Representations: Outcomes

Document Reference: D002

This document sets out our response to issues relating to outcomes in the Draft Determination

United Utilities Water Limited

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Contents

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1 Overview

This document sets out our response to issues relating to outcomes in the Draft Determination. The rejection of some proposals set out in our IAP response has resulted in an overall balance between outperformance payments and underperformance penalties which we do not consider to be appropriate. The range reflected in the Draft Determination is -2.23% to +0.54% return on equity (RoRE)). The Draft Determination ODI upper RoRE range of 0.54% is significantly less than the indicative figure described in Ofwat's final methodology, which suggested "*an indicative range for the size of companies' ODI outperformance and underperformance payments of ±1% to ±3% of RoRE at PR19.*"

Ofwat's final methodology stated that *"We expect companies to develop their ODIs in consultation with their customers, and obtain customer support for the overall RoRE range proposed in their business plan".* We developed our September plan RoRE range in close consultation with our customers and YourVoice. Customers supported the range of ODI impact which we included our plan, including the potential upside of 1.9%. We consider that changes are needed to bring the range closer to that supported by our customers. Full details of the analysis of the RORE range are given in our response on Financing (D004 Financing and financial model).

We are seeking some changes to performance commitments and incentive rates and structure. We consider that this will deliver a reasonable balance between underperformance and outperformance and is in accordance with the framework for setting outcomes and incentives.

In addition, having opted out of the early certainty principle, we are still potentially affected by changes in the approach to outcomes, particularly in relation to common measures. We put forward in this document our views on some aspects of the approach to these common measures.

This document also covers some of the IAP actions which remained to be addressed, and sets out some proposed definitional and measurement changes.

The table below shows the issues covered and outlines our response.

Section	Issue	Our response
Changes relating to the performance commitment / ODI framework		
2	**Resetting ODI rates**	This section explains why, where Ofwat has made one-sided adjustments to ODI rates, we have made adjustments to corresponding under / outperformance rates, in order to align with customer valuations and conform to Ofwat methodology.

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Section	Issue	Our response
3	**The framework for common measures**	We consider that the forecasting of upper quartile performance has led to unrealistic targets and takes no account of a company's operating environment. If this leads to a disproportionate effect on the P10/P90 balance then the target should be modified or its impact reduced. We also consider that the approach to incentive rates has led to too many companies' ODI rates being changed. We propose an upper / lower quartile approach to determining the reasonable range for ODI rates. We are proposing a glidepath and a revised incentive rate for internal flooding. We have also set out a potential glidepath for water supply interruptions, and a modification to the deadband for CRI.
Specific changes to PCs / ODIs which affect financial underperformance / outperformance		
4	**Mains repairs**	We explain that increased leak detection and repair is the most economic option for reducing leakage. This applies to UU to a greater extent than other companies, because: • Past high levels of mains replacement means that we only have a small programme of mains replacement in AMP7. • Below-average water pressure means that there is limited scope for further pressure management. Additional leak detection inevitably results in a temporary increase in mains repairs. We are proposing reinstatement of our targets but the addition of a deadband so that there will only be outperformance payments if mains repairs fall below current levels.
5	**Per capita consumption**	We are requesting that the targets set out in Ofwat's IAP actions restored. We consider that these represent a stretching target.

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Section	Issue	Our response
6	**Sewer collapses**	Moving to a common definition has led to a significant increase in our reported number of sewer collapses. The performance commitment will need to be revised and we consider that the incentive rate should also be adjusted. We are also proposing a collar for the ODI, in view of the uncertainty about future numbers.
7	**Systems thinking capability**	We have presented the results of customer research supporting systems thinking. We have set out our proposal to change the performance commitment mechanism to significantly increase the level of stretch through removal of the penalty deadband.
8	**Leakage**	The cost assessment allowance is based on a 15% reduction in leakage but we have been set a 20% target. Either the cost allowance should be increased or the target reduced.
9	**Keeping our reservoirs resilient**	We have set out how our approach takes account of probability and drafted revised text for the Performance Commitment technical document. We propose that our cost adjustment claim be accepted. If this is accepted, our financial incentive should be reinstated.
Definitional and measurement changes		
10	**Treatment works compliance**	We are proposing that the ODI be split between water and wastewater, and that performance be reported to one decimal place.
11	**Enhancing natural capital for customers**	We have set out our proposed approach to assurance, which involves us assessing added natural capital values, and to have that assessment externally assured by an independent third party. We have proposed a revision to the outperformance cap to achieve our intention of setting it at P90 performance (as set out in our 15th February amended Table App1).
12	**Recycling biosolids**	We have raised some issues on definitions.

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Section	Issue	Our response
13	**Cost adjustment mechanism**	We are seeking confirmation that the cost adjustment mechanism will apply to both additions and removals from the WINEP programme.
14	**Environmental scheme ODIs**	We are proposing that we be monitored against the Environment Agency's assessment of delivery of the environment programme, rather than having a different measure which will need separate review by the EA.
15	**Protecting the environment from the impact of growth and new development**	We have set out our proposals for assurance that increases in capacity are needed and have been delivered.
16	**Hydraulic flooding measures**	We are proposing a change in the date at which any schemes already started will be excluded from the outperformance calculation, in order to encourage an early start on schemes.
17	**Manchester and Pennines Resilience and Strategic Regional Water Resources**	We are seeking clarity on the timescale for publishing and consulting on draft conclusions on these two issues, which are being developed outside the fast track process. We have adjusted the Manchester and Pennine Resilience ODI rate to reflect the lower costs in the Draft Determination.
18	**Customers say that we offer value for money**	We think that Ofwat should align the required survey sample size with that for C-Mex.
19	**Unplanned outages**	We have made substantial improvements to our methodologies for this measure, which has resulted in a significant reduction in the historic and forecast unplanned outage values.

In Appendix 1 – summary of current position on PCs and ODIs we have set out the current position in terms of outstanding issues for each of our performance commitments.

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2 Resetting ODI rates

This section responds to Ofwat's Draft Determination interventions to remove our proposed adjustments to ODI rates, set out in the Ofwat document: "Delivering outcomes for customers: actions and interventions" (Actions UUW.OC.A7, A9, A11, A16, A19, A20, A27, A50).

It explains more fully the reasons for the adjustments we made, which are needed to align to customer valuations and Ofwat methodology.

2.1 Ofwat's intervention

Ofwat IAP actions required an increase in the underperformance incentive rate for nine ODIs. For the six ODIs where, after Ofwat's interventions, we still had outperformance rates, we also increased these rates. Similarly, for the pollution ODI Ofwat required a reduction in the outperformance incentive rate and we also reduced the underperformance rate.

In its Draft Determination, Ofwat removed all these changes and stated that United Utilities has not provided any justification for the proposed changes in ODI rates.

In this document, we have set out in Section 2 why it is appropriate in principle for underperformance and outperformance rates to be calculated on a consistent basis. Our commentary to Table App1 set out our approach to applying this principle to resetting incentive rates, and this is included in Section 2.3.

2.2 Our proposals

We recognise that the difference between companies' ODI rates is larger than can plausibly be explained by local circumstances. Differences between valuations are large, not only between companies, but between different customer research studies in the same company. We have observed this from our own results and from those of other companies. Our triangulation report which we submitted with the business plan in September 2018 set out the range of our customer valuation estimates. The range of results reflects the uncertainty in obtaining estimates of service valuations, when they cannot be observed from customer choice. Therefore we accept that it is reasonable for Ofwat to impose a range within which incentive rates should lie.

A change in the incentive rate implies that the customer valuation estimate on which the incentive rate is based has changed, since both outperformance and underperformance incentive rates are calculated from valuation estimates. The only reason for not changing both rates would be if there is evidence that customer valuations for outperformance are significantly less than valuations for underperformance. Our customer research does not support this:

- Our customer research on asset health incentives showed greater support for outperformance incentives than underperformance.
- Our willingness to pay research used two different levels of improvement and the average willingness to pay per unit for the higher level of improvement was very similar (slightly higher) than for the lower level of improvement. This suggests that improvements beyond target are likely to be valued as highly as improvements which are less than the targeted level.

Therefore we have used the new customer valuations for calculating underperformance and outperformance rates. The incentive rates which Ofwat has set out imply valuations which are within the range of estimates from our own research. Therefore, although we have reservations about the

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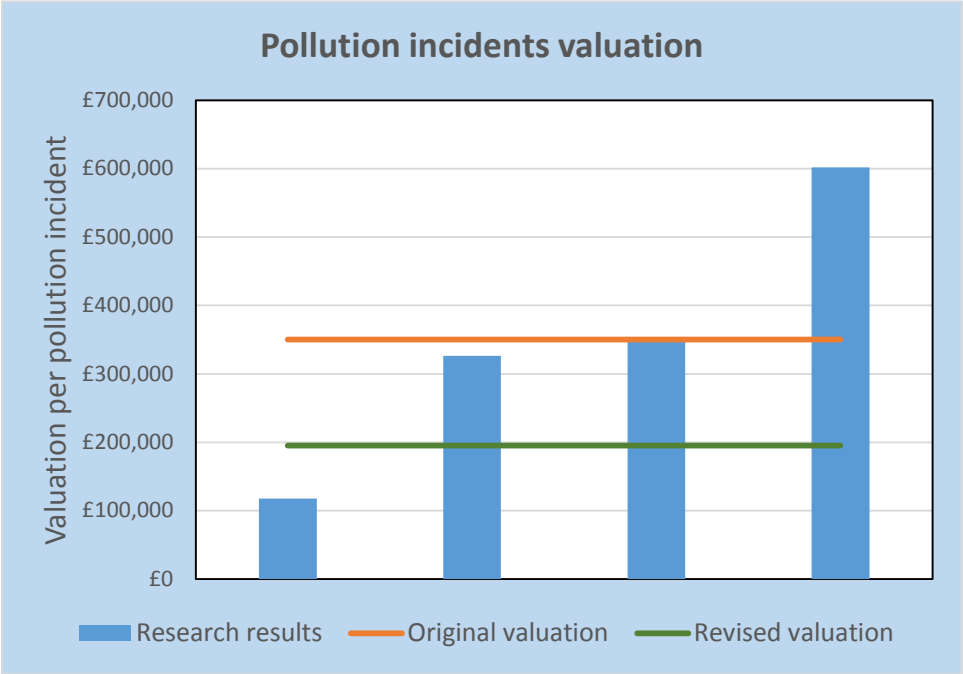
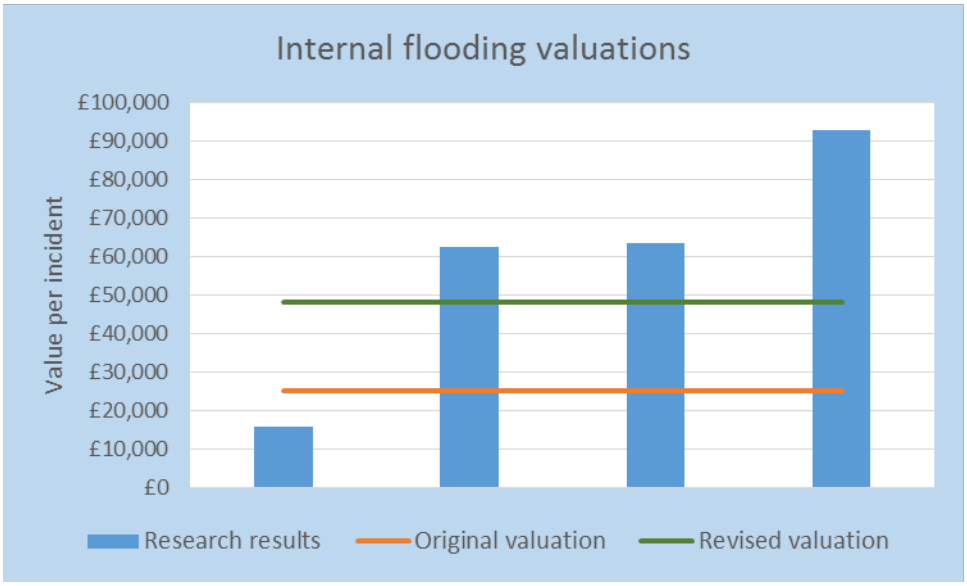
approach to set the range (see Section 4), we consider that they represent reasonable estimates of service valuations for our customers.

This is illustrated below for the pollution and internal flooding ODI rates. We have four estimates of customer value, from willingness to pay research and research to test our plan. Both our original valuation and the revised valuation implied by the revised incentive rate are well within the range derived from the customer research.





We recognise that consideration of other companies' valuations is a valid part of producing a triangulated valuation. We compared our estimates with those of other companies in producing our valuations, but did not have the full results which are now available following business plan submissions.

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External sewer flooding provides an example of the effect of removing our proposed changes to incentive rates. We are targeting a reduction from 7,502 incidents in 2019-20 to 6,845 in 2020-21. If we achieve 6,846 (one incident above target) then there will be an underperformance payment of £5,670. If we achieve 6,844 incidents (one incident below target), then there will be an outperformance payment of £663, i.e. 88% lower. There is no support from customer research for such a difference in incentives.

The effect for mains repairs is even more extreme. One mains repair above target will result in an underperformance payment of £6,682. One mains repair less than target will result in an outperformance payment of £191, i.e. 97% lower.

2.3 Applying changes to ODI rates – extract from App1 commentary

In our Table App1a commentary in our February IAP submission to Ofwat we set out how we applied the above principles to the recalculation of incentive rates. This is reproduced below.

2.3.1 Triangulated WTP / Marginal benefits estimate

Where incentive rates are unchanged, we have used the same values as we used in our Business Plan for setting incentives. For those measures where we have revised the incentive rates in line with actions agreed with Ofwat, we have used the customer values which derive from the new incentive rate. These new values are within the range of valuations derived from our customer research.

2.3.2 ODI rate calculation

In our Business Plan, we applied a symmetrical approach to setting incentives, based on half the customer valuation. This was subject to a check that the ODI provided sufficient incentive to deliver against targets, and that outperforming would require us to deliver at lower cost than current estimates.

For ODIs which are unchanged, we have maintained that approach. For ODIs which we have changed in line with agreed actions, we have applied the Ofwat formula to both underperformance and outperformance.

For underperformance the rate is:

- Customer Valuation – (Marginal Cost / 2)

For outperformance the rate is:

- Customer Valuation / 2

Where marginal cost exceeds the valuation, and this would result in outperformance rates being higher than underperformance rates, we have applied half the customer valuation to both under performance and outperformance. This is shown in the “Reason for using alternative formula” columns.

As a result of this approach, the outperformance rate is less than the underperformance rate for three measures (external sewer flooding, interruptions to supply, and mains repairs).

We have also checked that the revised rates for both underperformance and outperformance are within the ranges set out in Technical appendix 1: Delivering outcomes for customers.

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2.4 Conclusion

We propose that the ODI rates for the following measures should be changed to those set out in our App1 table based on our representations, in order to align with customer valuations and conform to Ofwat methodology:

- Leakage (B01-WN)
- Mains repair (B02-WN)
- Reducing interruptions to water supply (B03-WN)
- Per capita consumption (B05-WN)
- Pollution incidents
- Internal flooding Incidents (G02-WWN)
- External flooding Incidents (G032-WWN)

In summary;

- **We propose that Ofwat reinstates the incentive rate changes we included in our response to the IAP.**

3 The framework for common measures

3.1 Ofwat's intervention

Ofwat has set targets for pollution, sewer flooding and interruptions to supply which are based on the upper quartile of companies' estimates of the future upper quartile of performance, and adjusted incentive rates where they are above or below an Ofwat-defined range.

3.2 Our proposals

Although we have accepted the targets and incentive rates for common measures as part of the fast track process, we have opted out of the early certainty principle. Therefore changes to the framework will apply to our performance commitments. We have, therefore, commented on the framework below.

3.2.1 Upper quartile targets

The setting of standard upper quartile targets has the following effects:

- The upper quartile targets are based on company estimates of where the upper quartile will be, which results in using company targets where the company itself has no realistic chance of achieving those targets.
- No account has been taken of the deadbands or caps or collars which a company has defined. Where a company has set a two-minute target for interruptions but a deadband at six minutes, then it does not indicate that the company had any confidence in hitting the target. Similar

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considerations apply where a company has limited exposure through tight caps and collars. Although such deadbands and caps and collars may be removed or modified as part of the review process, the effect is that targets have been used which companies may have had little confidence in achieving.

- No allowance is made for differences in companies' operating environments. Companies with very compact water supply networks have a greater opportunity to achieve very low levels of water supply interruptions. Companies in the South and East with lower rainfall levels are more able to achieve lower levels of sewer flooding.
- The target makes no allowance for some continuing inconsistencies in measurement between companies. In our case, we consider that our Flooding Extent Assessment approach leads to us reporting a larger number of flooding incidents than other companies.
- Inability to achieve the projected targets may result in the potential range of ODI underperformance / outperformance being dominated by a single measure, which does not reflect the relative balance of customer priorities.

The effect of setting standard targets is in some cases magnified by changes to the ODI rates which fall outside the Ofwat range. As noted in Section 2 above, we recognise that it is reasonable for Ofwat to modify ODI rates to reduce the extent of variation. However, in many cases a majority of companies face changes to their incentive rates, which we consider shows that too narrow a range has been set.

In our case, we consider that the targets for water supply interruptions and internal sewer flooding are not achievable, and we project underperformance penalties even at a P90 level. The impact is particularly high for internal sewer flooding. We described our 2 AMP strategy to achieving upper quartile in our submission in September 2018. At a P10 level, internal flooding accounts for nearly 20% of the penalties (£99m out of £528m). This has a potential impact on bills of about £5 per customer per year, out of a total potential ODI impact of £27. We consider that this does not reflect the balance of customer priorities, as demonstrated in our research.

As described in our Cost Adjustment claim related to runoff and throughout our submission, some companies are more affected by high rainfall than others. This applies to Dwr Cymru, and, in particular, to ourselves. We have high rainfall in areas of high population density that are drained by a largely combined sewer network. We are affected by severe weather more than any other company, and the impact on our incident numbers is shown in the graph below. We have been successfully reducing "other causes" flooding but there are large year-to-year variations caused by the weather.

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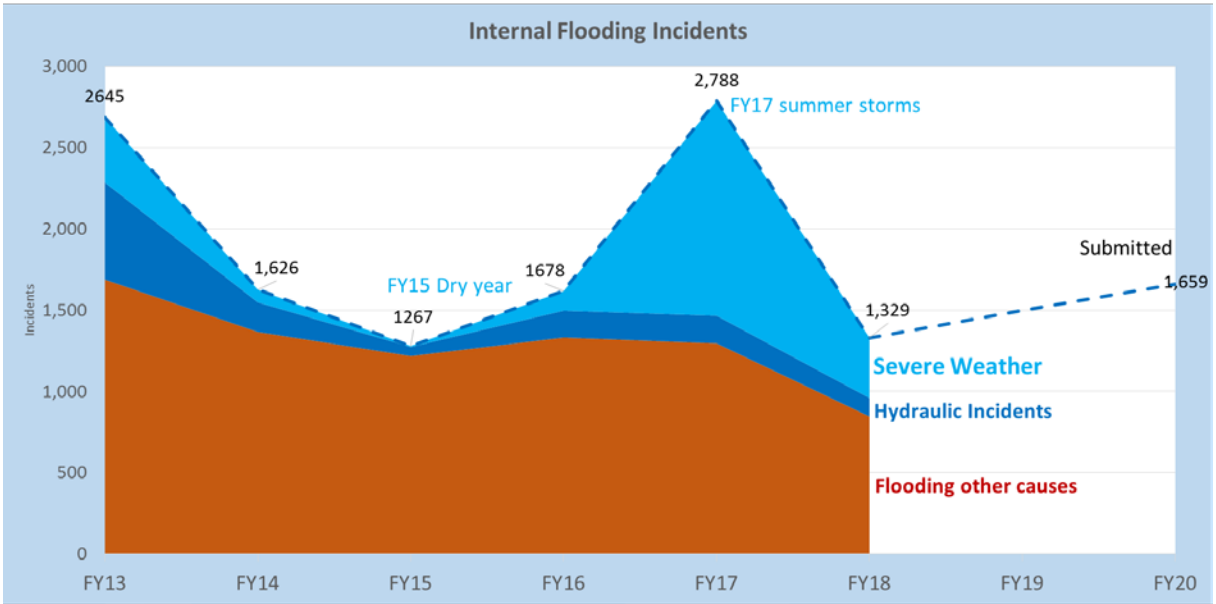

Our strategy is make further improvements to the controllable incidents, by striving to eliminate repeat incidents and through a risk-based strategy that aims to reduce the first-time flooding events. We will also invest to improve the resilience of the wastewater network to severe weather through added capacity, surface water removal and green infrastructure. However, the scale of the uncontrollable incidents due to the weather is disproportionately penal to us.

