

Ref 5.2

PR19 Performance Commitments

September 2018

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1. Summary

This document describes the approach we have taken and the information we have used in arriving at our Measures of Success/performance commitments (MOS) that are set out in our plan. A summary of the MOSs and our targets for each measure are set out below.

Clean, safe water for all		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 Target
Tap Water Quality Compliance Risk Index (Wt1)	The DWI's Compliance Risk Index	-	-	0	0	0
Water supply interruptions (Wt2)	Supply interruptions greater than three hours (expressed in minutes per property).	43.3	12	8	6	2
Acceptability of drinking water (Wt3)	The number of contacts received from customers per 1,000 population served.	2.79	2.4	2	1.75	1
Water mains bursts (Wt4)	The number of bursts of water mains per 1000km.	151.5	133.2	128.4	123.5	104.5
Water process unplanned outages (Wt5)	Total unplanned outage as a proportion of the company's total production capacity (%).	1.57%	-	0% change from 2019/20	0% change	0% change
Tap Water Quality Event Risk Index (Wt6)	DWI's Event Risk Index	56.042	-	UQ	UQ	UQ
Water Catchments improved (Wt7)	The number of our Water Treatment Works with catchments designated as requiring Safeguard Zones under the Water Framework Directive	1	23	18	13	5

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Clean, safe water for all		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 Target
Lead pipe replacement (Wt8)	Number of lead supply and communication pipes replaced (cumulative over an AMP).	30	1,800	7,000	7,000	50,000

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Safeguard our environment for future generations		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Water and Wastewater Treatment works compliance (En1)	Percentage of sewage treatment works with numeric limits, which were compliant	96.7%	100%	100%	100%	100%
Wastewater Treatment works look-up table compliance (En2)	Percentage of sewage treatment works with numeric limits, which were compliant with look-up table limits	99.46%	100%	100%	100%	100%
Pollution incidents from Wastewater (En3)	Category 1 - 3 pollution incidents, as reported to EA and NRW per 10,000km	28	29	24	21	10
Leakage (En4)	Leakage in mega-litres per day (Ml/d). Three-year average.	176	171	148	128	75
Per Capita Consumption (En5)	Average water use by each person in a residential property (litres per head per day). Three-year average.	144	145	139	136	100
km of river improved (En6)	The length (in km) of river improved as a	36	562	418	128	N/A

Safeguard our environment for future generations

		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Bioresources product quality (En7)	result of Welsh Water action (cumulative within an AMP). The percentage of Waste Water sludge producing an enhanced Biosolids Assurance Scheme (BAS) accredited Biosolids product.	60.2%	95%	97.3%	100%	100%
Bioresources disposal compliance (En8)	The percentage of sludge disposed of satisfactorily.	100%	100%	100%	100%	100%

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Personal service that's right for you		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Household customer satisfaction (C-MeX) (Sv1)	Customer Experience Measure of satisfaction	-	-	UQ	UQ	UQ
Developer services customer satisfaction (D-MeX) (Sv2)	Developer Services Experience Measure of satisfaction	-	-	UQ	UQ	UQ
Customer trust (Sv3)	Trust score from CCWater survey	8.15	8.04	UQ	UQ	UQ
Business Customer Satisfaction (Sv4)	The average customer score out of 5 on annual business customer satisfaction surveys.	4.37	4.5	4.5	4.5	4.5
Vulnerable customers on priority services register (Sv5)	The number of customers who are registered on our Priority Services Register.	26,000	52,000	100,000	105,000	127,000
Customers on Welsh Language register (Sv6)	Number of customers registered for Welsh language services	6,430	10,000	25,000	30,000	50,000

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Put things right if they go wrong		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Sewer flooding on customer property (internal) (Rt1)	The number of internal flooding incidents per year, including severe weather events	297	300	273	252	100
Sewer flooding on customer property (external) (Rt2)	The number of external flooding incidents per year within property curtilage.	3929	4121	3800	3420	2500
Sewer collapses (Rt3)	The number of collapses on sewers per 1000km.	7.5	7.5	0% change from 2019/20	0% change	0% change
Total complaints (Rt4)	The number of written and telephone complaints per 10,000 customers.	84	76	60	54	35
Worst served customer for water service (Rt5)	The number of customers that have had repeat incidents of low pressure or interruptions to water supply.	-	1131	871	670	0
Worst served customer for wastewater service (Rt6)	The number of properties at risk of repeat Internal or Serious External Flooding.	-	368	359	270	100

Fair bills for everyone		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Change in average household bill (BI1)	The percentage annual increase in the average household bill since 2019/20.	<RPI	<RPI	<CPIH	=CPIH	=CPIH
Vulnerable customers on social tariffs (BI2)	The unique number of customers who are benefiting from our social tariffs.	90,259	133,100	148,000	148,000	148,000
Company level of bad debt (BI3)	The annual doubtful debt charge as a proportion of total revenue.	2.90%	2.50%	2.00%	2.00%	2.00%
Unbilled properties (BI4)	The percentage of connected properties that are void.	4.30%	4.00%	3.50%	3.50%	3.50%
Financial resilience (BI5)	“High” means an A-grade rating for senior bonds from two of the three main rating agencies.	High	High	High	High	High

Create a better future for all our communities		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Risk of severe restrictions in a drought (Ft1)	Percentage of the population the company serves, that would experience severe restrictions in a 1-in-200 year drought.	4%	4%	0%	0%	0%
Risk of sewer flooding in a severe storm (Ft2)	Percentage of population at risk of sewer flooding in a 1-in-50 year storm.	3.63%	-	5% reduction from baseline	10% reduction from baseline	30% reduction from baseline
Energy self-sufficiency (Ft3)	Electricity generated and gas injected to grid as a percentage of all electricity and gas consumed (gas expressed as an electricity equivalent).	20%	26%	35%	50%	100%
Surface water removed from sewers (Ft4)	The volume of surface water removed from the sewers (measured as roof equivalents)	15,097	25,000	47,000	94,000	400,000
Asset Resilience (reservoirs) (Ft5)	Percentage of critical assets that are resilient against a set of criteria.	-	92.2%	95.5%	97%	100%
Asset Resilience (water network+ above ground) (Ft6)	Percentage of critical assets that are resilient against a set of criteria.	-	84.0%	86.5%	90.5%	100%
Asset Resilience (water network+ below ground) (Ft7)	Percentage of critical assets that are resilient against a set of criteria.	-	47.0%	56.0%	67%	100%
Asset Resilience (waste network + above ground) (Ft8)	Percentage of critical assets that are resilient against a set of criteria.	-	77.7%	80.0%	85%	100%

Create a better future for all our communities		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Asset Resilience (waste network + below ground) (Ft9)	Percentage of critical assets that are resilient against a set of criteria.	-	28.3%	45%	60%	100%
Education participation (Ft10)	The total number of children and adults who have participated in educational activities.	62,000	67,000	75,000	85,000	85,000
Visitors to recreational facilities (Ft11)	The number of visitors to our recreational sites across Wales.	450,000	480,000	830,000	880,000	1,000,000

	Colleague Promises	2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
RIDDOR injuries (Co1)	The number of RIDDOR injuries recorded per year.	14	10	5	3	0
Employee training and expertise (Co2)	The percentage of our employees who are evaluated as having the necessary skills, experience and knowledge to carry out their specific role safely.	82%	95%	95%	95%	95%
Employee Engagement (Co3)	ORC (an external company) calculate the Engagement Index based on the responses to a standard set of questions against the themes of Say, Stay and Strive.	80%	80%	80%	80%	80%

2. How we determined our Measures of Success (MOS) or Performance Commitments (PCs)

In arriving at our final suite of Measures of Successes (MOS), we considered the following areas:

- The views of customers
- Our current MOSs
- Our long-term goals as set out in Welsh Water 2050
- Ofwat's PR19 Methodology requirements
- Welsh Government policy, including the Water Strategy for Wales, the Strategic Priorities and Objectives Statement (SPS) and the Well-being of Future Generations (Wales) Act 2015.

For each of the areas, detail of the work we have undertaken and summaries of our conclusions are set out below.

2.1 The views of customers

Developing the suite of performance measures to include in our plan has been an iterative process using a wide range of data sources. We undertook a triangulation exercise to identify the issues that customers think are the most important for us to manage. This pulled on a number of data sets, as identified in the following table, and weighted these evidence sources to provide a prioritised list of customer priorities. The full report of our Phase 1 triangulation process is found in our supporting document 1.1K PR19 Customer Engagement: Phase 1 triangulation of priorities.

Information type	Information source
Historical Performance Data	<ul style="list-style-type: none"> • DCWW PR14 research • AMP6 Performance against FD14 PCs • AMP6 Performance on other metrics • AMP6 Performance Compared to industry • AMP6 PCs for other companies
Continuous Engagement	<ul style="list-style-type: none"> • Non-household Survey • Rant and Rave • Trust Tracker • Written Complaints • Phone Contacts • Phone Complaints • RoV Consultations
Qualitative Primary Research	<ul style="list-style-type: none"> • PR19 Primary qualitative research • Performance Measures research
Other industry Research (secondary research)	<ul style="list-style-type: none"> • CC Water research

Customer priorities

Customer priorities identified from the triangulation exercise are shown below and we have identified how these priorities have been reflected in our PR19 Measures of Success.

Category	Priority	Included in PR19?	Mapping to PR19 measures or rationale for exclusion
Affordability concerns		✓	Change in average household bill (BI1); Vulnerable customers on social tariffs (BI2); Company level of bad debt (BI3)
Supply interruptions		✓	Water supply interruptions (Wt2)
Water Quality		✓	Tap Water Quality Compliance Risk Index (Wt1); Tap Water Quality Event Risk Index (Wt6)
Sewer flooding/collapses		✓	Sewer flooding on customer property (internal) (Rt1); Sewer flooding on customer property (external) (Rt2); Sewer collapses (Rt3)
Leakage		✓	Leakage (En4)
Water Pressure		✓	Worst served customers for water service (Rt5)
Metering		X	Customers have told us that they do not want to see compulsory metering so an incentive about the number of meters installed would be inappropriate
Community/partnerships		✓	Education participation (Ft10); Visitors to recreational facilities (Ft11)
Water consumption		✓	Per capita consumption (En5)
Pollution incidents		✓	Pollution incidents from wastewater (En3)
Security of Supply		✓	Risk of severe restrictions in a drought (Ft1)
Customer Satisfaction		✓	Household customer satisfaction (Sv1) Business customer satisfaction (Sv4)
Specific customer groups		✓	Worst served customers for water service (Rt5); Worst served customers for water service (Rt6); Vulnerable customers on priority services register (Sv5)
Asset health - wastewater		✓	Sewer collapses (Rt3)
Environmental		✓	km of river improved (En6)
Customer awareness		✓	Community education (Ft10)
Resilience		✓	Risk of severe restrictions in a drought (Ft1); Risk of sewer flooding in a severe storm (Ft2); Asset resilience (impounding reservoirs) (Ft5); Asset resilience (water network + above ground assets) (Ft6); Asset resilience (water network + below ground assets) (Ft7); Asset resilience (wastewater network + above ground assets) (Ft8); Asset resilience (wastewater network + below ground assets) (Ft9)
Energy/emissions		✓	Energy self-sufficiency (Ft3)
Supply restrictions		✓	Risk of severe restrictions in a drought (Ft1)
Asset health - water		✓	Water mains bursts (Wt4); Water process unplanned outages (Wt5)
Water resources and abstraction		X	These are legal obligations addressed through the Water Resources Management Plan
Sustainability/innovation		X	These are general themes which underpin our Business Plan and considered difficult to measure with specific performance commitments
Sludge		✓	Bioresources product quality (En7); Bioresources disposal compliance (En8)
Waste disposal		✓	
SEMD		X	These are legal obligations
Biodiversity/SSSIs		X	These are legal obligations

Catchment Management		✓	Water catchments improved (Wt7)
Health & Safety		✓	Reportable injuries (Co1)

2.2 Our current Measures of Success /Performance Commitments

The following table sets out our PR14 Measures of Success and how these have been adapted into our PR19 suite.

Measure	Included in PR19?	Mapping to PR19 measures or rationale for exclusion
A1: Safety of drinking water – mean zonal compliance	✓	Mean zonal compliance is being phased out within the industry so we have replaced this measure with the two new DWI metrics. Tap water quality compliance risk index (Wt1) / Tap water quality event risk index (Wt6)
A2: Customer acceptability (drinking water) - contacts per 1,000 population	✓	We have made a minor change to this definition to exclude contacts about problems on a customer's own pipework, which are out of our control. Acceptability of drinking water (Wt3)
A3: Reliability of supply - minutes lost per property per year	✓	This measure remains and is unchanged. Water supply interruptions (Wt2)
B1: Abstraction for water for use - % compliance with abstraction licences, as regulated by NRW	x	Performance has been 100% for a number of years and is reported to NRW.
B2: Treating used water - % compliance of WwTW	✓	This measure has been slightly altered to comply with the Ofwat common definition. We have also included a second more focused compliance measure. Water and wastewater treatment works compliance (En1) / Wastewater treatment works look-up table compliance (En2)
B3: Preventing pollution - number of incidents	✓	This is now only the incidents relating to wastewater assets, as required by the common definition. Pollution incidents from wastewater (En3)
C1: Adapting to climate change - the volume of surface water removed from the system, expressed in number of properties equivalent	✓	This measure remains and is unchanged. Surface water removed from sewers (Ft4)
C2: Carbon footprint - gigawatt-hours (GWh) of renewable energy generated	✓	We have adapted our measure to incentivise energy efficiency projects Energy self-sufficiency (Ft3)
D1: Service incentive mechanism (SIM)	✓	This measure has been changed by Ofwat. Household customer satisfaction (C-MeX) (Sv1)
D2: 'At risk' customer services - number of customers who have experienced poor service	✓	This was a new measure for PR14 and we have learnt from our experience of applying it and made some modifications.

Measure	Included in PR19?	Mapping to PR19 measures or rationale for exclusion
		Worst served customers for water service (Rt5) / Worst served customers for water service (Rt6)
D3: Internal sewer flooding - properties flooded in the year	✓	We have adapted our definition to comply with the new industry consistent measure Sewer flooding on customer property (internal) (Rt1)
D4: Business customer satisfaction	✓	This measure remains and is unchanged. Business customer satisfaction (Sv4)
D5: Earning the trust of customers - % of customers surveyed that say they trust the company	✓	This measure remains but we are moving from using our own survey to adopting the CC Water research. Customer trust (Sv3)
E1: Affordable bills - annual increase	✓	This measure remains but the definition has been clarified. Change in average household bill (Bl1)
E2: Help for disadvantaged customers - customers benefiting from social tariffs	✓	This measure remains but the definition has been clarified. Vulnerable customers on social tariffs (Bl2)
F1: Asset serviceability	✓	This measure has been significantly altered to comply with Ofwat's methodology requirements but the intent is now represented in the new measures. Water mains bursts (Wt4) / Water process unplanned outages (Wt5) / Water and wastewater treatment works compliance (En1) / Sewer collapses (Rt3)
F2: Leakage	✓	This measure remains and is unchanged. Leakage (En4)
F3: Asset resilience - % of critical assets that are resilient against a set of criteria	✓	This was a new measure for PR14 and we have learnt from our experience of applying it and made some modifications. Asset resilience (impounding reservoirs) (Ft5) / Asset resilience (water network + above ground assets) (Ft6) / Asset resilience (water network + below ground assets) (Ft7) / Asset resilience (wastewater network + above ground assets) (Ft8)/ Asset resilience (wastewater network + below ground assets) (Ft9)

2.3 Welsh Water 2050

The list of measures that we have developed gives us the ability to monitor our progress towards our long-term vision and the Strategic Responses set out in Welsh Water 2050 [Supporting Document 1.4 Welsh Water 2050]. The following table shows the relationship.

<u>Strategic Response</u>	<u>MOSs/(Performance Commitment)</u>
1. Safeguarding clean drinking water through catchment management	Water Catchments improved (Wt7)
2. Enough water for all	Leakage (En4), Per capita consumption (En5), Risk of severe restrictions in a drought (Ft1)
3. Improving the reliability of drinking water supply systems	Water Supply interruptions (Wt2), Tap Water Quality Event Risk Index (Wt6)
4. Protecting our critical water supply assets	Asset Resilience (reservoirs) (Ft5), Asset Resilience (water network+ above ground assets) (Ft6), Asset Resilience (water network+ below ground assets) (Ft7)
5. Achieving acceptable water quality for all customers	Tap Water Quality Compliance Risk Index (Wt1), Acceptability of drinking water (Wt3)
6. Towards a lead free Wales	Lead supply pipes replaced (Wt8)
7. Working with customers and communities	Visitors to recreational facilities (Ft11), Community education (Ft10), Customers on Welsh language register (Sv6)
8. Ensuring affordability of services delivered to customers	Vulnerable customers on social tariffs (Bl2), Company level of bad debt (Bl3), Unbilled properties (Bl4), Financial resilience (Bl5)
9. Supporting customers in vulnerable circumstances	Vulnerable customers on social tariffs (Bl2), Vulnerable customers on priority services register (Sv5)
10. Addressing our 'worst served' customers	Worst served customer for water service (Rt5), Worst served customer for wastewater service (Rt6)
11. Employer of choice	RIDDOR injuries (Co1), Employee training and expertise (Co2), Employee engagement (Co3)
12. Leading edge customer service	Household customer satisfaction (C-Mex) (Sv1), Developer services customer satisfaction (D-Mex) (Sv2), Business customer satisfaction (Sv4), Customer Trust (Sv3), Total complaints (Rt4)

<u>Strategic Response</u>	<u>MOSs/(Performance Commitment)</u>
13. Smart water system management	Water mains bursts (Wt4), Water process unplanned outages (Wt5), Sewer collapses (Rt3)
14. Supporting ecosystems and biodiversity	Bioresources disposal compliance (En8), Water Catchments improved (Wt7), Surface water removed from sewers (Ft4), km of river improved (En6)
15. Using nature to reduce flood risk and pollution	Sewer flooding on customer property (internal) (Rt1), Risk of sewer flooding in a severe storm (Ft2), Sewer flooding on customer property (external) (Rt2), Surface water removed from sewers (Ft4)
16. Cleaner rivers and beaches	Pollution incidents from Wastewater (En3), Wastewater Treatment works compliance (En1), Wastewater treatment works 'look-up table' compliance (En2), km of river improved (En6)
17. Protecting our critical wastewater assets	Asset resilience (wastewater network + above ground assets) (Ft8), Asset resilience (wastewater network + below ground assets) (Ft9),
18. Promoting a circular economy and combating climate change.	Energy self-sufficiency (Ft3), Bioresources product quality (En7)

2.4 Ofwat's PR19 methodology requirements

2.4.1 Areas requiring performance commitments

We have considered the areas stipulated within the methodology that should be covered by the bespoke commitments and set out our coverage in the table below.

Areas	Coverage
The different price controls	We have a good spread of measures across price controls. A number of measures are spread across multiple controls but the following analysis shows measures that are specific to individual controls:

Areas	Coverage
	<p>Water resources: Two measures – water catchments improved and asset resilience (reservoirs)</p> <p>Water network plus: 11 measures</p> <p>Wastewater network plus: 11 measures</p> <p>Bioresources: Two measures – Bioresources product quality and bioresources disposal compliance</p> <p>Residential retail: Four measures</p> <p>Business retail: One measure – Business customer satisfaction</p>
Vulnerability	<p>We have included two measures relating to vulnerable customers:</p> <ul style="list-style-type: none"> • Vulnerable customers on social tariffs • Vulnerable customers on priority services register
Environment	<p>Our plan includes multiple measures relating to the environment, reflecting the focus it has in our business:</p> <ul style="list-style-type: none"> • Water catchments improved • Wastewater treatment works compliance • Wastewater treatment works look-up table compliance • Pollution incidents from wastewater • Leakage • Per capita consumption • km of river improved • Bioresources disposal compliance • Energy self-sufficiency • Surface water removed from sewers
Resilience	<p>Our plan includes multiple measures relating to resilience, in line with our long term Water 2050 strategy:</p> <ul style="list-style-type: none"> • Risk of severe restrictions in a drought • Risk of sewer flooding in a severe storm • Surface water removed from sewers • Asset resilience (reservoirs) • Asset resilience (water network + above ground assets)

Areas	Coverage
	<ul style="list-style-type: none"> • Asset resilience (water network + below ground assets) • Asset resilience (wastewater network + above ground assets) • Asset resilience (wastewater network + below ground assets)
Abstraction Incentive Mechanism	We have not included a commitment relating to AIM. We currently have no AIM sites but have undertaken a full review of our abstractions and not identified any applicable sites. NRW and EA have confirmed that there are no sites having an impact on the environment, and therefore none which they wish to be included at PR19.
Gap sites and voids	<p>We have included a commitment relating to unbilled properties.</p> <p>We have not included a commitment relating to gap sites at this stage. By their definition these sites are unknown to us so we cannot quantify how many there are and a measure would not be meaningful.</p>

2.4.2 Ofwat feedback on our 3 May 2018 draft Performance Commitment definitions submission

On 13 July, Ofwat provided feedback on the definitions of our MOSs (Performance Commitments) we submitted on 3rd May. The suggestions to improve drafting to improve clarity and completeness were helpful and our definitions have been amended where appropriate.

Ofwat also identified 3 MOSs that did not meet their requirements. These are:

- Asset Resilience (Water Resources)
- Asset Resilience (Water Network Plus)
- Asset Resilience (Wastewater Network Plus)

Ofwat's view was that these MOSs aggregated a number of sub-measures and did not comply with the PR19 methodology. We have made the following changes to reflect this feedback.

- Splitting our original Asset Resilience (Water Network Plus) MOS into two separate MOSs; Asset Resilience (Water Network+ Above Ground) and Asset Resilience (Water Network+ Below Ground).
- Splitting the Asset Resilience (Wastewater Network Plus) MOS into two separate MOSs; Asset Resilience (Wastewater Network+ Above Ground) and Asset Resilience (Wastewater Network+ below Ground).
- Restricting the Asset Resilience (Water Resources) to Impounding Reservoirs i.e. excluding raw water pumping stations and Intakes.

Further information on the changes made following this feedback are set out in Annex 1.

