it is also reasonable given that moves much more towards the range of -2.07% and +0.3% that Ofwat had estimated in the DD.

6. Commentary to support outcomes data tables

OC1

This table includes the changes to the P10 and P90 data (levels and payments) taking the PC/ODI parameters set at draft determination as fixed. We have not taken into account any proposed changes to these parameters on which we are making representations.

OC2.1

We have recorded all changes to our PC/ODI parameters proposed in our draft determination representations. This includes PC levels, ODI rates and P10/P90 data. The data has been provided in standardised units. For comprehensive details regarding these changes please refer to the outcomes appendix as submitted as part of our representation.

It is worth noting that our definition for low pressure complaints has changed and we have included the changes to this performance commitment in this table as opposed to including in table OC2.2.

OC2.2

We have recorded all changes to our PC/ODI parameters proposed in our draft determination representations. This includes PC levels, ODI rates and P10/P90 data. The data has been provided in alternative units.

OC2.3

One new bespoke performance commitment has been proposed in our draft determination representation and the details of this are included in this table.

OC3

There have been no changes to our ODI rate input parameters (such as marginal benefit or marginal cost values), as compared to the post-IAP submission that we provided in April 2019.

OC4

The shadow reporting data for bespoke performance commitments for the 2018-19 reporting year has been provided. Hafren Dyfrdwy was formed on the 1st July 2018 which means for some measures the data provided will not match the data reported in either the Annual Performance Report 2019 or the Discover water data, which may have been calculated on a different basis. Several of the bespoke measures relate to activity or outcomes that do not start until AMP7, in these cases the 18/19 performance is recorded as zero. We have detailed below what has been provided for each bespoke performance commitment.

Bespoke performance commitment	Action taken
Number of complaints about drinking water quality	Shadow data provided
Properties at risk of receiving low pressure	Shadow data provided
Satisfactory sludge disposal	Shadow data provided
Welsh language services	Shadow data provided
Sewer blockages	Shadow data provided
Reduction in the number of void supply points	Shadow data provided
Number of lead pipes replaced	N/A - new measure with data that is not comparable for shadow reporting
Hectares managed for biodiversity	N/A - new measure with data that is not comparable for shadow reporting

Non household customer experience	N/A - new measure with data that is not comparable for shadow reporting
Help to pay when you need it	N/A - data is not aligned to the new definition and Powys and Wrexham are being tracked against different legacy schemes so cannot be combined.
Effectiveness of the affordability support	N/A - new measure with 24 month time lag required, so data not available.
Priority services during an incident	N/A – new measure for AMP7, with an Ofwat intervention to the definition therefore the data is not available
Improving reservoir resilience	N/A – new measure, that relates to activity that will be carried out during AMP7.
Inspiring our customers to use water wisely	N/A – new measure with data that is not comparable for shadow reporting
Length of river water quality improved	N/A – This tracks the outcome of activity not starting until AMP7. The AMP6 NEP is for investigations only, no improvements are required.
NEP delivery	N/A - this is scheme specific not due for delivery until 23/24.

The following section includes associated commentary for each of the bespoke measures that we have provided shadow performance for. The purpose of this commentary is threefold:

1. to explain the degree to which it can be compared with other reported data (due to the complication of the mid-year licence change);
2. to set out any assumptions or extrapolations required to produce the data; and
3. to explain any significant difference from the forecast provided in the April 2019 updated plan.

Drinking water quality complaints

The shadow reported value cannot be compared to the APR data because for the DVW measure (APR table 3A line 1) is only discolouration complaints. In AMP7 it will be all complaints. The Powys measure for drinking water complaints (APR table 3A line 14) does include appearance and taste & odour (67 complaints) but it is for performance from July to Dec.

The DWI provided a theoretical HD full year performance for both appearance and taste & odour to be included in the Discover water website, which states 22.4 and 5.1 contacts per 10000 population served respectively. The DWI are using the population served as 209391, which then translates to 576 contacts.