We consider that where the proposed upper quartile target leads to a disproportionate effect on the P10/P90 balance, say 10% or 15% of the total P10 impact, then the target should be modified or its impact reduced. This could be achieved by a glidepath to the target or introduction of a deadband or cap and collar. In our case, a collar has been set, but at a level where the P10 underperformance penalties are still very high.

The graph below shows that:

- Our P10 / P90 impact of sewer flooding is relatively high.
- Our target is relatively much more stretching than others – maintaining current performance would lead to a -£5 impact on bills, whereas for other companies it is less than

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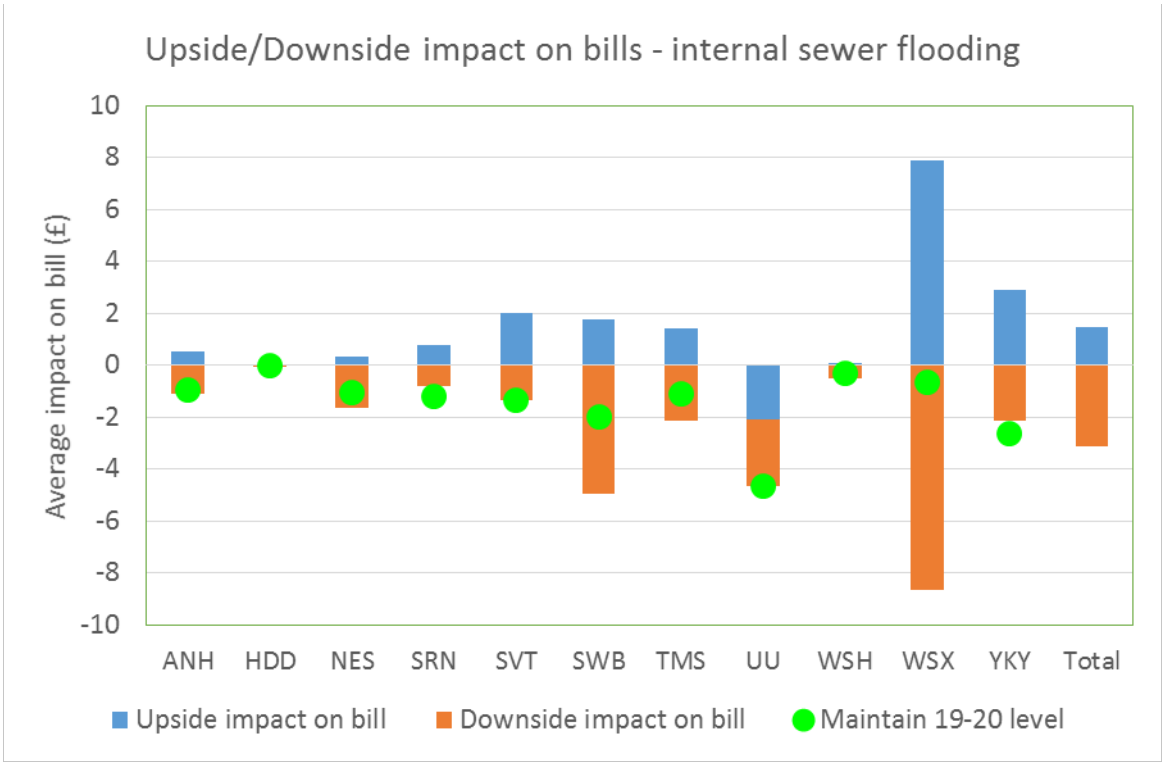

3.2.2 The range for incentive rates

As discussed in Section 2, we recognise that the difference between companies' ODI rates is larger than can plausibly be explained by local circumstances. Therefore we accept that it is reasonable for Ofwat to impose a range within which incentive rates should lie. However, we consider that the approach of basing the range on mean +/- 0.5 standard deviations gives too much weight to outliers, some of which show implausibly large values. For example:

- South West's ODI incentive rate for internal flooding implies a valuation of £160,000 for a single incident.
- Yorkshire's ODI incentive rate for water supply interruptions implies a £1,360 value for a 6-hour interruption for one customer.

We recognise that some extreme examples have been excluded from the calculations. However, we consider that a better approach would be to systematically discard exceptionally high or low values, e.g. by using an upper / lower quartile approach. This is illustrated below for water supply interruptions. An upper / lower quartile approach would only require 8 out of 17 companies to change their incentive rate, whereas Ofwat's approach requires 14 out of 17 to change.

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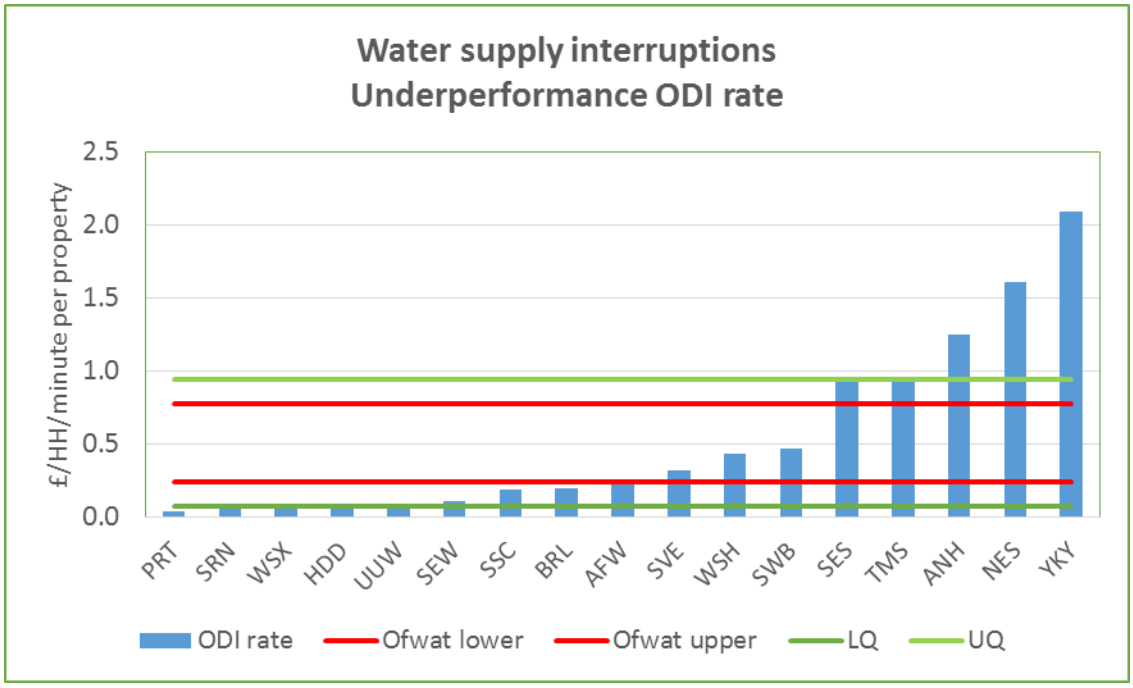
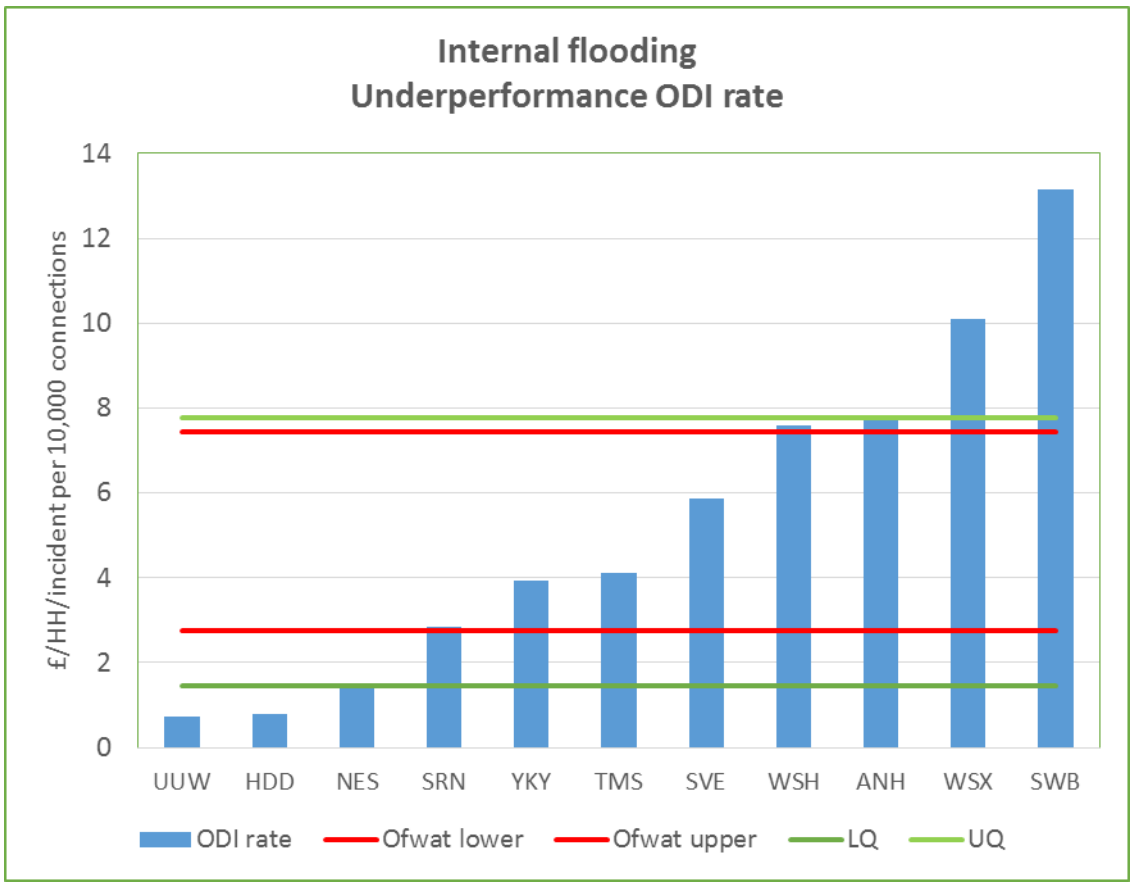


Similarly for sewer flooding, an upper / lower quartile approach would only require 4 out of 11 companies to change, whereas Ofwat's approach requires 7 out of 11 to change.



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This table shows the impact of switching to a quartile approach for all the common measures.

	Ofwat range		Quartile approach	
	Lower	Upper	Lower	Upper
Leakage (£ / HH / % Distribution Input)				
Underperformance	-0.993	-2.369	-0.769	-3.366
Outperformance	0.849	2.113	0.758	2.170
Per capita consumption (£ / HH / l / person/d)				
Underperformance	-0.103	0.091	-0.054	0.049
Outperformance	-0.294	0.282	-0.303	0.262
CRI (£ / HH / Index point)				
Underperformance	-0.373	-0.791	-0.179	-1.056
Supply interruptions (£ / HH / minute per property)				
Underperformance	-0.236	-0.778	-0.069	-0.942
Outperformance	0.184	0.536	0.082	0.821
Mains repairs (£ / HH / repair per 1,000 km of mains)				
Underperformance	-0.095		-0.034	-0.097
Outperformance		0.055	0.008	0.081
Unplanned outage (£/HH/% of maximum production capacity)				
Underperformance	-0.897		-0.329	-1.659
Pollution incidents (£/HH/incident per 10,000 km of sewer)				
Underperformance	-0.159	-0.309	-0.149	-0.404
Outperformance	0.131	0.253	0.143	0.309

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	Ofwat range		Quartile approach	
	Lower	Upper	Lower	Upper
Internal sewer flooding (£/HH/incident per 10,000 connections)				
Underperformance	-2.745	-7.445	-1.444	-7.766
Outperformance	2.133	4.865	1.444	5.874
External sewer flooding (£/HH/incident)				
Underperformance	-5,670	-£11,990	-2,800	-15,390
Outperformance	3,390	£10,320	2,080	13,460
Sewer collapses (£/HH/incident per 1000km of sewer)				
Underperformance	-0.272		-0.080	-0.289
Outperformance		0.090	0.049	0.255
Treatment works compliance				
Underperformance	-0.505		-0.421	-0.515

We consider that this approach could be applied across all common measures. In the App1 table based on our representations, we have only applied it to sewer flooding, because of the disproportionate P10 underperformance impact of internal flooding.

3.2.3 Options to produce a more balanced internal sewer flooding impact

In order to produce a more balanced financial impact from ODIs, we are proposing a glidepath to upper quartile performance and a reduced incentive rate (based on the approach set out in 3.2.2 above). In relation to incentives, we consider that an ODI incentive rate range based on upper and lower quartiles would be more appropriate than Ofwat's current approach. We have also applied this principle to external flooding, to retain an appropriate balance between these two flooding incentive rates.

A glidepath would reflect the time which it takes to implement changes in operations, to invest in assets, and to influence customer behaviour. We have developed a 10-year strategy to continue to deliver significant improvements in incident reduction in AMP7, and then achieve industry upper quartile in AMP8. This programme will enable us to deliver improvements at an acceptable cost to customers. Our 10-year strategy includes enhanced hot-spotting analysis, in-sewer monitoring and modelling capability. We are also developing an extensive customer awareness programme to raise awareness of what not to flush to reduce blockages from wipes and other material.

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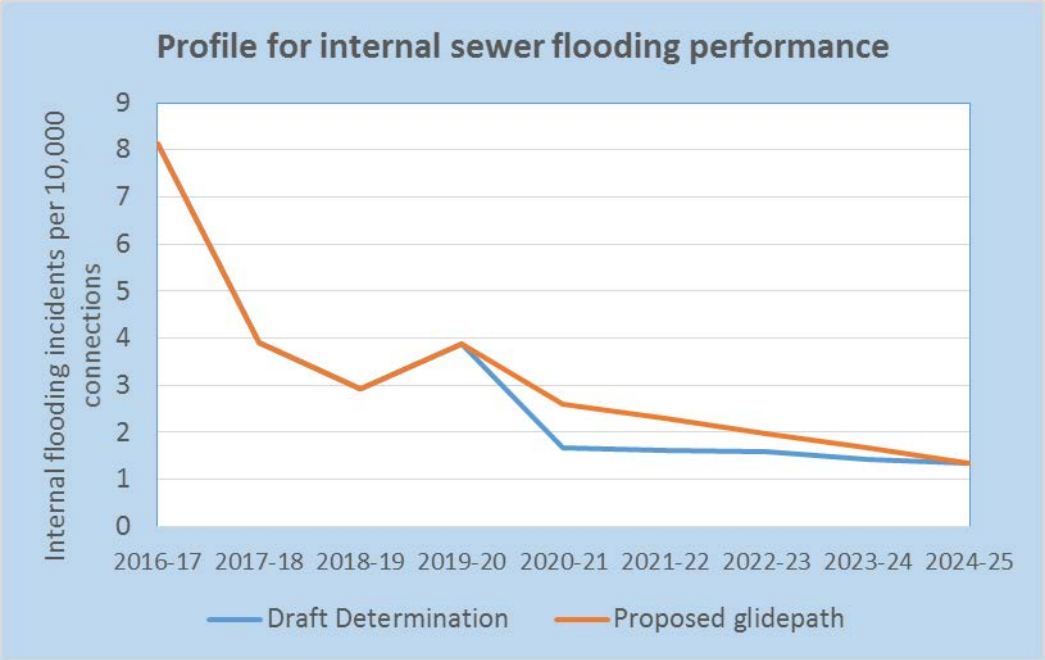
We have developed a proposal for a glidepath which would provide for achieving upper quartile by the end of the AMP7 period. The profile below reflects a revised estimate for 2018-19 and 2019-20. With 2018-19 figures now available, we consider that the progress made in the last two years indicates that the forecast for 2019-20 should be reduced.

We do not expect to be able to achieve this target glidepath. However, we think it would provide a more reasonable balance in terms of the potential penalties from this ODI.



The impact of the change in incentive rates and the proposed glidepath is to change the P10/P90 range from underperformance payments of -£99m to -£45m, based on the Draft Determination, to a range for underperformance payments of -£43m to -£14m.

3.2.4 Other common measures

Compliance Risk Index (CRI)

The DWI commented in response to the Ofwat consultation on "Delivering Water 2020: Consulting on our methodology for the 2019 price review" that:

> "*For CRI, as with MZC, we would propose a penalty only ODI. As every compliance failure (or event) represents a failure of the company to meet their statutory obligations it is not appropriate to offer rewards. As such, in terms of a target, companies should aim for CRI (and ERI) scores of zero and thus aspire to continuous improvement and results of at least at a level that is equal to or below the national average*".

We consider that an expectation of achieving at least the industry average should mean that underperformance penalties should apply to below-average performance. The deadband has been set

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at a level where a majority of companies would have incurred penalties in each of the last three years (on average, 70% of companies).

The measure is inherently more volatile than the previous Mean Zonal Compliance measure and there is limited experience of performance. We consider a deadband set at the 2017 industry average of 3.5 would be appropriate. We have included this in our App1 table based on our representations

Water supply interruptions

As noted above, the upper quartile targets are based on company estimates of where the upper quartile will be, which results in using company targets where the company itself has no realistic chance of achieving those targets. This particularly affects the water supply interruptions target. It also takes no account of differences in company operating environments, or of the time needed to implement improvements and invest in assets. A low level of interruptions can be more easily achieved by companies with relatively compact networks. We propose that a glidepath should be permitted. This could be based on reducing from industry median or current performance (whichever is the lower) at the beginning of the period to upper quartile by the end of the period.

3.2.5 Overall conclusions

In summary, we propose that Ofwat:

- **Sets the range for ODI incentive rates for common measures at lower and upper quartile levels.**
- **Permits glidepaths and caps and collars should be permissible, to reflect the time needed to implement plans to achieve major changes in performance levels**
- **Accepts our proposed modification of the incentive rate for internal flooding**
- **Modifies the deadband for CRI to reflect volatility in performance and limited past performance history.**

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4 Mains repairs

(Ofwat reference PR19UU_B02-WN)

4.1 Ofwat's intervention

In our business plan we provided for an increase in mains repairs to an annual target of 125 mains repairs per 1,000km of main, reflecting additional leak detection and repairs that would be required to meet our proposed leakage reduction target of 15%. We proposed an increase in the annual rate to 130 mains repairs per year following the IAP, to reflect the change in the leakage target to a 20% reduction. Ofwat rejected this and imposed a target of 110 repairs per km of water main, based on recent levels of mains repairs.

Ofwat stated that:

- We did not sufficiently quantify the link between additional mains repairs and a reduction in leakage.
- We did not show that we had considered alternative methods to reduce leakage that would not require a large increase in mains repairs.
- A number of other companies are proposing to reduce leakage without an increase in mains repairs.

4.2 Our proposals

We have set out below our response to each of the points raised by Ofwat and demonstrate why there will be an increase in mains repairs as a result of increased leak detection and repair activity. We have, however, revised our calculations, including a revised estimate of the leakage saving per repair. We now propose a target of 119 repairs per km of water main, which is lower than our previous proposals and is significantly lower than the industry average level of 133 repairs per km.

We have retained a cap and collar, but proposed that they are adjusted to be symmetrical (+/-23 repairs per km) around the new proposed target.

In order to ensure that customers are fully protected we are also proposing that a symmetrical deadband is applied to the measure. Although we have generally avoided deadbands, we think that in this case it will be in customers' interests. The deadband will ensure that no outperformance payment would be achieved unless repair levels were lower than historic average levels. In addition we would be protected from penalties from small exceedance of the target as a result of the natural variability of the measure caused by the weather.

We believe that the adjustment to the incentive rates from our IAP proposals to the position set out in the draft determination would result in unintended perverse incentives, leading to inefficiency in leakage control activities and acting against customers' interests. We are therefore proposing a revision to the incentive rates, which appropriately rebalances the incentive regime.

We recognise the need to ensure that the mains network is being maintained in a satisfactory state, as required by Ofwat's Outcomes performance commitments appendix. We will therefore, report on the number of reported and detected leaks, as well as the overall total, within our AMP7 reporting. The level of reported leaks will give some indication of the health of the network.