The detailed definitions of all Measures of Success are set out in the document 5.3 PR19 Performance commitments definitions.

2.4.3 Consistency in performance commitment definitions

We have welcomed the work undertaken by Ofwat and Water UK in recent years to achieve consistency across the industry in definitions for the common measures, but much further work is needed to ensure full comparability across all companies. We are working to achieve compliance with all the new definitions. The following table shows our current position in respect of these measures.

Measure	Our compliance with latest definition	Expected year of full compliance	Outstanding concerns with definition
Tap Water Quality Compliance Risk Index	Green	2017	There is some confusion in the application by DWI that we are not able to replicate their scores.
Water Supply interruptions	Amber	2020	<ol style="list-style-type: none"> 1. We believe there is a need for an engineering study be undertaken to support the case for a 3m head of pressure at the main. 2. We suspect that practices may differ and believe there would be value in an independent data audit.
Leakage	Red	2020	There is a significant amount of work to do to comply with the new measure and we will continue to work with the rest of the industry as this progresses to maintain consistency.
Per capita consumption	Amber	2020	We feel that there is considerable work required to achieve a consistent application of the definition for this measure but believe that this is best reviewed once the leakage measure has settled.
Sewer flooding on customer property (internal)	Red	2020	<ol style="list-style-type: none"> 1. We do not understand the value of including neighbouring properties in the count and believe it could lead to inconsistency. 2. We believe that further clarity is required around the inclusion of unsubstantiated claims. 3. We suspect that practices may differ and believe there would be value in an independent data audit.
Pollution incidents from Wastewater	Green	2017	We are content with this measure, which has been in place for some years.
Risk of severe restrictions in a drought	Amber	2020	This measure is very new but we believe we understand how to apply it. Now the first year of data is available it would be worth an industry wide review.

Measure	Our compliance with latest definition	Expected year of full compliance	Outstanding concerns with definition
Risk of sewer flooding in a severe storm	Red	2025	There is significant uncertainty in this definition and how to interpret modelling results including the depth of flooding that would count and whether to include internal or external flooding.
Water mains bursts	Amber	2020	We are content with this measure, which has been in place for some years.
Water process unplanned outages	Red	2020	Further clarity is required in relation to the requirement for physical tests of peak week production capacity.
Sewer collapses	Amber	2018	We believe there remains some subjectivity in the stated definition.
Wastewater Treatment works compliance	Green	2017	We are content with this measure, which has been in place for some years.

In addition to the common measures there are a number of bespoke measures that we have included that are commonly used in the industry so have the potential for comparisons to be made. These include:

- Acceptability of drinking water – We have used an amended version of the DWI and Discover Water metrics as we believe that this is more appropriate but makes our measure difficult to compare
- Sewer flooding on customer property (external) – We have complied with the latest industry definition so our results should be comparable with other companies.
- Level of bad debt – There is no standard methodology for dealing with bad debt within the industry so it is likely that different companies present different figures on this.

2.4.4 Asset Health

We support Ofwat's continuing commitment to monitoring asset health. We recognise that there is an important balance to be made in between the focus on high quality customer service in the short term and maintaining our assets to provide service in the long term, without storing up a high cost for future generations. In general our approach is to maintain performance against the asset health measures. As they are not directly linked to customer service there is no benefit in investing to improve asset health performance. Instead, we have targeted limited investment spend at directly improving customer outcomes, which in some cases may have a knock-on beneficial impact on an asset health measure (for example. mains bursts). However, we would be concerned to see performance deteriorating significantly from the current levels, as this would eventually lead to customer service problems.

We have included eight asset health measures in our suite of performance commitments;

- Water mains bursts
- Water process unplanned outages
- Tap water quality Event Risk Index
- Acceptability of drinking water
- Sewer collapses
- Wastewater Treatment works compliance
- Wastewater Treatment works look-up table compliance
- Sewer flooding on customer property (external)

2.5 Welsh Government policies and objectives

We have fully taken account of the Welsh Government policies and objectives in developing our business plan. The performance commitments in our plan will allow us to report to our customers, Government and other stakeholders on how we are progressing towards the Governments objectives.

In November 2017, the Welsh Government issued its **Strategic Priorities and Objectives Statement** to Ofwat. Our performance commitments are consistent with the Welsh Government priorities, in particular:

- *Affordability. We have included measures relating to the size of the average bill (BI1) and the number of customers on social tariffs (BI2)*
- *Long-term. We have included a number of measures relating to maintaining a high-quality service for the period up to 2050, as set out in Section 2.3.*
- *Resilience. Our plan includes multiple measures relating to resilience, in line with our long term Water 2050 strategy:*
 - Risk of severe restrictions in a drought
 - Risk of sewer flooding in a severe storm
 - Surface water removed from sewers
 - Asset resilience (reservoirs)
 - Asset resilience (water network + above ground assets)
 - Asset resilience (water network + below ground assets)
 - Asset resilience (wastewater network + above ground assets)
 - Asset resilience (wastewater network + below ground assets)
- *Strong customer focus. We have included a number of customer satisfaction and trust measures so that we can monitor how we are performing for the generality of customers. We have also included some targeted measures to monitor our impact on specific groups within the customer base, for example, total complaints and our worst served measures.*
- *Sustainable management of natural resources. We have included a measure to monitor our performance in delivering improvements to water catchments. We have also included a measure to*

monitor our performance in removing surface water from the sewerage system through our Rainscape programme.

In May 2015, the Welsh Government published its **Water Strategy for Wales**. The strategy sets out how the Welsh Government believes water services and resources should be managed. It articulates the strategic direction and long-term vision for water policy under six key themes. In relation to our performance commitments the key points are:

- *We will ensure fair and affordable water services for all and we are committed to reducing the percentage of people who have water affordability issues in Wales, in line with our broader aims set within the Welsh Government's Tackling Poverty Action Plan and the Child Poverty Strategy for Wales. This is measured through our commitments relating to the size of the average bill (Bl1) and the number of customers on social tariffs (Bl2).*
- *We realise that there are a wide range of benefits, both mental and physical, to be had from encouraging access to water. We will ensure that our water resources improve urban space and provide safe opportunities for recreation. This is measured through our commitment relating to access to our recreational facilities (Ft11).*
- *We expect and will actively encourage the water sector to protect and promote the Welsh language through education and services. We will ensure equal standards of services in both English and Welsh. This is measured through our commitment relating to Welsh language communications (Sv6).*
- *We expect companies to maintain leakage at the point where the environment, economic and social cost of reducing leakage is less or equal to the cost of getting water from other sources. We expect water companies to forecast a reduction in leakage during the planning period. This is measured through our commitment relating to Leakage (En4).*
- *We must aim to keep exposure to lead as low as reasonably practicable therefore we will consider management options to reduce exposure to lead and related health risks. This is measured through our commitment relating to the removal of lead supply and communication pipes (Wt8).*
- *The SuDS approach is central to future surface water management and supporting innovative surface water drainage in Wales. To support this we expect sewerage undertakers to facilitate the use of natural systems where there are benefits for wildlife, communities and customers. This is measured through our commitment relating to our Rainscape programme (Ft4).*
- *The water sector has an important part to play in reducing greenhouse gas emissions. The water companies can play an important role in both the emission reduction and adaptation agenda by reducing their use and generating their own energy. This is measured through our commitment relating to Energy self-sufficiency (Ft3).*

In April 2015, the National Assembly for Wales passed the **Well-being of Future Generations (Wales) Act 2015**. This sets out seven well-being goals for Wales.

- *A prosperous Wales. An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting*

on climate change). This is measured through our commitment relating to Energy self-sufficiency (Ft3).

- *A resilient Wales. A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change.* This is measured through our commitments relating to Water catchments improved (Wt7), km of river improved (En6), Surface water removed from sewers (Ft4).
- *A healthier Wales. A society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.* This is measured through our commitments relating to Lead supply pipes replaced (Wt8) and Visitors to Recreational Facilities (Ft11).
- *A more equal Wales. A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio economic background and circumstances).* This is measured through our commitments relating to Vulnerable customer on priority services register (Sv5) and Vulnerable customers on social tariffs (BI2).
- *A Wales of vibrant culture and thriving Welsh language. A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, and sports and recreation.* This is measured through our commitment relating to Customers on Welsh language register (Sv6).

It also sets out a series of indicators to measure improvements in well-being. A number of our measures make a direct contribution to these indicators.

National Indicator	Performance Commitment
12. Capacity (in MW) of renewable energy equipment installed.	Energy self-sufficiency (Ft3)
41. Emissions of greenhouse gases within Wales.	
45. Percentage of surface water bodies, and groundwater bodies, achieving good or high overall status.	km river improved (En6)

2.6 Our chosen MOSs (Performance Commitments) and a summary of the rationale for their selection

Clean, safe water for all

Ref	Measure	Reason for inclusion
Wt1	Tap Water Quality Compliance Risk Index	A top priority for our customers, DWI and one of Ofwat's common measures.
Wt2	Water supply interruptions	A top priority for our customers, DWI and one of Ofwat's common measures.
Wt3	Acceptability of drinking water	A top priority for our customers and the DWI. It is one of our AMP6 commitments, where we lag behind the industry. It is also important to Welsh Government that we provide water, which is not only meets quality standards but is acceptable to customers.
Wt4	Water mains bursts	An important measure of the health of our water network and one of Ofwat's common measures.
Wt5	Water process unplanned outages	An important measure of the health of our water process assets and one of Ofwat's common measures.
Wt6	Tap Water Quality Event Risk Index	Water quality is our customers' and the DWI's top priority. We believe this new measure will in the future provide a comparative benchmark as to how we are managing it.
Wt7	Water Catchments improved	The improvement of our catchments is a key element in our long-term strategy and an important policy for the Welsh Government.
Wt8	Lead supply pipes replaced	The removal of lead from distribution is a key element in our long-term strategy and an important policy for the Welsh Government. This measures our progress towards it.

Safeguard our environment for future generations

Ref	Measure	Reason for inclusion
En1	Wastewater Treatment works compliance	This is an important measure of the health of our wastewater treatment assets, and important measure for NRW/EA and one of Ofwat's common measures.

Ref	Measure	Reason for inclusion
En2	Wastewater Treatment works look-up table compliance	A more focused measure of the health of our wastewater treatment assets.
En3	Pollution incidents from Wastewater	A top priority for our customers, NRW/EA and one of Ofwat's common measures.
En4	Leakage	A top priority for our customers and one of Ofwat's common measures.
En5	Per Capita Consumption	A top priority for our customers and one of Ofwat's common measures.
En6	km of river improved	We have a significant environmental programme included within our plan and this measures the benefit associated with it. This also recognises our contribution to the resilience of Wales and the well-being goals of the Welsh Government.
En7	Bioresources product quality	This measure relates specifically to our bio-resources price control and our ability to manage this efficiently.
En8	Bioresources disposal compliance	This measure relates specifically to our bio-resources price control and our compliance with regulatory requirements.

Personal service that's right for you

Ref	Measure	Reason for inclusion
Sv1	Household customer satisfaction (C-MeX)	This is measures an important area of our service and one of Ofwat's common measures.
Sv2	Developer services customer satisfaction (D-MeX)	This measures an important area of our service and is one of Ofwat's common measures.
Sv3	Customer trust	We believe that is the ultimate overall measure of our performance. Our vision is to earn the trust of our customers. This measure allows us to monitor how well we are progressing with our other strategies in order to meet this vision.
Sv4	Business Customer Satisfaction	It is important that we monitor the satisfaction of these customers.

Ref	Measure	Reason for inclusion
Sv5	Vulnerable customers on priority services register	This measures an important area of our vulnerable customers' strategy. Protecting vulnerable members of our society is a key element of Welsh Governments well-being goals.
Sv6	Customers on Welsh Language register	We are strongly supportive of the goal set by Welsh Government in the Well-being of Future Generations Act for the promotion of the Welsh Language. This measure monitors our progress.

Put things right if they go wrong

Ref	Measure	Reason for inclusion
Rt1	Sewer flooding on customer property (internal)	A top priority for our customers and one of Ofwat's common measures.
Rt2	Sewer flooding on customer property (external)	This is an important area for our customers.
Rt3	Sewer collapses	This is an important measure of the health of our wastewater network and one of Ofwat's common measures.
Rt4	Written and telephone complaints	Monitoring the level of complaints is an important way of monitoring that all our other strategies are succeeding.
Rt5	Worst served customer for water service	The improvement in our service to our worst-served customers is a key element in our long-term strategy to ensure that all customers receive an acceptable level of service. This measures our progress towards it.
Rt6	Worst served customer for wastewater service	

Fair bills for everyone

Ref	Measure	Reason for inclusion
Bl1	Change in average household bill	Many of our customers have told us that affordability of bills is a concern. We are making a commitment to keep bills as low as possible, whilst improving our service.
Bl2	Vulnerable customers on social tariffs	We serve some of the more deprived communities in England & Wales. Many are struggling to pay their bills. This is a key element of our

Ref	Measure	Reason for inclusion
		vulnerable customers' strategy. Protecting vulnerable members of our society is a key element of Welsh Governments well-being goals.
BI3	Company level of bad debt	Customers have told us that we should make every effort to make sure that those customers who can afford their bills but choose not to do so, pay their bills. This measure monitor our progress on helping those who genuinely struggle to pay their bills and tackling those who choose not to do, and is an important element of our cost efficiency strategy.
BI4	Unbilled properties	This measure meets a requirement of the Ofwat methodology.
BI5	Financial Resilience	This is an important measure of our resilience as a company and our ability to continue delivering our service.

Create a better future for all our communities

Ref	Measure	Reason for inclusion
Ft1	Risk of severe restrictions in a drought	The improvement in our water network flexibility is a key element in our long-term strategy. This measures our progress towards it and is one of Ofwat's common measures.
Ft2	Risk of sewer flooding in a severe storm	Reducing flood risk is a key element in our long-term strategy. This measures our progress towards it and is one of Ofwat's common measures.
Ft3	Energy self-sufficiency	Reducing our dependency on the external energy market is a key element in our long-term strategy. This is also a key element of Welsh Governments well-being goals. This measures our progress towards it.
Ft4	Surface water removed from sewers	Reducing flood risk is a key element in our long-term strategy. This is also a key element of Welsh Governments well-being goals This measures our progress towards it.
Ft5	Asset Resilience (reservoirs)	Increasing the resilience of our assets is a key element in our long-term strategy, Welsh Water 2050, which had strong support for investment to secure the long-term resilience of the essential public services that we provide to customers and the environment. This long term strategy has also been specifically welcomed by the Welsh Government
Ft6	Asset Resilience (water network+ above ground)	

Ref	Measure	Reason for inclusion
Ft7	Asset Resilience (water network+ below ground)	Minister, as a significant contribution to achieving the goals set out in the Well-being of Future Generations Act. These measure our progress towards our long-term goals.
Ft8	Asset Resilience (wastewater network+ above ground)	
Ft9	Asset Resilience (wastewater network+ below ground)	
Ft10	Education participation	Involving children and customers in our education programmes helps communicate key behavioural messages, which will have long term benefits to our service and is a high priority for our customers.
Ft11	Visitors to recreational facilities	The provision of recreational facilities is part of our commitment to the community and is a high priority for our customers, linked to the Welsh Government Well-being of Future Generations Act goal of A Healthier Wales. This measures how successful we are in attracting people through quality facilities.

Colleague promises

Ref	Measure	Reason for inclusion
Co1	RIDDOR injuries	The health and safety of our colleagues is critical to our ability to deliver our service.
Co2	Employee training and expertise	The competence of our colleagues is critical to our ability to deliver our service.
Co3	Employee Engagement	The engagement of our colleagues is critical to our ability to deliver our service.

3. How we have determined targets for our MOSs (Performance Commitments)

We have adopted Ofwat's PR19 Methodology as our approach for determining targets for our MOSs, as set out below.

Approach	Description	Detail
Cost-benefit analysis	Identify marginal costs, customers' marginal willingness to pay (using a wide range of customer information) and other marginal benefits, so that the service level is set at the economic level of service.	Should take into account wider customer information than just marginal stated preference WTP. Also take into account impacts on the environment, biodiversity and natural capital where appropriate. Should challenge whether the cost information makes sufficient allowance for improvement in the future.
Comparative information	Use robust comparative information on other companies' performance (and sometimes other sectors) to inform their service levels.	Comparative information should be used where it exists. Should use a forecast of upper quartile performance in 2024/25 for targets or justify why not.
Historical information	Previous performance can be used to inform target levels.	Can use best past performance and performance improvement to forecast a rate of future improvement and apply that to the proposed performance commitment.
Minimum improvement	Based on improvements seen in the past or forecast technological improvements.	An example of this might be proposing a 20% minimum improvement.
Maximum level attainable	Work out the maximum possible level of performance as the reference point for setting the service level.	Can present a plan to achieve the maximum possible level over time or justify performance relative to the maximum, rather than taking the status quo as the initial commitment level.
Expert knowledge	Expert knowledge about possible improvements that are not captured in comparative or historical information from engineering models.	Asset health performance commitments might be informed by engineering expertise and /or models about what improvements can be made in the future.

3.1 Approach to upper quartile assessment

Ofwat outlines its expectation that, for some performance commitments, the commitment level should be set at least at the forecast upper quartile performance level for each year of the price control. We have considered how to interpret and comply with the expectation of upper quartile performance. The upper quartile could be defined based on the number of customers or companies. We have chosen to do so on the basis of the upper quartile of customers. This is calculated as the level of performance that is received by the top 25% of customers served in England and Wales. This is our preferred measure for the following reasons:

- Relevance to customers- it directly measures the performance that is received by customers relative to other customers.
- Interpretability- the measure is easy for customers to understand.
- It is less volatile than a measure which is derived from a league table of company performance, which can be unduly influenced by the results of very small companies, which have highly variable performance. Statistically, this is a more robust approach as it gives a better reflection of true best performance rather than showing small areas that have had a quiet year.
- It gives equal weight to the experience of each customer, rather than giving variable importance to each customer's experience depending on how large or small their company happens to be.

The tables below provide an illustration of the calculation of the upper quartile performance for Customer Minutes Lost (CML) and Pollution Incidents. The tables rank the performance of the companies from the lowest to the highest. The final column shows the cumulative proportion of the population served. The upper quartile performance is the performance which is received by the top 25% of the customers. For CML the upper quartile is 9.8 and for pollution the upper quartile is 29.9 per 10,000 km of sewers.

The forecast of the upper quartile performance for 2020/21- 2024/25 is based on the historical improvements that have been achieved at the upper quartile. It is assumed that the trend will continue over the AMP. This is a stretching assumption as incremental improvements to the upper quartile are progressively harder to achieve as the overall level of performance improves.

Customer Minutes Lost- Upper Quartile Customers

	CML Performance	Population (,000)	Proportion of Population	Cumulative Proportion
Sembcorp Bournemouth Water	1.9	457	1%	1%
Northumbrian Inc. Essex	2.4	4,427	8%	8%
Portsmouth Water	4.2	722	1%	10%
Sutton & East Surrey	4.4	688	1%	11%
South Staffordshire and Cambridge	5.2	1,666	3%	14%
Southern Water	7.0	2,493	4%	18%
Yorkshire Water	9.8	5,018	9%	27%
Severn Trent Water	10.1	7,864	13%	40%
Thames Water	10.7	9,883	17%	57%
Anglian	11.7	4,592	8%	65%
Welsh Water	12.2	3,042	5%	70%
Bristol Water	12.6	1,195	2%	72%
Wessex Water	12.8	1,305	2%	74%
South East Water	12.9	2,189	4%	78%
South West Water	13.3	1,730	3%	81%
United Utilities Water	13.6	7,150	12%	93%
Dee Valley Water	21.0	262	0%	94%
Affinity Water	21.1	3,615	6%	100%

Category 3 Pollution Incidents per 10,000km of Sewers

	Cat 1-3 Pollution Incidents per 10,000km of Sewers	Population (,000)	Proportion of Population	Cumulative Proportion
Wessex Water	22.0	2,779	5%	5%
United Utilities Water	22.0	7,499	13%	18%
Welsh Water	29.6	3,242	6%	23%
Severn Trent Water	29.9	9,002	15%	39%
Anglian Water	31.9	6,230	11%	49%
Thames Water	33.0	15,572	27%	76%
Southern Water	35.0	4,581	8%	84%
Northumbrian Water	38.0	2,752	5%	88%
Yorkshire Water	46.0	5,117	9%	97%
South West Water	115.0	1,696	3%	100%

3.2 Cost benefit analysis

One of the key tests we used was cost benefit analysis. We employed Economic Insight to advise us on the analysis methodology and results. Their report is included as Supporting document 5.2.2. We have used two main sources of willingness to pay in our cost benefit analysis but other sources have been used, where appropriate, as contextual information in assessing the targets. The primary source was our main willingness to pay study (Supporting Document 1.1A PR19 Customer Engagement: WTP) but we were able to supplement this with the results of our performance targets research (Supporting Document 1.1B PR19 Customer Engagement: Performance targets qualitative research).

We have contributed to a cross-industry review of PR19 willingness to pay values. This showed how our results on individual measures compared to the range of values from other companies. Across most measures there was a broad range of results, influenced partly by the different questions asked. In general our results were in the middle of the range with no outliers.

4. Wt1: Tap water quality compliance risk index

4.1 Summary

This measure is one of Ofwat's common performance commitments. It is a measure owned by the Drinking Water Inspectorate measuring Compliance Risk as a score.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual			2.70	2.85									
Target					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper quartile				1.28									
Frontier				0.00									

The rationale for our 2024/25 target – in a nutshell

Drinking water quality is of paramount importance for our customers. Although it is very difficult to achieve the perfect score of zero, this is the benchmark to which we aspire. Our performance is good when compared with the other larger companies, but it is variable, and however challenging it may be to eliminate entirely the very few failures that we do experience, it is clear that this is what our customers want us to strive to achieve.

In any event, even though expected performance in any one year may be slightly above zero, it would not be possible to justify a non-zero target, even during a transitional period, because this is a compliance measure and the formal requirement is that there be no failures.

4.2 Further and supporting evidence

Customer views

Water Quality is consistently a top priority for customers. There is an expectation from customers that we will comply with our legal obligations and that our regulators will continue to enforce these. On average some 6% of written complaints and 12% of water service telephone complaints related to water quality problems.