A PDT has been produced and assurance process followed for the APR data. The additional review to also incorporate the taste and odour complaints in North-East Wales was carried out by the WQ team and reviewed before submitting to discover water. It has also been presented to the HD Board. Performance is set out in the table below, which shows 577 contacts. This is the shadow reported value:

Water Supply Zone Ref	Total contacts appearance (definition 3.1.2.)	Total contacts taste/odour (definition 3.1.3)
Z01	***5***	***5***
Z02	***17***	***6***
Z05	***13***	***7***
Z06	***72***	***12***

Z07	***79***	***11***
Z08	***47***	***11***
Z11	***31***	***3***
Z15	***26***	***4***
Z16	***25***	***3***
Z18	***40***	***15***
ZCS01	***0***	***0***
ZSP07	***76***	***18***
ZSP08	***0***	***2***
ZSP14	***38***	***10***
Not Recorded	***1***	***0***
TOTAL	***470***	***107***

The 18/19 actual performance is higher than the PR19 business plan forecast for several documented reasons – firstly an aeration issue at Oerog Spring which caused an increase in complaints in Llangollen and secondly the period of high demand during the prolonged hot summer put the system under stress and we saw an increase in complaints, particularly in Powys. Which explains the difference between the BP forecast of 496 to actual 577.

Properties at risk of receiving low pressure

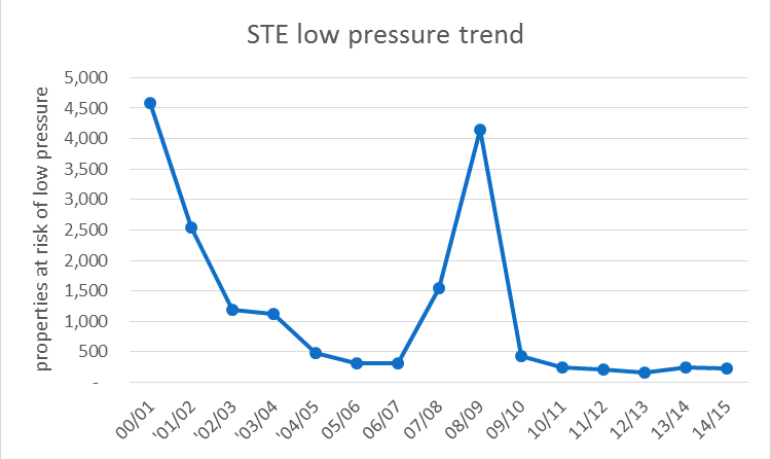
APR19 only includes Powys performance, as low pressure is not an AMP6 performance commitment for DVW. In table 3A line 23 Powys low pressure is reported at 11. This has been produced by following a detailed PDT and assurance process. No other data is available in the APR. Another source where low pressure data can be found is on the discover water website, where it is reported as 94 properties at risk for HD.

We have not reported 94 as the shadow performance because it has been derived on a different basis to all previous years. Over the last six months, in order to improve our understanding of pressure on the network we have installed around 200 pressure loggers. In the past the DVW performance was inferred from around 20 monitors across the network, this did not provide sufficient granularity to really understand what is happening. In the discover water submission, for the first time we have used the performance data from the new loggers, which resulted in 83 properties at risk in our North-East Wales region, plus 11 in Powys, totally 94. All of the PR19 data has been based on historical performance which is based on inferred data (in line with the Ofwat definition and is an approach taken widely across the industry). Therefore the data was reviewed by the subject matter expert and former network modeller at Dee Valley to reproduce the performance using the original method. The results are set out below, which shows the Wrexham performance would have been reported as 31, which added to the 11 in Powys is 42 properties at risk. A summary of the analysis is set out in the table below.

Area	Control Group	Properties on DG2 Register, 2018-19	Logger height	Highest property	logger in this DMA, pre-HD?	DG2 based on previous methodology
Wrexham	CHR Meter No3	35	35.4m	All above 34.2m	No	0
Wrexham	LLWYN ONN GRAVITY	9	100m	100.9m	Yes	9
Wrexham	Glyndwr South	1			No	0
Wrexham	Glyndwr South	0			No	0
Wrexham	Glyndwr South	20		270m	No	0

				(range down to 230m)	No	0
Wrexham	Glyndwr South	8	216.6m	380m	No	0
				(range down to 217m)	No	0
Wrexham	CHR Meter No. 3	9	27m	36.7m	No	0
Wrexham	Llangollen - Cefn	0			No	0
Wrexham	Llangollen - Cefn	1	237.8m	231.5m	No	0
Powys		11			Yes	11
Wrexham	Glyndwr South	0	Section 65 properties supplied by gravity from Church Hill DSR.		No	1
Wrexham	Llangollen - Cefn	0	Section 65 properties supplied by gravity from Geufron, Llandynan, Llantysilio Rhewl, Sun Bank and Upper Garth DSRs.		No	12
Wrexham	Legacy	0	Section 65 properties supplied by gravity from Cymau DSR.		No	3
Wrexham	Brymbo High Level	0	Not quite Section 65 properties supplied by gravity from Pendinas WTW/ DSR. (likely to have low pressure)		No	6
	total	94			Total	42

An increase in the number of properties at risk is to be expected and is less significant than the jump seen in STE around 2007-09, which was the period when they installed pressure loggers across the network. It is possible we will see a further increase next year as the logger installation is not yet complete and there are further modelling updates planned across AMP7. We have therefore proposed in the DD representations that the definition and target is adjusted to be the percentage reduction in the number of customers at risk of low pressure. This will ensure that the 28% stretch is delivered whilst also providing the right incentive to improve data.