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We have also had our proposals independently reviewed by Atkins, whose report is attached to this document as Appendix 5. Atkins concluded that "*United Utilities' have followed a reasonable methodology in determining a revised performance commitment of 119 repairs/1000km/yr (flat profile) for AMP7 that is 4 repairs/1000km/yr (3.5%) higher than the average actual performance over the past seven years (115 repairs/1000km/yr)*".

We believe that these proposed revisions, when considered alongside the leakage performance commitment result in a suite of measures which are demonstrably stretching, encourage efficient control of leakage, and provide clear and effective customer protection in both the short and longer term.

4.2.1 Quantifying the link between leakage and mains repairs

Leakage levels and leakage reduction from the mains network is determined by:

- The Natural Rate of Rise of Leakage i.e. the rate at which leaks break out and the rate of flow from those leaks. This can be influenced by mains replacement and pressure management.
- The number of repairs and the flow from those leaks before repair. As leak detection activity increases and leakage falls, the average flow from each leak found will tend to reduce, increasing the number of repairs required to achieve a given volume of leak reduction.

In addition to leakage from the mains network, leakage reduction can also be achieved by reducing customer-side leakage.

In a steady state situation these factors are broadly in equilibrium, with the numbers and impact of the repairs counterbalancing the natural rate of leakage. To make a step change in leakage levels at least one of these factors needs to change. Our analysis demonstrated that the most efficient way of delivering the required step change for UU was to broadly continue with existing levels of pressure management and mains replacement and to focus on an enhanced active leakage control and asset repair strategy, together with increases in targeted reductions in customer-side leakage.

Demonstrating the link between leakage and mains repairs from our own data is limited by the fact that our leakage level has remained broadly constant, over time, with previous reductions in leakage levels having been driven by other factors such as pressure management or previously extensive mains repair programmes. The linkage between an increase in mains repairs and a step change in leakage levels can, however, be observed from other companies' data where they have been reducing leakage, e.g. Affinity and, more recently, Yorkshire. Yorkshire argue that their deterioration in performance in AMP6 against this measure (to a level twice that of United Utilities, at c.250 repairs/1000km/yr) was due to additional active leakage control and not symptomatic of a sudden deterioration of their asset base.

We have re-estimated the impact of mains repairs on leakage levels and have used this estimate to determine a revised performance target. We have assumed that there will be no reduction in the average volume of leakage from each leak, as the level of leakage falls. This is a stretching assumption, as the flow per leak repaired will tend to reduce with increased mains detection and repair activity and with falling leakage levels. To achieve this, we will have to innovate and improve the efficiency of our leak detection, for example through investment in acoustic logging and splitting DMAs.

As Ofwat notes, there may be some change in the balance between detected and reported leaks as detection activity increases. This is not observable from our own data, but this may be limited by leakage levels having been relatively stable. This change in the balance does not, however, affect the overall level of repairs required to achieve a reduction in leakage.

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We recognise the need to ensure that the performance of our mains network is maintained, and that tracking the number of mains repairs can contribute to measuring network performance. However, it would not be in customers' interests to adopt a sub-optimal approach to leakage reduction simply to keep the number of mains repairs stable. An increase in repairs to reduce leakage does not reflect any deterioration in the network.

We have set out the full calculations for the mains repair level in Section 4.2.4 below.

4.2.2 Alternative methods to reduce leakage

Ofwat's intervention stated that we did not show that we had considered alternative methods to reduce leakage that would not require a large increase in mains repairs.

There are a number of ways to reduce leakage including mains replacement, pressure management, customer side leakage, and increased active leakage control (increased detection and repair of leaks). We considered all the possible interventions as part of the water resource management plan process.

Our plan to reduce leakage includes a contribution from each of these factors with the most cost-effective plan set out within our WRMP, involving most (80%) of our leakage reduction target being achieved through increased active leakage control. This programme of work would drive a number of interventions, which would result in 67% of the total reduction being achieved by increased mains repairs.

We have included a substantial programme to reduce leakage from communication pipes and customer supply pipes, accounting for most of the additional reduction in leakage. However, it would not be economic to achieve our leakage target solely through this means.

4.2.3 Other companies' leakage reduction plans

Ofwat referred to the fact that a number of other companies are proposing to reduce leakage without an increase in mains repairs. Although we cannot comment in detail on other companies' proposals, the economics of the balance between different leakage reduction options may differ between companies, for the reasons set out below.

Pressure management

Pressure management acts to both reduce the number of burst occurring in the network and to reduce the level of leakage that occurs from these bursts. We have already undertaken a major programme of pressure management. The industry values used in a 2016 UKWIR report[1], demonstrate that our average pressures are now considerably below the industry average, despite the hilly topography of North West England (see graph below).

[1] Factors affecting minimum achieved levels of leakage, UKWIR, 2016

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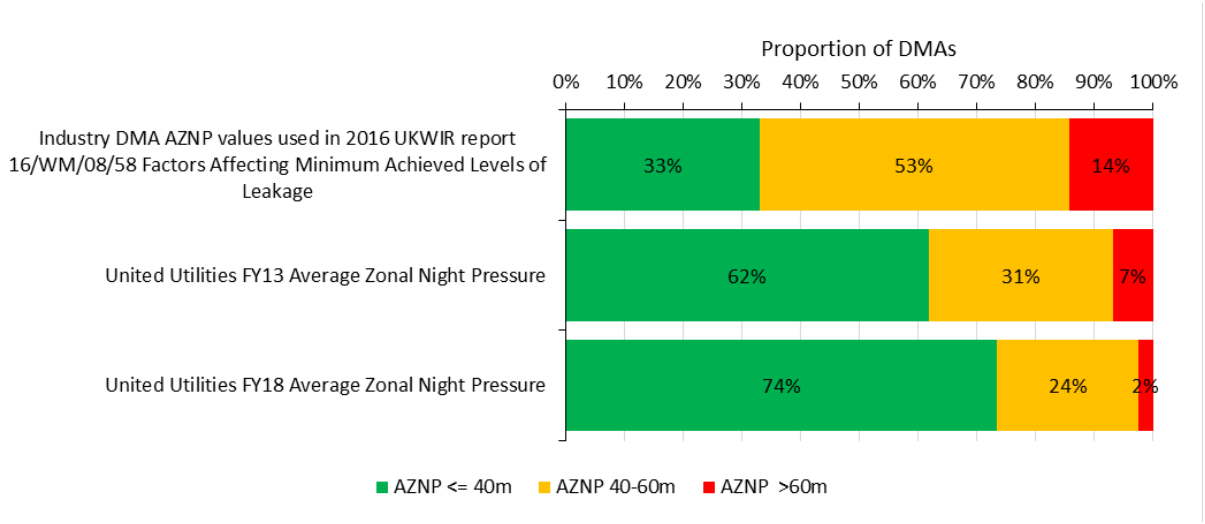
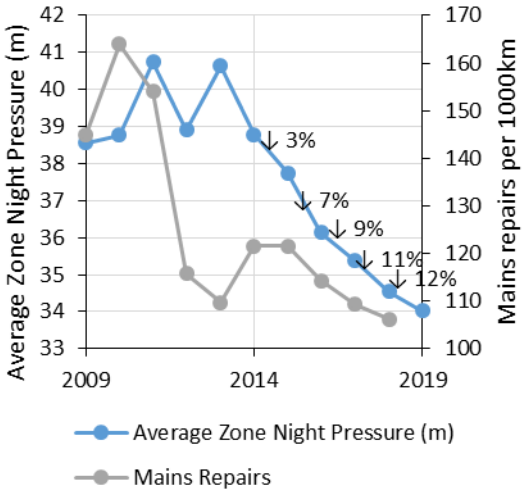
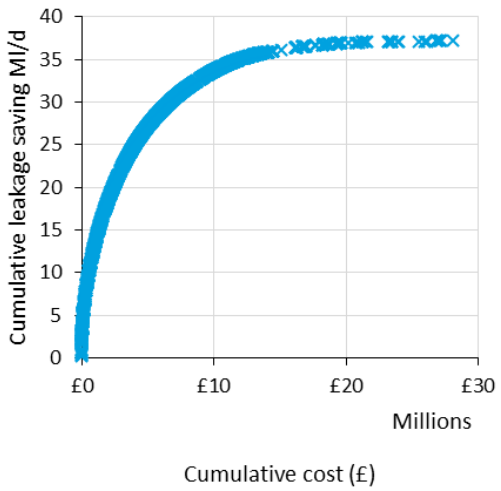
United Utilities average network pressures compared with the industry average



The graphs below show how we have reduced pressure during AMP6, and how the benefits diminish from further schemes to reduce pressure.



Average pressures across United Utilities network



Cumulative costs and benefits of pressure management schemes appraised in AMP6

Other companies may not have optimised pressure management and therefore they would have potential opportunities to drive out further reductions in leakage which are no longer available to UU.

As part of Atkins review of our approach they commented that "*there is minimal opportunity for further pressure optimisation in the undulating topography of a high proportion of the United Utilities network*".

Mains replacement

Mains replacement targets the mains with the highest risk of leakage and acts to reduce the natural rate of rise in leakage. For most companies, making a step change in leakage reduction through mains

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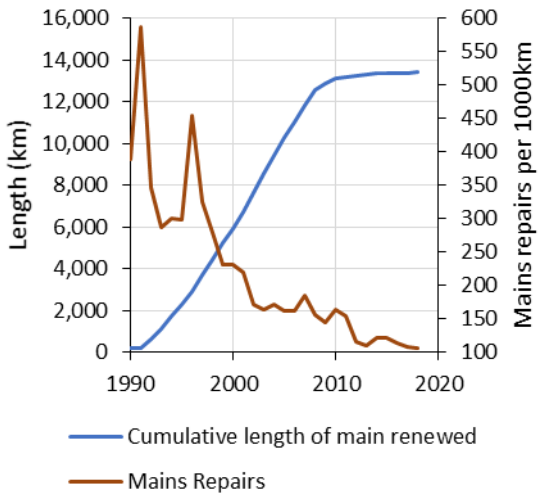
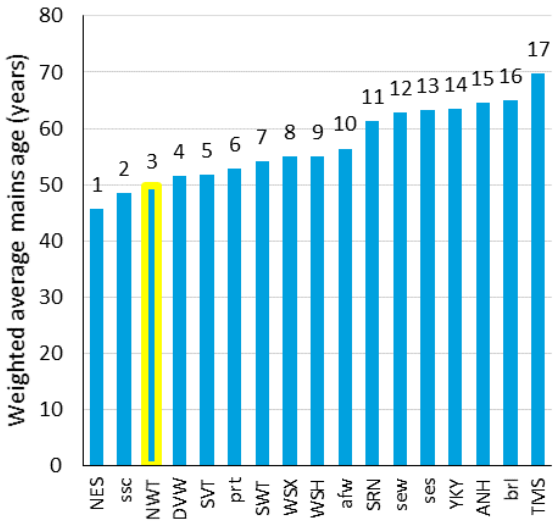
replacement is a very high-cost option. Leakage may not be the only driver behind other companies' replacement programmes, but there will be a leakage benefit.

We undertook a number of major mains replacement programmes in the periods following privatisation, principally to meet water quality standards for iron and manganese. Some other companies had smaller programmes or focussed on rehabilitation techniques such as mains lining, which have much shorter asset lives. As a consequence of our higher replacement levels, we will have targeted and replaced many of the older mains, which are more prone to bursts, as such in 2025 we will have the third youngest water network in the industry.





Our relatively young network and our relatively low level of mains bursts reflects the state of our network, and that other companies may have already increased their rate of leak detection and repair to reduce leakage. Given the current state of our network we have less opportunity to reduce leakage through mains replacement than some other companies would.

As part of Atkins review of our approach they commented that "*In our Water Resource Management Plan, mains replacement schemes were not selected as the most cost-effective options for delivering the required step change reduction in leakage. Other companies will select a different mix of leakage reduction schemes dependent on their own historic, economic and environmental circumstances i.e. 'one size does not fit all*'.

4.2.4 Increase in mains repair to deliver a 20% leakage reduction

As set out above, our calculations are based upon the choice of options developed through our Water Resource Management plan. This concluded that most of the required reduction in leakage should be driven by additional active leakage control. This would result in 67% of the total leakage reduction being achieved by an increase in mains repair numbers.

We have reviewed our calculations, including a reassessment of leak saving per repair and the amount of leakage reduction from supply and communication pipe repairs. We have based our assessment on analysis of our data by Crowder Consulting. Our analysis concluded that an additional 16 mains repairs would be required to make a step change in leakage of 1 Ml/d.

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The calculations of the additional repairs that would be required to achieve the annual reductions in leakage required to generate the overall 20% reduction in leakage are set out below. The calculations have been reviewed by Atkins who considered the estimates to be reasonable.

Year	2021	2022	2023	2024	2025
Annual Reduction in leakage to achieve 20% (Ml/d)	-9.0	-8.7	-13.8	-29.7	-30.0
Leakage reduction from mains repairs (67%)	-6.0	-5.8	-9.2	-19.9	-20.1
Total length of potable mains as at 31 March	42,481	42,549	42,647	42,745	42,842
Repairs required for 1 Ml/d reduction	16	16	16	16	16
Additional repairs required to achieve 20% reduction	**2.3**	**2.2**	**3.5**	**7.4**	**7.5**
Additional Repairs Calculation	=(16*6.0)/ (42,481 /1000)	=(16*5.8)/ (42,549/ 1000)	=(16*9.2)/ (42, 647 /1000)	=(16*19.9)/(42,745 /1000)	=(16*20.1)/ (42,842 /1000)

4.2.5 Structure of the ODI

This performance commitment and ODI needs to be designed appropriately to ensure that it works with, and does not conflict with, the implementation of a cost-effective approach to leakage control.

Too low a target for mains repairs and too high an incentive rate, beyond costs and customers' valuations would create an imbalance. This could drive inefficient behaviour, and sub-optimal decisions, by effectively adding an additional cost to mains replacement options. In response, companies could be incentivised to concentrate on less efficient options than mains repairs, by targeting the potentially smaller leaks (for example on supply pipes, valves, hydrants etc.), or the higher-cost option of mains replacement that do not incur this additional artificial cost.

The asymmetry between the outperformance and underperformance rates set out within the Draft Determination could also have significant unintended consequences. External factors, principally prolonged cold or dry weather, are a substantial driver for mains failures rates. Therefore there is inherent uncertainty over each company's outturn in any given year. The average performance over the long term, however, will reflect the health of the assets. With symmetrical outperformance and underperformance rates the net position for a company which delivers stable asset health would be neutral. Asymmetrical incentive rates, however, shift the outcome entirely to the negative.

This is illustrated below by taking United Utilities performance from the last five years and setting an illustrative performance commitment as the average performance. If the incentive rates are symmetrical then the outcome is neutral. The asymmetrical rates from the draft determination would generate a net payment over the period of £3.8m, this would be equivalent to setting the performance commitment 2.7 repairs per 1,000 km lower and applying symmetrical incentive rates.

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Illustration of the effect of our proposed ODI structure and the Draft Determination structure

YEAR	ACTUAL PERFORMANCE (Repairs / 1000km)	BUSINESS PLAN ODI PAYMENTS	IAP RESPONSE ODI PAYMENTS	DRAFT DETERMINATION ODI PAYMENTS
2014	122	-£56,483	-£1,976,149	-£1,976,149
2015	122	-£57,125	-£1,998,613	-£1,998,613
2016	114	£2,612	£91,368	£2,612
2017	109	£43,292	£1,514,618	£43,292
2018	106	£67,705	£2,368,776	£67,705
AVERAGE / TOTAL	115 (AVERAGE)	£0	£0	-£3,861,154

Other companies' performance has been more variable. Applying the same principles to other companies would lead to average five year underperformance payments for WASCs of approximately £10m, equivalent to a 6 repairs per 1000km reduction in the performance commitment.

The risk of being disproportionately penalised for the effect of factors outside of companies' control will drive risk-averse behaviours. Companies will shift their tactics further away from the optimal interventions to reduce leakage to avoid the risk of a large penalty. To prevent this we are proposing a symmetrical deadband is applied to the existing measure.

The deadband has been set at a level which will ensure that no reward would be achieved unless repair levels were lower than past average levels (115 repairs per 1000Km). In addition, we would be protected from penalties from small exceedance of the target as a result of the natural variability of the measure caused by the weather. Alternatively the measure could be reported as a 3-year rolling average in the same way as leakage and PCC.

Given that this measure is intended to assess the state of the network, and ensure that it is not deteriorating, a deadband is appropriate in this case. Fluctuations in performance from year to year do not have any long term effect on customers (unlike measures of service performance), so there is no need to penalise or reward small fluctuations caused by the weather.

4.2.6 Our proposed performance commitment level

We have developed a revised performance level for this measure by adding the increase in mains repairs, the calculation for which was set out above, to the underlying baseline level of mains repair. We have developed our baseline level using the average performance levels over the last 5 years (2014-15 to 2018-19). This provides a baseline performance of 115 mains repairs per year. This is slightly higher than the value calculated by Ofwat.

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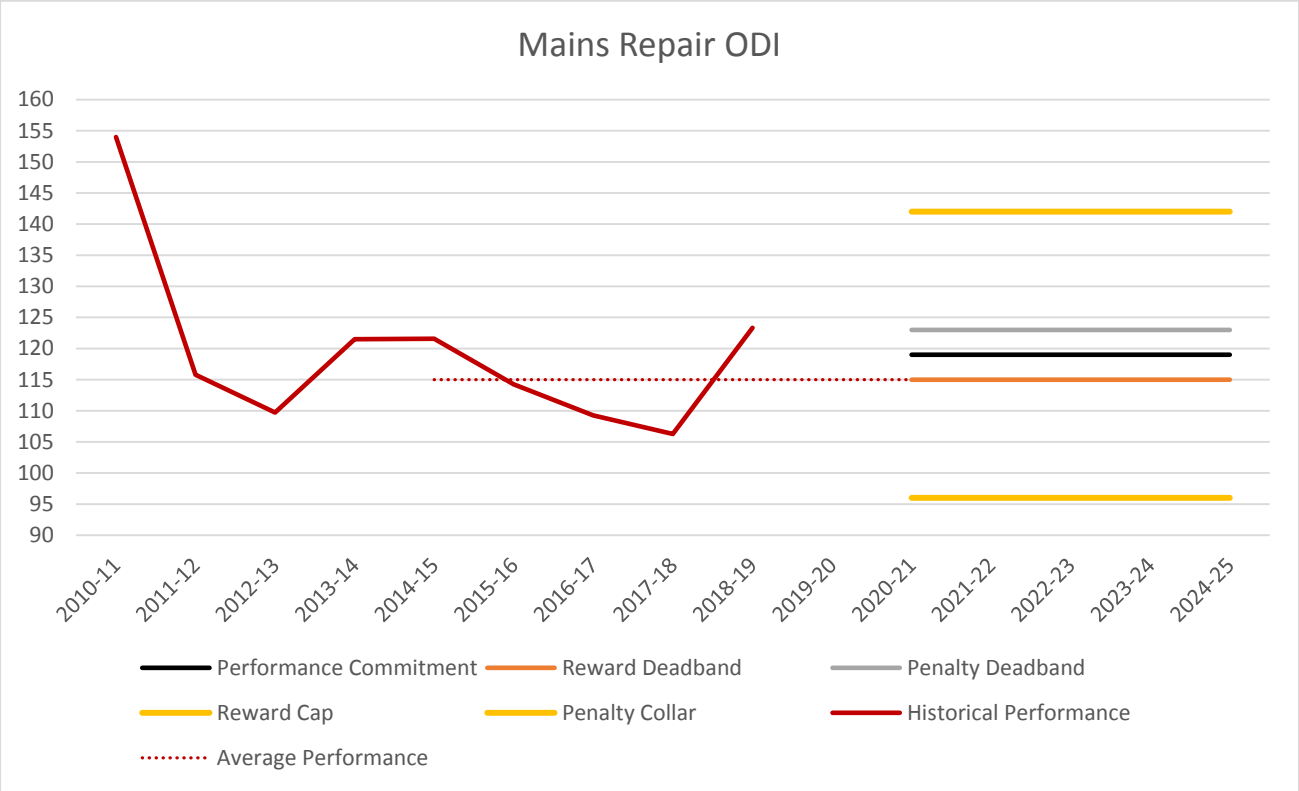
We have then averaged annual values generated by the calculation and rounded this value down to zero decimal places, to produce our performance commitment. The calculation of our revised performance commitment is set out in the table below.