2015-20 performance

This measure has only been developed very recently so we have limited information available to monitor our performance. Our current measure of success in AMP6 is mean zonal compliance and our performance is shown in the following table.

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment		99.98	99.98	100	100	100
Actual performance	99.94	99.96	99.97	99.96		

We have never had a year with no water quality failures but the failures that we do have are very difficult to prevent, as they do not form a pattern. Every year we have some that are caused by problems with customers own plumbing, which we will not be able to eliminate.

In 2016, the first year of the Compliance Risk Index the majority of our score was made up of failures in the distribution network coming from a range of different causes but primarily discoloured water.

Cost benefit test

As this is a compliance measure undertaking cost benefit would be inappropriate.

Comparative analysis

At the time of setting this target we only had one year's (2016) worth of data available to us. We had the 15th best score out of 27 but were third best of the water and sewerage companies. Five companies achieved a score of 0, but these were all very small water companies.

Minimum improvement

As this is a measure of compliance with a regulatory requirement we will always aim to have no failures, although we recognise that this is nearly impossible.

Maximum attainable level

The best ever performance would be to have no failures.

Investment plan

We have not identified any investment specifically to improve performance in relation to this measure but we have identified a number of investments to improve our resilience to water quality problems, which are set out in our Investment Case 5.8F PR19 IC: Water Quality. Any changes to the investment plan could have the result of worsening our performance on this critical measure.

5. Wt2: Water supply interruptions

5.1 Summary

This measure is one of Ofwat's common performance commitments. It is the average number of minutes lost per customer for the whole customer base for interruptions that lasted 3 hours or more.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	23.0	21.7	12.2	43.3									
Target					12.0	12.0	11.2	10.4	9.6	8.8	8.0	6.0	2.0
Upper Quartile	9.6	11.2	9.8	9.5	9.2	9.0	8.8	8.6	8.5	8.3	8.2		
Frontier	2.2	2.5	1.9	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.1		

The rationale for our 2024/25 target – in a nutshell

Although the period 2012/13 – 2017/18 had seen a significant reduction, our interruptions performance continues to lag behind the industry. ("Storm Emma" drove our reported performance back up from 12.2 in 2016/17 to 43.3 in 2017/18). Significant further gains will require replacement of substantial parts of the asbestos cement and cast iron mains that have a much higher propensity to burst than other types of pipework, as well as a marked improvement in the resilience of some of our trunk mains. Our plans for AMP7, notably the zonal studies programme, will address this challenge, but the impact will take time to manifest itself.

Notwithstanding our relative performance, the evidence from our stakeholder engagement is that customers do not see this as a major issue, and support for significant improvement is not strong. Although longer interruptions were regarded negatively (such as, breaks in supply lasting over half a day), customers (especially households) did not generally regard shorter term interruptions (for example, 3-6 hours) as problematic. Rather, what came across in the customer research was that the availability of information when interruptions did occur was very important, as was the provision of alternative supplies and attendance to the needs of vulnerable customers, neither of which are captured in the measure.

Ultimately, as we address the underlying issues with our mains stock, we think we can achieve a performance level of 2 minutes by 2050, half of which would relate to interruptions caused by third party interference with our network. In the meantime, we have chosen a target of **8 minutes** by 2024/25, because this is in line with our estimate of industry upper quartile performance by that date and it lies within the range of 5 to 12 minutes that our cost benefit analysis indicates would be cost beneficial.

Although this will be difficult to achieve, we did not want to select a higher target, because we wanted to challenge ourselves to achieve upper quartile performance. We did not select a lower target because there was no customer support for significant further improvement and it would have been extremely difficult to achieve, without bringing forward substantial capital expenditures to address all of the underlying issues with our mains network.

5.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 1 of Supporting document 5.2.1.

Our Willingness to Pay qualitative sessions found that customers are generally tolerant of short term interruptions, they recognise that things can go wrong. As long as they are kept informed and the interruptions are short then they are comfortable. Business customers do express more concern about interruptions as the impact on many, for example a café or a hair salon, is immediate.

Once an interruption goes over 6-8 hours they become more uncomfortable about the level of inconvenience and expressed health concerns. Our triangulation analysis found that 6% of written complaints and 12% of water service telephone complaints related to interruptions to supply.

Our performance targets research suggested that customers were relatively happy with the current level of performance and didn't give a strong steer for making improvements. However, they found it difficult to engage with the measure of customer minutes lost, as the averaging effect means that the numbers feel quite low. 98% of respondents in the workshops voted for no change in current performance.

In our willingness to pay study we investigated a number of different types of interruption. The results are shown in the following table.

	WTP (£ to prevent an interruption at one property)
Short-term interruption (3–6h)	£636
Short-term interruption (6–12h)	£702
Long-term interruption (24–48h)	£4,009
Long-term interruption (7 days)	£6,743

2015-20 performance

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment		36	24	12	12	12
Actual performance	23.0	21.7	12.2	43.3		
Business plan forecast					12	12

We have made significant progress in this AMP to improve our performance against this measure. 2017/18 was a bad year for us, as a result of the freeze-thaw event but we came close to achieving our end of AMP target in 2016/17, and remain committed to working towards this level of performance.

Impact of moving to the new definition

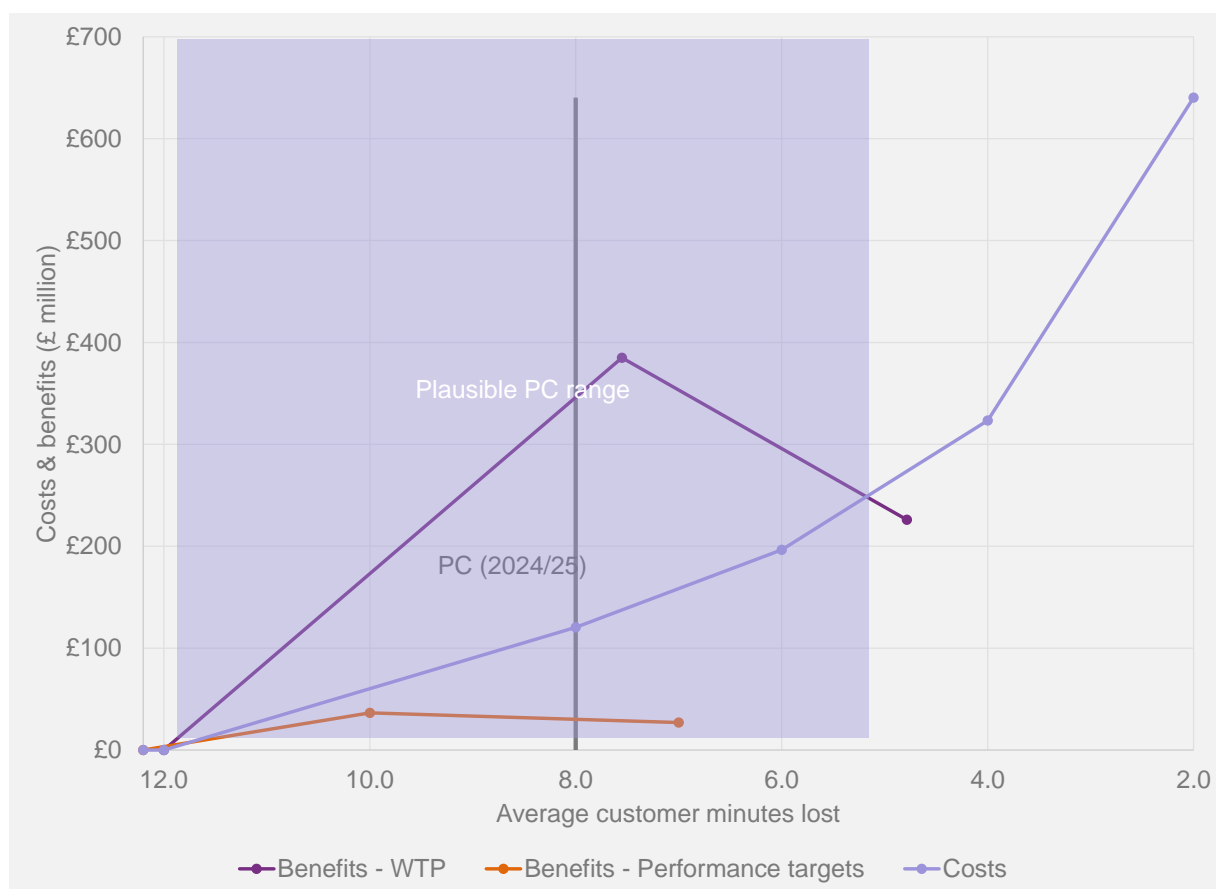
The new definition for this measure is very closely aligned to our existing approach. We believe that when we have achieved full compliance our numbers will not change significantly. We have therefore made no adjustments to historical or future figures to account for the change in definition.

Cost-benefit test

In evaluating the cost benefit test we used two sources of customer valuations, the WTP and the results from the performance targets research. The WTP comparisons report showed that our results were towards the higher end of the industry range, but not an outlier.

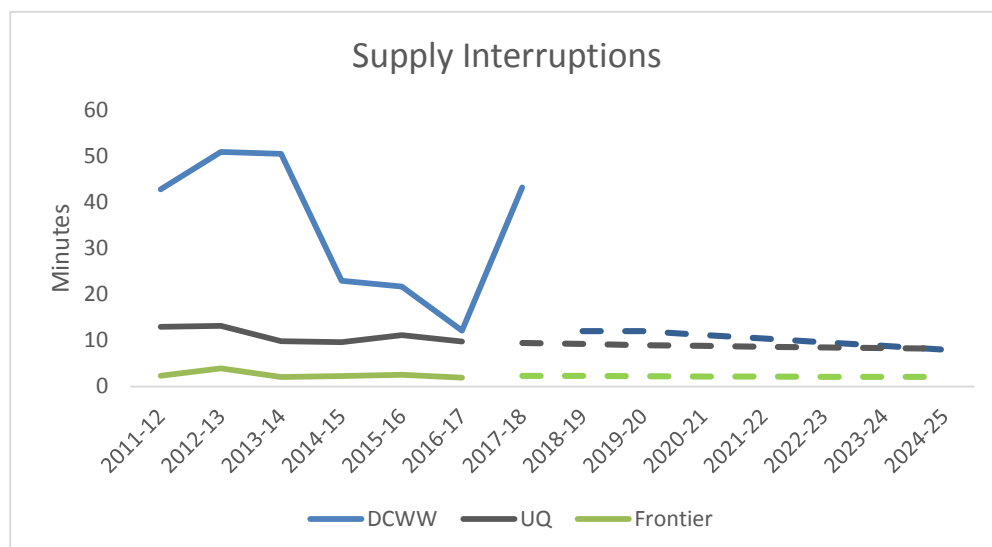
Our cost estimate to get to 8 minutes has high confidence and is based on our AMP7 programme of work. Beyond this we believe that widescale mains replacement would be required to achieve an improvement in this measure and so the costs increase substantially. However, we are expecting technology and analytics to evolve in this area so that at the next price review we can re-evaluate this cost curve.

The results of the cost benefit analysis are shown in the following graph. This suggests that a range of between 5 minutes and 12 minutes would be cost beneficial.



Comparative analysis

Our analysis of upper quartile performance shows that we have been performing below upper quartile. Our prediction of upper quartile in 2024/25 is 8.2 minutes and our prediction of frontier is 2.1 minutes.



Minimum improvement

Customers have consistently told us that they do not expect to see any deterioration in service levels. In response to that, we believe the minimum level of service would be our current target of 12 minutes.

Maximum attainable

We have analysed our data on current performance to understand the maximum attainable performance. Every year we experience a number of interruptions due to third party damage to our network. As our response to incidents improves we will be able to minimise the impact of these, but not prevent them. The impact of these is about 1 minute per year on average. With widescale replacement of deteriorating mains we would be able to prevent many interruptions but this would take a significant expenditure and many years. Even with this we anticipate a residual level of interruptions would occur, which we estimate at 1 minute per year.

Our estimated maximum attainable performance is therefore 2 minutes.

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8H PR19 IC: Customer Minutes Lost Service Improvement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

6. Wt3: Acceptability of drinking water

6.1 Summary

The definition of this measure is the number of contacts received from customers in the calendar year regarding the appearance, taste or odour of drinking water, per 1,000 population served.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	3.53	2.91	2.90	2.79									
Target					2.55	2.40	2.32	2.24	2.16	2.08	2.00	1.75	1.00
Upper quartile	0.86	0.76	0.77	0.77	0.74	0.73	0.71	0.69	0.68	0.66	0.65		
Frontier	0.28	0.28	0.28	0.27	0.28	0.28	0.29	0.30	0.30	0.31	0.31		

The rationale for our target – in a nutshell

Our performance on this measure has been weak compared with the rest of the industry. In 2017/18 our 2.79 contacts per 1,000 population served compared with an estimated upper quartile performance across the sector of 0.77. This represents significant progress from the figure of 3.53 in 2014/15, and we are projecting further improvement to 2.4 by the end of AMP6, but we are already paying financial penalties for missing our AMP6 FD targets and expect to continue to do so up to the end of the period. In addition, we have been issued with notices by the DWI to address acceptability in 31 zones, of which 14 are being addressed in AMP6 with the remainder being dealt with in AMP7.

The main reason why we trail the rest of the industry is because of our operating circumstances. Most contacts are related to discolouration, which is caused by a combination of soft upland sources and the presence of relatively high concentrations of manganese in source water, both of which are further exacerbated by the relatively high proportion of unlined iron mains in our network.

Making further improvements in this measure is not straightforward: the “easy wins” have already been made, and our assessment is that only the combination of our proposed strategic zonal studies and the programme for replacing unlined iron mains – both of which involve considerable amounts of both expense and time – will bring our performance into line with the rest of the sector.

In addition, the findings from our stakeholder research suggest that, although discolouration does raise some modest concerns for customers, the support for significant investment to achieve further improvements in this measure is limited. Further, cost benefit analysis supports a level of performance in the range of 2.0 – 2.4 contacts per 1,000 population, well above the current industry standard.

Nonetheless, we are committed to bringing our performance closer into line with the rest of the industry, even though this will take some time. Our indicative target for 2050 is 1.0, based on current industry upper quartile performance. For the end of AMP7 we have settled on a target of 2.0 contacts per 1,000 population, this being the best performance improvement consistent with the cost benefit results. There was no customer mandate for a more aggressive rate of improvement at this time, and notwithstanding the lukewarm support of customers to any improvement we did not want to select a higher figure because that would create a risk of further divergence between ourselves and the rest of the industry.

We will re-visit the issue at PR24: by then, technological and other changes may have altered the balance between costs and benefits, and our progress in implementing the strategic zonal studies programme may have generated new insights that will enable us to firm up our long term performance plans.

6.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 3 of Supporting document 5.2.1.

Our Willingness to Pay qualitative sessions found that customers have a negative reaction to the thought of discoloured water and many wouldn't drink it, even if they were told it was safe.

In the performance targets research when customers were shown the size of the problem and our performance in relation to other companies they didn't express a significant interest in further improvements. Many customers had never experienced a problem for any length of time that made them worry. 82% of respondents from the workshops voted to keep performance at current levels.

Our willingness to pay results are shown in the following table.

	WTP (£ to prevent one property being affected)
Discoloured water (a week)	£1,162
Taste & smell not ideal (few days)	£1,567

2015-20 performance

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
FD14 target		2.54	1.89	1.23	1.23	1.23
Actual	3.53	2.91	3.2	3.19		
Forecast					2.9	2.75

In AMP6 we have a very similar performance commitment. We have adapted the definition for AMP7 to exclude contacts relating to private customer problems, which are outside our control.

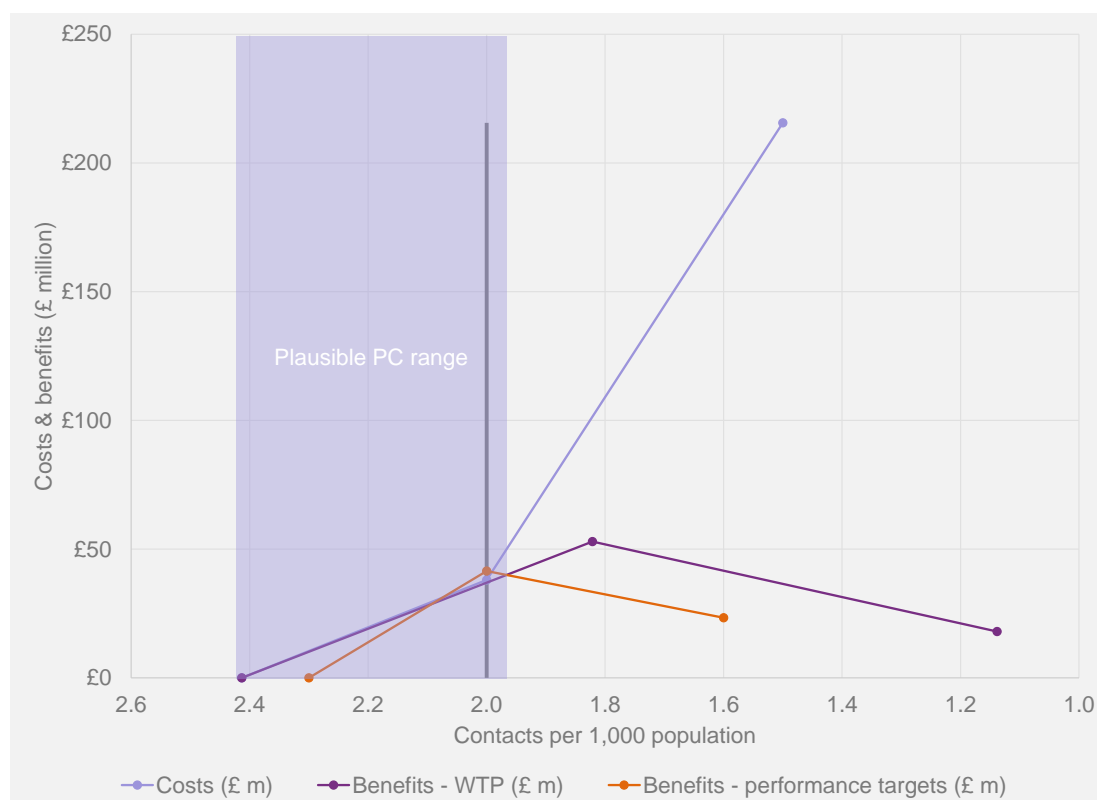
In our PR14 submission we proposed a target of 2.9, which Ofwat overwrote with an upper quartile analysis. We have an ambitious AMP6 investment programme in delivery, but we do not expect to make sufficient improvements to meet the current target, and will therefore be in penalty for this measure in AMP6.

Cost-benefit test

In evaluating the cost benefit test we used two sources of customer valuations, the WTP and the results from the performance targets research. The WTP comparisons report showed that our results were in the middle of the industry range.

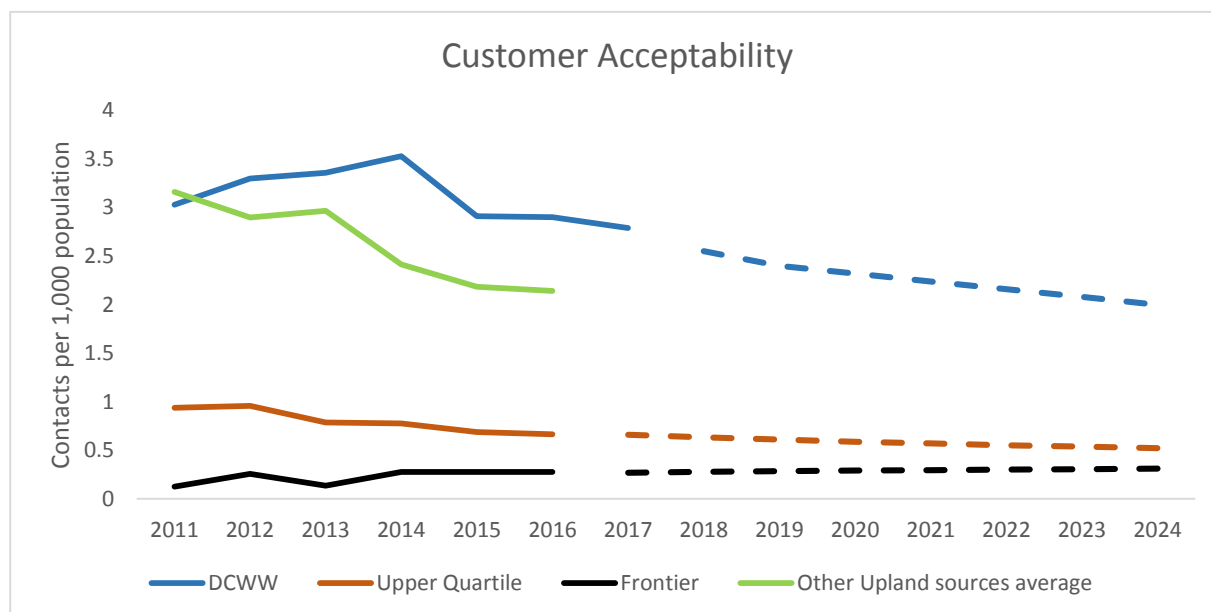
Our cost curve has been created from detailed analysis. We have put forward a special cost factor claim detailing the investment programme that will be required to make a step change in performance against this measure. Beyond this point we have assessed the benefits associated with further investment in our Zonal Studies Programme. As we are taking a hotspot approach and dealing with all the significant problem areas now, the marginal cost will increase significantly following delivery of our next batch of zones.

The results of the cost benefit analysis are shown in the following graph. This suggests that a range of between 2.4 and 2.0 would be cost beneficial.



Comparative analysis

Performance across the industry varies with the type of water that is used. The main reason for customer contacts is discoloured water caused by a combination of soft water, manganese in upland water sources and a high proportion of cast iron mains. Many of the other companies do not have the same operating conditions, with borehole, hard water sources consistently leading to much lower rates of customer contact due to discolouration in particular. Our analysis of performance shows that we have been performing worse than the majority of the industry but consistent with those companies with similar operating conditions. Our prediction of upper quartile in 2024/25 is 0.65 and of frontier is 0.31.



