Appendix A30

Our approach to asset health outcomes

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1. Our approach to asset health

1.1 Introduction to asset health

Asset health is fundamental to our operations. As a blanket term, it is what ensures that we are able to supply water to customers at the quality and reliability they expect. Our network of pipes, pumping stations and treatment works has been in operation for over 160 years and it is our most important duty to ensure that this continues to be the case, adapting to meet customer's changing needs over time, for many generations to come.

Asset health is all encompassing. From our broad range of performance commitments, to our plans for enhancement and capital maintenance, to our day to day operations. Asset health is impacted by everything that we do, including the high level resilience of the company and our ability to finance our operations and maintenance programmes.

For this reason, it is quite difficult to summarise where asset health features in our plan, as our whole plan is designed to deliver sustainable asset health into the future as well as the other specific, shorter term, outcomes that feature. However, this appendix is intended to explore those specific areas of performance commitments, incentives and customer engagement that relate to asset health outcomes and how they have been designed.

1.2 Our asset health performance commitments at PR14

At PR14 we broadly continued with the historical approach to asset health that had been used by Ofwat for several years previously. We retained most of the 'serviceability' (using old terminology) metrics for infrastructure and non-infrastructure assets, rebased to the latest performance information and with more challenging control limits. Additionally we made our asset health approach mechanistic, based on a rolling three year average of performance and defined thresholds for when asset health performance indicates a deteriorating asset base.

The metrics currently in use do have good links to the asset base, and they are measuring quite technical aspects of performance related to quality, reliability and condition. However they are not metrics which are easily understood by customers, as for the most part they do not directly relate to aspects of service that customers see on a day to day basis.

We are supportive therefore, of the guidance that Ofwat provided in terms of asset health outcomes. We think it is the right thing to do, for improved transparency and to help make the link stronger with customers, to ensure we engage on the subject and have metrics which are understandable on a standalone basis.

We have decided to discontinue the majority of AMP6 asset health measures that we use in our composite performance commitments, for the following reasons:

Interruptions >12 hours: The service consequences that this measure reflects are fully covered by the industry common supply interruptions measure.

Low pressure: This metric records the number of persistent low pressure issues that we have been unable to resolve during the report year. For a considerable time it has been at a level of one property, which we are currently investigating. The link to asset condition is relatively weak, as persistent low pressure is normally a result of supply pipe arrangements at individual or groups of properties. We also have statutory duties to resolve low pressure problems for customers which negate the need to have it as a metric given our very high level of performance over a long period of time.

Discolouration contacts per 1000 customers: The service consequences that this measure reflects are fully covered by our performance commitment for customer contact about water quality.

Turbidity, iron and manganese non-compliance: This metric measured three specific components of the regulatory sample programme which are linked to pipe condition. As these components are also included in the new compliance risk index metric, this is fully covered.

Water treatment works coliform non-compliance: This metric was intended to indicate the asset health of water treatment works, which is now included as a component of the compliance risk index, so is fully covered.

Water treatment works turbidity non-compliance: This metric was intended to indicate the asset health of water treatment works, which is now included as a component of the compliance risk index, so is fully covered.

Service reservoir non-compliance: This metric was intended to indicate the asset health of service reservoirs, which is now included as a component of the compliance risk index, so is fully covered.

Enforcement actions for microbiological parameters: This metric was intended to indicate where we have had regulatory intervention to ensure we meet standards for water quality at our works. Enforcement is part of the compliance risk index methodology, so is fully covered.

Unplanned maintenance: This metric was intended to reflect the condition of non-infrastructure assets by recording the number of equipment failures that occur. The new unplanned outage metric is by far a better indicator of reliability because it measures, at a higher level, the overall performance of a works in terms of its availability as a whole asset. Therefore this metric has been superceded.

1.3 Our asset health performance commitments for PR19

We have taken the opportunity for PR19 to really consider how we can best represent asset health outcomes in our plan. We welcomed the opportunity to participate in the industry discussions, facilitated by Ofwat, about asset health, and to express our views in the Water 2020 methodology consultation process.