Year	2021	2022	2023	2024	2025	Average
Additional repairs required to achieve 20% reduction	2.3	2.2	3.5	7.4	7.5	
Baseline from 7 year average	115	115	115	115	115	
Total repairs	117.3	117.2	118.5	122.4	122.5	**119.6**
Performance Commitment	**119**	**119**	**119**	**119**	**119**	

The graph below shows our target, compared with past performance, and the proposed deadbands, cap and collar.



In summary, we propose that Ofwat:

- **Sets the mains repair performance commitment level at 119 repairs per 1,000 km.**
- **Adjusts the ODI outperformance rate.**
- **Introduces a deadband and a collar on penalties.**

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5 Per capita consumption

(Ofwat reference PR19UU_B05-WN)

5.1 Ofwat's intervention

Ofwat set out proposed targets for per capita consumption in its IAP feedback. It then revised these targets in an email on 2nd May, and included these revised targets in the Draft Determination. These targets are shown below.

Target per capita consumption (litres per person per day)

	IAP	DD (annual)	DD (3-year average)
2020-21	139.2	139.0	140.3
2021-22	138.1	137.3	139.0
2022-23	137.1	135.6	137.3
2023-24	136.2	133.9	135.6
2024-25	135.4	132.3	133.9

5.2 Our proposals

We consider that IAP targets should be reinstated as:

- We accepted these targets as part of the fast-track process, and they should not be subsequently changed unless it is clear-cut that they are inappropriate.
- The original IAP proposals already represented a stretching target.

We have a lower level of metering than the national average (53% projected for 2024-25 compared with a national average of 67%). The lower rate of metering reflects less pressure on the supply-demand balance than for companies in the south and east. This is illustrated in the graph below. With below-average metering, we would be expected to have above-average PCC.

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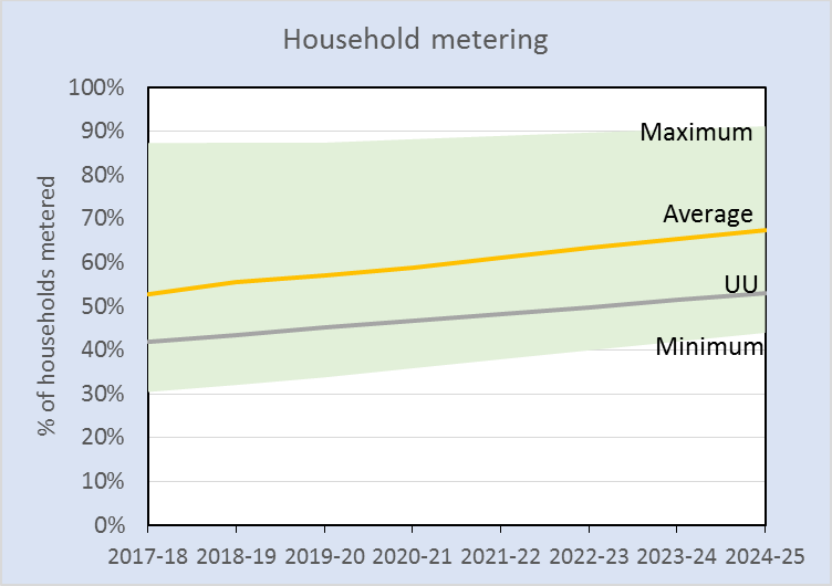

The AMP7 increase in the proportion of customers who are metered is also below average (8% compared with 10% nationally). As a region not under water stress, and with a relatively healthy long term supply/demand balance, the mechanisms available to us to increase metering rates are constrained compared to companies in water-stressed regions. Even with a relatively low increase in metering, the impact of metering on demand accounts for about three-quarters of our projected reduction in PCC. Therefore a low rate of metering has a significant impact on the scope for PCC reductions, and other companies could be expected to achieve larger PCC reductions. The lower level of metering is appropriate given the supply-demand position in our areas, and contributes to keeping bills at an affordable level, but inevitably has an effect on relative PCC.

The original IAP proposal represented a significant increase on our business plan proposals, and we consider that it will be a very stretching target.

In summary, we propose that Ofwat

- **Reinstates the IAP proposals for PCC performance.**

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6 Sewer collapses

(Ofwat reference PR19UU_F01-WWN)

6.1 Ofwat's intervention

Ofwat required an increase in the incentive rate for underperformance from £0.308m/collapse per 1,000km of sewer to £0.820m/collapse per 1,000km of sewer.

6.2 Our proposal

As a result of the additional clarification that was provided to the definition of sewer collapses, we have made some substantial revisions to our methodologies for defining and reporting sewer collapses, which has significantly increased the reported and expected levels of sewer collapses.

The initial and revised performance levels in terms of collapses per 1,000 km sewer length are set out below for the AMP6 and AMP7 period. Full details are given in our supplementary IAP response on sewer collapses (I020 Update to F01-WWN Sewer collapses).

Summary of changes since 2017/18

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Initial performance level (Collapses per 1,000km sewer length)	4.177	4.172	4.140	4.057	3.975	3.893	3.811
Revised performance level (Collapses per 1,000km sewer length)	16.16	16.12	15.84	15.56	15.28	15.00	14.73

6.2.1 Sewer collapse incentive rate

We consider that the sewer collapse incentive rate should be reviewed because:

- The impact of moving towards a common definition for the measure has led to us revising our data, with a substantial increase in our estimate. With this being a recent change, there is some uncertainty about the future collapse rate.
- It would not be appropriate, where there is significant uncertainty in the measurement, for the potential underperformance payments (P10) to be substantially increased from our initial estimates. The new estimate, using the Draft Determination incentive rates, has increased the P10 AMP7 total from -£6m to -£25m.
- The Ofwat incentive rate is set at upper quartile. For a measure where there is uncertainty about measurement it is inappropriate to use an approach which sets a more stringent penalty than the method applied to other common measures. Our proposed incentive rate is at median level, and is well within the range of the normal Ofwat method of setting a range of mean +/- 0.5 standard deviations. It would result in P10 underperformance penalties of -£9m, i.e. slightly more than the Draft Determination level of -£6m.

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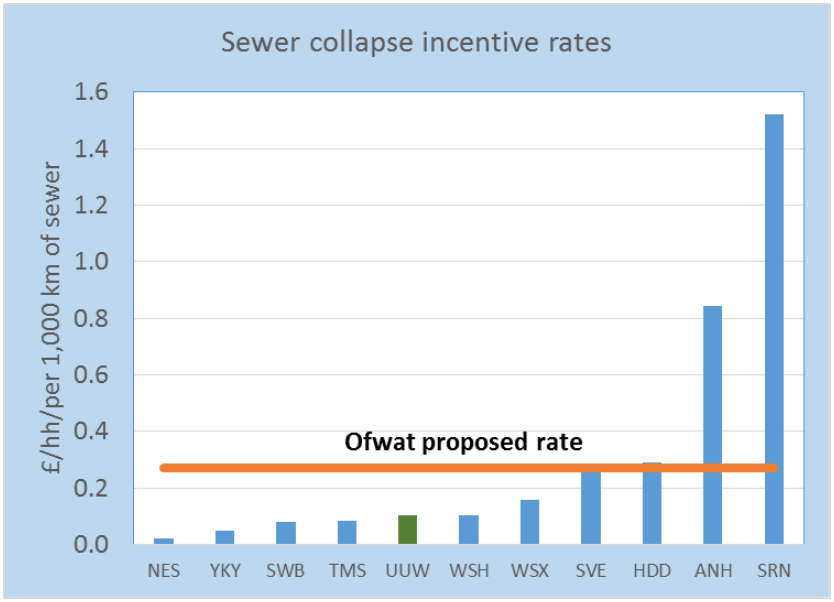

Our business plan incentive rate is similar to those proposed by a majority of other companies, and we propose that the incentive rate be reset to our original proposal.

6.2.2 Underperformance Collar

We are proposing an underperformance collar at the P10 level, and have included this in Table App1, because of the increased uncertainty about future numbers of collapses. The base years of 2017-18 and 2018-19 have been created based on a retrospective view of our existing data. Before the start of AMP7, we will be adapting our existing processes in order to better comply with the methodology but will not be able to have a significant period of shadow reporting before the start of the AMP.

In summary, we propose that Ofwat:

- **Resets the ODI rate to our business plan proposal.**
- **Sets an underperformance collar to reflect the uncertainty about future reported levels.**

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7 Systems thinking capability

(Ofwat reference PR19UUW_E06-CF)

7.1 Ofwat's intervention

Ofwat's IAP actions proposed the removal of financial incentive rates for the Systems Thinking ODI and recommended we reconsider the proposed service level to ensure that it was stretching. Ofwat also requested further evidence to justify the use of financial incentives.

In our IAP response to these actions we proposed an increase to the performance commitment target from a maturity level of 1 in each year of the 2021-2025 period to a maturity level of 2 from 2022-2025, including the application of an underperformance deadband at a maturity level of 1 in each year of the 2021-2025 period. We also provided additional detail on how performance will be assessed with the options for additional customer research. In the resubmission of our data tables we subsequently re-applied the incentive rate for underperformance below the penalty deadband and outperformance above the target.

In its Draft Determination, Ofwat removed these changes and stated that United Utilities did not provide sufficient evidence that customers support an outperformance payment and the scale of that incentive for systems thinking capability maturity. Rationale for the removal of the incentive rate also included our application of a penalty deadband and insufficient demonstration that the capabilities which constitute outperformance are stretching or innovative.

7.2 Our proposals

In this document, we have set out below, in Sections 7.2.1 to 7.2.3, additional evidence why it is appropriate for underperformance and outperformance rates to be applied to this performance commitment, specifically;

- Section 7.2.1 sets out the results of additional customer research demonstrating support for outperformance delivery of systems thinking and the associated bill impacts following such outperformance.
- Section 7.2.2 sets out our proposal to change the performance commitment mechanism to significantly increase the level of stretch through removal of the penalty deadband. Thus increasing the penalty exposure for non-delivery of the performance commitment target.
- Section 7.2.3 articulates the sector stretching nature of outperformance in the context of the capabilities that underpin it.

This evidence is in addition to, and complementary to, the evidence already provided[2] in our response to Ofwat's Initial Assessment of Plans. This paper sets out where further amendments to E06-CF Systems Thinking Capability have been proposed and further evidence in support of the use of financial incentives.

We believe that this evidence, alongside that previously provided, clearly demonstrates the appropriateness of financial incentives in this performance commitment. For systems thinking to be included in our performance commitments it is essential that it includes a financial incentive, and that

[2] Document Reference I002 – Proposed amendments to E06-CF Systems thinking capability.

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there is an appropriate balance between outperformance payments and underperformance penalties. Delivering improvements in this area requires significant initial investment, in order to deliver the improvements which will ultimately benefit customers.

The inclusion of financial incentives has, at its core, a regulatory incentive for us to innovate. The use of financial incentives also enables the delivery of significant benefits for customers that, due to the in-period economic regime, would otherwise have not been delivered. Attaining business-wide maturity, i.e. the target and outperformance levels, requires delivery of all the stretching and connected capabilities. Only then will we deliver a different way of operating, at the forefront of the sector. The robustness of our third-party assurance, global benchmarking, extensive customer support, and specificity in the tangibility and coverage of the improvements needed, all strongly evidence both the stretch and leading approach that will come with delivery of this performance commitment.

7.2.1 Customer support for systems thinking

We recognise that the insight derived from customer research undertaken prior to our PR19 Business submission did not explicitly test customer support for acceleration of our systems thinking transformation in the context of the exact impact on bills as a result of any outperformance. We have, therefore, commissioned substantial further research which has revealed resounding customer support (91%) for accelerating systems thinking and the associated impacts of outperformance on bills from the financial incentive. Further details are set out below.

Our Intergenerational Research and YourChoices Research clearly demonstrated customers' preference to spread the cost of improvements and resilience over the generations, paying some now and some by our future bill payers. However, it did not test the financial extent to which an upfront bill increase was acceptable as a result of our systems thinking transformation. Undertaking the bespoke systems thinking on-line pop up community did set out strong customer support that larger programmes delivering larger benefits (as would be the case with Systems Thinking) should be funded by customers' contributions through their bills. Further details were set out in our IAP response[3]. However, we accept that the impact of the incentive rate on bills was not tested explicitly and therefore customer support could not be fully ascertained.

On this basis we undertook significant further research to establish robust evidence for customer preferences in relation to the bill profile and systems thinking investment. Importantly for the research we wanted to fully understand customers' views on systems thinking and the extent to which they were happy, or not, with the use of financial incentives and specifically the scale and magnitude of the incentive rate. Appendix 2 summarises the research.

YourVoice Customer Engagement Sub-Group were invited to comment on the survey proposals and we made amendments to incorporate their challenges. Sub-group members attended a debrief by Boxclever Consulting, who carried out the research. The members had the opportunity to raise any issues or concerns. The Group did not have any concerns about the way in which the research was carried out or the results of the research.

With regards to systems thinking the specific requirements of the research were three-fold:

[3] Document Reference: I002 Proposed amendments to E06-CF Systems thinking capability

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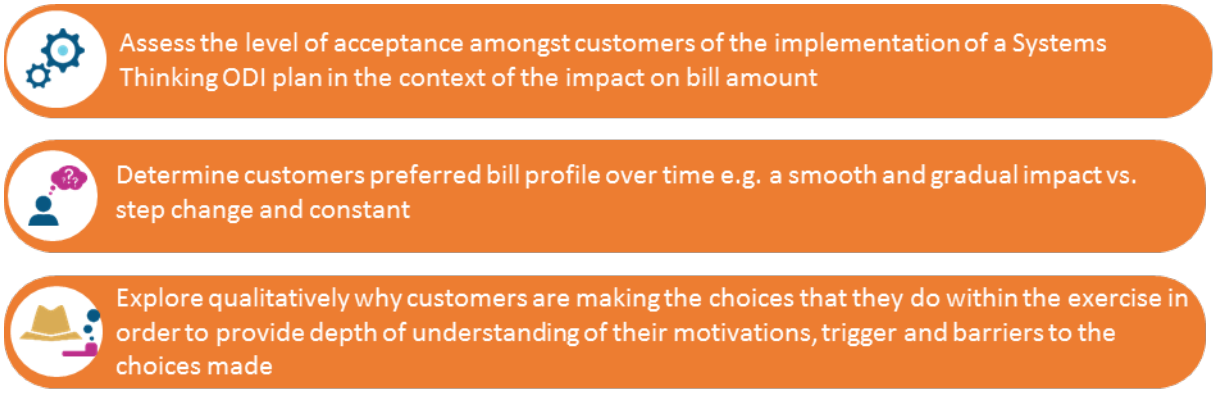

Reflective of the size of the incentive rate a significant sample size was key to ascertain robust insight for both the Quantitative and Qualitative elements of the research. For the quantitative research 1018 surveys were undertaken across a range of demographics, with 19% of the sample classified as vulnerable based on ability to pay bill criteria. There were also an additional 26 in-depth interviews to explore the thought processes that customer go through when weighing up the acceptability of the proposed investment and ODI plan. This qualitative research tested customers' understanding and response to the bill profile, including the rationale behind the choices that customer have made, and any specific areas of the systems thinking ODI plan where a deep dive was required.

Quantitative research

The quantitative research revealed overall support at 91% for the acceleration of systems thinking, with the majority preferring any associated outperformance incentive rate applied to their bill smoothed over time (80%) and a small number (11%) preferring to see a short term bill spike for greater bill reductions over time. 9% of respondents preferring to deliver the base plan only without any outperformance. It is important to note that these preferences for outperformance and the associated bill impacts were based on respondents' actual bills. The profiles of bills presented was dynamic, i.e. based on each customer's preference for bill profiles for phasing in transition from RPI to CPIH.

Some customer segments, specifically those that struggle to pay, articulated lower support (but still majority support) for the acceleration of systems thinking and use of outperformance payments. In setting bill profiles we will take this into account, along with the extent of customers' preference for smoothed bills, which is consistent with other acceptability and bill profile research. We will aim to ensure that any application of outperformance onto bills will remain smooth over time, both within and beyond the next period.

In the research customers were shown the potential impact on bills of outperformance across the suite of our ODI package. Customers remained supportive (69%). Acceptability was again based on customers' actual bills and dynamic to the preferences selected for CPIH/RPI and systems thinking.

In recognition of customers' expectations[4] of transparency when innovating, we sought to include stimulus for the purpose of engaging with customers on systems thinking. We tested the extent to which customers felt the research was educational, with 63% of respondents saying the research was, in fact, educational.

[4] Document Reference: T1080 Innovation and Systems Thinking Research

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Qualitative research

This affirmed that customers continue to be supportive of systems thinking as an initiative. The insight from this additional qualitative research was consistent with that of our previous online pop-up community research, with most feeling that systems thinking is simply common sense and hence a good idea. The benefits that resonated with customers most were quicker service, lower bills and environmental improvements. Customers recognised that in order to bring bills down a company needs to invest.

When exploring the amount of potential bill variations associated with the outperformance of the performance commitment customers were also accepting, stating the impacts as 'acceptable as risks are inherent in investment.

7.2.2 Changes to the Performance Commitment mechanism to include the removal of the penalty deadband

In response to Ofwat's initial assessment of plans, we recognised that proposing static performance from 2019/20 would not appear to customers to be a sufficient commitment of stretching performance. We subsequently proposed to amend the target to commit to achieving a level 2 in the 2nd year of the next period, making the target more stretching. By applying a reward deadband we were also protecting customers from paying twice for delivery of systems thinking capability (level 2 maturity) from which the costs and benefits are already baked into our AMP7 targets and bill reductions. We also applied a penalty deadband on the basis that should the target performance be missed, then the financial penalty would be felt by the business from non-delivery of efficiencies and service within our base plan and across the suite of performance commitments for the same period.

In their Draft Determination Ofwat stated that the use of the penalty deadband contributed to their rationale for the removal of the financial incentives. It is still the case that we believe delivery of Level 2 capability in line with the performance commitment methodology is stretching, it is also still the case that the impact of non-delivery of the Level 2 maturity target would be felt financially across the business both in terms of non-delivery of efficiencies and targets across other performance commitments within the period.

However, in order to demonstrate our sincere commitment to the delivery of this capability uplift, and to further incentivise delivery of the innovations required to achieve the already more stretching target early in AMP7 (year 2), we are prepared to remove this penalty deadband.

Removal of this penalty deadband **significantly increases the level of stretch** within the performance commitment by increasing our financial risk from non-delivery of our target by an additional £37m on top of that which already exists in our broader suite of Outcomes Delivery Incentives.

Also, exceeding our target in any year would result in an annual reward, although if this capability maturity is not retained for the remainder of the AMP7 period the reward would be returned to customers in the year that the performance level deteriorated back to target. Similarly any delay in meeting our planned target level of 2, or any subsequent reduction from this level, would result in an annual penalty. However this penalty would be recovered if the target level was achieved in a subsequent year and this performance level was maintained for the remainder of the AMP7 period. Figure 1 below illustrates the proposed performance commitment.