Historical analysis

Our performance over recent years has been variable. We are currently investing in a significant programme of work as a result of our Zonal Studies investigations. The benefits of this investment should be seen in our performance next year and future years. Between 2015 and 2020 we expect a 32% reduction. Applying this to our 2020 forecast performance would imply a 2025 target of 1.6.

Minimum improvement

Customers have consistently told us that they are not prepared to accept any deterioration in service levels. In response to that, we believe the minimum level of service would be our end of AMP6 target of 2.4 contacts per 1,000 population served.

Maximum attainable

We have analysed our maximum attainable performance by looking at the root causes of failures and assessing the potential for improvements within AMP7.

Root cause	Average annual performance (2016-2018)	% reduction possible
Burst Water Main	1828	25%
Condition Of System	1664	25%
Customer Pipework	160	0%
Electricity Failure	0	
Fire Service	553	50%
No Definitive Cause	637	0%
Not Assigned	23	0%
Planned Flushing	0	
Pump / Mechanical Failure	288	10%
Quality / Treatment	31	0%

Root cause	Average annual performance (2016-2018)	% reduction possible
Third Party Use Of The System	1801	50%
Valving - Network Operation	989	50%
Chlorine	436	50%
Other	385	0%
Demand	144	0%
Total	8940	31.2%

Applying this percentage reduction to our 2017/18 performance of 2.79 gives us a maximum attainable performance level of 1.92.

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8I PR19 IC: Acceptability of Water Service Improvement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

7. Wt4: Water mains bursts

7.1 Summary

This measure is one of Ofwat's common performance measures for the number of bursts on water mains. When we have made comparisons to the performance of other companies we have standardised our analysis by dividing by the length of main.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	3530	3012	3679	4181									
Target					3700	3700	3700	3700	3650	3650	3600	3500	3100
Performance commitment (bursts / 1000km)	129	110	134	152	134	133	133	133	131	131	128	123	105
Upper quartile	3328	3010	3032	3375	3308	3276	3197	3139	3090	3044	3011		
Frontier	1739	1665	1856	1731	1683	1654	1602	1561	1524	1490	1462		

The rationale for our 2024/25 target – in a nutshell

Mains bursts is not a performance measure *per se*. Bursts are an indicator of asset health, but they do not, of themselves, have a direct impact on customers.

The rate of bursts in our region has shown general improvement in recent years – although there have been fluctuations – and the rate has typically been 15-25% above the upper quartile for the industry. Although customers support the general principle that we should maintain our assets, we are not planning to invest specifically to reduce the rate of bursts. Rather, we are forecasting a gentle continued decline in the rate of bursts as a by-product of our strategies to achieve improvements in performance measures such as leakage and customer minutes lost, especially as a result of our strategic zonal studies programme. From a figure of 4,181 bursts per 1,000km of main in 2017/18 (an abnormally high reading due in large part to the effects of Storm Emma) we are projecting a figure of 3,700 for 2019/20 falling to 3,600 in 2024/25 and 3,100 by 2050.

7.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 5 of Supporting document 5.2.1. Customers recognise that we are dealing with an old and complicated network of assets. They expect us to work to upgrade these assets in an appropriate manner, minimising disruption. We did not ask customers to evaluate future targets due to the difficulties in assessing cost benefit.

2015-20 performance

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment	4350	4350	4350	4350	4350	4350

Lower reference level	3987	3987	3987	3987	3987	3987
Actual performance	3530	3012	3679	4181		
Business plan forecast					3700	3700

At PR14 we agreed a commitment for this measure as part of our package of Asset Serviceability measures. We are performing below the reference level and below the lower bound in most years. Our 2017/18 performance was affected by the freeze-thaw event but was still within the reference level.

Impact of moving to the new definition

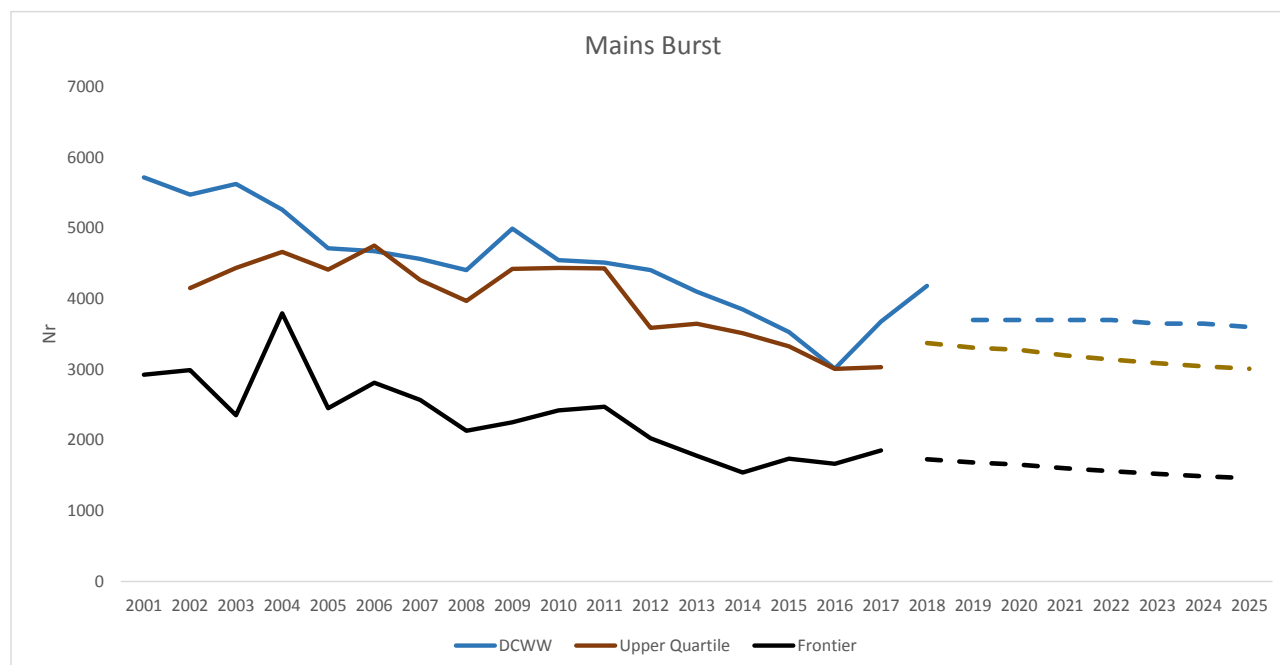
The new definition for this measure is very closely aligned to our existing approach. We believe that when we have achieved full compliance our numbers will not change significantly. We have therefore made no adjustments to historical or future figures to account for the change in definition.

Cost-benefit test

Our willingness to pay study did not include mains bursts. This is because there is no direct customer impact from a mains burst. We undertake cost-benefit analysis using the customer benefit relating to a reduction in interruptions to supply. Only a small percentage of bursts result in an interruption to supply. We have reduced this percentage even more recently with the process improvements we have implemented in relation to Customer Minutes Lost. Investing to reduce mains bursts as a driver does not prove to be cost-beneficial.

Comparative analysis

Our analysis of performance shows that we have been performing consistently close to industry upper quartile. Our prediction of upper quartile in 2024/25 is 3011 and frontier is 1462.



Minimum improvement

Our minimum improvement scenario is to maintain 2019/20 performance of 3700.

Maximum attainable

We analysed our maximum attainable performance by considering historical rates of improvement. Over AMP5 we invested in burst mains clusters (for about £100m) and managed to make a 20% reduction over the AMP. We believe that we could improve on this performance with an increased rate of investment and have assessed that a 25% reduction is the maximum attainable performance level but the price would be $\text{£100m} * 2 = \text{£200m}$.

The underlying rate of bursts is currently about 3,600 so the maximum attainable level is 2,700.

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

8. Wt5: Water process unplanned outages

8.1 Summary

This measure is one of Ofwat's common performance commitments. It relates to a temporary loss of maximum production capacity for water. This measure was introduced in 2017/18 and we have not been able to analyse performance from historic years.

	14/ 15	15/ 16	16/ 17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual				1.57%									
Target					0% change	0% change	0% change	0% change	0% change	0% change	0% change	0% change	0% change

The rationale for our 2024/25 target – in a nutshell

This is a new measure recently introduced by Ofwat. 2017/18 was the first year in which performance was measured, we reported a figure of 1.57%.

In general, unplanned outages in production capacity do not affect customers because we manage our systems to ensure that they are unaffected. There is therefore no justification for committing resources to improve our score on this measure, as customers would see no change in service.

Accordingly we have set the target for each year of AMP7 and beyond at 0% change from the figure we report in 2019/20.

8.2 Further and supporting evidence

Customer views

We did not talk to customers specifically about this issue, but in general they recognise the need to invest in maintaining our assets.

Cost benefit test

This measure is so new we have been unable to complete any cost benefit analysis. However, we know that there is limited customer impact from these types of failures, as we design our networks to be flexible enough to deal with these problems. The benefit of increasing our investment is therefore small. We already invest significant base totex in maintaining our process assets using a risk-based approach to ensure that the risk of impact on customers is minimised.

Comparative performance test

There is not yet any comparative data available in the industry.

Historical analysis context

We only have one year's worth of data so are unable to provide any historical context.

Minimum improvement

Our minimum improvement scenario is to maintain service at current levels.

Maximum attainable level

We have not analysed our maximum attainable level, as we do not have sufficient history of failures to make this meaningful.

Expert knowledge

Our operations teams have advised us that there are very few instances each year when these kind of failures impact on customers, therefore they do not recommend any significant change in performance.

Investment plan

Our ability to maintain stable performance in this case depends on us successfully delivering our proposed AMP7 base maintenance investment programme. Any changes to the investment programme would therefore have a consequential impact on this performance commitment, and could result in deteriorating performance.

9. Wt6: Tap water quality event risk index

9.1 Summary

This measure is owned by the Drinking Water Inspectorate and is a score measuring our response to drinking water quality events. This measure has not been properly introduced yet so only limited analysis has been possible.

	14/ 15	15/ 16	16/ 17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual				56.0									
Target							UQ	UQ	UQ	UQ	UQ	UQ	UQ

The rationale for our 2024/25 target – in a nutshell

This measure is being introduced by the DWI but has not yet been fully implemented. As a result, few details are available. However, since customer engagement has reinforced our view that drinking water quality is of the highest priority, we are setting ourselves the target of being upper quartile for each year of the AMP7 period and beyond.

9.2 Further and supporting evidence

Customer views

Achieving acceptable water quality is seen as a fundamental for customers

Cost benefit test

As this is a compliance measure undertaking cost benefit would be inappropriate

Comparative performance test

In 2017 the upper quartile level of performance was 13.9. The range from best to worst performance was 0.05 to 1595. Our performance of 56 makes us an average performer.

Historical analysis context

We do not yet have the data to provide any historical context.

Minimum improvement

Our minimum improvement scenario is to maintain service at current levels.

Maximum attainable level

We have not analysed our maximum attainable level, as we do not have sufficient history of failures to make this meaningful.

Expert knowledge

We do not yet have experience of managing our performance against this measure.

Investment plan

We have not identified any investment specifically to improve performance in relation to this measure but we have identified a number of investments to improve our resilience to water quality problems, which are set out in our Investment Case 5.8F PR19 IC: Water Quality. Any changes to the investment plan could have the result of worsening our performance on this critical measure.

10.Wt7: Water catchments improved

10.1 Summary

This measure is the number of our Water Treatment Works with catchments designated as Safeguard Zones under the Water Framework Directive.

	14/ 15	15/ 16	16/ 17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual				1	1								
Target						23	23	23	23	23	18	13	5

The rationale for our 2024/25 target – in a nutshell

This is a new measure, and represents the reduction in the number of catchments designated as Safeguard Zones under the Water Framework Directive, which we expect to be 23 by the end of 2019/20.

Customers have expressed firm support for catchment management initiatives. They recognise and value the environmental benefit that natural solutions can offer, and endorse the principle of preventing pollution at source.

As this is a new area there is some uncertainty over the rate at which catchments can be improved sufficiently to have the Safeguarding designation removed. However, we think that removal of 5 zones by 2024/25 is realistic and achievable, and plan to continue reducing the number at the same rate thereafter. There are five particularly large and diverse catchments where we plan interventions to improve raw water quality, but given their size we do not think it will be possible to remove the Safeguarding designation altogether, so our projections show that these will still be in place in 2050.

10.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 5 of Supporting document 5.2.1. We discussed catchment management with customers in our Water 2050 research. They placed it as a relatively high priority with the rationale that

- They support preventing pollution at source: it is better for nature and wildlife; natural solutions are more sustainable than hi-tech ones
- Future of the natural environment is vital to quality of life (and life itself)
- It is likely to be cost effective in long term

Cost benefit test

We have not undertaken a cost benefit test for the target as a whole. We are developing a process for cost benefit analysis to be applied to individual schemes as they progress through our internal gateways process. These schemes have the benefit of avoiding construction of costly treatment processes and will provide long-term sustainable approaches to the management of water quality risks.

Comparative performance test

There is not yet any comparative data available in the industry.

Historical analysis context

We do not yet have the data to provide any historical context.

Minimum improvement

Our minimum improvement scenario is no improvement. Our understanding is that 23 zones will be designated by 2020 and these would remain.

Maximum attainable level

We believe that our maximum attainable level is 5. Five of the designations that we are expecting are large, diverse catchments and we will be able to improve the risk levels in them but we do not believe we will be able to remove the Safeguard Zone designation.

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8A PR19 IC: Water Resources. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

11.Wt8: Lead supply pipes replaced

11.1 Summary

This measure is the number of customers' lead supply and communication pipes replaced (cumulative over an AMP).

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual				30									
Target					660	1800	1400	2800	4200	5600	7000	7,000	50,000

The rationale for our 2024/25 target – in a nutshell

A “Lead-Free Wales” is one of the prominent features of our Water 2050 strategy consistent with the Welsh Government’s Water Strategy. This includes a long term target to replace all lead supply pipes (as well as communication pipes) by that date.

Stakeholder engagement has generated a diversity of views. There is plenty of customer support for lead pipe replacement, the potential health effects being of particular concern, but equally there is support for the view that supply pipes are the responsibility of householders, and should not concern us.

In addition, there is considerable uncertainty regarding how many lead supply pipes there are in our region, and what are going to be the most cost effective ways of tackling them over the longer term. Our strategy for 2024/25 is to replace lead supply pipes as part of integrated initiatives intended to achieve leakage and water efficiency benefits as well, on top of our existing approach of offering free lead pipe replacement when a property has a sub-threshold failure of a lead water quality sample.

Accordingly, AMP7 will, to some degree, be a learning process, and by the time we prepare our business plan for PR24 we will be in a position to be much more definitive about the scope of the programme thereafter, and what are likely to be the best strategies for delivering it. During AMP7 itself we are targeting a total of **7,000** lead supply pipe replacements, because we believe that this will constitute a meaningful step along the road to achieving a lead-free Wales and will give us the diversity of experience to formulate an optimal programme going forwards.

11.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 6 of Supporting document 5.2.1. We discussed replacement of lead supply pipes with customers in our Water 2050 research. Support for this programme was polarised in the groups. Some are shocked by the health consequences and want to see us pushing to replace them. Others, particularly the older generation, do not believe that it is a significant problem, as it would already have been addressed if it was, and see it as the responsibility of the householder to resolve.

Cost benefit test

We have not undertaken a cost benefit test for the target as a whole. We see our AMP7 programme as a testing ground to improve our understanding of the scale of the problem and difficulties in implementation, prior to rolling out the programme wider. Our strategy for AMP7 is to tie in the work with other programmes of work to tackle leakage and water efficiency and achieve multiple benefits.

Comparative performance test

There is not yet any comparative data available in the industry. We are not aware of any other water companies considering replacement of supply pipes.

Historical analysis context

We do not yet have the data to provide any historical context.

Minimum improvement

Our minimum improvement scenario is to offer replacement of supply pipes when a property has a sub-threshold failure of a lead water quality sample. Last year we replaced 30 pipes in this way.

Maximum attainable level

Our maximum level of performance would be to replace all lead supply pipes in Wales, but we have already encountered some householders who do not want the disruption. The Welsh Government's Water Strategy for Wales sets the long-term aspiration of achieving a "lead-free" Wales.

Expert knowledge

We are at the early stages of experience in this programme. We have set ourselves a target of replacing 7000 pipes in the next period, which we believe is deliverable.

DWI are very supportive of our commitment to start a process of lead pipe replacement, although they have said that they would be supportive of a more rapid rate of progress.

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes by removing lead pipes from properties. The investment plan is set out in our Investment Case 5.8F PR19 IC: Water Quality. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

12.En1: Water and wastewater treatment works compliance

12.1 Summary

This measure is one of Ofwat's common performance commitments. It is a measure owned by Natural Resources Wales, measuring our % compliance with our wastewater treatment permits at both sewage treatment works and water treatment works.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	97.8	97.1	99	96.7									
Target					100	100	100	100	100	100	100	100	100

The rationale for our 2024/25 target – in a nutshell

Customers have expressed strong support for our commitment to positive outcomes for the environment, and expect us to comply with our legal obligations. In recent years our wastewater treatment compliance has been below 100%, ranging from 96.7% to 99%. Although it is very difficult to achieve the perfect score of 100%, this is the benchmark to which we aspire. Accordingly, our target for every year of AMP7 (and beyond) is 100%.

12.2 Further and supporting evidence

Customer views

We haven't talked to customers specifically about this measure but they have a general expectation that we will comply with our legal obligations, and expect our regulators to enforce this.

Cost benefit test

As this is a compliance measure undertaking cost benefit would be inappropriate.

Comparative performance test

As this is a compliance measure making comparisons to the performance of other companies would be inappropriate.

Historical analysis context

We have seen slightly improving performance over recent years but find it difficult to achieve 100% compliance.

Minimum improvement

Our minimum performance level is to maintain compliance at current levels.

Maximum attainable level

Our maximum attainable level of performance is 100% compliance.

Investment plan

Our ability to maintain stable performance in this case depends on us successfully delivering our proposed AMP7 base maintenance investment programme. Any changes to the investment programme would therefore have a consequential impact on this performance commitment, and could result in deteriorating performance.

13.En2: Wastewater treatment works “look-up table” compliance

13.1 Summary

This measure is an adaption of En1 that focuses on a subset of compliance metrics, and is reported as % compliance. These are the ones where failure would have the most significant impact on the environment.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	99.7	99.5	99.8	99.5									
Target					100	100	100	100	100	100	100	100	100

The rationale for our 2024/25 target – in a nutshell

Customers have expressed strong support for our commitment to positive outcomes for the environment, and expect us to comply with our legal obligations. In recent years our performance on this measure has been slightly below 100%, ranging from 99.5% to 99.8%. Although it is difficult to achieve the perfect score of 100%, this is the benchmark to which we aspire. Accordingly, our target for every year of AMP7 (and beyond) is 100%.

13.2 Further and supporting evidence

Customer views: We haven’t talked to customers specifically about this measure but they have a general expectation that we will comply with our legal obligations, and expect our regulators to enforce this.

Cost benefit test: As this is a compliance measure undertaking cost benefit would be inappropriate.

Comparative performance test: As this is a compliance measure making comparisons to the performance of other companies would be inappropriate.

Historical analysis context: We have seen slightly improving performance over recent years but find it difficult to achieve 100% compliance.

Minimum improvement: Our minimum performance level is to maintain compliance at current levels.

Maximum attainable level: Our maximum attainable level of performance is 100% compliance.

Investment plan: Our ability to maintain stable performance in this case depends on us successfully delivering our proposed AMP7 base maintenance investment programme. Any changes to the investment programme would therefore have a consequential impact on this performance commitment, and could result in deteriorating performance.

14.En3: Pollution incidents from wastewater

14.1 Summary

This measure is one of Ofwat's common performance commitments. It is the number of category 1-3 pollution incidents from our wastewater network.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	108	111	107	102									
Target					107	107	103	99	96	93	90	80	40
Performance commitment (incidents / 10,000 km)	30	31	30	28	29	29	28	27	26	25	24	21	10
Upper Quartile	106	138	107	87	104	101	98	96	94	92	91		
Frontier	80	109	79	61	88	79	77	76	75	74	73		

The rationale for our AMP7 targets – in a nutshell

We have consistently been one of the leading companies in the industry on this measure, and our performance has steadily improved in recent years, notwithstanding the natural fluctuations that occur over time due to weather and other factors.

In 2017/18 our performance of 102 was inside our estimate of the industry upper quartile (105), and we are earning "ODI rewards" during this period as a result of our out-performance.

Looking ahead, our stakeholder engagement has provided a clear steer on where we go from here. Customers recognise the impact that pollution can have, not just on the environment but on tourism and the economy in general. They support a continuation of the steady and positive trend that we have delivered in recent years, but there is no evidence of any appetite for a radical acceleration in performance improvement.

Incremental improvements in expected pollution incidents performance are getting more difficult and expensive to achieve. Ultimately, by 2050, we aim to reduce pollution incidents to something in the region of 40 per annum. This is our assessment of the lowest rate achievable, given that it will never be possible to eliminate incidents caused by third parties, and it will require a major and sustained commitment from the company. We are already devoting considerable resources to targeted education and promotion activities because it is essential to reduce the incidents that are caused by aspects of customer behaviour. But it will also be necessary to invest in innovative techniques to predict sewer blockages and collapses before they happen, to pinpoint areas where hydraulic overload of the network may occur, and ultimately to reduce incidents due to failures of our equipment to zero.

These initiatives are already under way, but it will take time for their effects to feed through into headline performance figures. So far as the medium term targets for AMP7 are concerned, our cost benefit analysis supports a target in the range 75 to 110. Taken together with the results of our customer engagement and our forecast for the industry upper quartile of 92 in 2024/25, we have settled on a target of **90 incidents per annum** for 2024/25. We did not want to pick a higher target, because this would not have been in line with our long term objective and would have implied a

deterioration in our relative performance. We did not choose a lower target, because this would have meant sharply higher expenditures in AMP7, and there was no evidence that this was in line with customers' priorities.

14.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 7 of Supporting document 5.2.1. Customers link our performance on this measure with our environmental credentials and therefore recognise the importance of limiting failures (WTP qualitative research).