Asset health is fundamentally rooted in asset condition and has close links to resilience. Assets in good condition can perform reliably and deliver good service, and in conjunction with the right operational strategy and level of resilience will deliver the overall service that customers expect.

For this reason we are highly supportive of the choice of common asset health performance commitments that Ofwat has selected.

Mains bursts

For infrastructure assets, mains bursts is a simple measure that has direct links to the long term condition of the asset base and, by virtue of a burst often being very visible, is something that customers can easily relate to.

Mains bursts, as an asset health theme, is primarily influenced by our network renewal programme over the long term. We undertake a level of network renewal which seeks to maintain a broadly stable overall condition over a greater than 100 year time frame. This ensures a rate of renewal that broadly matches the aging rate of the assets, and importantly also ensures a steady level of expenditure that contributes to stable bills and regular workloads for our resources to deliver, over a long period. This is what asset health really means, to us and to customers, and our plan delivers this objective.

We also ensure in our day to day asset management activity that our long term maintenance programme is able to react to short term information. For example we carry out pipe condition tests, and monitor burst rates geographically, to enable us to target those areas of the network that might be deteriorating at faster rate than others, regardless of age, which factors such as ground conditions and legacy material quality can influence. We can also make operational changes, such as undertaking pressure and surge management, to reduce the risk of bursts occurring. Finally, we can improve our knowledge by collecting more data, such as through strategic logging and building up our live network data.

Despite our broad range of maintenance and resilience activity, mains bursts is still heavily influenced by external conditions. The Beast from the East event in March 2018 caused our burst rate to increase by 27% because of the impact that the rapid freeze thaw had on our pipes. Many companies were affected to a similar extent and the industry upper quartile for that year jumped by 11% from 2016/17. We fully recognise however, that the ability of the asset base to withstand external impacts such as this is also a function of condition,

and should certainly be a factor in determining whether our assets are healthy and resilient.

As external conditions can cause a high degree of very short term volatility in bursts, whereas in contrast our maintenance programme is designed to maintain asset condition over a much longer time frame, we think that a three year average is appropriate to balance these competing drivers of performance. We have therefore proposed this in our mains bursts definition, which is a slight departure from the initial common definition for the industry, but one which is consistent with the approach adopted for leakage and water consumption.

We have set a performance commitment which is at the average of the industry upper quartile and our own performance over a number of years. Our network maintenance programme is designed to maintain a stable level of bursts over the long term. Our performance commitment reflects this, as it would not be appropriate to install a target which our planned level of renewals, which has been accepted by customers in the context of our entire expenditure plan and bill level, cannot achieve.

In valuing the incentive for this measure we have combined several willingness to pay data points together. A burst main has the potential to cause supply interruptions, water quality contact, traffic disruption, low pressures and localised flooding, which we asked customers about in our research. These are all areas that customers care about, and which can improve as well as deteriorate, therefore it is appropriate to include both underperformance and outperformance incentives for this measure. We have however ensured that customers are protected, through the use of the three year average to ensure weather volatility cannot cause excessive outperformance payments, and by installing a cap at the 5 percentile.

Unplanned outage

On the non-infrastructure side, asset health has always been more difficult to measure. However we think that the chosen measure, unplanned outage, is a really good indicator of overall asset condition, as it will broadly reflect the level of reliability of the water supply and treatment assets which make up the bulk of the non-infrastructure asset base.

Unplanned outage is a more complex measure, as it is expressed as a percentage of our total peak week production capacity. As per the common methodology that we will adopt, this requires a series of data sets to ensure the reporting is robust.

Unplanned outage, as an asset health theme, and like bursts, is primarily influenced by our asset maintenance programme. We undertake a wide range of maintenance activity on our water production assets, which seeks to maintain their level of performance, linking to risk and resilience, over the long term. As with the network assets, a steady rate of refurbishment results in broadly stable risk profile over time.

External conditions do not have a significant impact on this measure, as for the most part our water production assets are not sensitive to weather impacts unless they are

extremely severe. The methodology provides for a 24 hour buffer zone and allows for exlusions related to raw water quality deterioration. These are sufficient to allow for any externalities that could reasonably occur and we therefore do not think it is necessary to include any deadbands or three year averages on this measure.