Satisfactory Sludge

This has not been reported for HD, but it is part of the EPA assessment for STE, which confirmed 100% of sludge was satisfactorily treated. All of the sludge from Powys is treated at Severn Trent sites in England, and therefore the HD performance must also be 100%.

Compliance with Welsh Language scheme

This is not an AMP6 measure, but we have applied the assessment process and scored our compliance with our Welsh language scheme. The PDT has not yet been written, but the scoring methodology is detailed in the PC definition (see appendix 1 of our PC commitments https://www.hdcymru.co.uk/content/dam/hdcymru/about-us/pr19/hdd_appendix_a3_bespoke_performance_commitment_definitions.pdf). The audit has been carried out and we scored 91%, which has been reported in OC4. There were three areas where we were not compliant and they are:

- The developer services phone line does not give the options in Welsh
- The website on the careers page does not offer Welsh translation
- The website on the Investor page does not offer Welsh translation

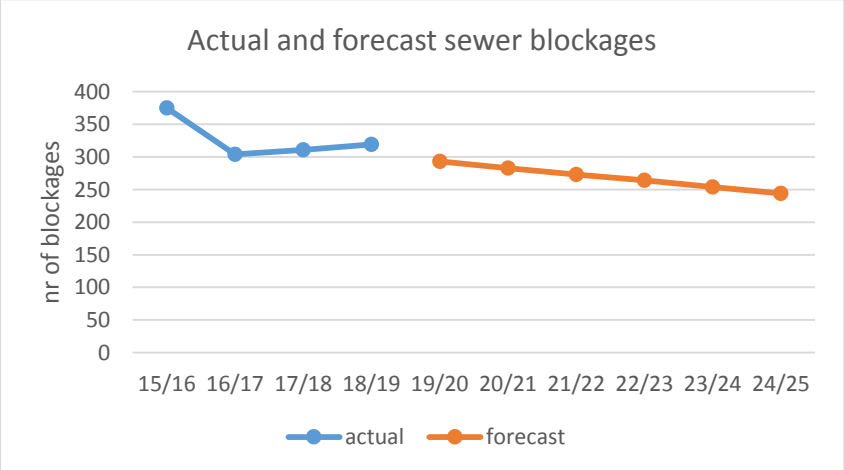
Sewer Blockages

This has been reported in APR19 table 4R.5 as it is an AMP6 PC for Powys. The reported data covers the period July 18 – March 19. Therefore the April to June (Q1) data has been added.

code	description	units	dp	Pre NAV – Q1	Post Nav Q2-4	total
4R.5	Total number of sewer blockages	nr	0	67	252	319

There is a process description template (PDT) which has been followed to produce this data. The data has been subject to three lines of assurance (by Jacobs as part of the Severn Trent Assurance).

The data has also been reviewed and is 17% lower than the business plan forecast, but is in line with historical trend. The 18/19 and 19/20 BP forecasts were set at the FD target. Actual performance is outperforming against the FD, as a result of the focus we have put on the proactive sewer cleansing programme. The graph below shows the AMP7 targets, which show 18/19 performance is in line with both historical and forecast performance.



Reduction in Void supply points

Ofwat has set an intervention to re-define this measure to be the percentage of void supply points as proportion of the total properties connected.

The number of household voids is reported in the APR and therefore we have an established PDT and the 18/19 data has been assured. The PDT is located on the APR assurance Sharepoint site. The data is included in APR table 4A line 1 totals to 4164 household voids. Our AMP7 measure also includes non-household voids, which using the same system is 1614. When combined then presented as a proportion of connected properties (104,974 from APR table 4Q line 6) is 5.5%. Which is the value we are shadow reporting.

Line description		Units	DPs	Current year	
				Unmeasured	Measured
Retail A	Household				
4A.1	Number of void households	000s	3	2.048	2.116

However we fully anticipate the number of voids to increase over the next 12 months as we are just embarking on a programme of work looking at the data and our processes for identifying and then taking action. We are already seeing month on month increases as the data cleanse process is carried out.