Our triangulation analysis found that 1% of wastewater service telephone complaints related to pollution.

In our performance targets research the impact on people as well as the environment was recognised. The thought of damage to the rivers they or tourists visit was very real to customers. Our recent experience of steady improvements in this measure was found to be encouraging. When asked to vote, 57% of our respondents voted for a steady improvement to 90 incidents a year with only 12% voting for us to go further.

In our willingness to pay study we investigated two types of pollution incident. The results are shown in the following table.

	WTP (£ to prevent one incident)
Significant pollution	£397,225
Minor pollution	£150,459

2015-20 performance

In this AMP we have a similar performance commitment. There are two differences. In this AMP the measure includes pollution from water business assets and is restricted to category 3 incidents only.

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment		161	154	131	131	131
Actual performance	117	110	111	112		
Business plan forecast					113	112

Our operational pollution focus during the previous AMP period has left us in a good position and meant that we have been performing significantly under the level of the commitment.

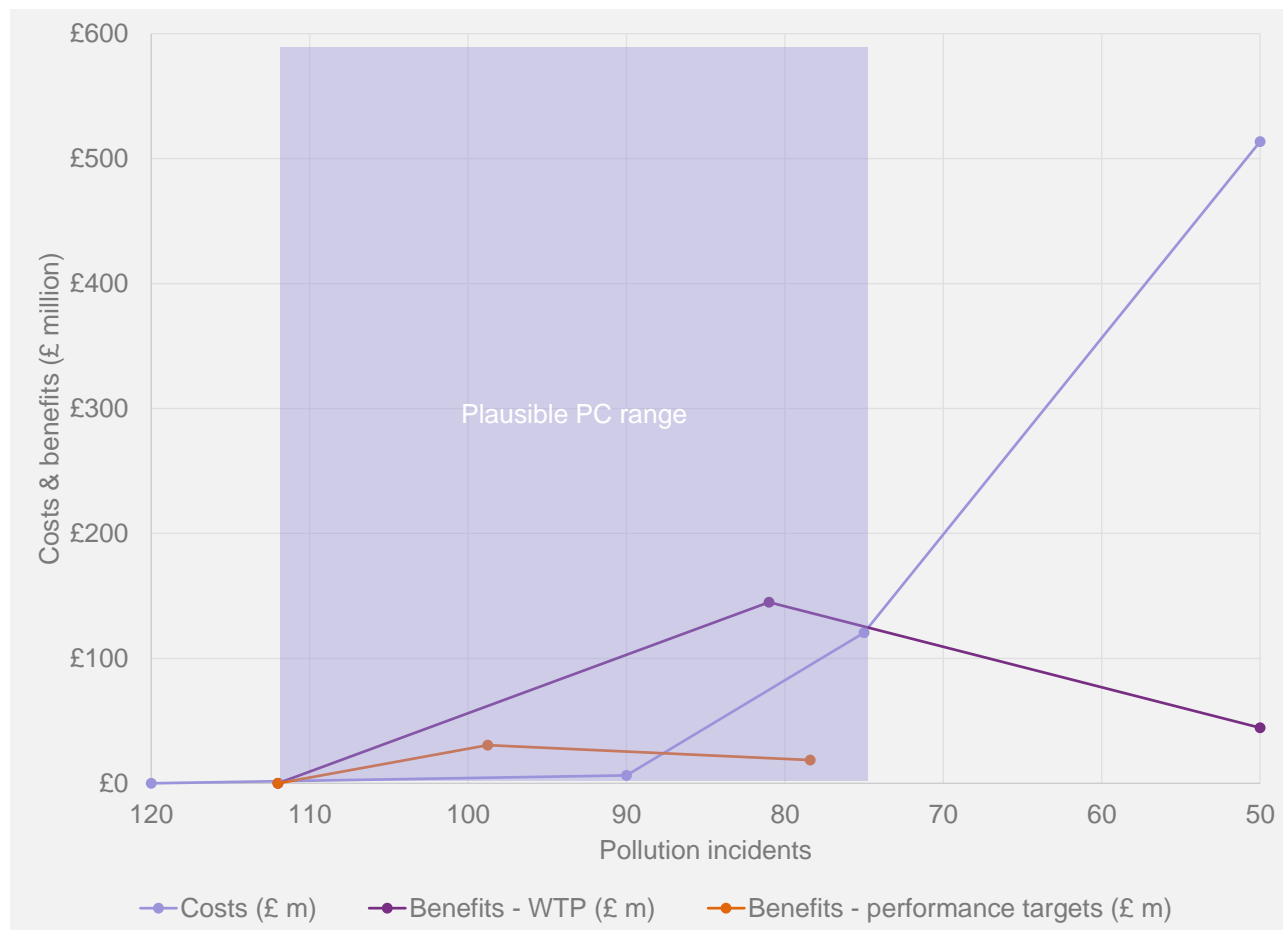
Cost-benefit test

In evaluating the cost benefit test we used two sources of customer valuations, the WTP and the results from the performance targets research. The WTP comparisons report showed that our results were towards the higher end of the industry range, but not an outlier.

Our cost estimate to get to 90 incidents is based on our AMP7 programme of work, which contains some specific investment items but also contains further operational process improvements. Beyond this we believe that widespread monitoring and changes in customer behaviour will be required to significantly

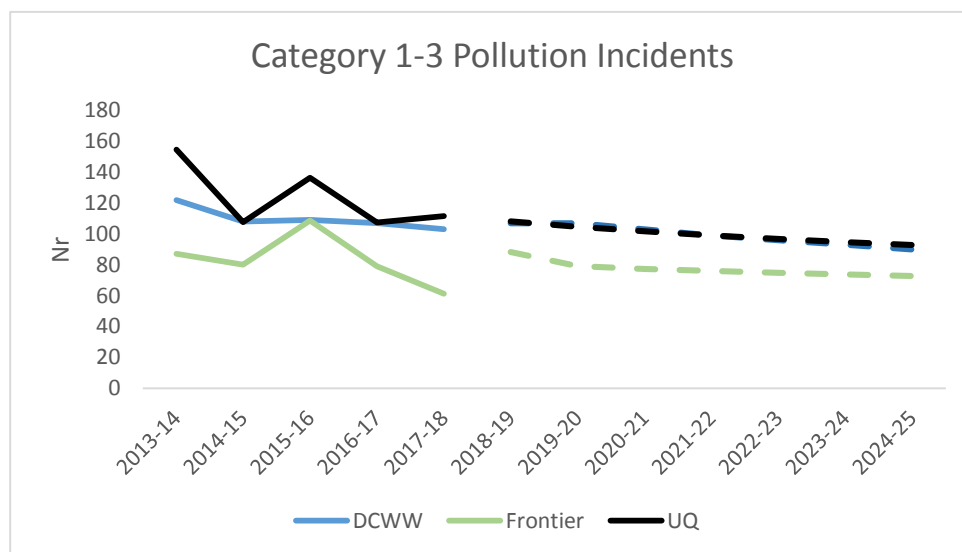
improve this measure so the costs increase substantially. However, we are expecting technology and analytics to evolve in this area so that at the next price review we can re-evaluate this cost curve.

The results of the cost benefit analysis are shown in the following graph. This suggests that a range of between 110 and 75 incidents per year would be cost beneficial.



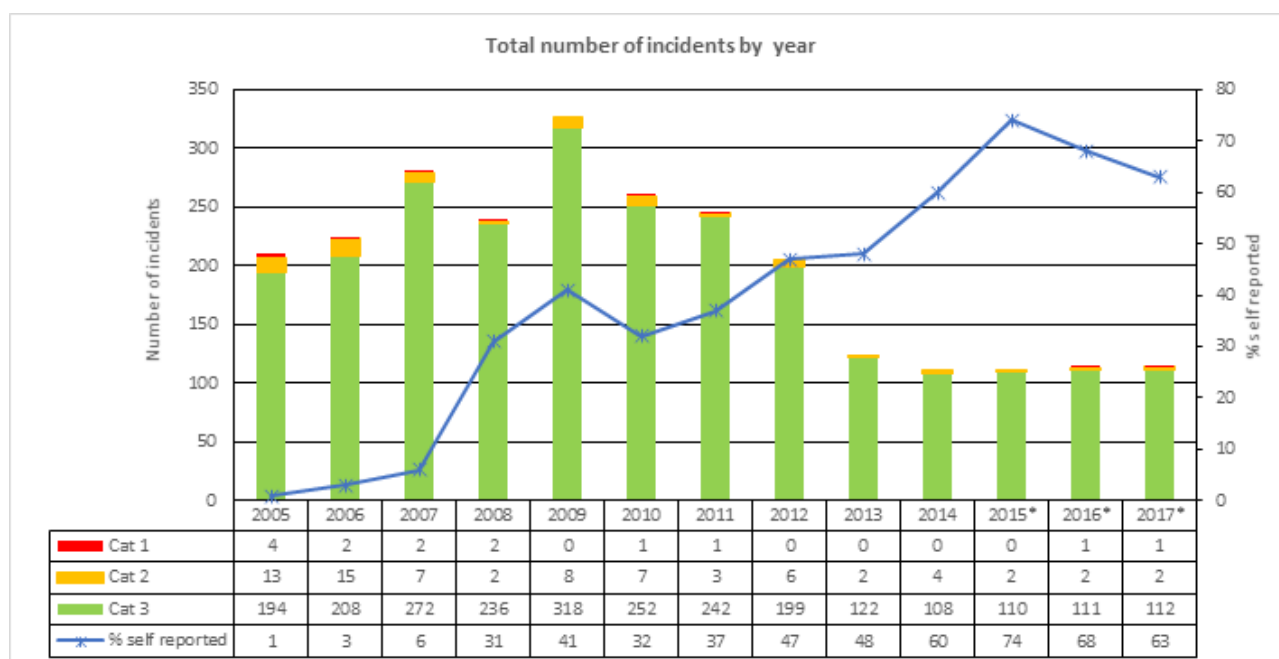
Comparative analysis

Our comparative analysis has used a standardisation of other companies' performance using the length of sewers. Our analysis of upper quartile performance shows that we have been performing at around the upper quartile in recent years. Our prediction of upper quartile in 2024/25 is 92 incidents, with a frontier of 77 incidents.



Historical analysis

We monitor our company performance as a total, including incidents as a result of our water assets, which is a broader definition than the PR19 metric. The following graph shows our performance against this measure.



Over recent years our pollution performance has shown continuous improvement reducing the number of incidents by 65%. The improved performance results from considerable attention in this area. Our Pollution Reduction Strategy, built around the three themes of Asset Understanding, Data and Systems, and People, links together different components of the business to ensure an integrated approach.

- To give us better understanding of our assets we have completed extensive surveys to identify potentially polluting assets and focussed on increased maintenance, this has come at significant financial cost and increased spend on Reactive Capital Maintenance (RCM).
- The data and systems theme outlines how we are improving data collection and extraction to make our systems smarter, more efficient and more sustainable. With increased ability to handle data intelligently we are moving to a more targeted proactive maintenance regime. Where incidents do occur we have mitigation plans such that our response is swift and co-ordinated, and impact is minimised. Improvements are also related to changes to the regulatory framework providing clearer guidance and pollution assigned field staff building strong relationships with our key stakeholder.
- The principles of Lean have been incorporated to improve service and reduce operating costs whilst equipping our people with new skills and development opportunities.

Minimum improvement

Customers have consistently told us that they do not accept to see any deterioration in service levels. In response to that, we believe the minimum level of service would be our current target of 107.

Maximum attainable

Our analysis of maximum attainable performance reviewed the root cause of failures, as shown in the table below.

Cause	Last 3 years average	End of AMP 7 max attainable	End of AMP 8 max attainable	Intervention speed
Hydraulic overload	11	9	1	V. Slow
Equipment Failure	11	7	3	Medium
Collapses	19	16	10	Medium
Blockages	62	45	16	Slow
Total	103	77	30	
% reduction		25%	71%	

The estimated cost to achieve this improvement is £250m.

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8N PR19 IC: Wastewater Network plus Enhancement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

15.En4: Leakage

15.1 Summary

This measure is one of Ofwat's common performance commitments. It is the volume of water that is lost through leakage in mega litres/day.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	179.5	179.9	175.4	173									
Target					171	169	163.8	158.6	153.4	148.2	143	125	75
Performance commitment (3 year rolling av.)	182.7	181.1	178.3	176.1	173.1	171	167.9	163.8	158.6	153.4	148.2	128	75
Per km comparators													
Industry 25th %ile	180	180	175	173	171	168	166	164	161	159	157		
Industry frontier	134	135	134	134	133	133	132	132	131	130	130		
Per property comparators													
Industry 25th %ile	140	139	142	140	139	137	136	134	133	131	130		
Industry frontier	106	109	114	107	107	106	105	104	104	103	102		

The rationale for our AMP7 targets – in a nutshell

In comparison to the rest of the industry we are close to upper quartile performance on a leakage per km basis. Over recent years our rate of improvement has been faster than the industry leaders.

Leakage is a highly emotive subject to discuss with customers as they see it as wasteful, although when it is explained they understand the concept of the economic level.

In analysing the target level we have included the benefits of some new strategies, for which the benefits are not yet proven and are therefore uncertain. This means that the target range suggested by the economic analysis is for a reduction between 15% and 20%.

Due to the scale of the operational and engineering challenge involved in adopting the new strategies plus the uncertainty in the benefit we have selected a target at the lower end of the scale of 15%.

The learning that will take place from delivery of the AMP7 strategy and the additional effort across the whole industry in the same period will help us to develop strategies to make further reductions in future AMPs. We believe that in the long term we will be able to get to a level of losing 10% of treated water as leakage, which would equate to about 75MI/d.

15.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 7 of Supporting document 5.2.1.

Our triangulation analysis found that 7% of written complaints and 5% of water service telephone complaints related to leakage.

We discussed leakage with our customers in our research relating to the Water Resources Management Plan. It is a highly emotive topic with customers seeing it as wasteful and inefficient. The impact on the environment of over abstraction is also raised. However, most customers understand the concept that there is an economic level of leakage.

The performance targets research gave a similar response, with a comment that something must be done to protect this precious natural resource. The investment options voting was different between the different groups, highlighting the polarisation of views on this emotive topic.

Overall 53% of respondents voted for no change in the current performance on leakage and 31% voted for the largest reduction we showed them, which was about 6%. The research took place before Ofwat had published their draft PR19 methodology so we didn't discuss the option of a 15% reduction with customers.

2015-20 performance

We already have this performance commitment within our current suite of measures.

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment		181	177	173	171	169
Actual performance	179.5	179.9	175.4	173		
Business plan forecast					171	169

We are delivering in line with this commitment and expect to continue to do so.

Impact of moving to the new definition

The change in definition for leakage is significant and we are having to invest in additional metering and logging in order to comply with it. However, our current belief is that, although our reported level will fluctuate in the next few years, we will end up reporting on a similar basis to currently. For this reason we have not made any adjustment to historical or forecast figures to adjust for the new definition.

Cost-benefit test

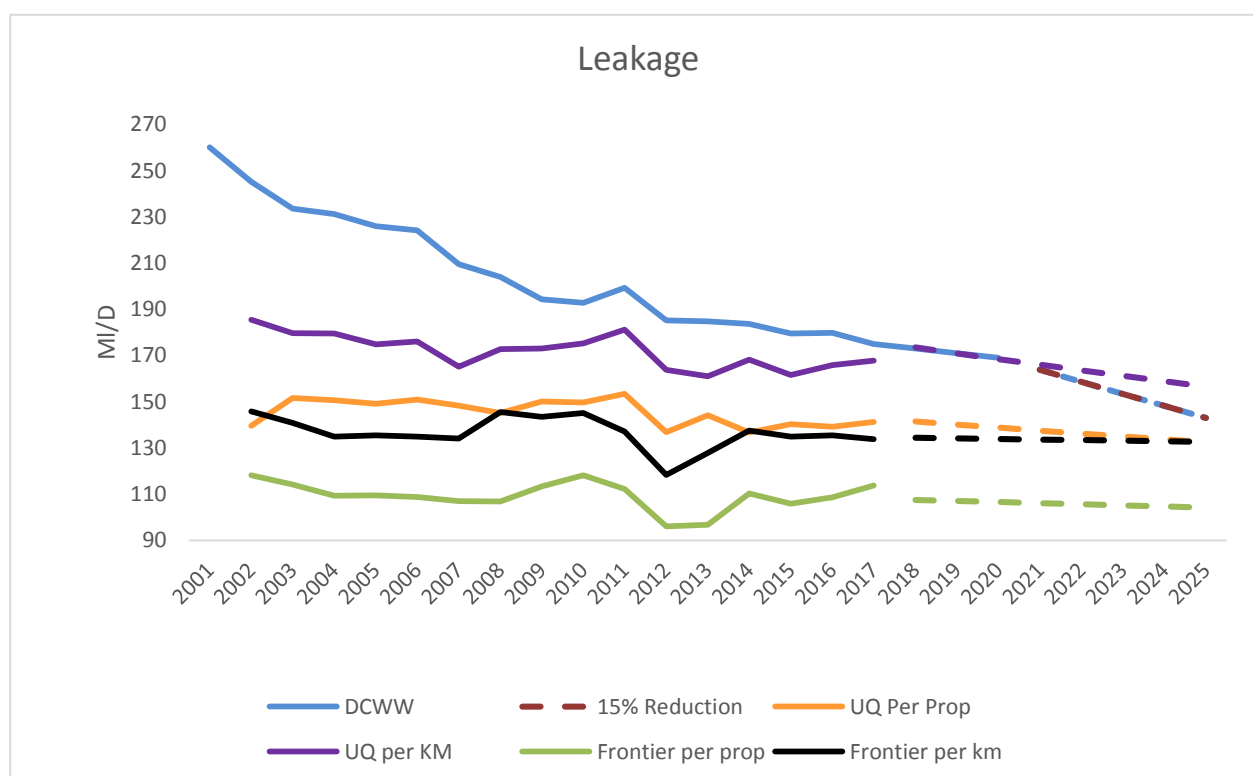
Our cost benefit analysis for leakage uses the Sustainable Economic Level of Leakage model (SELL). The details of the analysis are set out in our Leakage Strategy (Supporting Document 3.5 PR19 Leakage Strategy). We found that the economic range is from 126 to 144 Ml/d. This is based on a change in our investment strategy, for which the benefits are uncertain.

Comparative analysis

The comparative assessment for this measure is undertaken using two types of analysis, leakage per connected property and leakage per km of main.

We are performing very close to the upper quartile level on the basis of leakage per km but not on the leakage per property basis. We have a very dispersed population served so our density of mains per property served is quite high in comparison with other companies. For this reason we have given greater weight to performance comparisons based on a leakage per km basis as better reflecting our operating circumstances.

Both analyses show that our rate of improvement in leakage over recent years has been significantly better than the best in the industry. We are close to industry upper quartile on the leakage per km measure but would have to make a 21% improvement to meet the leakage per property upper quartile.



Historical analysis

We have managed to make a steady reduction in leakage with a 33% reduction since 2001 and a 6% reduction forecast in this period.

Minimum improvement

Our minimum improvement scenario is to continue with the 6% improvement that we are forecasting for this AMP.

Maximum attainable

Our cost benefit analysis identified that making a 25% reduction in leakage would be uneconomic but that a 20% reduction would be economic, this is our current maximum attainable level.

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Leakage Strategy 3.5 PR19 Leakage Strategy. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

16.En5: Per Capita Consumption

16.1 Summary

This measure is one of Ofwat's common performance commitments. It is the average amount of water used by each person that lives in a household property (litres per head per day).

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	142	143	145	145									
Target					145	145	144	142	141	139	138	135	100
Performance commitment (3 year rolling av.)		143	143	144	145	145	145	144	142	141	139	136	100
Upper Quartile	130	130	135	135	135	135	135	135	135	135	135		

The rationale for our 2024/25 target – in a nutshell

Our reported per capita consumption (PCC) figure in 2017/18 was 145 l/h/d, somewhat higher than the estimated upper quartile for the industry of 135. Although per capita consumption has been reported for many years, this is the first time that it has been adopted as a performance measure.

Customers have not been specifically asked for their views on PCC as a performance measure, but they have indicated a significant appetite to be better educated on water efficiency. There is also general support amongst customers for better environmental outcomes.

There is industry evidence that suggests that we could target a level of PCC as low as 100 l/h/d by 2050. To achieve this would require average annual reductions of 1.4 l/h/d per annum. If we adopted this target for AMP7 we would just about achieve the estimated industry upper quartile by 2024/25.

However, we consider that there is a need to proceed cautiously in relation to this measure. For one, it appears that there is some way to go in standardising measurement methodologies across the industry. Moreover, as significant reductions in PCC may require widespread adoption of certain types of fitting by households, as well as necessitating potentially significant changes in cultural attitudes to water and personal behaviours, we do not want to press ahead too quickly until we have clear evidence that that is what our customers want. Whilst we are fully committed to the long term importance of maximising the efficient use of water, there are important differences between our circumstances and those of some of the companies in England, especially those located in the comparatively dry and densely populated South East.

Accordingly, for the purposes of AMP7 we are targeting a slightly lower – but still significant – rate of improvement of 1 l/h/d. This produces a target in 2024/25 of **138 l/h/d**. By the time we re-visit this issue in five years' time we will have a much better understanding of customers' priorities in this area, and will have a track record of experience on the interaction between the measures that we promote and customers' response.

16.2 Further and supporting evidence

Customer views

We haven't spoken to customers specifically about this measure but throughout our research there have been requests for improvements in our education, and water efficiency is one of the areas mentioned.

Cost benefit test

We have not undertaken a cost benefit test as we have very little evidence to show how this measure can be improved.

Comparative performance test

Our current reported performance is higher than industry average at the moment. However, comparisons across England & Wales need to be treated with caution. In its report "*Planning for the future: a review of our understanding of household consumption (2017)*", Artesia Consulting concluded that PCC was not a good comparator of performance between companies because of the variation from area to area arising from the factors that influence household consumption such as occupancy, property type, social-demographic factors, weather, individual values towards water use. This is consistent with the variation in PCC study commissioned by Ofwat in 2007 and more recent UKWIR studies.