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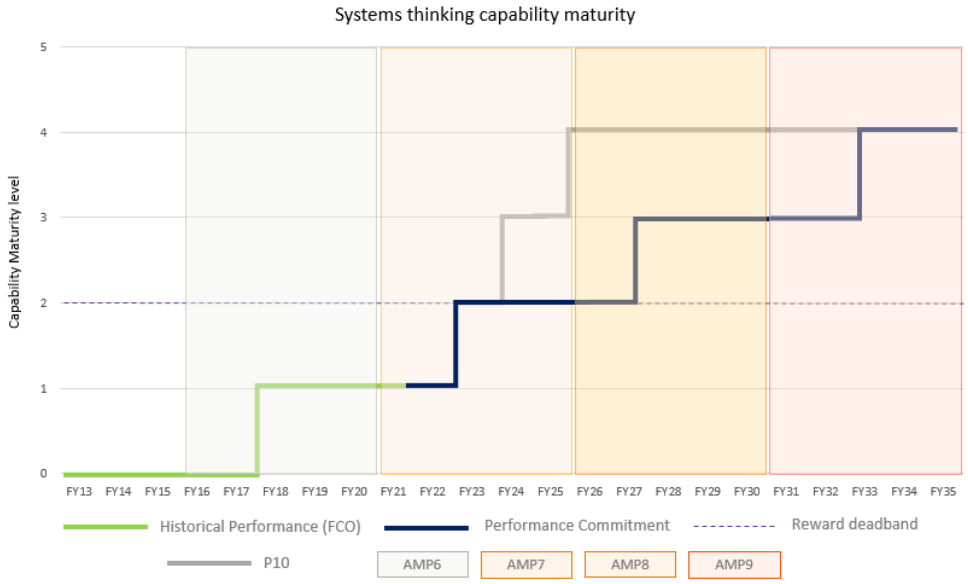
Figure 1 Systems thinking capability maturity performance commitment

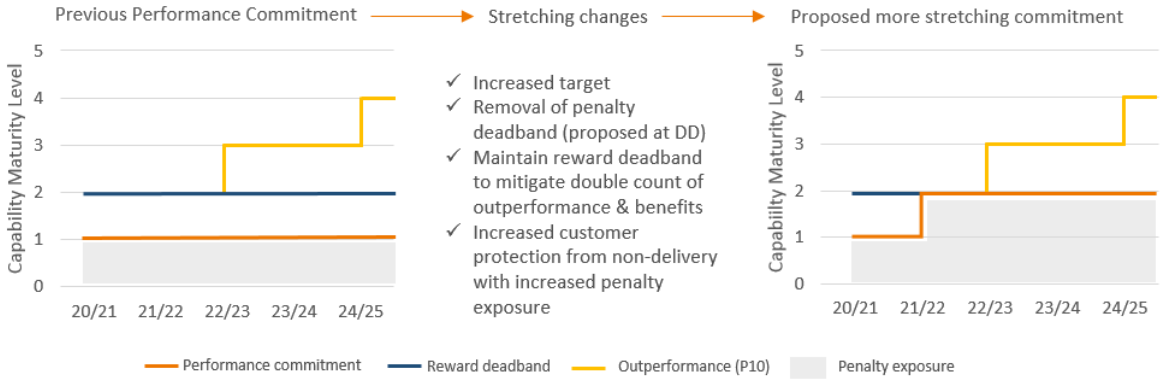


This change to a more stretching penalty and reward regime:

- Provides a clear commitment to improve within the 2020-2025 period and beyond
- Maintains the incentive to innovate, accelerate the transformation and secure the extensive benefits and resilience for customers in the long term, yet earlier than would otherwise be possible within the in-period economic regime
- Offers the maximum protection to customers from non-delivery or regression.

Figure 2 below illustrates the changes to a more stretching commitment.

Figure 2 Systems thinking capability maturity 'stretching changes'



7.2.3 Stretching capability uplift

In addition to the elements of customer support and the use of a penalty deadband, Ofwat has set out some additional rationale for the removal of the financial incentives from this performance commitment. Ofwat suggested that we had not demonstrated that the capabilities which constitute outperformance are stretching or innovative compared to those already being achieved by other companies in the sector.

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We firmly believe the extent to which these capabilities must transform right across the business at the levels to achieve outperformance and deliver the subsequent and sector shifting benefits for customers are extremely stretching in comparison with other companies across the sector. This belief is based on:

- The extent to which transformation has to occur to deliver the tangible and measured improvements across the whole company
- Comparative commitment set out in other companies' business plans
- Track record and scale of benefits delivery in systems thinking capability maturity
- Our long-term commitments to sector leading benefits (efficiency and service) beyond the next period
- Extensive global benchmarking
- Expert 3rd party sector benchmarking and rigorous assurance
- Capability maturity methodology based on sector-leading and comprehensive 3rd party assessments

Further information is set out below and can also be found in the following documents: I002 – Proposed amendment to E06-CF; S5001 – Innovation in Action; T5004 Systems thinking benchmarking report and T5003 - System thinking capability assurance report.

In our response to Ofwat's initial assessment of plans we provided additional detail[5] on how company-wide capability maturity would be assessed, including the challenging third-party assurance and benchmarking that shaped the comprehensive maturity level attainment criteria and assessment methodology. This assessment is tangible and measured, requiring widespread embedment of capability maturity across all aspects of customer, water and wastewater operations for both networks and treatment. In order to achieve the outperformance levels it requires moving away from discrete projects and one-off initiatives to epidemic use of advancing capabilities and delivering benefits benchmarked globally by leaders in systems thinking. UUW is externally recognised by Accenture to be at the forefront of this sector shift.

From our assessment of other companies' plans we have not seen anything that makes us believe business-wide maturity at the levels set for outperformance in our performance commitment will be attained. There are examples of capability maturity that would, in silo against isolated capability criteria, i.e. 1 or 2 of the 44 assessment criteria, constitute a level 3 and in some cases a level 4. However, this is for discrete parts of the business such as water networks, or includes only the digital foundation elements of the capability. It does not reflect the habitual application and continuous improvement required across all aspects of the capability which, when true to delivering systems thinking, must be delivered across the full spectrum of the system in order to deliver a sector-leading uplift in efficiencies, service and resilience.

It is also clear that these industry examples of delivering capability maturity uplift can be found from only a very small number of companies and are not prevalent or joined up across the business, a pre-requisite for delivering systems thinking and the benefits associated with the outperformance levels of maturity.

[5] Document Ref: I002 – Proposed amendments to E06-CF Systems thinking capability

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We have aimed to achieve an independent assessment of detailed reviews of other companies' business plan. Our view is confirmed by conducting simple capability-related search terms. This revealed little to allow a comparably mature benchmark against our, externally recognised to be sector leading, systems thinking capability assessment methodology.

It is our belief that there are no companies within the sector that are truly challenging themselves with tangible measurement of capability, stretching KPIs, demonstrating a track record of business-wide benefits delivery, or any commitment to future customer benefits as a direct result of this capability maturity uplift. It is our belief from these assessments, and complemented by our 3rd party assurance and global benchmarking, that no-one is firmly committing to this change and certainly not at a scale that would be assessed as sector leading.

Unlike our systems thinking strategy framework, model, benefits, maturity assessment and capability assessment, there is also no or little evidence of any rigorous third-party assessment on other companies' transformations (and roadmaps where present), neither on their approach to capability uplift, nor have their digital transformation roadmaps been rigorously assured. This, alongside an absence of any measurement or tangible commitment (benefits, capability or expenditure), is evidence that no one else is holding themselves to account for delivery.

In summary, we propose that Ofwat;

- **Accepts a financial ODI based on the proposals set out above. For systems thinking to be included in our performance commitments it is essential that it includes a financial incentive, and that there is an appropriate balance between outperformance payments and underperformance penalties**

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8 Leakage

(Ofwat reference PR19UUW_B01-WN)

8.1 Ofwat's intervention

Ofwat required a 20% reduction in leakage by 2024-25.

8.2 Our proposal

The cost assessment process only provided for the costs relating to a 15% reduction in leakage. We consider that either the cost allowance should be increased or the target reduced from 20% to 15%. Further details are given in our cost assessment response (D003 Cost Assessment).

In summary, we propose that Ofwat:

- **Retains the 20% leakage target.**
- **Adjusts the cost allowance for leakage.**

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9 Keeping reservoirs resilient

9.1 Ofwat's intervention

Ofwat rejected our reservoir cost adjustment claim and stated that the ODI omits the probability element of risk and only focuses on impact. This could create perverse incentives for United Utilities Water to focus on high impact reservoirs rather than focusing on a risk based approach in order to outperform their ODI. The Performance Commitment remains in place but the financial incentive has been removed.

9.2 Our proposal

We have addressed issues relating to the cost adjustment claim in our response on cost issues (D003b Update to claim: Keeping Our Reservoirs Resilient). If the cost adjustment claim is accepted we would restore the financial element of the ODI. We have set out in D003b how our proposals take probability into account. We have redrafted the text for the Performance Commitment technical document to reflect this.

We recognise that utilising impact alone could incentivise us to focus upon high consequence reservoirs, and to neglect sites with a high probability of failure but comparatively lower consequence of failure. Effective risk management means that we must consider both the probability of a dam failure incident, and its consequences.

We have adopted a 'weighted consequence' measure, which focusses upon reservoirs with the highest consequences of failure, but which also provides the necessary incentives to drive interventions at particularly high probability of failure sites. These high probability sites need to be addressed as they are unacceptable risks, even if the number of people at risk is very low. This weighted consequence measure is expressed as:

'Keeping our reservoirs resilient' equivalent population de-risked	
Annual probability of failure > $1x\ 10^{-2}$	Greater of actual population at risk or 1,000
Annual probability of failure $1 x 10^{-3}$ to $1x 10^{-2}$	Greater of actual population at risk or 750
Annual probability of failure $1 x 10^{-4}$ to $1x 10^{-3}$	Greater of actual population at risk or 500
Annual probability of failure < $1 x 10^{-4}$	Actual population at risk

We believe that this 'equivalent population de-risked' metric strikes the right balance between consequence and probability of failure, and is simpler to communicate to stakeholders and customers than a probability x risk approach.

In summary, we propose that Ofwat:

- **Accepts our cost adjustment claim.**
- **Reinstates the financial ODI, if the cost adjustment claim is accepted.**

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10 Treatment works compliance

(Ofwat reference PR19UU_ C02-CF)

10.1 Ofwat's intervention

The measure relates to the number of numeric permit breaches at both wastewater treatment works and water treatment works. We split the measure, with a 94% allocation to wastewater network plus and 6% to water network plus. Ofwat's UU performance commitments appendix allocates this measure 100% to Wastewater Network Plus.

In the Draft Determination, it states that the treatment works compliance performance commitment will be reported to 2 decimal places (Unique Reference: PR19UU_C02-CF, Section 1.1.13, United Utilities – Outcomes performance commitments appendix).

10.2 Our proposal

10.2.1 Price control allocation

We propose that, in line with our business plan submission, this performance commitment be split between water and wastewater network plus. This will ensure that our performance reporting accurately reflects the measure definition. It would also be in line with the Severn Trent Draft Determination, which provides for a 90%:10% split. We understand that our proposal is acceptable to Ofwat.

The 6% allocation to the Water Network Plus price control is based on the proportional allocation of treatment works sites with numeric environmental discharge permits in calendar year 2020 (21 Water network+, 369 Wastewater network+). For more information, see our business plan Performance commitments document, Chapter 5, S3001 – 4.17. C02-CF).

10.2.2 Performance reporting

The proposal to report to two decimal places differs from how the Environmental Agency report the Discharge Permit Compliance component of the Environmental Performance Assessment (EPA), which is to one decimal place, as shown below.

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Environment Agency

Table 1: Water and sewerage companies – Environmental Performance Assessment (EPA) 2017

	Indicators												
	Pollution Incidents (sewerage)		Serious Pollution Incidents (sewerage)		Discharge Permit Compliance (STWs & WTWs)		Satisfactory Sludge Disposal		Self Reporting of Pollution Incidents		AMP National Environment Programme Delivery		Security of Supply Index (SoSI)		
Units	Category 1-3 incidents per 10,000 km of sewer		Category 1-2 incidents per 10,000 km of sewer		%		%		%		% of planned delivered		Above or below target		
Red, Amber, Green, thresholds	≥50 red >25 amber ≤25 green		≥1.5 red >0.5 amber ≤0.5 green		≤97 red <99 amber ≥ 99 green		≤98 red >98 amber 100 green		≤55 red <75 amber ≥75 green		≤97 red >97 amber ≥99 green		Above SoSI target (green) With concerns (amber) Below SoSI target (red)		
Water Company															**Overall Performance Star Rating**
Anglian Water	30	↔	1.2	↔	98.6	↓↓	100	↔	71	↑	100	↔	100	↔	***
Northumbrian Water	17	↑↑	0.7	↑↑	96.0	↓↓	100	↔	80	↑↑	100	↔	100	↔	**
Severn Trent Water	30	↔	0.2	↑↑	99.6	↔	100	↔	80	↑	100	↔	100	↔	****
Southern Water	31	↑	1.0	↓	98.2	↓	100	↔	70	↓	100	↔	100	↔	***
South West Water	109	↑	1.9	↑	97.1	↓	100	↑↑	68	↑	100	↔	100	↔	**
Thames Water	28	↑	0.9	↔	99.5	↑↑	100	↔	73	↑	100	↔	97	↔	***
United Utilities	23	↔	0.1	↑	98.8	↑	100	↔	82	↑	100	↔	100	↔	****
Wessex Water	23	↔	0.9	↓	99.0	↓	100	↔	78	↑	100	↔	100	↔	****
Yorkshire Water	43	↑	0.8	↑	97.8	↑	100	↔	83	↑	100	↔	100	↔	***
Sector	31	↑	0.7	↑	98.6	↔	100	↑↑	76	↑↑	100	↔	99.7	↔	

Key - Status for Performance

	Performance better than target
	Performance close to or slightly below the target
	Performance significantly below target

Key – Performance star rating

****	Industry Leading Company
***	Good Company
**	Company Requires Improvement
*	Poor Performing Company

Key – Performance star rating

4 Star - 6 or more green metrics and no red metrics
3 Star - 3 or more green metrics and no red metrics
2 Star - 1 or 2 red metrics and/or 2 or less green metrics
1 Star - 3 or more red metrics

Key – Performance comparison to last year

↑	Improving within class	↓	Deteriorating within class
↑↑	Improved a class	↓↓	Deteriorated a class
↑↑↑	Improved by 2 classes, e.g. from red to green	↓↓↓	Deteriorated 2 classes, e.g. from green to red
↔	About the same		

Note: These results are drawn, in part, from information submitted by the companies and may change as a result of subsequent audits and checking

The treatment works compliance performance commitment is based on the EPA, as stated in the outcomes performance commitments appendix. In order to be consistent with this, we stated in our business plan that the treatment works compliance performance commitment should be reported to 1 decimal place (please see the Performance commitments document S3001 – 4.17. C02-CF) and in the updated data tables sent in February 2019 (I012)).

To ensure that we are reporting consistently and to avoid confusion for customers and stakeholders, we continue to propose this commitment should be measured to 1 decimal place.

In summary, we propose that Ofwat:

- **Splits the ODI allocation, with a 94% allocation to wastewater network plus and 6% to water network plus.**
- **Requires the PC to be reported to one decimal place.**

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11 Enhancing natural capital for customers

(Ofwat reference PR19UU_ C08-CF)

11.1 Ofwat's intervention

11.1.1 Assurance

In the Draft Determination Ofwat has stated that "*the company will appoint an appropriately qualified third-party organisation to **perform** the measurement of added natural capital value.*" ("Performance commitment definition and parameters" table, "Reporting and assurance" section, page 85 of "Outcomes performance commitments appendix").

11.1.2 Outperformance cap

Ofwat included an outperformance cap for the natural capital ODI, as shown below:

		Company forecast					
	Unit	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Standard outperformance cap	£m		4.500	2.000	2.000	2.000	4.500

11.2 Our proposal

11.2.1 Assurance

We proposed in our business plan that we would perform the measurement and that our assessment would be externally assured. The change in the methodology, to require measurement by a third-party organisation, is not listed as an intervention in "Delivering outcomes for customers – actions and interventions". Therefore we are seeking clarity from Ofwat as to whether requiring an external organisation to "perform" the measurement is intended as a change to our methodology, or whether this is not intended and the definition should say "assure" instead.

To have a third party performing the measurement of natural capital added value would be an expensive mechanism, and is contrary to our strategic objective of embedding natural capital approaches in our decision-making framework. We are therefore proposing to use the industry standard tool B£ST to internally assess added natural capital values, and to have that assessment externally assured by an independent third party. This is similar to what has been proposed by Severn Trent Water in their "Green Communities" performance commitment.

Ofwat has also stated that it is "*intervening to require the company to put in place a detailed process for assurance around the assessment of conventionality and best value of solutions ahead of Final Determination*" (action ref. UUW.OC.A39, "Delivering outcomes for customers actions and interventions").

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We are proposing to obtain independent third party assurance of the performance commitment, to annually assess: the mechanism, conventionality of the solutions, best value option selected and the claimed added value. We have therefore engaged with a third party organisation, Vivid Economics, to provide a proposal of what is required in order to carry out an independent assurance audit for this performance commitment (see Appendix 4 – proposal for audit of our natural capital assessment).

11.2.2 Outperformance cap

The outperformance cap included in the performance commitments appendix was based on our 11th February App1 table. On 15th February we submitted a corrected table, extracts from which are shown below. This table is aligned with the Ofwat action, in terms of setting the cap. We propose, therefore, that it be used in the performance commitments appendix. This revision achieves our objective of setting the cap at the P90 performance level.

	Unit	2020-21	2021-22	2022-23	2023-24	2024-25	AMP7 total
Performance commitment level	£m added natural capital value	0	1.750	0	0	2.250	4.000
P90 outperformance	£m outperformance payment	4.500	2.000	2.000	2.000	4.500	15.000
P90 associated performance commitment levels	£m added natural capital value	4.500	3.750	2.000	2.000	6.750	19.000
Standard outperformance payment cap	£m added natural capital value	4.500	3.750	2.000	2.000	6.750	19.000

In summary, we propose that Ofwat:

- **Accepts our proposed approach to assurance, with us carrying out the calculations, which are then subject to independent assurance.**
- **Resets the outperformance cap.**

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12 Recycling biosolids

(Ofwat reference PR19UU_ C09-BR)

12.1 Ofwat's intervention

The following definitional changes were made in the draft determination:

Purpose

Ofwat's performance commitment appendix states that: "*This PC measures the compliance of the company with the 'Sludge (Use in Agriculture) Regulations' as defined by the Environment Agency and the voluntary 'Biosolids Assurance Scheme' (BAS)*".

Sludge definition

Ofwat's performance commitment appendix defines sludge volume within the performance commitment calculation ("C" within the formula) as being "*the total sewage sludge produced by United Utilities Water, reported in thousand tonnes of dry solids (tTDS). It also includes all sludge traded; both imports and exports*".

Performance definition

The appendix states, in line with the proposal in our business plan, that: "*The measure will continue to comply with any revisions to the Environment Agency EPA definition for each year, and performance will be assessed in accordance to the Environment Agency's assessment of performance*".

Outperformance payment

The appendix states that outperformance payment is earned as a lump sum for three consecutive years of 100% performance.

Timing of measurement

We proposed in our performance commitment technical document that we operate the measure on a financial year basis. Ofwat's performance commitment appendix defines the commitment as being measured on a calendar year basis.

12.2 Our proposal

Our proposed revisions to these definitions are set out below:

Purpose

We consider that the purpose is too narrow to reflect the full definition of Satisfactory Sludge Use and Disposal as part of the Environmental Performance Assessment (EPA). The requirements of the EPA are much broader than just Sludge Use in Agriculture Regulations. Our submitted definition is below. We propose using the text below.

> This measure assesses the successful use and disposal of treated material containing sewage sludge, known as biosolids. All biosolids will be compliant with regulatory requirements that apply to each end use in line with the water industry and Environment Agency version 5 definition of satisfactory sludge use and disposal. As a further requirement, biosolids that are recycled to agriculture must also conform to the Biosolids Assurance Scheme (a voluntary scheme under the governance of WaterUK).

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Sludge definition

The proposed definition of sludge volume within the performance commitment calculation means that the sludge produced volume would double-count traded volumes (by the importer and the exporter). We consider that it would be better to avoid double-counting, and that the ODI, which affects UU's customers, should not be affected by non-appointed activity relating to treating other companies' sludge. Applying the principle of a company being responsible for its in-area sludge, we propose that the definition should be the total sludge produced by United Utilities Water, as we originally proposed. This is in line with RAG4.08 line 4R.25 'Total sewage sludge produced'.

Performance definition

We stated that the measure will take into account any Environment Agency revisions to the definition. However, the Environment Agency have suspended the Sludge Use / Disposal measure of their Environment Performance Assessment (EPA) until further notice. The issue is under review and it is not clear when the measure will be reinstated and what changes will be made. We propose, for consistency, that performance continue to be measured on the basis of the EPA methodology set out in version 5 revision (EA/02/2019) on 21 March 2019.

Outperformance payment

Our business plan App1 table and our performance commitment technical document (S3001) both set out that there would be a further one-off £1.5m payment if the target is met for all five years, i.e. a potential total of £3m across the five year period. This change was not listed as an Ofwat action and it is not clear whether the change is intentional. We propose that our original incentive structure be reinstated.

Timing of measurement

We can operate on a calendar year or financial year basis but would like confirmation that the timing change is intentional. Changing the reporting period to calendar year would align to the full water industry and Environment Agency agreed definition of satisfactory Sludge Use/Disposal as part of the Environmental Performance Assessment (EPA).

However, it would not align to the full measure which also includes the Biosolids Assurance Scheme.