The methodology for this measure is new, and we still have improvements to make to our data and processes to become fully compliant. The measure was available for the industry for the first time in 2017/18 and we have set our performance commitment at the upper quartile level, which is over a 10% improvement from our current position.

This incentive however was difficult to value, because we could not ask customers directly about unplanned outage. We did however ask them about service restrictions. We think it is appropriate to use our data on service restrictions as a proxy, because long term changes to the reliability of water production assets could manifest in changes to the risk profile of service restrictions and the supply demand balance. This measure has a natural outperformance cap, at zero percent, and as our target is already very close to this level it is not necessary to have an outperformance payment cap on this measure.

Other performance commitments

The two common measures above are the best measures for direct asset health as they are both closely related to asset condition, over the long term. We considered the list of other potential asset health measures published by Ofwat in it's methodology, however these all exhibit the same problem as our PR14 asset health measures in that they are quite narrowly focussed and technical in nature. The two common measures above are both relatively broad in comparison, in other words they cover a great of the asset base relatively easily. For these reasons we have chosen not to adopt any other direct asset health measures.

However we believe that several of our other performance commitments have links to asset heath, so we have designated them as 'part' asset health measures. This means that the measure can be influenced by both short term operational practices and long term asset health. These measures are as follows:

Leakage: Leaks result from an aged network developing minor condition deterioration over time. We normally target these via leak detection activity and burst repairs, which acts to restore a small portion of the pipe to better condition. We also use leak data to better target mains renewal activity, and mains renewal activity undertaken because of general poor condition would also be expected to remove some leakage. Therefore there is a link between the activities we undertake to detect and repair leakage, with the overall condition of our network and asset health.

Compliance risk index: CRI measures water quality compliance, and contains components which have a direct link to the performance of treatment works and service reservoir assets. A deterioration in these assets' condition

can result in water quality issues and failures over time, and therefore CRI is also an asset health indicator.

Supply interruptions: This is a measure of reliability of supply, as perceived by customers at their taps. A supply interruption is caused by operational events, which can have a cause rooted in asset deterioration (commonly a burst main but also potentially booster asset or service reservoir asset failure). Supply interruptions is a less direct measure of asset health than the other measures, however over the long term a systematic deterioration in asset health could manifest as worsening supply interruption performance.

Risk of severe restrictions in a drought: This is primarily a resilience measure, but does also have a link to long term asset health. This is because for us to be resilient to drought conditions, we also need to ensure our water production assets can operate reliably when they are needed, and we need to maintain a broad range of sources available so that we can respond effectively to localised drought issues. The activities we undertake in our maintenance programme, and for our water resources management plan help mitigate risk of restrictions and help maintain asset health.

Customer contact about water quality: This measure reacts to both short term and long term water quality causes in the network. In the short term, it is primarily driven by acute changes, such as bursts, which cause pressure and flow surges and allow sediments to be lifted, causing discolouration. However these sediments are a long term issue, and they relate to the condition of the pipe network (in terms of corrosion) and to the performance of our water production assets (in terms of final water quality). Our cost adjustment claim discusses the long term link between our treatment works, the build up of sediments and the hotspots of contact. Over time, improvements in our treatment works and renewal of deteriorated network assets will seek to improve this metric, and therefore is also an asset health indicator.

We think that these performance commitments cover a wide range of asset health themes that customers can easily understand and directly relate to, whilst avoiding overly technical metrics similar to those used in the past.

Using these metrics as indicators of asset health maintains a close link to service, and as the majority of the measures above are already financially incentivised there is a also a long term incentive on asset health which arises by default. The performance commitment levels for all of the above measures include a significant level of stretch, which won't be achieved if we don't ensure asset health is appropriately maintained.

1.4 Customer engagement on asset health

Our engagement with customers has included asset health outcomes from the outset, however we have avoided over-using the term to ensure customers can relate to the ideas we need to explore with them without excessive technical language.