Number of lead pipes replaced

In table 4Q line 19 the number of lead pipes for quality reasons is reported. The 18/19 APR stated this as 1 pipe. The shadow reporting data states N/A. This is because the AMP7 definition specifies that 1 pipe means both the communication and supply pipe has been replaced. The 18/19 performance did not include the customer pipe and therefore is effectively a different measure and is therefore not applicable.

This is not reported anywhere else.

The shadow reported data has been through our well established three lines of assurance. The independent report by our third line auditors, Black & Veatch is included below.

6.1 Assurance report

HAFREN DYFRDWY PR19 – CHECKS ON OUTCOMES PERFORMANCE COMMITMENTS – AUGUST 2019

Introduction and Purpose

Hafren Dyfrdwy (HD) submitted its draft Business Plan for the period 2020-25 (known as PR19) in September 2018. This included bespoke Performance Commitments (PCs) proposed by the company, in addition to a number of common PCs which Ofwat requires all companies to report against. Following requests from Ofwat, further PR19 clarifications were sent in April 2019.

Prior to Ofwat's publication of the Final Determination in December 2019, HD have been asked to provide shadow-reporting data on 2018-19 performance against the proposed bespoke and common PCs, including the effect of changes required by

Ofwat or proposed by the company. This is to be submitted by 30.8.19. and will consist of Tables OC1 – OC4, the Outcomes data tables.

Black & Veatch was asked to provide third-line assurance on the 2018-19 shadow performance data given in Table OC4 relating to bespoke PCs only. For some of these, shadow performance data can be given and for others no data can be given.

The purpose of our assurance was:

For the PCs where values can be given

- To comment on the reasonableness of the approach taken to reporting
- To comment on the robustness of the reported data by reference to the approach and assumptions used and data in the company's systems and to other reported data, such as that in the APR19.

For those PCs where no values can be given

- To test the reasons why data cannot be given and confirm that the approach is reasonable

We have also commented on the Table Commentary for Table OC4.

Our conclusions are given below.

Key Points

1. For PCs where shadow 2018-19 data were reported, we concluded that the company had correctly populated Table OC4 from data in the company's systems and had taken a reasonable approach to the calculation of the data.

2. For PCs where shadow data were reported, differences between reported figures and other published data were satisfactorily explained.

3. We reviewed PCs with a report of Not Applicable and confirmed and agreed the reasons for this assessment.

4. The company carried out first-line assurance checks for PCs where shadow data were reported. These were not formally recorded and we recommend that they should be.

5. The company carried out second-line assurance checks which were recorded in the form of a table comparing the shadow-reporting figures with other reported figures, with reasons for variances.

6. Third-line assurance is provided by this report.

Our Approach to the Audit

To carry out this audit we met the HD staff responsible for reporting the data given in Table OC4. For each of the bespoke PCs we checked the approach taken to reporting.

For PCs where data were reported we checked the data reported and compared it with other reported data (for example in APR 19 or the initial PR19 submission). Where appropriate we checked these data by reference to summary data in the company's systems. Since much of this has previously been audited by Black & Veatch or others, we did not check back to source data for this assurance exercise. We did not check PDTs in detail.

For PCs where no data were reported, we checked the reasons for this and confirmed that the approach was reasonable.

We reviewed the proposed Table Commentary.

Comments on Individual PCs

Methodology and conclusions differ for the different PCs and are discussed individually below.

PCs Where Shadow-Reporting Values Can Be Given

Number of Complaints About Drinking Water Quality

HD consists of the Powys area, formerly part of Severn Trent Water (STW) and the Wrexham area, formerly part of Dee Valley Water (DVW). Data on drinking water complaints reported in APR19 consisted of all complaints for Powys, but of discolouration complaints only for Wrexham, so the figure reported in Table OC4 is not the sum of the two reported APR19 figures.

Data on complaints are based on data collected for and reported to DWI and for APR19 these relate to calendar year 2018 performance. We checked the company's data spreadsheet summarising drinking water complaints for all of the HD water supply zones, which showed 470 complaints on appearance and 107 complaints on taste and odour, confirming the 577 complaints reported in Table OC4.

We noted that this figure differs from that given on the Discover Water website of 576. This is because the Discover Water figure was calculated from published figures for contacts/10,000 population using a slightly different population figure.