Calendar year reporting would also not enable Ofwat to reconcile sludge produced TDS (used in the calculation) to financial year sludge produced data provided in annual regulatory reporting or as part of the average revenue control. This could cause confusion.

In summary, we propose that Ofwat;

- **Amends the "Recycling biosolids" definition to reflect the above points.**

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13 Cost adjustment mechanism

13.1 Ofwat's intervention

In the Draft Determination appendix, Ofwat states, "*Where we made an allowance for amber schemes, we use a mechanism to adjust our totex for schemes which are later confirmed as not required*"[1].

13.2 Our proposal

It is not clear from the Draft Determination whether the proposed mechanism only applies to reductions in the required programme. In our submission we proposed a two-sided cost adjustment mechanism for unconfirmed WINEP schemes, allowing for the addition of new schemes as well as the removal of schemes which are not required. This was designed to ensure the expenditure required to deliver our WINEP could respond dynamically to changes in requirements.

In Severn Trent's equivalent mechanism, Ofwat states: "*we will use a unit cost mechanism to make adjustments if other schemes in the WINEP but for which no allowance has been made in our determination are subsequently confirmed as being required*". A one-sided mechanism would leave us exposed to greater risk than would be the case under Severn Trent's mechanism, whereas we would expect the mechanisms to be the same.

Further details are given in our cost assessment response, document D003.

In summary, we propose that Ofwat;

- **Confirms that the cost adjustment mechanism will apply to both additions and removals from the WINEP programme.**

[1] '*R19 draft determinations: United Utilities - Cost efficiency draft determination appendix*', p8

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14 Environmental Scheme ODIs

(Ofwat references PR19UU_ C04-WR and PR19UU_ C05-WWN)

14.1 Ofwat's intervention

The Draft Determination requires that two performance commitments linked to WINEP delivery (Improving the water environment (C04-WR) and Improving river water quality (C05-WWN)) should be reputational only and that additional assurance is required from the EA. This is set out in the United Utilities Outcomes performance commitment appendix.

14.2 Our proposal

We propose to replace these two performance commitments with a measure which mirrors the Environment Agency's Environmental Performance Assessment (EPA) WINEP delivery measure. We recommend this as there is no need for additional reputational measures when the Environment Agency's EPA already performs this role, in terms of delivery by the regulatory date. This will also minimise work for the Environment Agency who will only need to assure our performance once and will provide consistency for customers.

Our draft determination indicates that we are required to ask the Environment Agency to confirm that performance has been correctly reported with the view of the Environment Agency being definitive. The Environment Agency's main focus is the confirmation of the delivery of the WINEP schemes for each year to inform the EPA. The EA's time scale for this is tight following end of year, with less than two weeks for area offices to provide EA nationally with the completed WINEP tracking spreadsheet and cumulative percentage of schemes completed.

As this is the EA's focus, and a task we are heavily involved in, it would seem appropriate to have this as a measure, rather than two separate measures which are not a prime focus of the EA. This public reporting and comparison between companies also demonstrates the performance of the company against others, highlighting any shortcomings and ensuring consistent reporting for customers from AMP6 into AMP7 and beyond.

We have included proposed replacement text for the performance commitments appendix in Appendix 3 – proposed text for Outcomes performance commitment appendix.

In summary, we propose that Ofwat;

- **Replaces our improving the "Improving the water environment" and "Improving river quality" ODIs with our proposed new measure.**

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15 Protecting the environment from the impact of growth and new development

(Ofwat reference PR19UU_ C06-WWN)

15.1 Ofwat's requirement

In Ofwat's performance commitment appendix, the performance commitment C06-WWN includes additional assurance requirements:

> "*The company will submit an independent assurance report that summarises the evidence that additional treatment capacity was required by 31 March 2025 when on site investment began. It will also set out the additional capacity that is delivered and summarise the evidence that the capacity was required within the project design horizon and set out the rationale for the project design horizon*."

15.2 Our proposed action

We will commission an independent audit report, with the proposed approach to this set out below:

Area requiring independent assurance	Approach
Evidence that additional treatment capacity was required by 31st March 2025 when investment began Evidence that the capacity was required within the project design horizon and set out the rationale for the project design horizon	In supplementary document S6001 of our business plan (Our Approach to Totex) we set out the Risk and Value process that we use as part of our Totex approach. We will provide evidence to an independent auditor from our Risk and Value process for each scheme which is intended to contribute to delivering benefits under this performance commitment. This will demonstrate how the initial need identified through our Wholesale Risk Asset Planning (WRAP) has been challenged to ensure that intervention is required by 31st March 2025. This may rely on a range of intelligence such as Local Authority planning information and combined authority strategies, planning applications and planning enquiries, knowledge from liaison with local authorities, knowledge of trade effluent future requirements. Where decisions are made to deviate from our standard design horizon we will ensure the rationale is documented.
Evidence the additional capacity has been delivered	We already produce evidence packs for any schemes that provide additional treatment capacity to accommodate growth. We will provide these evidence packs to an independent auditor to enable them to assure that we have completed the interventions that were necessary to deliver the additional capacity to serve more customers.

In summary, we propose that Ofwat;

- **Accepts our proposed approach to assurance**

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16 Hydraulic flooding measures

(Ofwat reference PR19UU_ G05-WWN and PR19UU_ G06-WWN)

16.1 Ofwat's intervention

Ofwat has added a specific exclusion that properties where work is already under way at 31 March 2020 will be excluded.

16.2 Our proposal

We recognise that there should not be an ODI benefit from actions to resolve flooding problems which were already planned for AMP6. Our own proposals recognised the issue. We said that we would not report any outperformance relating to any locations where work is already underway.

Our AMP6 strategy is focussed on addressing "other causes" flooding, which accounts for around 94% of the flooding incidents (excluding severe weather incidents). Our high-level programme breakdown for the final 2 years of AMP6 is as follows:

Sub Programme	2018-19	2019-20
IRE Mitigation Arisals	£1.5m	£1.3m
Hydraulic Flooding	£0.5m	£0.3m
IRE Serviceability Sewer Rehabilitation (Flooding other causes)	£14m	£12.5m

The planned £0.3m hydraulic spend for 2019-20 is for modelling support for network investigations and modelling risk for proposed developments. This activity will not contribute to the hydraulic flood risk resilience performance commitments. Work relating to mitigation interventions will also not contribute to these commitments, as our definition states that "*Risk levels will only be updated where the modelled risk changes solely due to a permanent intervention being carried out in the period with the intention of providing or freeing up additional hydraulic capacity*".

The new performance commitments means that we can now consider schemes to increase capacity to address hydraulic repeat flooding problems. We have developed outline designs for potential schemes and propose to start early on these, in line with the timeline below, to ensure benefits to customers are realised as soon as possible.

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We therefore propose a specific exclusion as follows:

"Properties where construction is underway at 30th June 2019 and excluding 2019-20 planned hydraulic modelling for network investigations and modelling risk for proposed development."

If this is acceptable, we would welcome early notification of this so that we can consider making an early start on some projects.

In summary, we propose that Ofwat;

- **Brings forward the cut-off date for eligible projects to 30/06/2019**

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17 Manchester and Pennines Resilience and Strategic Regional Water Resources

(PR19 UUW_B09-DP and PR19 UUW_E07-DP)

17.1 Ofwat's intervention

In the IAP on 31 January Ofwat said that further optioneering work was required before approval of the Manchester and Pennines resilience scheme and proposed to progress our assessment of this scheme outside of the fast-track process. Actions were raised in relation to two ODIs. Since then we have engaged with Ofwat, responding to the IAP actions and sharing information with David Young, Matthew Greetham and others. The draft determination says that Ofwat will continue to progress its assessment of the scheme outside of the fast-track process and that it has deferred its assessment of the outcome delivery incentive until the Final Determination.

The IAP also asked us to propose ODI mechanisms to allow allocated funding to be recovered by customers in the event of our strategic regional solution development (Severn Thames transfer) scheme not progressing and for the non or late delivery of outputs. We welcomed this approach and responded to the action ahead of a 1 April deadline. The draft determination says that due to the collaborative element of this action the process will align to the slow track determination deadlines.

In the IAP Ofwat reduced the allowance for the costs we will incur for our contribution to the delivery of Manchester and Pennine Resilience from £72.7m to £57.4m.

17.2 Our proposals

We are concerned that we may not get an opportunity to make representation on draft conclusions relating to these two significant elements of the periodic review: Manchester and Pennines Resilience and the strategic regional water resources solution development.

The process of publishing a preliminary conclusion based on evidence submitted, and allowing representation before making a final determination, is an important regulatory mechanism which gives customers, investors and other stakeholders confidence that appropriate decisions are made. While it is understandable that our early draft determination means that there has not been sufficient time to reach a conclusion on some aspects, we are concerned that the process going forwards for allowing representation on Manchester and Pennines Resilience and the strategic regional water resources solution development has not been set out.

We expect that for both these two issues Ofwat will be publishing draft conclusions and determinations at the same time as the draft determinations for slow-track companies. This would enable representations to follow the same timescale as for those companies. We are seeking confirmation that this is the case or, if not, what the timescale will be for publishing draft conclusions.

The incentive rate for the Manchester and Pennine Resilience ODI is based on benefits to customers, and reflects the proportion of total scheme costs attributable to our contribution. This means that the incentive rate changes when our costs change. We have updated the rate to reflect the allowance for our costs in the Draft Determination (but if Ofwat's assessment changes a further incentive rate

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change will be required). Details are given in document D003c: Update to claim: Manchester and Pennines Resilience.

In summary, we propose that Ofwat;

- **Provides clarification on the process for consultation on these two ODIs.**
- **Aligns the ODI rate for Manchester & Pennine Resilience with Ofwat's final cost estimate.**

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18 Customers say that we offer value for money

(PR19 UUW_B09-DP and PR19 UUW_E07-DP)

18.1 Ofwat's intervention

Ofwat's Outcomes performance commitments appendix states that:

> "*The customer value for money survey aligns the questions and methodology with the approach adopted in CCWater's "Water Matters" survey. The sample size used to measure this performance commitment is to be at least equivalent to that used in the PR14 measure of the same name (1,100 customers)*".

18.2 Our proposals

We are concerned at the inconsistency between the proposed annual sample sizes of 1,100 for this performance commitment and the 800 surveys annually used in each of the Customer Service and Customer Experience C-MeX surveys.

If a sample size of 800 is adequate to ensure the statistical accuracy of individual C-MeX surveys (which in the case of UU has an associated +/-£68m of potential reward/penalty), we believe such a sample size should be considered appropriate for the reputational only 'Value for Money' ODI.

We think that Ofwat should reconsider the appropriateness of using surveys with only 800 respondents in assessing performance against C-Mex, or adjust the requirement for this performance commitment.

In summary, we propose that Ofwat;

- **Aligns sample size for C-Mex and this PC**

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19 Unplanned outages

(PR19UU_ B04-CF)

19.1 Ofwat's intervention

Ofwat's Outcomes performance commitments appendix included the following performance commitment levels, based on our business plan.

	Unit	2020-21	2021-22	2022-23	2023-24	2024-25
Performance commitment level	%	11.02	10.91	10.80	10.69	10.58

19.2 Our proposals

As set out in our 15th May IAP response (Actions UUW.OC.12 & UUW.OC.A13), we have made substantial improvements to our methodologies for defining and assessing Peak Week Production Capacity and defining and capturing outages. We have also improved many of our data capture processes and re-analysed our historic outage data. As a consequence, we have significantly improved the RAG methodology compliance for this measure in comparison with our business plan submission. This work has resulted in a significant reduction in the historic and forecast unplanned outage values, as shown in the table below.

Summary of performance commitment change from our business plan to this IAP response

	2020/21	2021/22	2022/23	2023/24	2024/25
PR19 business plan methodology	**11.02%**	**10.91%**	**10.80%**	**10.69%**	**10.58%**
Revised methodology	**3.87%**	**3.83%**	**3.79%**	**3.75%**	**3.72%**

In summary, we propose that Ofwat;

- **Revise the performance commitment level as above.**

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20 Commentary – Tables App1, App1a and App1b

We have provided the following spreadsheet tables:

D002a App1 and 1b Draft Determination for information only

D002b App1, 1a and 1b at 220519 based on our representations

D002c a non-standard ODI calculations workbook

We have set out below the changes included in our representations and the Sections in this document which explain these changes.

20.1 Amendments to the representations version of our App1 table

Water quality compliance (CRI) (A01-CF) – As described in Section 3.2.4, the underperformance penalty deadband has been amended. This revision has required an update to both the maximum standard underperformance penalties and P10/P90 financial positions.

Leakage (B01-WN) - As described in Section 8, the outperformance incentive rate has been amended, and the P10 and P90 positions and financial ranges re-baselined.

Mains repair (B02-WN) - As described in Section 4, the performance commitment, outperformance and underperformance deadbands, standard outperformance and underperformance incentive rates, and underperformance penalty collar have been amended.

Reducing interruptions to water supply (B03-WN) - As described in Section 3.2.2, the standard outperformance incentive rate has been amended

Unplanned outages (B04-WN) - As described in Section 19, the performance commitment levels have been revised to reflect

Per capita consumption (B05-WN) - As described in Section 5, the outperformance incentive rate has been amended, and the performance commitment and P10 and P90 positions/financial ranges re-baselined.

Keeping reservoirs resilient (B10-WR) - As described in Section 9, the financial incentives associated with this measure have been reinstated. Details on the application of the non-standard ODI calculation can be found in Document D002c.

Pollution incidents (C01-WWN) - As per the description in Section 3.2.2, the standard and enhanced underperformance incentive rates have been amended.

Treatment works compliance (C02-CF) – As described in Section 10, the price control allocation has been returned to the position declared in our previous submissions. The measure units have also been reverted back to one decimal place and a new underperformance collar inserted.

Enhancing natural capital value for customers (C08-CF) – As described in Section 11, the standard outperformance payment cap is aligned to the position reported in our 15th February submission of App1.

Recycling biosolids (C09-BR) - As described in Section 12, the standard outperformance payment 2 has been reinstated and the P90 outperformance payments updated accordingly.

Delivery of the Water Industry National programme (WINEP) (C11-CF) - As described in Section 14, this is a newly created performance commitment and is a direct replacement for both the Improving

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the water environment (C04-WR) and Improving river water quality (C05-WWN) performance commitments.

Developer experience (D-MeX) (D02-CF) – the price control allocation has been updated to a 74% Water / 26% Wastewater split, based on the Draft Determination. This could change as a consequence of any changes in estimates for grants and contributions.

Systems thinking capability (E06-CF) - As described in Section 7, the financial incentives associated with this measure have been re-instated. A new standard outperformance payment cap has been introduced at maturity level 4 and the underperformance penalty deadband removed. Details on the application of the non-standard ODI calculation can be found in document D002c.

Strategic regional solution development (Severn Thames transfer) (E08-WR) - As described in Section 17, this measure has been further developed since previous submissions, allowing UU to now declare information on the performance commitment and outcome delivery incentive mechanism.

Sewer collapses (F01-WWN) - As described in Section 6, the measure has been amended to incorporate the updated reporting methodology, and the incentive rate amended to reflect this change.

Internal flooding Incidents (G02-WWN) - As described in Section 3.2.3, the performance commitment and the standard outperformance and underperformance incentive rates have been amended.

External flooding Incidents (G03-WWN) – As described in Section 3.2.3, the standard outperformance and underperformance incentive rates have been amended.

Water services resilience (B08-WN)

As part of the Draft Determination Ofwat made a number of presentational changes to the Water Service Resilience measure. The primary changes were:

- To change the sign of improving performance from negative to positive
- To change the baseline performance commitment from an absolute risk assessment to an assessment relative to the beginning of AMP7, March 31st 2020.

These changes have cascading impacts to caps and collars and any other reported performance figures for this measure. The following list, included in our 15th May IAP response, relating to Action UUW.OC.A13, covers the resultant changes to the App 1 table for this measure associated with the above changes.

1. Column W Changed unit definition to "**reduction in** risk…"
2. Column Y Changed direction of improving performance to **up**
3. Columns AN-AO changed 2017-2018 and 2018-19 forecast performance to performance relative to 2020 forecast, i.e. "-500"
4. Column AP changed absolute forecast to relative forecast of "0"
5. Columns AQ-AU changed absolute performance commitment to relative performance commitment in line with Ofwat draft determination.
6. Columns AV-BK changed long term forecasts to be based upon 2020 baseline relative position, stable risk targeted for 2040.
7. Columns BV-CO (performance caps, collars and deadbands) changed to be based upon 2020 baseline relative position

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8. Columns EJ-EN (138 P10 performance) changed to be based upon 2020 baseline relative position

9. Columns EU-EY (149 P90 performance) changed to be based upon 2020 baseline relative position

Non-standard ODI calculations

Within Appointed table 1, there are 14 ODI calculations that are identified as 'non-standard' in columns 105. To assist Ofwat with understanding of how these non-standard calculations are intended to work, we have submitted a supplementary excel workbook (document D002c – a non-standard ODI calculations workbook). This workbook contains details on seven measures:

- Number of properties with lead risk reduced (A03-WN)
- Reducing discolouration from the Vyrnwy treated water aqueduct (A05-WN)
- Water service resilience (B08-WN)
- Keeping reservoirs resilient (B10-WR)
- Systems thinking capability (E06-CF)
- Hydraulic internal flood risk resilience (G05-WWN)
- Hydraulic external flood risk resilience (G06-WWN)

Omissions for the workbook are:

- Reducing interruptions to water supply (B03-WN) – identified as non-standard due to the units being time.
- Abstraction incentive mechanism (C03-WR), Customer experience (C-MeX) (D01-HH) and Developer experience (D-MeX) – identified as non-standard in-line with the Ofwat table guidance.
- Recycling biosolids (C09-BR) – identified as non-standard due to the application of outperformance payments for consecutively achieving 100% compliance.
- Enhancing natural capital value for customers (C08-CF) - identified as non-standard due to the units being 'natural capital value' and already being displayed in £millions, therefore negating the need for an incentive rate.
- Successful delivery of direct procurement of Manchester and Pennine resilience (E07-DP) - identified as non-standard due to the single application of the incentive rate, in-line with contract award (meeting the criteria).

20.2 Table App1a

We have followed the same approach in this submission as in the App1a table submitted in response to the IAP. We have made changes from the IAP submission to reflect:

- Changes to the unit of measurement for some performance commitments (see commentary for Table App1b).
- Changes to the incentive rates for internal and external flooding (see section 3.2.3).

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20.2.1 Triangulated WTP / Marginal benefits estimate

Where incentive rates are unchanged, we have used the same values as we used in our Business Plan for setting incentives. For those measures where we have revised the incentive rates in line with actions agreed with Ofwat, we have used the customer values which derive from the new incentive rate. These new values are within the range of valuations derived from our customer research.

20.2.2 ODI rate calculation

In our Business Plan, we applied a symmetrical approach to setting incentives, based on half the customer valuation. This was subject to a check that the ODI provided sufficient incentive to deliver against targets, and that outperforming would require us to deliver at lower cost than current estimates.

For ODIs which are unchanged, we have maintained that approach. For ODIs which we have changed in line with agreed actions, we have applied the Ofwat formula to both underperformance and outperformance.

For underperformance the rate is:

- Customer Valuation – (Marginal Cost / 2)

For outperformance the rate is:

- Customer Valuation / 2

Where marginal cost exceeds the valuation, and this would result in outperformance rates being higher than underperformance rates, we have applied half the customer valuation to both under performance and outperformance. This is shown in the "Reason for using alternative formula" columns.

As a result of this approach, the outperformance rate is less than the underperformance rate for three measures (external sewer flooding, interruptions to supply, and mains repairs).

We have also checked that the revised rates for both underperformance and outperformance are within the ranges set out in Technical appendix 1: Delivering outcomes for customers.

20.3 Table App1b

In Appointed table 1b we have inserted alternative views of three of our performance commitments. These are:

- Internal flooding Incidents (G02-WWN) – In line with the Ofwat feedback received at the Draft Determination on this measure, we have utilised normalised figures as the primary view of this measure in Appointed table 1 and then the absolute number equivalent in Appointed table 1b. This is a reversal of the reporting approach taken in our previous table submissions, where we placed absolute numbers in App1 and normalised in App1b. This amendment does not affect our approach to the measure itself.
- External flooding Incidents (G03-WWN) – In order to be consistent with the approach taken on Internal flooding, we have utilised the normalised view of this measure in Appointed table 1 and the absolute number equivalent in Appointed table 1b. Again, this is a reversal of the reporting approach taken in our previous table submissions, but does not fundamentally change our approach to the measure itself.