There is some way to go in standardising methods of analysis across the industry. PCC was a late addition to the industry's consistency project. Reported figures for 2017/18 indicate that new methods are resulting in significant changes of up to 12% in reported figures.

Historical analysis context

We have not targeted or made significant improvements in this measure in past years.

Minimum improvement

Our minimum improvement scenario recognises the industry focus on the importance of this measure and proposes a 1 l/h/d improvement each year

Maximum attainable level

We have looked at other water companies around the globe and there are examples of companies reaching a level of about 100, but these tend to be in areas with greater meter penetration and greater water scarcity.

At the next price review we will be much better placed to analyse the maximum attainable level. We will have several years of experience from our Project Cartref (Home), working in customers' homes to improve water efficiency and we also expect the industry analysis of this measure to have improved.

Investment Plan

This performance commitment is not directly linked to the investment plan, but more linked to our education programmes. Our biggest risk to delivery is changes in the measurement approach across the industry.

17.En6: km of river improved

17.1 Summary

This measure reflects the impact of our environmental improvement programme and is the length (in km) of river with improved water quality, as a result of Welsh Water action (cumulative within an AMP).

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual		0	16	36									
Target					293	562	0	5	25	25	418	128	N/A

The rationale for our 2024/25 target – in a nutshell

Our customer research indicates that customers are supportive of the work we do in this area. We are targeting improvements to 418kms of rivers over the course of the AMP7 period, and a further 128kms during AMP8. These figures have been agreed with NRW and the EA under the WINEP and the NEP respectively, and as such have the status of formal legal obligations. Any further longer term additions will be the subject of future consideration in discussions with our environmental regulators and other stakeholders.

17.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 8 of Supporting document 5.2.1.

In our customer research relating to the environment, customers reflected an overall impression that the rivers in Wales have improved a lot over the years. It was seen as important that we should take a lead in relation to making improvements but it should be in conjunction with others.

Out of the eight Strategic Responses consulted on in our summer 2017 consultation event “Cleaner rivers and beaches” was ranked as the most important with a score of 4.59 out of 5.

In the Water 2050 qualitative research the same response was given consistently high importance, driven by the relationship to tourism and the related importance to Wales, but it wasn’t ranked at the top level due to the recognition that it was a shared responsibility with other agencies.

Our performance targets research gave similar messages to other pieces around the improvements that have already been seen and the importance of our rivers to the economy of Wales. 73% of respondents voted for some level of improvement in performance against this measure.

We included this measure within our willingness to pay study. The results are shown in the following table.

	WTP (£ to improve 1km)
River water quality less than Good to Good	£73,439

We also undertook revealed preference research in relation to this measure, using data from the Welsh Outdoor Recreation Survey (WORS) from Natural Resources Wales (NRW). Econometric models were then estimated in order to find the variables explaining the individuals' choice of site to visit, and their number of visits to beaches and rivers over a month.

The results are shown in the following table.

	WTP (£ per visit)
River water quality less than Sufficient to more than Sufficient	£1.51
Improvements in river flow	£2.59

2015-20 performance

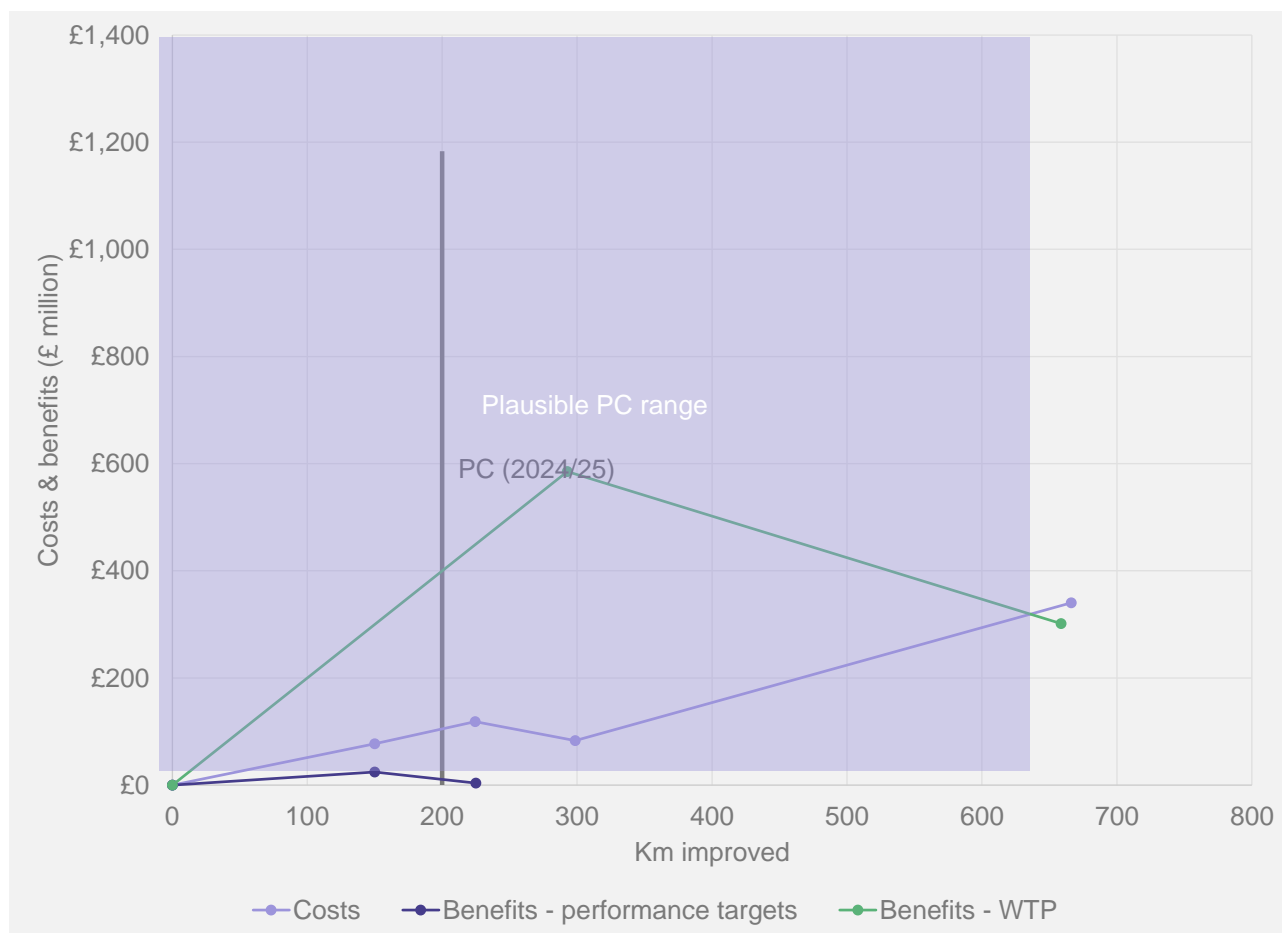
We did not include an equivalent measure within our PR14 plan but this has always been monitored by our environmental regulators as part of delivery of the National Environment Programme. We are on course to meet the requirements of this period as were agreed at the start.

Cost-benefit test

In evaluating the cost benefit test we used two sources of customer valuations, the WTP and the results from the performance targets research. The WTP comparisons report showed that our results were in the middle of the industry range.

Our cost estimates used in this test are derived from a notional programme to address every location of poor river quality that has been identified, where our assets may be the reason for failure of the river to achieve "Good" ecological status. A great deal of sampling and modelling is still taking place to verify the root causes of poor quality rivers.

The results of the cost benefit analysis show there is significant willingness to pay for improvements to rivers.



Comparative performance test

We do not compare performance on this measure with other companies as it is very specific to the level of problems observed, which are different in different areas.

Historical analysis context

We have so far achieved a good track record of delivering improvements to rivers and there is now only 20% of river length failing to achieve Good ecological status where we are listed as a possible contributor, with only 5% where it is confirmed. This is an area where evidence is constantly improving so it is difficult to compare with historical performance.

Minimum improvement

Our minimum improvement level is to meet the requirements of the National Environment Programmes, which is 418km.

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our

Investment Case 5.8P PR19 IC: Wastewater NEP. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

18.En7: Bioresources product quality

18.1 Summary

This measure is the percentage of Waste Water sludge producing an enhanced Biosolids Assurance Scheme (BAS) accredited Biosolids product.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	59.5	60	64.4	60.2									
Target					60	95	95	97.3	97.3	97.3	97.3	100	100

The rationale for our 2024/25 target – in a nutshell

Our long term target is to generate energy from 100% of our sludge. We have not specifically sought customers' views on this target, but we know that they expect us to deliver services as efficiently as possible. Our 2024/25 target of 97.3% reflects the fact that there is one small site where it makes sense to invest in the necessary plant during the following AMP8 period instead, but by 2030 the 100% long term target will have been achieved.

18.2 Further and supporting evidence

Customer views: We have not talked to customers about the management of our bioresources assets.

Cost benefit test: We have not undertaken a specific cost benefit test for this measure but every project that we develop is evaluated for cost benefit, with the benefit being derived from the operational cost savings created by generating energy and avoiding the disposal of product to land.

Comparative performance test: There is no data available to compare performance with other companies.

Historical analysis context: Our performance has been relatively steady against this measure for the last few years. Our projected performance improvement in 2019/20 reflects the commissioning of a new treatment plant in Wrexham.

Minimum improvement: Our minimum improvement scenario for AMP7 is 97.3%, which reflects the commissioning of assets that are currently in design.

Maximum attainable level: Our maximum attainable level is 100%.

Investment plan: Our ability to maintain stable performance in this case depends on us successfully delivering our proposed AMP7 base maintenance investment programme. Any changes to the investment programme would therefore have a consequential impact on this performance commitment, and could result in deteriorating performance.

19.En8: Bioresources disposal compliance

19.1 Summary

This measure is the percentage of wastewater sludge disposed of satisfactorily.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	100%	100%	100%	100%									
Target					100%	100%	100%	100%	100%	100%	100%	100%	100%
Upper quartile	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Frontier	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		

The rationale for our 2024/25 target – in a nutshell

Customers expect us to comply with our legal obligations. We have achieved 100% compliance with bioresources disposal requirements in recent years, and plan to maintain this level for every year going forwards.

19.2 Further and supporting evidence

Customer views: We have not talked to customers about the management of our bioresources assets.

Cost benefit test: We have not undertaken cost benefit analysis in relation to this measure. This is because we consider it a compliance measure and we already achieve 100%.

Comparative performance test: The majority of companies consistently achieve 100% compliance for this measure.

Historical analysis context: We have consistently achieved 100% compliance for this measure for a number of years.

Minimum improvement: We are already achieving 100% compliance so no improvement is required.

Maximum attainable level: We are already achieving 100% compliance so no improvement is required.

Investment plan: Our ability to maintain stable performance in this case depends on us successfully delivering our proposed AMP7 base maintenance investment programme. Any changes to the investment programme would therefore have a consequential impact on this performance commitment, and could result in deteriorating performance.

20.Sv1: Household Customer Satisfaction (C-MeX)

20.1 Summary

This measure is Ofwat's new measure of household customer satisfaction, which has not been launched yet.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual													
Target												Upper Quartile	

The rationale for our 2024/25 target – in a nutshell

This is Ofwat's new measure of customer satisfaction, which has not yet been launched. Whatever the precise details of the measure when it is finalised, we have extensive evidence from the engagement with our customers on what aspects of our service deliver satisfaction, and we know that they value it. Historically we have generally achieved upper quartile performance on customer service measures, and the evidence suggests that customers would expect us to maintain this relative position. Further, by definition an ambitious target for this measure will receive customer support, so we are targeting industry upper quartile performance in every year of the AMP7 period.

20.2 Further and supporting evidence

Customer views

We have not consulted directly with customers on this measure, but have discussed the drivers that lead them to be satisfied with our service.

Cost benefit test

Cost benefit is not an appropriate test for this kind of qualitative measure.

Comparative performance test

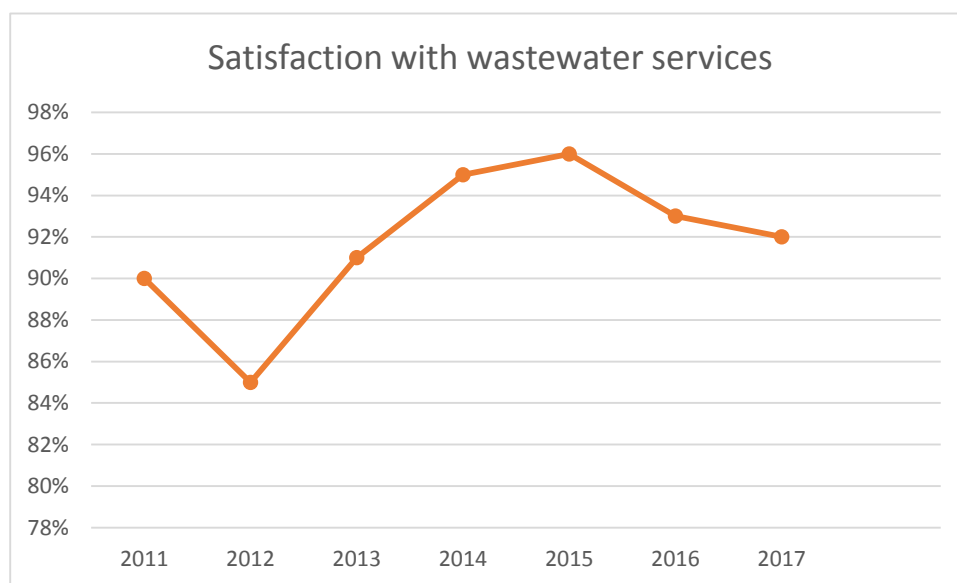
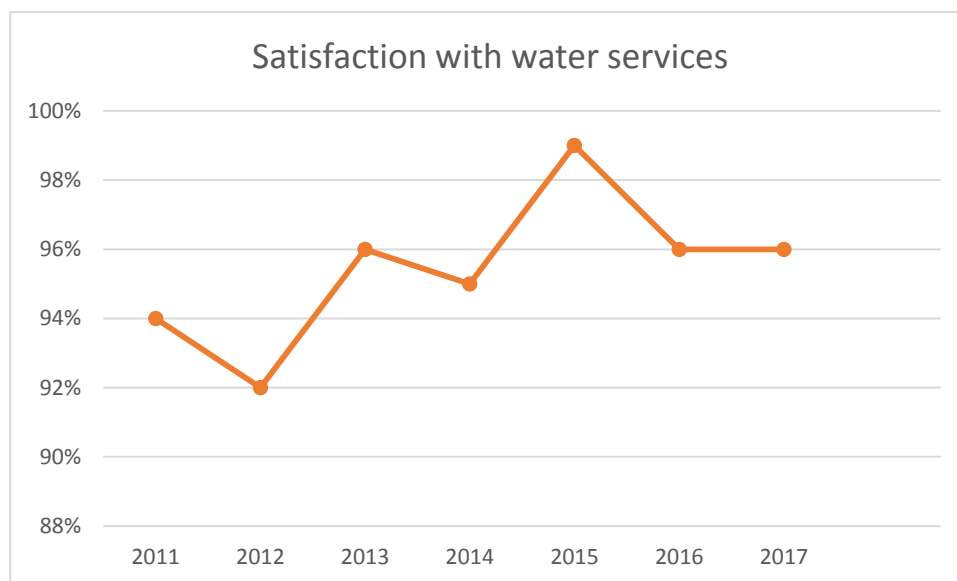
This measure and its predecessor, SIM are by nature comparative.

Historical analysis context

The following table shows our performance on SIM within this AMP period so far.

Forecast year	Actual/Forecast performance level
2015-16	83 -Average (Joint 9th with all companies and 5th against WaSCS)
2016-17	83 -Below Average (13th with all companies and 7th against WaSCS)
2017-18	85 -TBC (Other companies position not yet known)

CCWater's "Water Matters" report gives an indication of overall satisfaction levels of our customers. In their latest report, for 2017, we came top for water services satisfaction and joint top for wastewater services satisfaction, as compared to the other WASCs.



Minimum improvement

We consider that a minimum level of performance is to maintain upper quartile position.

Maximum attainable level

Our maximum performance would be to perform consistently at the top of the industry.

Expert knowledge

Our experience on working with SIM suggests that the best companies are now very close together in terms of levels of satisfaction but we can continue to keep learning and adapting to improve our customer service. Our performance for this measure is not directly linked to the investment plan.

21.Sv2: Developer Services Customer Satisfaction (D-MeX)

21.1 Summary

This measure is Ofwat's new measure of developer services customer satisfaction, which has not been launched yet.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual													
Target												Upper Quartile	

The rationale for our 2024/25 target – in a nutshell

This is Ofwat's new measure of developer services customer satisfaction, which has not yet been launched. Whatever the precise details of the measure when it is finalised, we know from the feedback from developers that they value important service attributes such as speed of response and contact accessibility. Historically we have performed well on the Water UK-led metrics and we believe that developers would expect us to maintain this position. By definition, an ambitious target for this measure will receive customer support, so we are targeting industry upper quartile performance in every year of the AMP7 period.

21.2 Further and supporting evidence

We are working with Ofwat's industry group on the development of D-Mex. There are important differences in legal regulations for developers between England and Wales which impact on how developers respond to qualitative assessments of service. These are:

- Mandatory Build Standards regulations apply in Wales but not in England
- The installation of Fire Sprinklers in new properties is a legal requirement in Wales but not in England.

Our D-Mex target is based on the assumption that the final design of the D-Mex measure takes into account the different operating environment in Wales. If not, we will need to reconsider our target.

Customer views: We have not consulted directly with customers on this measure, as it is not relevant to them, but developers are being involved in the development of the new measure.

Cost benefit test: Cost benefit is not an appropriate test for this kind of qualitative measure.

Comparative performance and historical analysis test: This metric is new so it is difficult to assess how we will perform against the other companies but we have performed consistently well on the Water UK developer services metrics since their launch.

Minimum improvement: We consider that a minimum level of performance is to maintain upper quartile position.

Maximum attainable level: Our maximum performance would be to perform consistently at the top of the industry.

Investment plan: Our ability to maintain stable performance in this case depends on us successfully delivering our proposed AMP7 base maintenance investment programme. Any changes to the investment programme would therefore have a consequential impact on this performance commitment, and could result in deteriorating performance.

22.Sv3: Customer trust

22.1 Summary

The customer trust score, given out of 10, is calculated from the CCWater's survey question: "How much do you trust your water and sewerage company?"

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	8.03	8.06	7.93	8.15	8.04	8.04							
Target							Upper Quartile						

The rationale for our 2024/25 target – in a nutshell

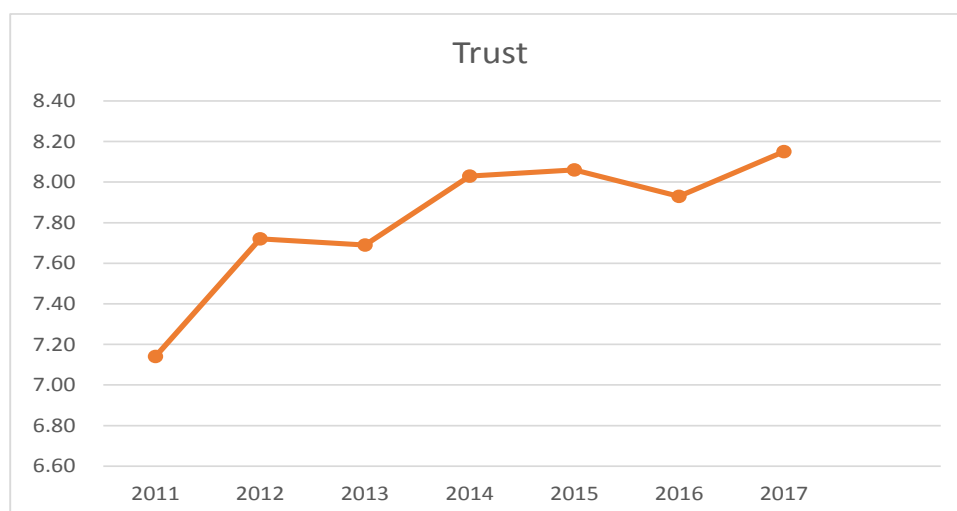
Our stakeholder engagement has provided extensive evidence on customer attitudes to the drivers of customer trust, and it is clear that this is of core importance to the communities that we serve. By definition, an ambitious target for this measure will receive customer support. Accordingly, our target is to achieve upper quartile performance on the CC Water survey measure in every year of AMP7 (and beyond).

22.2 Further and supporting evidence

Customer views: We have not consulted directly with customers on this measure, but have discussed the drivers that lead them to trust us.

Cost benefit test: Cost benefit is not an appropriate test for this kind of qualitative measure.

Comparative performance test and historical analysis: We have seen a consistent increase in our levels of trust and in the latest CC Water report, for 2017, we were the best performing WASC.



Minimum improvement: We consider that a minimum level of performance is to maintain upper quartile position.

Maximum attainable level: Our maximum performance would be to perform consistently at the top of the industry.

23.Sv4: Business customer satisfaction

23.1 Summary

This measure is the average customer score out of 5 from four quarterly business customer satisfaction surveys.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	4.5	4.4	4.5	4.4									
Target					4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5

The rationale for our 2024/25 target – in a nutshell

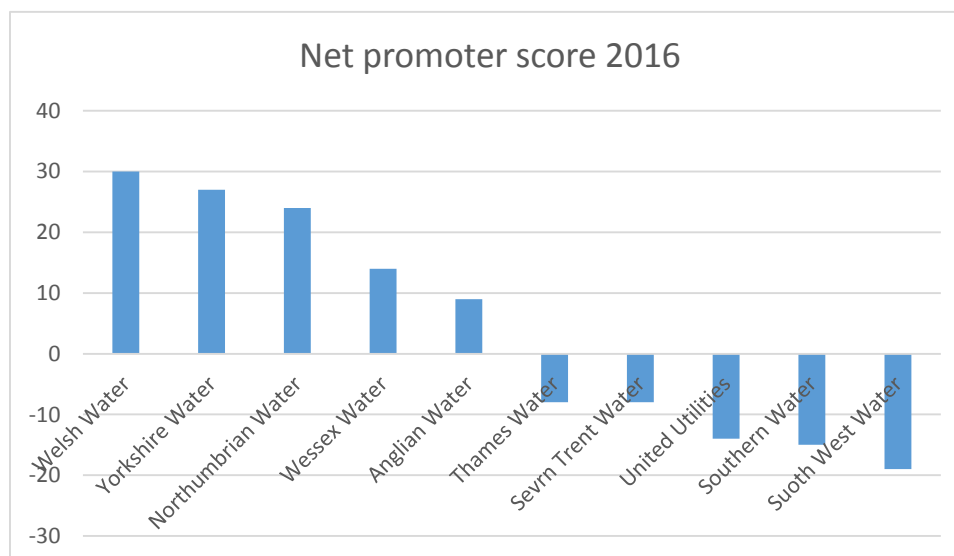
Our performance on this measure in recent years has been consistent at either 4.4 or 4.5 out of 5. By definition we would expect customers to support as high a score on this measure as possible. However, we believe that raising our score above 4.5 will be very difficult, because there will always be a sizeable minority of customers that will be reluctant to express positive views about their water company, regardless of the service they have received. Accordingly, our target for each year of AMP7 and beyond is to maintain our high customer satisfaction score of **4.5 out of 5**.