We concluded that a reasonable approach had been taken to the calculation and reporting of the Table OC4 figure, that this was consistent with data reported to DWI (which has been audited annually by Black & Veatch for DVW and by others for STW for a number of years) and that the above had been satisfactorily set out in the Table Commentary. A PDT exists for the collection of these data for APR reporting.

Properties at Risk of Receiving Low Pressure

Low pressure is an AMP6 PC for Powys and we confirmed that this was reported as 11 properties in APR19. This figure was calculated using a detailed PDT. However low pressure is not an AMP6 PC for DVW and so was not reported in APR19 for Wrexham.

Formerly, low pressure in DVW was identified from results from 20 pressure loggers. In recent months over 200 loggers have been installed in the former DVW area to improve understanding of network pressures. Data from these indicates that 83 properties in the Wrexham area are currently at risk of low pressure. With 11 added or Powys, this gives the 94 total figure reported on the Discover Water website.

To ensure consistency with the calculation method used to provide the forecast PR19 figures, the numbers of properties at risk of low pressure have been reassessed using the Business Plan methodology to determine the number of properties in the Wrexham area which would have been reported for 2018-19, given the numbers and locations of loggers formerly available and consistent with the DG2 methodology. This showed that a number of low-pressure properties would not have been identified and confirmed the number of properties at risk in Wrexham on this basis as 31, giving a total with the 11 Powys properties of 42, as reported in Table OC4.

We reviewed this calculation and concluded that it gave a reasonable estimate of the number of properties at risk of low pressure, consistent with the methodology used to set the Business Plan targets. An increase in the number of properties at risk is to be expected when the number of loggers is greatly increased and we note that this was the case when a similar exercise was carried out in STW. To avoid a large discrepancy and a step-change in numbers reported in future years, the company proposes to amend its PR19 PC measure to reflect the percentage change in numbers of properties at risk. This is a reasonable approach and is described in the Table Commentary.

Satisfactory Sludge Disposal

All HD sludge (which arises only in the Powys area) is taken out of the HD area and treated at STW sites. This is expected to continue throughout AMP7. We saw the EPA data reported to EA by STW, which related to calendar year 2018, and confirmed that 100% of sludge was satisfactorily disposed of. This figure has been audited by others and substantiates the 100% figure reported for 2018-19 in Table OC4.

Compliance with the Welsh Language Scheme

To provide a figure for shadow reporting the company has applied the assessment process using the scoring methodology set out in the Outcomes Performance Commitment Appendix to score compliance. This lists a number of criteria which must be achieved to obtain full compliance and assigns a weighting to each. On making internal checks the company found that it failed to fully meet requirements in three areas:

- Options not given in Welsh on the Developer Services phone line

- Welsh translation not offered on the Careers and Investors pages of the website

We reviewed the calculation and confirmed that the weightings applied to the above measures, using the agreed methodology, resulted in a score of 91%, as reported in Table OC4. The company proposes to address these shortcomings before the start of AMP7.

Sewer Blockages

This measure applies only to the Powys area of HD. A PDT is available for the calculation of the APR measure. Following the formation of HD on 1.7.19, the blockages figure reported in APR19 included blockages for the period 1.7.18 – 31.3.19 only, totalling 252. The figure for 1.4.18 – 30.6.18 needs to be added to this figure for reporting of the whole-year total in Table OC4. We viewed the base data for the whole year, recorded in SAP and confirmed totals as: Q1 = 67, Q2-4 = 252, making a total of 319, as reported in Table OC4.

Numbers reported are based on the number of sewer blockage clearance jobs carried out and include only blockages reported by customers. Pro-active clearance by company staff is not included. This is a reasonable approach and we confirmed that the reported figure was consistent with base data.

Reduction in the Number of Void Supply Points

This measure was proposed since it is believed that a number of properties currently recorded as void are actually occupied and a target has been set to reduce this by the end of AMP7. The PC proposed by the company was the number of voids, which is forecast to reduce year on year during AMP7 as cleansing of legacy customer data continues. However, Ofwat requires this PC measure to be stated as a percentage of the total number of customers. Numbers have been calculated using the PDT which is used for the calculation of the number reported in the APR.

The figure reported in Table OC4 consists of the average of 12 monthly figures for 2018-19 for Powys household properties, Wrexham household properties and HD total non-household properties. We saw the calculation spreadsheet and confirmed from it the average number of voids in HD during 2018-19. This was divided by the APR19 property figure given at APR Table 4Q.6 of 104,974 (believed to be the year-end figure). Since legacy data cleansing is also affecting the estimated total number of company properties, to avoid volatility in reported numbers in future the company has asked Ofwat to confirm the property number assumption to be used.