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- Reducing areas of low water pressure (B07-WN) – As per previous table submissions, we have utilised the normalised view of this measure in Appointed table 1 and the absolute number equivalent in Appointed table 1b.

Other than these three exceptions, all other information displayed in Appointed table 1b is consistent with Appointed table 1.

In previous table submissions we had displayed alternative views for Leakage (B01-WN) and Per Capita consumption (B05-WN) in Appointed table 1b. In-line with the Ofwat Performance Commitments appendix and to avoid conflict between App1 and App1b arising from rounding issues, we have now utilised the absolute number approach for these two performance commitments in both tables. Where necessary or appropriate, we will also report both measures in the percentage reduction equivalent, despite this view not being displayed in either App1 or App1b.

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Appendix 1 – summary of current position on PCs and ODIs

PC reference	Performance commitment	Changes made following IAP	Current status
Outcome A - Your drinking water is safe and clean			
A01-CF	Water quality compliance (CRI)	Incentive rate, deadband and collar modified	DD response proposes revision to deadband and incentive rate
A02-WN	Reducing water quality contacts due to taste, smell and appearance	Definition modified and P90 cap following IAP	No further issues
A03-WN	Number of properties with lead risk reduced	Cap and collar introduced.	No further issues
A04-WN	Helping customers look after water in their home	None	No issues
A05-WN	Reducing discolouration from the Vyrnwy treated water aqueduct	Outperformance cap applied	No further issues
Outcome B - You have a reliable supply of water now and in the future			
B01-WN	Leakage	Target and incentive rate modified	Incentive rate change proposed Additional allowance for costs of achieving 20% target requested
B02-WN	Mains repairs	Target and incentive rate modified	Incentive rate and target changes proposed
B03-WN	Reducing interruptions to water supply	Target and incentive rate modified	Incentive rate change and glidepath proposed
B04-CF	Unplanned outages	Outperformance payment removed Application of industry methodology has changed the PC levels.	Incentive rate change proposed
B05-WN	Per capita consumption	Target and incentive rate modified	Incentive rate and target changes proposed

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PC reference	Performance commitment	Changes made following IAP	Current status
B06-CF	Drought risk resilience	Additional evidence provided	No further issues
B07-WN	Reducing areas of low water pressure	None	No issues
B08-WN	Water service resilience	Cap and collar introduced. We have updated App1 in line with the revisions to the measure contained within the DD (see Table App1 commentary). We have completed an independent audit of our baseline risk assessment. We have adjusted the baseline in the light of interventions delivered since the submission of our business plan.	No further issues
B09-DP	Manchester & Pennine resilience	Additional information provided	Progressing outside fast track timescale
B10-WR	Keeping reservoirs resilient	Financial incentive removed	Proposed
B11-WN	Thirlmere transfer into West Cumbria (AMP7)	Continued from AMP7	No further issues
Outcome C - The natural environment is protected and improved in the way we deliver our services			
C01-WWN	Pollution incidents	Target and incentive rate modified	Incentive rate change proposed
C02-CF	Treatment works compliance	Target and incentive rate modified, and outperformance payment removed	Incentive rate change proposed Definitional changes proposed
C03-WR	Abstraction Incentive Mechanism	None	No issues
C04-WR	Improving the water environment	Financial incentive removed	Single PC proposed to replace these two PCs
C05-WWN	Improving river water quality	Financial incentive removed	

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PC reference	Performance commitment	Changes made following IAP	Current status
C06-WWN	Protecting the environment from impact of growth and new development	No issues	Proposals on assurance requirements
C07-CF	Cost adjustment mechanism - quality enhancement programme		Clarification requested on whether this is a 2-sided mechanism
C08-CF	Enhancing natural capital value for customers	Additional information provided. Cap and collar introduced	Proposed amendments in relation to measurement and assurance requirements
C09-BR	Recycling biosolids	None	Modification of definitions requested
C10-BR	Better air quality	None	No issues
Outcome D - You're highly satisfied with our service and find it easy to do business with us			
D01-HH	Customer experience (C-MeX)	None	Being developed
D02-CF	Developer experience (D-MeX)	None	Being developed
D03-HH	Priority services for vulnerable customers	Additional PC on achieving BSI standard introduced. Financial incentive removed	No further issues
D04-CF	Street works performance	Financial incentives removed	No further issues
D05-HH	Priority Services - BSI accreditation	New measure	No further issues
Outcome E - We will improve the way we work to keep bills down and improve services for you and future customers			
E01-HH	Number of customers lifted out of water poverty	Cap and collar introduced	No further issues
E02-HH	Household occupancy verification	None	No issues
E03-CF	Non-household vacancy incentive scheme	Cap and collar introduced	No further issues

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PC reference	Performance commitment	Changes made following IAP	Current status
E04-CF	Gap sites (wholesale)	None	No issues
E05-HH	Gap sites (retail)	None	No issues
E06-CF	Systems thinking capability	Additional information provided. Ofwat proposes removal of financial incentive.	Proposed reinstatement of financial incentive
E07-DP	Successful delivery of direct procurement of Manchester and Pennine Resilience	Additional information provided	Progressing outside fast track timescale
E08-WR	Strategic regional solution development (Severn Thames transfer)	New measure	Progressing outside fast track timescale
E09-HH	Customers say that we offer value for money	Reintroduced measure	Issue over sample size
Outcome F - We reliably collect and recycle your wastewater			
F01-WWN	Sewer collapses	Outperformance payment removed. Incentive rate changed.	Incentive rate change proposed
F02-WWN	Sewer blockages	Cap and collar introduced	No further issues
Outcome G - The risk of sewer flooding for homes and businesses is reduced			
G01-WWN	Risk of sewer flooding in a storm		
G02-WWN	Internal flooding incidents	Target, incentive rate and collar modified	Glidepath and incentive rate change proposed
G03-WWN	External flooding Incidents	Target and incentive rate modified	Incentive rate change proposed
G04-WWN	Raising customer awareness to reduce the risk of flooding	None	No issues
G05-WWN	Hydraulic internal flood risk resilience	Cap and collar introduced	Measurement definition change proposed

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PC reference	Performance commitment	Changes made following IAP	Current status
G06-WWN	Hydraulic external flood risk resilience	Cap and collar introduced	Measurement definition change proposed

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Appendix 2 – summary of customer research on CPIH Bill profile and systems thinking

Project ref: TXXXX	Title:	CPIH Bill profile and systems thinking ODI preferences and acceptability	
Related performance commitment	We will improve the way we work to keep bills down and improve our services for you and future customers.		
Service provider	Boxclever Consulting	Date of study	April 2019

Research need	• To understand customer attitudes to the principle of intergenerational equity of investment – who should pay for investments to improve service; how should the cost of investments be spread across different generations of bill payers • Views on challenges surrounding financial decisions; • Impact of inflation and the importance of stable bills – do customers prefer larger bill reductions now, or higher bills in future, or a more stable profile
Research objectives	• To engage with customers in shaping the planned bill implementation • To identify the preferred Consumer Price Index with Household costs (CPIH) and systems thinking bill profiles preferred, along with levels of acceptability • To explore the rationale and thought process that determine preference • To support the business in demonstrating it has a customer mandate for bill profile implementation.
Methodology	• A comprehensive quantitative study with household customers o 15 min online survey with 1,018 customers recruited from an external research panel o Sample composition broadly in line with customer base demographics: o Geographic: Cheshire (17%), Cumbria (8%), Greater Manchester (36%), Lancashire (20%), and Merseyside (20%) o Age: 18-24 (3%), 25-34 (13%), 35-44 (17%), 45-54 (21%), 55-64 (26%), 65-74 (17%) 75+ (2%). Prefer not to answer (<1%) o Gender; Female (53%), Male (47%). Other / prefer not to say (<1%) o Measured: Not metered (61%), Metered (39%) o SEG: AB (23%), C1 (31%), C2 (16%), DE (30%). o Financially vulnerable (19%) o The survey mechanism made use of the individual customer's bill data in order to model future bills profiles and as the basic to calculate the impact of inflation over time. This ensured customers were shown realistic bill profiles based on their own personal circumstances • A complementary qualitative study with household customers using 26 depth interview o 6 x pre-family, age 20-35, 6 x family age 25-45, 6 x post-family 45-70. Mix of home-owners and renters, males and female, metered and non-metered. o 8 x in-home interviews with customers in vulnerable circumstances, including elderly customer, customers with low income, disability, learning difficulties and English not their first language.
Findings & conclusions from the research	**Impact of CPIH on bill profiles:** Customers were asked their preference for 3 different profiles reflecting potential decisions on how investment decisions and cost recovery could be phased over time. o Option 1 – Full transition to CPIH o Option 2 – Same transition/AMP7 bill o Option 3 – Same transition • The majority of customers, when asked "which of the ways that changes to your bill could be implemented do you prefer?" chose Option 1 (63%). Option 2 came next (29%) with Option 3 the minority (7%) o Two main factors influenced this choice; avoiding bill increases and long term lower bills. Customers see stability and predictability of bills, they want to avoid shocks and to have to cope with increases when money is tight

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	○ There is some appetite from customers with financial vulnerability to save money now. • There was no significant difference in preference by county within the North West region, although Merseyside showed a significantly higher preference for option 1 than Lancashire • The levels of acceptability for Option 1 (participants who found it very acceptable or fairly acceptable) was 81%. Acceptability levels for Option 2 and 3 was lower at 72% and 45% respectively ○ The key influence for the higher level of acceptability for Option 1 was long term bills being lower than the short term. ○ There was a significant difference in the levels of acceptability for both Options 1 & 2 between the AB and DE SEG groups **Systems Thinking ODI:** Customers were asked to consider the systems thinking initiative and provide feedback on whether it was an attractive concept and how the impact of the ODI should or shouldn't be applied to customer bills. • Most customers feel that the concept reflects a common sense approach and is good business practice ○ Benefits that resonated with customers included quicker service, lower bills, to be better for the environment, improving a knowingly aged infrastructure and being more efficient per se. • There is a strong desire for charging to be fair; to share the cost of investment across generations ○ Customers want to 'do their bit for future generations ○ Costs for 'common good' should be shared between current and future customers • Overall 91% of customer supported accelerated investment option for systems thinking: 79% preferred for the investment to be smoothed in terms of impact on customer bills, whilst 12% preferred bill impacts to reflect recovery of costs, incrementally year-by-year • Just 9% of customers stated they no accelerated investment in systems thinking initiatives should take place. • In terms of the broader impact of the potential impact of the systems thinking ODI, alongside the impacts from the package of ODIs in the plan, almost ¾ of participants (69%) found these to be fairly or very acceptable
Key messages	• UU has a clear mandate from customers to adopt the full transition bill profile for implementing bill reduction ○ 63% of customers state a preference for the full transition profile • Preference for the full transition bill profile is reflected in high levels of acceptability amongst customers ○ 81% of customer found full transition acceptable • Preference for the full transition profile is driven by customers wanting to avoid bill increases, and have lower bills in the lower term • Customers are supportive of systems thinking as an initiative • There is also a clear mandate from customers to adopt a smoothed bill profile to account for accelerated systems thinking investment ○ 79% of customers state a preference for smoothed systems thinking bill profiles • Rationale for smooth systems thinking transition mirrors the reasons for full CPIH transition – predictable and stable bill amount • Customers are accepting of the total annual amount of potential bill variation associated with the full ODI package and accelerated systems thinking investment ○ 69% of customers find the ODI and systems thinking bill impacts amounts acceptable
Actions taken	• The research has been used to influence the bill profiling decision associated with business plan implementation • The findings will also be used to take account of any mitigations that may be required to cushion the impacts of any bill variations, for customers in vulnerable financial circumstance

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Appendix 3 – proposed text for Outcomes performance commitment appendix

Delivery of the Water Industry National Environment Programme (WINEP)

Purpose: This PC measures the progress of the company in delivering its agreed Water Industry National Environment Programme (WINEP) river water quality enhancement schemes in a timely manner.

Benefits: This PC improves the natural environment by encouraging the timely delivery of water resources environmental improvement schemes and river water quality enhancement schemes. It will help to improve the cleanliness of local rivers, thereby supporting the preservation of river ecosystems including river-based wildlife, and to ensure that water can be abstracted from rivers and lakes without any negative impacts on the environment.

Performance commitment definition and parameters

Unique Reference	PR19UU_ C05-WWN
Detailed definition of performance measure	Reporting of this measure will be in line with the Environment Agency Environmental Performance Assessment methodology, version 5 (March 2019) plus AMP7 event duration monitors (U_MON1 and U_MON3). It is reported as the cumulative number of WINEP schemes, investigations and monitoring delivered as a percentage against the plan for each 5-year Asset Management Programme (AMP) period. It includes water quality, water resources, fisheries, biodiversity and geomorphology schemes and investigations. The planned number of schemes, investigations and monitoring have been profiled in the WINEP and delivery will be reported against this data taking into account any agreed changes. As part of the EPA process the EA record this data and share with Ofwat annually.
Additional detail on measurement units	A value of 100% will indicate that all schemes have been delivered on time.

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	If changes to the programme of river water quality enhancement schemes are required during the 2020-25 period, then the company will work with the Environment Agency to agree changes to its WINEP programme through a change control process. Where such changes are formally agreed with the Environment Agency, as defined by the sign-off of an amendment form, the company's performance against this commitment will subsequently be measured against the delivery dates agreed for the revised programme. For schemes to be included in this measure they must be planned for delivery within that year. On completion of each scheme the company will ensure that detailed 'output in use' packs are available for sharing with the Environment Agency to demonstrate completion of the work. The company will only be able to claim completion of a scheme once its internal governance procedure for claiming outputs has been completed, as demonstrated through the completion of 'output in use' documentation, and the scheme is due for delivery by that date.. Where alternative permit approaches are used, such as catchment permits or stretch targets, an individual scheme will be considered complete if enhancement requirements to achieve these alternative permits are met and 'output in use' documentation has been completed.
Specific exclusions	None
Reporting and assurance	The Environment Agency confirms scheme delivery as part of its annual Environmental Performance Assessment process. The view of the Environment Agency will be definitive.
Measurement unit and decimal places	Measured as cumulative percentage of agreed schemes delivered to the current point in the AMP period. Assessed annually and reported to one decimal place.
Measurement timing	Financial year
Incentive form	NA
Incentive type	Reputational
Timing of underperformance and outperformance payments	NA

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Price control allocation	NA
Frequency of reporting	Annually
Any other relevant information	There will be a separate cost adjustment mechanism related to this programme of river water quality enhancement schemes, which will be used to manage the costs borne by customers if there are any future changes to the scope of the programme.
Links to relevant external documents	NA

Performance commitment levels

		Company forecast	Committed performance level				
	Unit	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Performance commitment level	%	NA	100	100	100	100	100

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Appendix 4 – process of assurance for the natural capital performance commitment

Introduction

The purpose of this document is to define the scope of the assurance process for this ODI and specifically the arrangements that we are putting in place for independent audit in relation to the:

- **Categorisation of schemes**. To ensure that schemes are characterised as 'conventional' or 'non-conventional' in accordance with clear definitions, thereby ensuring that no outperformance payments are received for schemes which are conventional (and so would potentially have been promoted in the absence of the ODI).
- **Valuation of schemes.** To ensure that cost-benefit analysis has been carried out in line with best practice, thereby ensuring that no scheme is selected which does not provide value to customers.

By providing this additional detail on the assurance processes that we will put in place around the assessment of conventionality and best value of solutions, we aim to demonstrate that the proposed financial incentives will not drive adverse outcomes for customers. The process will ensure that we will only select solutions which are best value for customers, and that we are unable to receive outperformance payments for the deployment of conventional solutions.

Overview of the assurance that will be applied

The assurance of these elements of the ODI (and the application of the ODI more broadly), will be subject to United Utilities' annual regulatory reporting assurance framework, which consists of a risk-based approach with three levels of assurance. The details of this assurance framework, as applied to our current regulatory reporting, are set out in the regulatory reporting assurance framework, which is available on our website[6].

In summary, the three lines of assurance that we will apply work as follows:

- The first line of assurance ensures that management has accountability for developing and maintaining sound processes, systems and controls in the normal course of their operations.

[6] Link to regulatory reporting assurance framework:
file://uug.vcm.cc/Users$/3/n382144/Documents/Downloads/UU%20Regulatory%20Reporting%202017.pdf

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- The second line of assurance currently lies with Economic Regulation who have accountability for providing the framework and governance for regulatory reporting, the UU Corporate Audit team also provide an independent review of the effectiveness and application of the assurance framework and undertake targeted reviews.
- The third line of assurance provides independent audit and assurance activity through independent technical auditors.

The specific application of each line of this framework to the natural capital performance commitment is set out below. Details of the specific information which would be subject to independent review, to confirm that conventionality and value have been calculated robustly and appropriately, are set out in Annex 1.

First line of assurance: Business and management accountability and responsibility

The day-to-day management of the ODI will be undertaken by United Utilities' (UU) Natural Capital Strategy Team, who are accountable for identifying opportunities to enhance the natural capital value of UU's assets, and working with the wider business to govern the delivery of these schemes.

Key elements of this team's work are to track the projects identified as potentially contributing to this ODI, and work with the wider business to ensure that they are delivered in line with clear processes, and that decisions are taken based upon robust evidence and data. It is this team who are accountable for producing the data which is used to monitor the delivery of this ODI. The Natural Capital Strategy Team are supported and guided in this work by the Natural Capital Working Group and Natural Capital Steering Group.

The Natural Capital Working Group is made up of representatives from a number of teams, all of whom play a part in the process of optioneering, delivering and monitoring natural capital enhancing (i.e. non-conventional) solutions. The Natural Capital Working Group is accountable for overseeing the end-to-end process of delivering natural capital solutions, working collaboratively to address problems that arise, and ensuring that they make decisions based upon robust evidence and data. In relation to the selection of either a conventional or non-conventional scheme, the Natural Capital Working Group would be accountable for reviewing the optioneering process to ensure that both potential solutions have been consistently reviewed, in order to ensure that final solution selection has been based on a fair process, using clear evidence. Similarly, in relation to ensuring the best value for customers, the Natural Capital Working Group would be accountable for reviewing the valuation of schemes and the valuation of the potential added natural capital value, in order to ensure that both have been calculated appropriately, and that the chosen solution does offer the best overall value to customers. The Natural Capital Working Group are accountable to the Natural Capital Steering Group.

The Natural Capital Steering Group is made up of senior managers from across UU, all of whom have accountability, as the sponsor for their business area, for the delivery of UU's ambition to enhance natural capital value. The Natural Capital Steering Group have overall accountability for monitoring the application of the Natural Capital ODI, and ensuring that the schemes which make up both the performance commitment and the outperformance opportunity meet the qualifying definitions for inclusion in the ODI, and deliver the best overall value for customers. They are also accountable for signing off the programme of

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schemes that are included in the ODI and any changes to this programme over the AMP. It is the Natural Capital Steering Group who own the performance data for this ODI and are responsible for reporting the progress towards the delivery of this ODI across the business and to the UUW Board.

Second line of assurance – Providing the enabling framework and governance for regulatory reporting

United Utilities' Economic Regulation department have accountability for providing the framework and governance for UUW's regulatory reporting. As part of this role they will provide oversight to the executive and Board that the methodologies and control checks that have been developed through the first-line management controls processes are consistent with the requirements and expectations of this measure and that the governance and assurance that is applied to the reporting of the measure are consistent with the risk assessment of the measure.

Economic Regulation will also provide oversight that the information being reported has been produced in line with these methodologies, through the well-established annual regulatory reporting processes. Data produced as part of this regulatory reporting process is signed off by a senior manager (Head of Environment Strategy and Regulation), the Director of Asset Management and the Chief Operating Officer, prior to being reported to the UUW Board.

The UU Corporate Audit team also provide an independent review of the effectiveness and application of the assurance framework and undertake targeted reviews, with their findings also being presented to the UUW Board.

Third line of assurance - Providing independent audit and assurance activity through independent technical auditors

United Utilities also gains independent assurance of the robustness of the data reported for all its performance commitments through the annual regulatory reporting cycle from an appropriately qualified, independent technical auditor (currently Jacobs). This review process adds an additional level of assurance to the reported performance against the Natural Capital ODI. The results of this independent review process are also reported to the UUW Board to support them in approving each year's Annual Performance Report.

In addition to the standard assurance checks carried out for all of our performance commitments, the Natural Capital ODI will also be subject to an additional targeted annual review, which will be undertaken by a suitably qualified, independent third party.