23.2 Further and supporting evidence

Customer views: We have not consulted directly with customers on this measure, but have discussed the drivers that lead them to be satisfied with our service.

Cost benefit test: Cost benefit is not an appropriate test for this kind of qualitative measure.

Comparative performance test: There is no comparative data available for this measure. However, the most recent CC Water survey “Testing the Waters, 2016”, showed us as the top performing water and sewerage company, with a net promoter score from our business customers of +30 (as compared to an industry average of +5). On this basis a score of 4.5 achieved in 2016/17 on our measure can be said to be consistent with industry frontier performance.



Historical analysis context: Our performance since we created this metric has been at a consistent level of around 4.5.

Minimum improvement: We consider that a minimum level of performance is to maintain our current performance.

Maximum attainable level: We believe that it will be difficult to achieve substantially better performance than our current level, which is already consistent with sector leading performance, as customer expectations will continue to rise.

Investment plan: Our ability to maintain stable performance in this case depends on us successfully delivering our proposed AMP7 base maintenance investment programme. Any changes to the investment programme would therefore have a consequential impact on this performance commitment, and could result in deteriorating performance.

24.Sv5: Vulnerable customers on priority services register

24.1 Summary

This measure is the number of customers who are registered on our Priority Services Register.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	23k	24k	24k	26k									
Target					39k	52k	62k	72k	82k	92k	100k	105k	127k
Upper Quartile	18k	17k	24k										

The rationale for our 2024/25 target – in a nutshell

The number of customers on our priority services register has risen slightly in recent years, from 23,000 in 2014/15 to 26,000 in 2015/16. During this period our performance has been at or above the industry upper quartile.

Our stakeholder research has shown that customers are strongly supportive of the register, and this is corroborated by information on willingness-to-pay. However, they have expressed concern that we may not be promoting awareness of its existence actively enough and are therefore not reaching many of the customers who may be eligible.

We are determined to rise to this challenge, and have set ourselves the ambitious target of matching the performance of the energy sector, where 8% of household customers are registered for priority services. This implies a target of **100,000** for us, which we plan to achieve by 2024/25. Thereafter, given the expectation of a gradually ageing population, we think we can extend the number of customers on the register further, and are targeting 5% net growth in each five year period up to 2050.

24.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 13 of Supporting document 5.2.1.

Our customer service expectations research showed that there was a low awareness of the services we have available to support those who need special assistance.

We undertook a specific piece of research to better understand customers in vulnerable circumstances and what their needs are. We also ensured that we made provision in the design of research generally to ensure that the voices of vulnerable customers are heard. The general feedback was that

- Our current handling of customers in vulnerable circumstances is good. Third party stakeholders are supportive of our approach to vulnerability
- However, many vulnerable customers are eligible for help but are not currently getting it.
- Research suggests that we are missing opportunities to register customers known to be vulnerable despite CCWater research showing that we have the highest awareness of priority services registers of all the water and sewerage companies.

- 6% of those customers who say they cannot afford their bill say it's because of a disability. Customers with a chronic illness are more likely to say bills are unaffordable or a stretch.

Cost benefit test: We have not undertaken cost benefit for this measure. The marginal costs are relatively low as they relate to improved marketing but the benefits of being able to provide a better service to vulnerable people at a time of crisis are significant.

Comparative performance test: Our analysis shows that the size of our register is good compared to other water companies at the moment. However, there is evidence that the energy sector is performing better.

Historical analysis context: The number of customers signed up to our priority services register grew by nearly 50% between 2012 and 2016, albeit this has slowed considerably in the last 2 years. Our approach has until recently been largely reactive, relying on call centre employees to identify potentially vulnerable customers and inform them of the priority register. Historically, marketing has been limited, however we are developing improved processes to make a step change.

Minimum improvement: Our minimum improvement scenario reflects the historical growth we have achieved, i.e. a 50% increase by 2025 to 78k.

Maximum attainable level: We found the maximum attainable scenario very difficult to assess. These people are, by their nature, very hard to identify.

Expert knowledge: Our business plan assumes that registration will double by the end of AMP6 to 52k (approx. 4% of customer base) and then grow by 10k per annum over AMP7 reaching 100k (7.8%) by 2025. This would be comparable with the energy sector. Our performance for this measure is not directly linked to the investment plan.

25.Sv6: Customers on Welsh language preference register

25.1 Summary

This measure is the number of customers registered for our Welsh language preference services (for example, proactive and reactive communication including text alert/correspondence).

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual		5533	5539	6430									
Target					6,430	10k	13k	16k	19k	22k	25k	30k	50k

The rationale for our 2024/25 target – in a nutshell

We currently have 6,430 customers on our Welsh language preference register. This represents about 4% of the estimated 150,000 households that are occupied by people who claim to use the Welsh language every day.

There is a wide spectrum of views about the Welsh language amongst our customers. Some see the production of bilingual company materials as wasteful, but there is also widespread support for the use of the Welsh language, and not just because of the fact that it is a legal requirement.

It is the policy of the Welsh government to promote the use of the Welsh language, and it has set a target of doubling the number of Welsh speakers by 2050. We are committed to supporting this initiative, and have set ourselves the challenge of increasing the proportion of Welsh speakers who are on our register by a factor of nearly four times. By 2024/25 we aim to have increased the number of customers on the register to 25,000 and we are aiming to double this to 50,000 by 2050.

Although we have evidence of customer support for these targets, we have not carried out cost benefit analysis because the costs involved are comparatively negligible.

25.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 16 of Supporting document 5.2.1.

Our customer service expectations research identified that all public sector organisations in Wales are expected to operate as bilingual. Bilingual bills and call centres are seen as the norm although not everyone sees them as a benefit.

Cost benefit test: We have not undertaken cost benefit analysis in setting this target as the costs are so small.

Comparative performance test: There is no comparative data available for this measure.

Historical analysis context: We have not collected data for this measure for long and have not actively looked to promote our service offering.

Minimum improvement: We consider that a minimum level of performance is to maintain our current performance.

Maximum attainable level: The total number of people in Wales who claim to use the Welsh language every day is 347,000 (significantly lower than the number of those who claim to have use of the Welsh language as recorded by the census) which roughly equates to about 150,000 accounts. However many people are accustomed to doing business in English so wouldn't register for this service.

Investment plan: Our performance for this measure is not directly linked to the investment plan.

26.Rt1: Sewer flooding on customer property (internal)

26.1 Summary

This measure is one of Ofwat's common performance commitments. It is defined as the number of internal flooding incidents per year.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual*	358	307	338	297									
Target					300	300	294	288	283	280	273	252	100
Upper Quartile	463	385	405	397	389	381	373	366	359	352	346		
Frontier	291	280	233	256	251	246	242	238	235	233	230		

* N.B. Actual performance data against the new definition is only available for 2017/18. Earlier actual figures have been pro-rated.

The rationale for our 2024/25 target – in a nutshell

We are one of the top performers in the industry on internal flooding, whether on the basis of the new definition that Ofwat has required companies to adopt or the old definition. In 2017/18 we had 297 incidents (on the new definition) compared with an estimate of the industry upper quartile of 397.

Customers understandably give internal flooding a high priority. It is considered to be one of the worst things that can happen to a householder. They would like us to continue to commit resources to achieving further improvements in the future.

However, although willingness to pay is quite high at around £20,000 per property affected per year, the incremental cost of achieving further improvements is also high. In due course it is hoped that significant progress towards our ambitious 2050 vision of just 100 properties affected will be achieved as a result of the education and awareness programmes that we have initiated. That figure represents our assessment of the minimum achievable level of performance, given that there will always be flooding incidents caused by third parties which we cannot prevent.

It is too early to tell what long term effect these will have, though, and there remains uncertainty around the adoption of the new definition for internal flooding, so for the purposes of AMP7 we are planning to address the remaining few incidents caused by hydraulic overload which will take our performance down from 297 to 273, still well inside the forecast industry upper quartile figure of 346, and well within the range of 230-300 indicated by cost benefit analysis.

We did not choose a higher target, because the 273 is achievable (albeit at considerable expense – it will cost us about £400k per incident to improve performance from 297 to 273) and is in line with customer' priorities. We did not choose a tighter target because of the uncertainty over the effect of moving to the new definition and the fact that it will be some time before we have good evidence of the sustained effect of our education initiatives on the incidence of internal flooding.

26.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 16 of Supporting document 5.2.1.

In our willingness to pay preparatory research customers discussed sewer flooding in generality. The concept provoked a highly emotional response, which translated into it being seen as a high priority for investment.

Our triangulation analysis found that 3% of wastewater service telephone complaints related to internal flooding.

In our performance targets research focus groups we got a very strong steer to invest in improvements in this measure. 60% of respondents voted for a 20% reduction in flooding and a further 20% voted for an 11% improvement. Customers were encouraged to see that we have been making steady improvements and that we are a leader in the industry, however they took this as an indication that we could continue to make improvements.

Customers were shocked to hear about the impact that poor customer behaviour had in causing blockages, resulting in flooding. A key theme of our research response was a need for better customer education, and this was a key area, with them looking to us to lead communications with businesses marketing non-flushable products and customers, whilst doing our bit in replacing broken infrastructure.

We included this measure within our willingness to pay study. The results are shown in the following table.

	WTP (£ to prevent one property flooding)
Major sewer flooding inside property	£22,470
Minor sewer flooding inside property	£13,024

2015-20 performance

Within the current price control period we have a performance commitment relating to internal sewer flooding but on a different definition than the one put forward for PR19. We are currently performing well against this measure, due to the investment we have made and our continuing operational focus on avoiding this failure, one of the worst a customer can experience.

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment	313	310	300	292	282	269
Actual performance	265	223	242	221		
Business plan forecast					223	223

Our forecast for the rest of this period is based on keeping performance steady and reflects an expectation of significantly outperforming the PR14 determination commitment. We have a few remaining schemes in the plan to deliver hydraulic flooding outputs but these do not deliver until 2019/20 so will not have a benefit until AMP7.

Impact of moving to the new definition

The areas of difference between our existing measure and the new aligned definition are;

Area of difference	Assessed impact	Basis of assessment
The current definition is based on the number of properties flooded. The new definition is based on the number of incidents in a year.	0	We have set ourselves the target of having no repeat failures within the year so there is no difference in our target between incidents and properties.
The new definition includes incidents due to severe weather.	18	The impact of severe weather is highly variable. We have taken a 10 year average impact to include in the target.
The new definition includes flooding of lean-to buildings attached to properties.	9	At the time when we set the target we had one year's worth of data on the number of properties affected. We do not expect this figure to vary significantly from year to year.
The new definition includes claims for internal flooding that have not been substantiated.	50	At the time when we set the target we had one year's worth of data on the number of properties affected. We do not expect this figure to vary significantly from year to year.
Total	77	

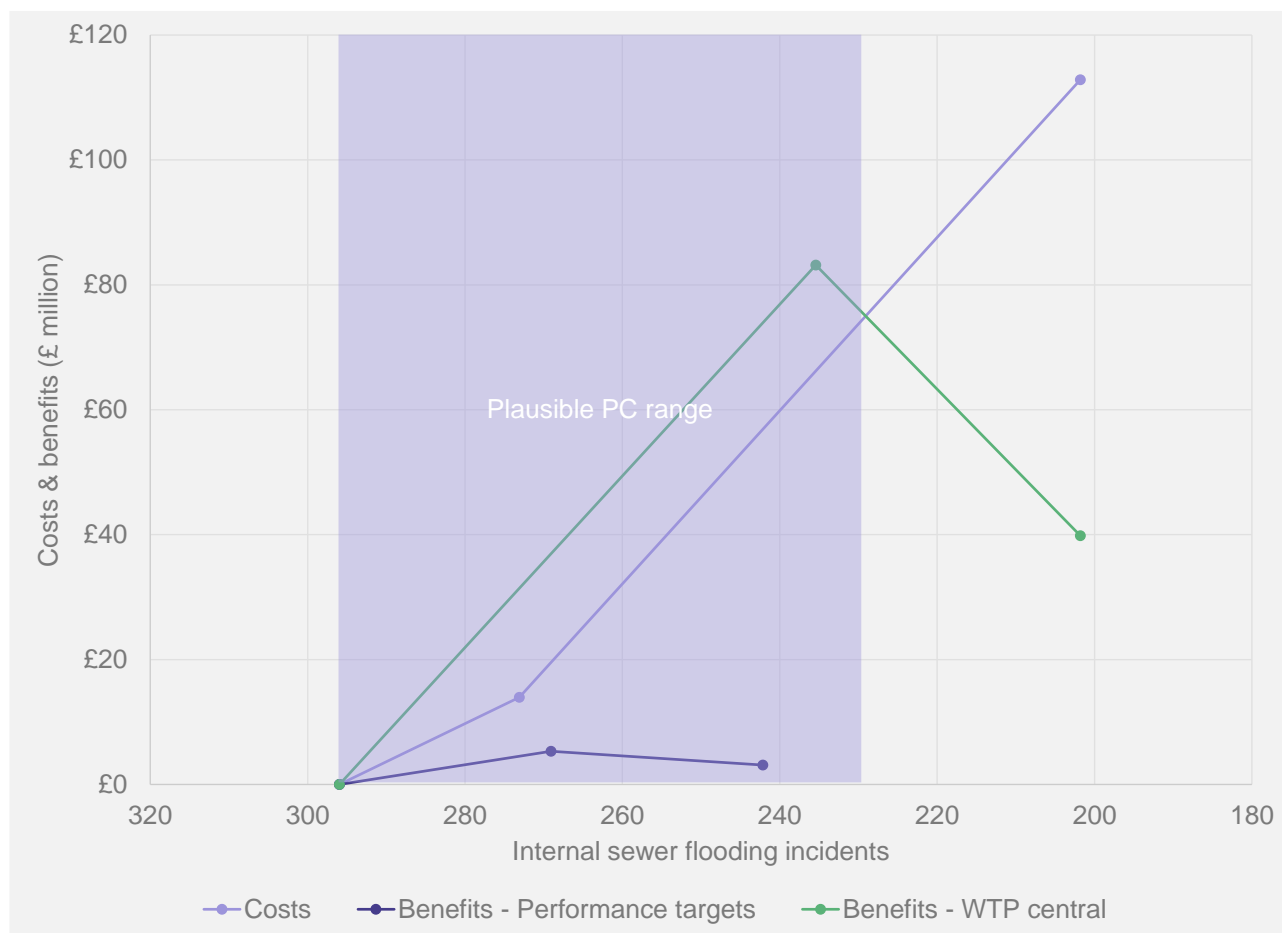
In 17/18 the old definition figure was 221 and the new definition was 297, a difference of 76.

Cost-benefit test

In evaluating the cost benefit test we used two sources of customer valuations, the WTP and the results from the performance targets research. The WTP comparisons report showed that our results were towards the lower end of the industry range.

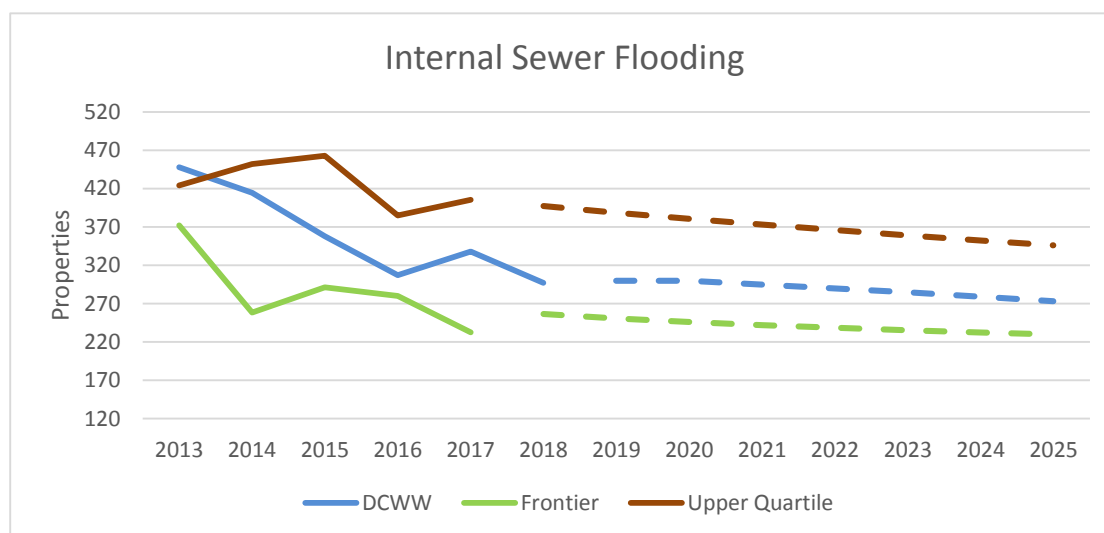
Our cost curve has been generated through an expert review of our programme options. The programme that we have put together is based on removing the risk of hydraulic overload at a number of properties where there are cost beneficial solutions. Additionally to this we have assumed that a modest reduction in other causes flooding is possible due to the current campaigns targeting customer behaviour. This allows us to make our proposed improvement in performance for a relatively small cost. Beyond this we reach a turning point, where we are having to prevent more random "other causes" problems in the network and the marginal cost increases significantly as we have to hunt harder to find problems to solve.

The results of the cost benefit analysis are shown in the following graph. This suggests that a range of between 230 incidents and 300 would be cost beneficial.

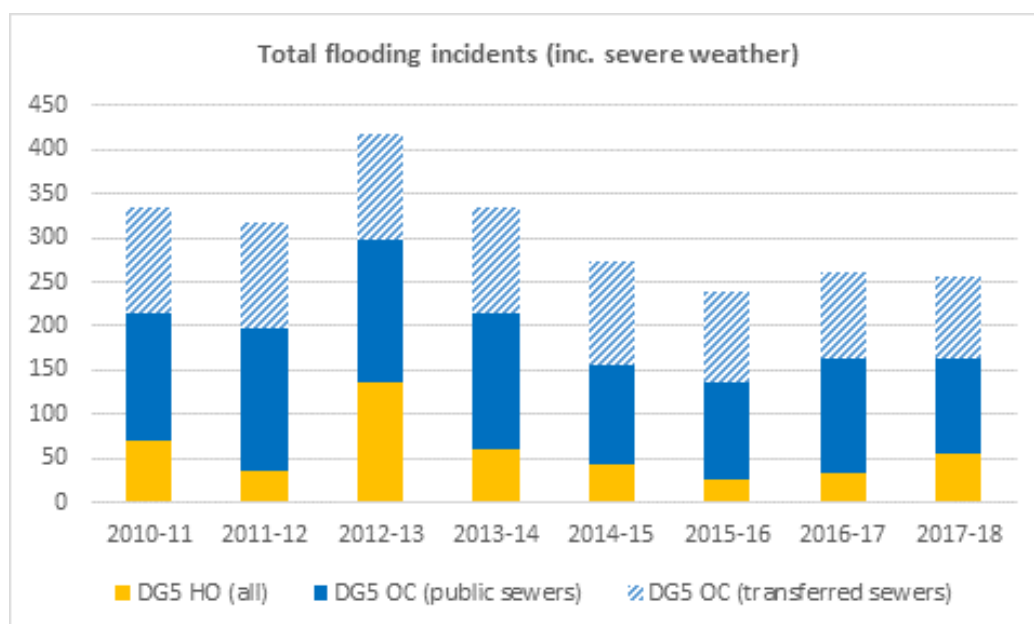


Comparative analysis

Our analysis of upper quartile performance shows that we have been performing at or below the upper quartile for a number of years. Our prediction of upper quartile in 2024/25 is 257.



Historical analysis



Over the last few years we have managed to make significant improvements in our internal flooding performance. This has been achieved as a result of two different strategies. Our investment in hydraulic flooding over a number of years has left our asset base in a better place to respond to severe storms so our performance has improved. We have also continued with a significant operational focus to tackle problems as they arise and identify ways to prevent problems recurring at the same location. It has proved very difficult to significantly reduce the number of other cause floods, because they tend to be random in nature, so hard to predict.

Minimum improvement

The minimum improvement we have selected for this measure is to maintain our current level of performance. Feedback from our customers is that they would not accept any deterioration in service against this important measure.

Maximum attainable

We have analysed the maximum attainable performance using root cause analysis of failures. This analysis was undertaken whilst the industry was still finalising the AMP7 definition, so it includes some aspects of the new definition but not all. We have therefore used the percentage improvements identified and applied them to the total figures evaluated against the new definition. The cost of achieving the maximum attainable scenario was estimated at £163m.

Cause			Last 6 years average	Standard deviation	End of AMP 7 max attainable	End of AMP 8 max attainable	Intervention speed
Hydraulic overload	Non-severe weather		37	18	30	19	V. Slow
Hydraulic overload	Severe weather		9	13	9	8.5	N/A
Other causes	Equipment Failure	Jetting	14	2.4	0	0	Medium
Other causes	Equipment Failure	SPS	13	14	10	7	Medium
Other causes	Collapses		34	11	31	29	Slow
Other causes	Blockages	Misuse					V. Slow
Other causes	Blockages	Silt					Medium
Other causes	Blockages	Roots					Medium
Other causes	Blockages	Rods					Slow
Other causes	Blockages	Other					Slow
Other causes	Blockages	All	181	14	145	96	Slow
Total			288	38	225	159.5	
% reduction					22%	45%	

Expert knowledge

There are now a limited number of locations where hydraulic flooding can be tackled for a good cost benefit. The expert view is that only a small steady improvement can be achieved in this measure.