Throughout our engagement, customers have recognised that the long term stability of our service and asset base is important, and these discussions have been central to the whole of our engagement on our future plans, including our cost adjustment claim.

Throughout our whole engagement journey customers have also expressed a consistent view that we should provide a careful balance between ensuring affordabe, stable bills over time, but that our assets are 'future-proofed' to ensure that we can always meet demand for water in the face of the challenges we face and their service expectations. For example:

- in our up-front Foundations priroity engagement customers spontaneously expressed a strong desire for us to invest in new technology to ensure long term resilience and there was a clear expectations for us commit to significant infrastructure investment, partiualrly in the face of the challenges we face around leakage and climate change. However, customers were also clear that we needed to balance the affordability of bills of their bills vs the long-term resilience of our assets in order to meet demand over the next 10 years and beyond;
- in our Water Resource Management Plan engagement we engaged with customers at workshops around which demand- and-supply side options they prefered. Customer showed a consistent priroty towards demand management options and pointed to the fact that we should invest first in maintinaing and improving our current assets (e.g to reduce pipe leakage) before looking at supply side options. This was further evidenced in the on-line survey where the vast majority also thought that we should run our two large water treatment works, instead of building one 'mega-works' as this provided better resilience to ensure we always meet demand for water in the long-term;
- in our willingness to pay research, reducing instances of flooding from a burst pipe and leakage received high valuations showing that customers value us maintaining our assets to avoid service failures;
- in our engagement around the upgrading of our two water treatment works in the South Staffs region (to support our cost adjustment claim) there was recongnition that assets need to be upgraded over time to improve the service – eg "you need to continually invest in infrastructure to ensure best practice and continuous improvement" – SSW customer
- in our business plan acceptability testing qualitaitive groups there was clear evidence that customers wanted to understand the 10 year outlook in terms of the impact on their bills and that we were not going to hit them with a large bill increase in 2025 to deliver our plans to improve our assets and deliver improvements in service.

1.5 Financial incentives on asset health

As our asset health outcomes are integrated with our outcomes package on the whole, reflecting both long term asset health and short term service impacts together, then it is not possible to specify exactly what the asset health component of our incentives package is. However, we can determine the total incentive attached to all of our asset health related performance commitments and express that separately from the overall package.

On the whole our asset health designated outcomes form the vast majority of our overall incentives package, as it is broadly the wholesale water supply metrics that attract the most value in our package.

		2020-21	2021-22	2022-23	2023-24	2024-25	Average
% of RoRE	10%	-0.9%	-0.9%	-0.9%	-1.0%	-1.1%	-1.0%
% of RoRE	50%	0.1%	0.1%	0.0%	0.0%	-0.1%	0.0%
% of RoRE	90%	1.3%	1.2%	1.1%	1.0%	0.9%	1.1%

The following table shows the balance across our designated asset health measures.

PC name	2020-21	2021-22	2022-23	2023-24	2024-25	2020-21	2021-22	2022-23	2023-24	2024-25
Leakage South Staffs region	-0.39	-0.45	-0.56	-0.72	-0.92	1.18	1.20	1.23	1.26	1.28
Leakage Cambridge region	-0.32	-0.32	-0.46	-0.59	-0.76	0.88	0.88	0.91	0.93	0.94
Compliance risk index	-0.67	-0.67	-0.67	-0.67	-0.67	0.00	0.00	0.00	0.00	0.00
Supply interruptions	-0.94	-0.97	-0.99	-1.01	-1.04	0.79	0.76	0.73	0.70	0.67
Mains bursts	-0.44	-0.44	-0.44	-0.44	-0.44	0.87	0.87	0.87	0.87	0.87
Unplanned outage	-0.19	-0.19	-0.19	-0.19	-0.19	0.65	0.76	0.76	0.76	0.76
Customer contact about water quality	-0.71	-0.71	-0.71	-0.71	-0.71	0.94	0.94	0.94	0.94	0.94

The outperformance payments should be viewed in the context of the stretching targets that we have adopted. We will only achieve outperformance payments if we go beyond these stretching targets. No outperformance payment applies to the compliance risk index measure.

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