This review will allow the end to end application of the ODI methodology to be reviewed and assured to ensure that the proposed incentives reflect UU's adoption of schemes that (a) would not be promoted in the absence of the ODI and (b) provide valuable ecosystem services that would not be delivered without the mechanism. The review therefore ensures that incentive payments follow both the letter and the spirit of the decision process laid out in UU's response to Ofwat's Initial Assessment of Plans, which is represented in Figure 1 of Natural Capital Performance Commitment: Response to Actions UUW.OC.A39 and UUW.OC.A40.

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In order to develop the framework for this additional independent assurance process, United Utilities have worked closely with Vivid Economics. This process looked at two key aspects of the assurance of the measure.

Initially we worked with Vivid Economics to undertake a thorough review of the calculation of added natural capital value using the B£ST methodology to ensure that ecosystem services are measured and valued in a robust fashion, consistent with leading practice across the water sector. The application of this calculation will form part of the overall annual governance and assurance process of the ODI.

We also worked with Vivid Economics to develop a series of specific checks related to the assessment of conventionality and the assessment of best value. This independent review was designed to ensure that the proposed assurance checks aligned with Ofwat's expectations and with UU's customers' wider interests.

These audit check are set out in Annex 1 below and would form part of the targeted annual review, which will be undertaken by a suitably qualified, independent third party, with the results of this review process being reported to Ofwat as part of the annual regulatory reporting process.

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Annex 1 Independent assessment criteria for conventionality and best value

1. The Assessment of Conventionality

Task number	Task title	Detail	Expectation	Auditor comment
1.1	Optioneering and solution selection	In identifying solutions: • Has UU followed its standard optioneering process to an appropriate overall level of detail? • Has this process been followed to an equivalent level of detail for non-conventional and conventional options?	Documentation of optioneering process.	
1.2	Categorisation	Is the categorisation of schemes as either 'non-conventional' or 'conventional' consistent with UU's definitions?	A conventional schemes is one which meets any of the following criteria: • The construction of a new hard engineered asset • The enhancement of existing hard engineered assets • the augmentation of the operation of an existing hard engineered asset A non-conventional scheme is any scheme that does not satisfy the definition above and incorporates green solutions and / or catchment	

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			solutions to deliver a requirement and deliver added natural capital value.	
1.3	Eligibility for incentive payment	Ensure UU is not incentivised for promoting schemes it would have promoted without the ODI	To be eligible a scheme must qualify as non-conventional under the definition provided under 1.1.2. Furthermore, a scheme must satisfy at least one of the two following requirements, each of which implies that UU would not be incentivised to promote it in the absence of the mechanism: • the scheme offers best value to customers because of the natural capital benefits covered by the ODI. In other words, without accounting for these benefits, the scheme would not be selected because it would not be the most cost-beneficial option. • the scheme is innovative, in the sense that it is not widely adopted across the industry as a solution to equivalent regulatory drivers, except where companies face similar incentives to do so (for example, an ODI to promote SUDs).	

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2. The Assessment of Best Value

Task number	Task title	Detail	Expectation	Auditor comment
2.1	Regulatory or statutory driver	Does the scheme have a regulatory driver or statutory requirement?	There should be a regulatory requirement or statutory driver for an intervention which provides the justification for investing in the scheme. These requirements should be documented, for example, as a requirement on the WINEP.	
2.2	Cost benefit analysis (demonstrating that schemes with a WFD improvement driver for investment on the WINEP are in customers' interest)	Evidence that schemes with a WFD improvement driver are on the WINEP have undergone Environment Agency cost benefit analysis to ensure they are value for money for customers	Schemes delivered which have a WINEP driver for WFD improvement undergo a joint cost benefit analysis with the Environment Agency, before they are included on the WINEP. Only those schemes which UU and the EA agree demonstrate value for customers are included for investment under these drivers on the WINEP. All schemes which make up the performance commitment are on the WINEP.	
2.3	Cost benefit analysis (comparison of the value of conventional and non-conventional schemes)	Is the solution that has been chosen the one that offers the best overall value in terms of scheme cost versus the natural capital benefits delivered?	The whole life cost assessment ("the cost") has consistently applied, following the same methodology for both the standard conventional solution and the alternative non-conventional. The natural capital value ("the benefit") has been consistently calculated using B£ST methodology for both the standard conventional solution and the alternative non-conventional.	

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			The best value solution has been identified as the solution where “the cost” minus “the benefit” is the smallest overall value i.e. it represents the best net value for the customer.	

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Appendix 5 – Atkins review of mains repair performance commitment

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This document and its contents have been prepared and are intended solely as information for United Utilities and use in relation to provide assurance on United Utilities Draft Determination response for the mains repair performance commitment.

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This document has 111 pages including the cover.

Document history

Revision	Purpose description	Origin-ated	Checked	Reviewed	Authorised	Date
Rev 1.0	First draft	DC				09 May 2019
Rev 1.1	Updated draft	DC				14 May 2019
Rev 1.2	Final document	DC				16 May 2019
Rev 1.2.1	Updated Final Document	DC			AH	22 May 2019

Client signoff

Client	United Utilities
Project	Mains Repair Performance Commitment
Job number	
Client signature / date	

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Contents

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Executive Summary

Following a review of the assumptions and evidence cited in the United Utilities Draft Determination Response Document (v_TA), the following conclusions have been reached;

a) A step change reduction in leakage reduction can be delivered through a number of interventions including mains replacement, pressure management and active leakage control/mains repairs. Of these interventions, United Utilities have significantly reduced the average zone night pressure (AZNP) in district meter area since the late 1990's and therefore there is minimal opportunity for further pressure optimisation in the undulating topography of a high proportion of the United Utilities network. In United Utilities' Draft Water Resource Management Plan, mains replacement schemes were not selected as the most cost-effective options for delivering the required step change reduction in leakage; whereas enhanced active leakage control with additional acoustic/noise loggers is forecast to deliver 97% (65/67Ml/d) of the originally proposed 15% leakage reduction, and 80% (73/91Mld) of the revised 20% leakage reduction. Given UU's leakage reduction strategy is predominantly based on increased active leakage control it is reasonable to assume that 67% of the total leakage reduction will be delivered as a result of increased numbers of mains repairs. Other companies will select a different mix of leakage reduction schemes dependent on their own historic, economic and environmental circumstances ie 'one size does not fit all'.
b) It is reasonable to assume that the number of proactive mains repairs undertaken by the company will increase as a result of implementation of an enhanced active leakage control regimen to deliver a step change in leakage reduction.
c) United Utilities' have followed a reasonable methodology in determining a revised performance commitment of 119 repairs/1000km/yr (flat profile) for AMP7 that is 4 repairs/1000km/yr (3.5%) higher than the average actual performance over the past five years (115 repairs/1000km/yr). In particular;
    I. the company will be undertaking a step change reduction in leakage over the AMP7 period predominantly driven by an enhanced active leakage control and asset repair strategy.
    II. The north-west has not experienced a significant period of freezing weather over the past five years and hence the recent historic average reflects relatively benign weather
d) Based on a review of PR19 submission data tables, United Utilities revised performance commitment of 119 repairs/1000km/yr is expected to still be upper quartile performance in 2024/5.

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1. Aim and Background

The aim of this document is to provide technical assurance services to United Utilities (UU) with respect to the relationship between mains repair activity levels and leakage levels.

This report will supplement the documentation that UUW will provide to Ofwat in response to the targets and comments about the mains repair performance commitment (PC) and outcome deliver incentive (ODI) in the Draft Determination (DD) received on 11th April 2019.

2. Methodology

The methodology followed in producing this report was as follows

2.1. Start-up meetings

Following receipt of the Draft Determination on 11th April 2019, start-up meetings were held on 24th and 30th April with Jon Latore, Mark Abbott, Tom Allen and Matt Holmes.

2.2. Document review

The following documents were reviewed:

i) IAP Response Document 1001 – Response to actions_Mainsrepairs
ii) DD_DraftResponse_v3 (9th May)
iii) DD_DraftResponse_TA.doc (15th May)
iv) DD_DraftResponse_TargetScenarios_v3b.doc (9th May)
v) Bursts_per_1000km_2.xls (9th May) and update (16th May)
vi) Review of United Utilities ELL Model 2016 – David Pearson Consultancy Ltd (September 2016)
vii) Publicly Water Company PR19 business plan data table submissions
viii) Minimum air temperature for the north west of England (2008-2019)

2.3. Clarifications and responses

Clarifications were sought from United Utilities on the methodology and historic data used to derive the revised proposed performance commitment of 119 mains repairs/1000km/year in the DD response.

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3. Commentary

3.1. United Utilities methodology

3.1.1. Selecting interventions to deliver leakage reduction

Following Ofwat's challenge to the company in their Initial Assessment of Plans (IAP) to increase the percentage reduction in leakage from 15% to 20% by 2025, United Utilities revisited their Economics of Balancing Supply and Demand (EBSD) model used in developing their Water Resource Management Plan (WRMP).

The EBSD contains a range of cost/benefit options using United Utilities data to deliver leakage reduction including mains replacement, pressure management and active leakage control/mains repairs. The Economic Level of Leakage inputs to the EBSD were independently reviewed and assured by David Pearson, an industry leakage expert in September 2016.

Of the leakage reduction interventions, United Utilities have significantly reduced the average zone night pressure (AZNP) in district meter area since the late 1990's and therefore there is minimal opportunity for further pressure optimisation especially considering the undulating topography of a high proportion of the United Utilities network, especially in the north and east of the Greater Manchester area and the East Lancashire towns.

Neither in United Utilities' Draft nor Revised Draft Water Resource Management Plan have mains replacement schemes been selected as the most cost-effective options for delivering the required step change reduction in leakage. This may be because of a) the high unit cost of construction (especially fixed costs for site establishment) for mains replacement associated with 'hot spotting' strategies and b) the lack of industry evidence to show that mains replacement eliminates leakage from the replaced pipes, ferules and fittings.

The selected options are primarily focused on enhanced active leakage control with additional acoustic/noise loggers is forecast to deliver 97% (65/67Ml/d) of the originally proposed 15% leakage reduction, and 80% (73/91Mld) of the revised 20% leakage reduction target (see table 1 below)

Option IDs	Option description and category	Estimated leakage reduction (Ml/d)	Rationale for selection
WR500a to c	Enhanced Active Leakage Control "find and fix"	28	Selected for reliability to deliver AMP7 commitment
WR500f to j	Acoustic/noise loggers	45	Innovative technique to deliver AMP7 commitment
WR503, WR907e and WR912	Tackling customer-side leakage (reviewing our supply pipe policy and carrying our 3rd party pilots with Invenio and Teccura)	11	Pilots to test reliability for future delivery
WR514, WR515 and WR517	New approaches and systems thinking (incorporating DMA splitting, temporary flow logging, upstream tile splitting and pressure management and optimisation)	7	Innovative technique to deliver AMP7 commitment
	TOTAL	91	

Table 1 – United Utilities selected options to deliver 20% leakage reduction in AMP7

Other companies will select a different mix of leakage reduction schemes dependent on their own historic, economic and environmental circumstances ie 'one size does not fit all'.

3.1.2. Target setting model

In calculating the proposed performance commitment of 119 repairs/1000km/year, United Utilities have used data and independently assured assumptions about the contribution of mains repairs (vs repairs to other network assets such as service pipes and fittings) to delivering the total leakage reduction volumes in the

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EBSD model. The contribution of mains repairs has been assessed to be 67% of the total, which is a reasonable assumption, leading to an assessed average 16 mains repairs/1000km/yr per 1Ml/d saving.

In year 1 of AMP7 there is a leakage reduction target of 9Ml/d. is the Company has assumed that additional active leakage detection and mains repairs will deliver 67% of the required leakage reductionleading to 6Ml/d of leakage saving. 16 mains repairs multiplied by 6 Ml/d gives 96 additional mains repairs; dividing by 42,800km gives a predicted additional 2.26 repairs/1000km (rounded to 2.3 in the table below).

Using the leakage reduction profile to achieve 20% leakage reduction by 2025, the number of additional repairs predicted by the Company is as follows:

	2020/1	2021/2	2022/3	2023/4	2024/5
Leakage reduction (Ml/d)	-9.0	-8.7	-13.8	-29.7	-30.0
Additional mains repairs (No.)	2.3	2.2	3.5	7.4	7.5

The Company had a choice of baseline performance from which to apply the additional mains repairs;

a) Use the long-term underlying trend line, based on actual performance from 1990-2019

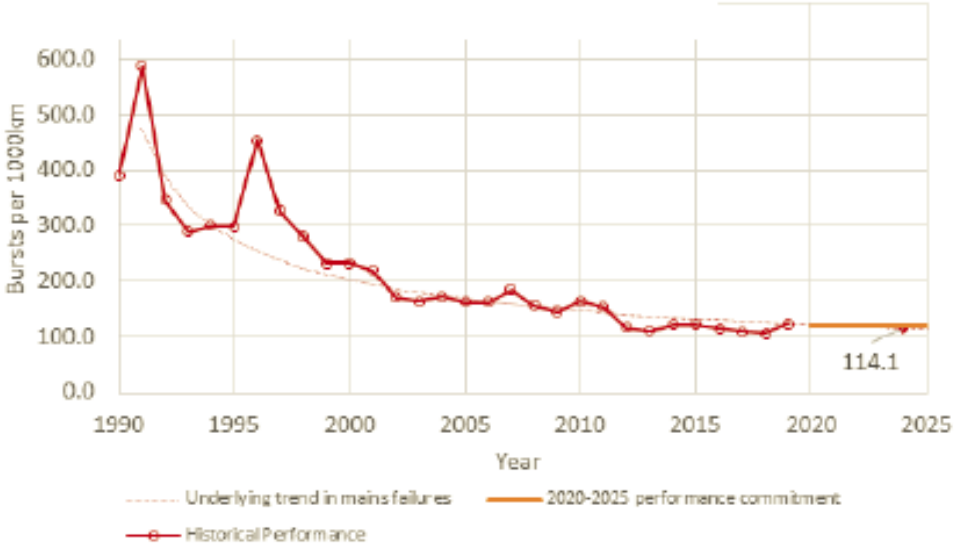

Figure 1 UU historic performance for the mains repairs PC

	2020/1	2021/2	2022/3	2023/4	2024/5
Underlying performance trend line	119.3	117.5	115.8	114.1	112.5
Additional mains repairs	2.3	2.2	3.5	7.4	7.5
Total predicted mains repairs	121.6	119.7	119.2*	121.6*	120.0

Average predicted over AMP7 = 120.4

*NB rounding applied

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b) Use more recent performance data – 7 years average from 2011

	2020/1	2021/2	2022/3	2023/4	2024/5
Underlying performance trend line	115	115	115	115	115
Additional mains repairs	2.3	2.2	3.5	7.4	7.5
Total predicted mains repairs	117.3	117.2	118.5	122.4	122.5

Average predicted over AMP7 = 119.6

The company has selected b) as the baseline as it is the slightly lower of the two historic datasets, which is a reasonable assumption based upon recent performance.

It should be noted that the company are taking on some risk in adopting the recent performance trend as the baseline, because there has only been one month (March 2013) where the mean monthly minimum overnight temperature was less than zero (-0.7c) and hence there has not been a particularly cold winter in these five years.

The company has taken further risk by rounding down from 119.6 to the proposed target of 119/1000km/yr.

3.2. Industry comparison

A review of business plan data tables shows that four WaSCs (THM, UUW, SVT and YKS) proposed an increase in repairs/1000km from performance reported over the first three years (2015/16 – 2017/18) of AMP6 (figure **1**). Three WaSCs (UUW, SVT and HAF) proposed a flat profile of mains repairs/1000km from AMP7 until AMP10, despite also proposing a continuing (generally a straight line) reduction in leakage over the same time period (figure **5**). THM proposes a flat profile of mains repairs during AMP7.

Two Water Only Companies proposed a flat profile of mains repairs/1000km from AMP7 until AMP10 (AFF, SEW), and another two (BRI, SSF) proposed a flat profile of mains repairs/1000km through AMP7 only.

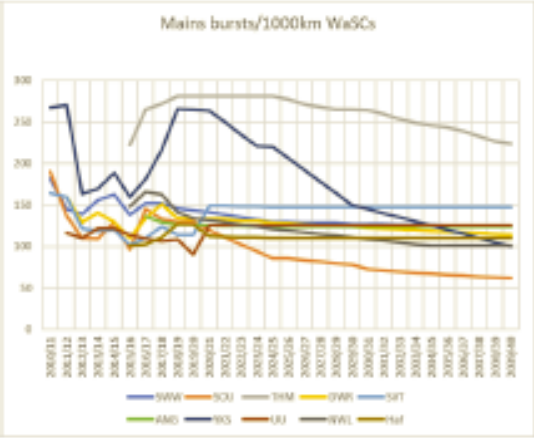

Figure 2 – Water and Sewerage companies

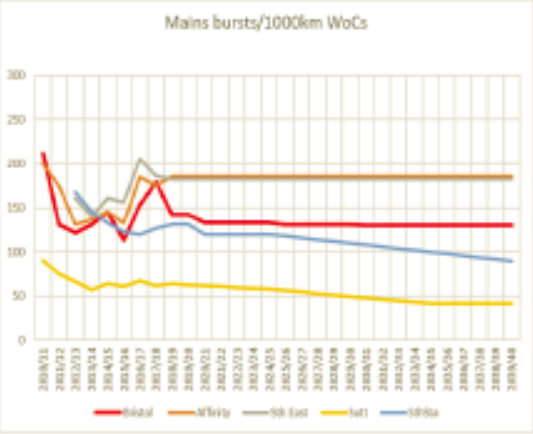

Figure 3 – Water only companies

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Analysing the range of mains burst PC target for 2025 from all publicly available business plan submissions, correcting UU's target to 119/1000km/yr, shows that 119 is still upper quartile performance.

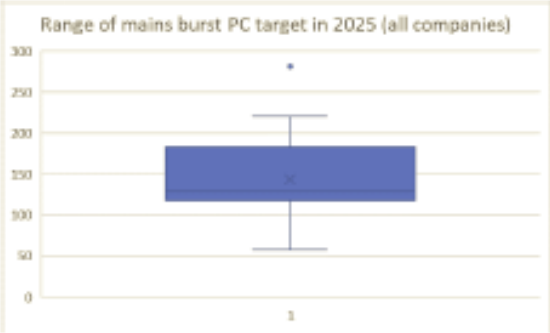

Figure 4 – 'box and whisker' graph of proposed 2025 targets for the mains repair PC

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4. Conclusion

As a result of the assurance work undertaken, the following conclusions have been reached;

a) A step change reduction in leakage reduction can be delivered through a number of interventions including mains replacement, pressure management and active leakage control/mains repairs. Of these interventions, United Utilities have significantly reduced the average zone night pressure (AZNP) in district meter area since the late 1990's and therefore there is minimal opportunity for further pressure optimisation in the undulating topography of a high proportion of the United Utilities network. In United Utilities' Draft Water Resource Management Plan, mains replacement schemes were not selected as the most cost-effective options for delivering the required step change reduction in leakage; whereas enhanced active leakage control with additional acoustic/noise loggers is forecast to deliver 97% (65/67Ml/d) of the originally proposed 15% leakage reduction, and 80% (73/91Mld) of the revised 20% leakage reduction. Given UU's leakage reduction strategy is predominantly based on increased active leakage control it is reasonable to assume that 67% of the total leakage reduction will be delivered as a result of increased numbers of mains repairs. Other companies will select a different mix of leakage reduction schemes dependent on their own historic, economic and environmental circumstances ie 'one size does not fit all'.

b) It is reasonable to assume that the number of proactive mains repairs undertaken by the company will increase as a result of implementation of an enhanced active leakage control regimen to deliver a step change in leakage reduction.

c) United Utilities' have followed a reasonable methodology in determining a revised performance commitment of 119 repairs/1000km/yr (flat profile) for AMP7 that is 4 repairs/1000km/yr (3.5%) higher than the average actual performance over the past five years (115 repairs/1000km/yr). In particular;

   I. the company will be undertaking a step change reduction in leakage over the AMP7 period predominantly driven by an enhanced active leakage control and asset repair strategy.

   II. The north-west has not experienced a significant period of freezing weather over the past five years and hence the recent historic average reflects relatively benign weather

d) Based on a review of PR19 submission data tables, United Utilities revised performance commitment of 119 repairs/1000km/yr is expected to still be upper quartile performance in 2024/5.

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