The approach taken is reasonable, but we note the potential for volatility in this measure due to legacy data cleansing, which is likely to affect both the estimated number of void properties and the estimated total number of properties. We understand that this has been highlighted to Ofwat.

PCs Where Shadow Reporting is Not Applicable (N/A)

Number of Lead Pipes Replaced

APR19 Table 4Q.19 reported this number as 1. This related to the replacement of a supply pipe only and the corresponding customer's communication pipe was not replaced. Ofwat has clarified that 1 pipe means that both the supply and communication pipe have been replaced. In discussion with Ofwat, they have clarified that for AMP7 reporting a supply and a communication pipe can be counted as half a pipe each and that the target proposed by the company will be correspondingly halved.

Using the new definition would result in a report of zero for 2018-19 in Table OC4. However, as the definition of a pipe differs from that used for the APR, the company has reported this as N/A.

Hectares of Land Managed for Biodiversity

This is reported in Table OC4 as N/A since all of the work covered by this PC relates to the Vyrnwy estate and will not begin until AMP7. The company is carrying out some biodiversity work in AMP6, but this would not qualify under the PC definition.

Non-Household Customer Experience

This PC will be measured using a new measure based on survey data which will start to be collected in 2020-21. The survey work has been tendered and let and a pilot survey will be carried out in Autumn 2019. No data have been collected for 2018-19, so this is reported as N/A in Table OC4.

Help to Pay When You Need It

The Powys and Wrexham areas currently have different legacy Help-to-Pay schemes, mirroring those used in STW and DVW. A new aligned bespoke PC will be introduced in AMP7 for the whole of HD, based on the company's Here-to-Help scheme, but no consistent data are currently available for 2018-19 reporting and this measure has been correctly reported as N/A.

The company is currently discussing with Ofwat an appropriate percentage of customers who are struggling to pay, for use in the calculation.

Effectiveness of the Affordability Support

This will be a new measure for AMP7, reporting the percentage of customers who, 12 months after receiving 12 months affordability support, continue to pay their bill. There is thus a 2-year lag in collecting data and no data are available for 2018-19, so this measure has been correctly reported as N/A.

Priority Services During an Incident

This will be a new measure for AMP7 and there has been an Ofwat intervention affecting the definition. Accordingly, no data are available for 2018-19 and this measure has been correctly reported as N/A.

Improving Reservoir Resilience

This is a new measure for AMP7 and relates to work to deliver Reservoirs Act Matters of Safety which will not be carried out until AMP7, so no data are appropriate for 2018-19 reporting and this has been correctly reported as N/A. The measure will be assessed against annual targets.

Eleven reservoirs are affected and only Matters of Safety works currently identified will be included in the measure. This measure is an Ofwat initiative and is consistent with measures proposed by other companies. We note that while the PC will provide a measure of the likelihood of dam failure it does not provide any measure of the effect on customers' supplies and also that it is a statutory requirement that all Matter of Safety measures are completed within three years.

Inspiring Our Customers to Use Water Wisely

This is a new measure and data collection will not start until AMP7, so there are no data to report for 2018-19 and this has been correctly reported as N/A.

Length of River Water Quality Improved

This measure will track performance against NEP requirements which come into force in AMP7, so there are no data to report for 2018-19 and this has been correctly reported as N/A.

NEP Delivery

This is a new measure required by Ofwat. It will track scheme-specific NEP progress and not come into force until 2023-24, so there are no data to report for 2018-19 and this has been correctly reported as N/A.

Assurance Checks

The company carried out first-line assurance checks during the analysis of the data for PCs where shadow data have been reported, but these were not formally recorded.

Second-line checks were carried out by the manager responsible for compiling Table OC4 and recorded in the form of a table comparing the shadow-reporting figures with other reported figures, with reasons for variances.

Third-line assurance is provided by this report.

Conclusions and Recommendations

We concluded from our assurance that the company had correctly populated Table OC4 from data in the company's systems and satisfactorily reconciled any differences between reported figures and other published data for PCs where shadow data could be reported. In each case we assessed the approach taken as reasonable.

We reviewed PCs with a report of Not Applicable and confirmed and agreed the reasons for this assessment.

We recommend that the first-line assurance checks which were carried out should be formally recorded.

Prepared by: **Steve Bentley**

Date: **25.8.19**