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8N PR19 IC: Wastewater Network plus Enhancement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

27.Rt2: Sewer flooding on customer property (external)

27.1 Summary

This measure is the number of external flooding incidents per year. This is compliant with the definition that has been published by Ofwat through the consistency of measures review.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual			4313	3929									
Target					4121	4121	4057	3993	3928	3864	3800	3420	2500

The rationale for our 2024/25 target – in a nutshell

Our performance on external flooding has shown some improvement in recent years, and the number of incidents is on a downward trend. Compared to other companies, however, our performance appears to be lagging (though it appears that there remain important differences in definition across the industry which are yet to be ironed out).

Although customer research shows that external flooding causes some concern, it is not seen as a very significant issue, and our cost benefit analysis does not support a reduction below 3,700 incidents at this time. We believe this supports modest rather than radical improvement in AMP7.

Our performance in 2017/18 improved to 3,929 from 4,313 the previous year, but this was viewed as a particularly benign year, and we are expecting 4,121 incidents this year. From there, we consider that a reduction of around 10% to 3,800 by 2024/25 represents a proportionate response to the modest priority that customers have given this measure, whilst enabling us to address the small minority of incidents that are classified as severe, together with many of the locations that are subject to repeat flooding.

In the longer term, as the benefits of our Rainscape programme are delivered and we are able to utilise our Strategic Drainage Plans we believe that the rate of external flooding can be steadily brought down to a level of 2,500 by 2050.

27.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 16 of Supporting document 5.2.1.

In our performance targets research customers told us this was an important measure but weighed it up as less important than sewer flooding in the house. They understood that many problems are caused by blockages and encouraged us to improve our education around the appropriate use of sewers.

Only 37% of our respondents voted for some additional investment in this area to reduce overall numbers.

Our triangulation analysis found that 6% of written complaints and 13% of wastewater service telephone complaints related to external flooding.

We included this measure within our willingness to pay study. The results are shown in the following table. Only the first metric is relevant to the specific definition in use for this measure.

	WTP (£ to prevent one property flooding)
Sewer flooding outside property	£3,090
Sewer flooding in a public area	£1,979

Impact of moving to the new definition

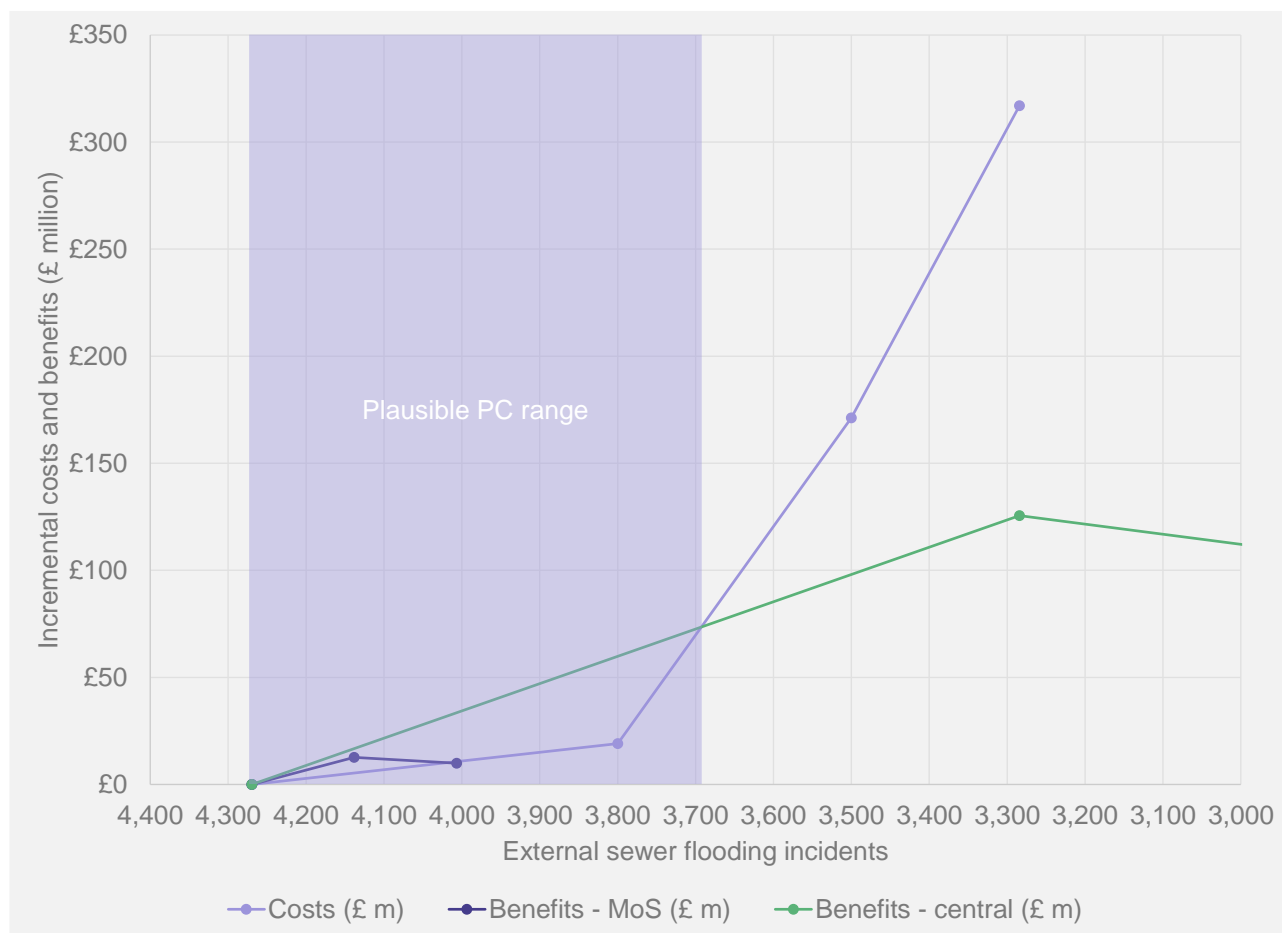
The new definition for external flooding is more focused than the one we have been using within our business so we only have two years' worth of data to assess performance. We have some minor process changes to make to fully comply with the new definition but are confident that these will not make a substantial difference to our figures.

Cost-benefit test

In evaluating the cost benefit test we used two sources of customer valuations, the WTP and the results from the performance targets research. The WTP comparisons report showed that our results were towards the lower end of the industry range.

Our cost curve has been generated through an expert review of our programme options. As we have not previously focused on external flooding there are a number of properties on our registers with low cost solutions available. We have analysed the data and believe that resolving these properties would take us to a level of around 3800 properties flooded per year. Beyond this we reach a turning point, where we are having to prevent more random "other causes" problems in the network and the marginal cost increases significantly as we have to hunt harder to find problems to solve.

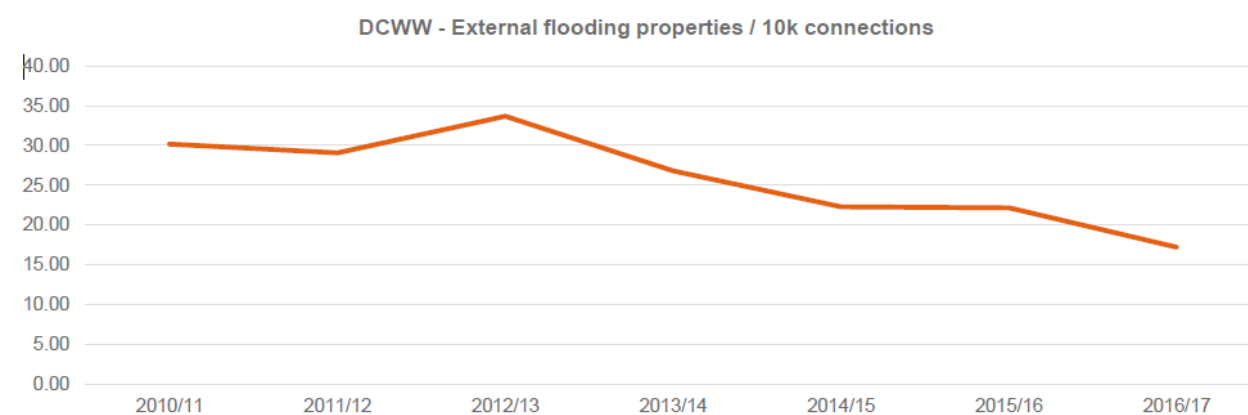
The results of the cost benefit analysis are shown in the following graph. This suggests that a range of up to 3700 incidents would be cost beneficial.



Comparative analysis

The industry has been reporting external flooding using a variety of different definitions so a long history of comparisons is not possible. In 2016/17 we were the third worst performer of the water and sewerage companies, although we do have concerns that the reporting basis for this measure may show significant inconsistencies between companies.

Historical analysis



We have made steady improvements in this measure over a number of years, but this has largely been as a side benefit from our internal flooding programme.

Minimum improvement

Our minimum improvement scenario is to maintain our existing performance.

Maximum attainable

We have analysed the maximum attainable performance using root cause analysis of failures. This analysis was undertaken before the new definition was published so was undertaken on the total number of floods. We have therefore used the percentage improvements identified and applied them to the total figures evaluated against the new definition. The cost of achieving the maximum attainable scenario was estimated at £162m.

	Cause	Baseline (2016 total incidents)	End of AMP7 max attainable	End of AMP8 max attainable	Intervention speed
Hydraulic Overload	Non-severe weather	911	456	278	Slow
Hydraulic Overload	Severe weather	53	53	48	V. Slow
Other causes	Equipment failure	97	75	52	Medium
Other causes	Collapses	361	289	213	Medium
Other causes	Blockages	5642	2257	1411	Medium / Slow
Total		7064	3129	2002	
			56%	72%	

Investment plan

Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8N PR19 IC: Wastewater Network plus Enhancement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

28.Rt3: Sewer collapses

28.1 Summary

This measure is one of Ofwat's common performance measures for the number of collapses on sewers.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	258	250	261	272									
Performance commitment (per 1000km)	7.2	6.9	7.2	7.5									
Target							0% change from 2019/20 baseline						

The rationale for our 2024/25 target – in a nutshell

Sewer collapses is not a performance measure *per se*. Collapses are an indicator of asset health, but they generally do not, of themselves, have a direct impact on customers. We have been using sewer collapses as one of our asset serviceability measures for many years, and performance has remained well within “reference levels” in recent years, indicating stable serviceability.

For PR19 Ofwat has introduced a new measure which uses a very different definition. Our out-turn performance in 2017/18, for example, was 712 on our old measure but just 272 on Ofwat's new measure.

Our proposed performance target for each year of AMP7 is to achieve at most a **0% change** from the 2019/20 baseline, i.e. no deterioration. This is because, although customers generally want us to continue to maintain our asset base, they would see limited service benefit from a reduction in collapses (as opposed to prioritising outcomes such as sewage flooding). Further, there is no cost-benefit case for any improvement because failures are essentially random and the costs of pro-active intervention are very high by comparison with reactive replacement.

28.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 17 of Supporting document 5.2.1.

Customers recognise that we are dealing with an old and complicated network of assets. They expect us to work to upgrade these assets in an appropriate manner, minimising disruption. We did not ask customers to evaluate future targets due to the difficulties in assessing cost benefit.

2015-20 performance

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment		775	775	775	775	775
Higher reference level		905	905	905	905	905
Lower reference level		405	405	405	405	405
Actual performance		862	836	712		
Business plan forecast					775	775

At PR14 we agreed a commitment for this measure, against our old definition of a collapse, as part of our package of Asset Serviceability measures. We are performing above the reference level but below the higher reference level so relatively stable.

Impact of moving to the new definition

The new definition for this measure is a significant change for us, although our current data collection procedures allow us to comply with the new definition relatively easily. We believe that there is still considerable uncertainty in this measure, which will be discussed and developed within the industry. For this reason we are unable to confidently predict future performance for this measure.

Cost benefit test

Investing in sewer collapses is not cost beneficial, as there is limited customer impact and failures are random so the cost of proactive versus reactive replacement is high.

Comparative performance test

There is no industry comparative data using the new definition yet available so we have not been able to use this test.

Historical analysis context

Our level of collapses has been relatively steady for several years.

Minimum improvement

Our minimum improvement scenario is to maintain 2019/20 performance.

Maximum attainable level

We believe that we will struggle to reduce the number of sewer collapses significantly. With only c. 250 collapses on 36,000km of sewer they are hard to find before they are observed.

Investment plan

Our ability to maintain stable performance in this case depends on us successfully delivering our proposed AMP7 base maintenance investment programme. Any changes to the investment programme would therefore have a consequential impact on this performance commitment, and could result in deteriorating performance.

29.Rt4: Complaints

29.1 Summary

Our measure of complaints is the number of written and telephone complaints per 10,000 customers

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	99	108	95	84									
Target					80	76	73	71	68	64	60	54	35

The rationale for our 2024/25 target – in a nutshell

In 2017/18 we had 84 written and telephone complaints per 10,000 customers.

We have not specifically sought customers' views on the level of complaints. We consider that it is self-evident that they would support as low a number as possible. Accordingly we are targeting a rate of improvement that will take us to **60** by 2024/25, which we believe would constitute good performance relative to the rest of the sector. Thereafter we are planning to achieve a 10% reduction in each AMP to reach a figure of 35 by 2050. We think there will always be a "hard core" of complaints that will be impossible to eliminate, regardless of how good our services are.

The proposed target of 60 by 2024/25 represents a reduction of nearly 30% on the out-turn figure for 2017/18, and as such represents a very considerable challenge. We did not want to choose a lower target because we think there would be questions about feasibility, but equally we did not wish to project a gentler trend decline because we think our customers would expect us to be aiming to have one of the lowest complaint rates in the industry.

29.2 Further and supporting evidence

Customer views: We have not consulted directly with customers on this measure, but have discussed the drivers that lead them to be satisfied with our service.

Cost benefit test: Cost benefit is not an appropriate test for this kind of measure.

Comparative performance test: No industry data is yet available relating to telephone complaints or total complaints. However, based on the results of CCWater's latest "Water Matters" report for 2017, we were the top rated WaSC for customer satisfaction with water services and equal top for wastewater services. This evidence suggests that our customer service is relatively well received by our customers, so our level of total complaints would be expected to be lower than average. Based on historical trends, we anticipate that customer service will improve over time across the sector.

Historical analysis context: We have managed to make a significant improvement in this measure over recent years (34% in 5 years) due to our Customer Led Success programme. If we were able to continue at this rate we would be performing at a level of 50 by 2019/20.

Minimum improvement: We consider that a minimum level of performance is to maintain our current performance.

Maximum attainable level: Our maximum performance would be to perform consistently at the top of the industry.

Investment plan: Our ability to improve performance in this case depends on us successfully delivering our proposed AMP7 investment programme. Any changes to the investment programme would therefore have a consequential impact on this performance commitment, and could result in deteriorating performance.

30.Rt5: Worst served customers for water service

30.1 Summary

This measure is the number of customers that have had repeat incidents of low water pressure or interruptions to water supply.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual				1131									
Target						1131	1131	1066	1001	936	871	670	0

The rationale for our 2024/25 target – in a nutshell

This measure is unique to us. It was introduced at PR14, and reflects the principle that no customer should have to put up with a persistently sub-standard service, however expensive it might be to eliminate the most stubborn of service problems.

Customers' views on this measure are mixed. Those that do not fall within the category of "worst served" have sympathy for those who do, but do not support significant expenditure to address the problems. Those that do fall within the category emphasise the significant effect that being "worst served" has on their lives.

We have given a commitment to reduce the number falling within this category from 1,131 in 2017/18 to zero by 2050. As an interim step, by 2024/25, we are targeting a reduction of 25% in the number of customers suffering multiple supply interruptions, and a reduction of 10 in the number of customers suffering long term pressure problems. This will take the number to 871. We think that this is a significant but measured step towards our long term target that reflects the mixed support of customers for improvements in this area whilst setting ourselves the challenge of achieving a meaningful reduction in the number of worst served customers.

30.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 18 of Supporting document 5.2.1.

In our performance targets research there was not a high concern over our performance against this measure. The numbers were felt to be relatively low but the impact on those affected was recognised. 43% of respondents voted for some investment to reduce the numbers affected by low pressure. Only 21% of respondents voted for some investment to reduce the numbers affected by interruptions to supply.

We also undertook deep dive research with groups of customers directly affected by these repeat problems. With the interruptions to supply group they told us of their frustration at the inconvenience. Many customers have coping mechanisms but they still face difficulties with having to find bottled water and not being able to wash properly. With the low pressure interviews there was a sense of resignation. They often understood that there were reasons relating to the geography of where they live.

Our triangulation analysis found that 5% of written complaints and 5% of water service telephone complaints related to low water pressure.

2015-20 performance

Within the current price control period we have a similar performance commitment for “At risk” customers, which is a different definition than the one put forward for PR19, but with a similar sentiment. We are currently performing well against this measure, due to the investment we have made and our continuing operational focus on avoiding these failures.

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment		850	750	650	550	425
Actual performance	702	648	575	613		
Business plan forecast					550	425

Cost benefit test: We have not undertaken cost benefit analysis for this measure. Our willingness to pay was designed to capture random service failures and is therefore not appropriate for repeat failures.

Comparative performance test: There is no other company reporting against a similar measure so no comparisons are available.

Historical analysis context: This current measure is very new so we don’t currently have a history for it.

Minimum improvement: Our minimum improvement scenario is to keep performance at current levels.

Maximum attainable level: We believe that it is possible to remove this type of failure completely, but in some cases it would be at significant cost.

Expert knowledge: Our asset management teams have assessed the cost of reducing the current list of known failures. This was used by the executive team in setting an appropriate target.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8H PR19 IC: Customer Minutes Lost Service Improvement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

31.Rt6: Worst served customers for wastewater service

31.1 Summary

This measure is the number of properties at risk of repeat internal or serious external flooding.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual				425									
Target					412	368	374	371	375	357	359	270	100

The rationale for our 2024/25 target – in a nutshell

This measure is unique to us. It was introduced at PR14 (albeit with a slightly different definition), and reflects the principle that no customer should have to put up with a persistently sub-standard service, however expensive it might be to eliminate the most stubborn of service problems.

Customers' views on this measure are mixed. Those that do not fall within the category of "worst served" have sympathy for those who do, but do not support significant expenditure to address the problems. Those that do fall within the category emphasise the significant effect that being "worst served" has on their lives.

We have given a commitment to reduce the number falling within this category from 368 in 2019/20 to 100 by 2050. (We do not think it is possible to reduce the figure to zero, as there will always be an issue with flooding caused by third parties.) As an interim step, by 2024/25, we are targeting a net reduction of 9 in the number of customers at risk of repeat flooding, and takes into account the rate of new additions we see each year. This will take the number to 359. However, we are planning to accelerate the rate of improvement in AMP8, because by then we will be in a position to use the results from our Strategic Drainage Plans to pinpoint where our interventions can be most effective.

31.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 20 of Supporting document 5.2.1.

In our performance targets research there was not a high concern over our performance against this measure. The numbers were felt to be relatively low but the impact on those affected was recognised. 52% of respondents voted for some investment to reduce the numbers affected.

We also undertook deep dive research with groups of customers directly affected by these repeat problems. Customers affected displayed highly emotional responses. Each time it happens it is upsetting and they spend a considerable amount of time worrying about when it is going to happen again. They had not found coping mechanisms, they just had to report it and get a response when it did.

2015-20 performance

Within the current price control period we have a similar performance commitment for “At risk” customers, which is a different definition than the one put forward for PR19, but with a similar sentiment. We are currently performing well against this measure, due to the investment we have made and our continuing operational focus on avoiding these failures.

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment		850	750	650	550	425
Actual performance	702	648	575	613		
Business plan forecast					550	425

Cost benefit test: We have not undertaken cost benefit analysis for this measure. Our willingness to pay was designed to capture random service failures and is therefore not appropriate for repeat failures.

Comparative performance test: There is no other company reporting against a similar measure so no comparisons are available.

Historical analysis context: This current measure is very new so we don’t currently have a history for it.

Minimum improvement: Our minimum improvement scenario is to keep performance at current levels.

Maximum attainable level: We believe that it will not be possible to remove this type of failure completely, in some cases due to prohibitive cost, but also due to the impact of customer behaviour in causing flooding. Our maximum attainable performance is 100.

Expert knowledge: Our asset management teams have assessed the cost of reducing the current list of known failures, and also the likely future rate of increase in the risk of repeated sewer flooding, due to climate change and increased urbanisation. This was used by the executive team in setting an appropriate target.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8N PR19 IC: Wastewater Network plus Enhancement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

32.BI1: Change in average household bill

32.1 Summary

This measure is the percentage increase in the average household bill from the bill in 2019/20 relative to CPIH inflation.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	<RPI	<RPI	<RPI	<RPI	<RPI	<RPI							
Target							<CPIH	<CPIH	<CPIH	<CPIH	<CPIH	=CPIH	=CPIH

The rationale for our 2024/25 target – in a nutshell

We have carried out extensive research on customers' views on the level of bills and the trade-off between future bills and service improvements.

There is a wide mix of views. A small majority of customers find the current level of the bill acceptable, but a large minority say it is a "stretch". A majority of customers that have been informed about our investment needs support an increase in their bill, but amongst uninformed customers preferences are evenly split between an increase, keeping bills the same, and reducing bills by doing less. Overall, whilst value for money is undoubtedly a priority, a consistent theme throughout our research is that delivering a reduction in household bills is not a priority for most customers.

The essential message that emerges from all our stakeholder engagement is that there is no consensus for an increase in bills. Accordingly, our target going forwards is to **cap average household bills each year at the same level that they were in the last year of AMP6, after allowing for CPIH inflation.**

32.2 Further and supporting evidence

Customer views: We undertook specific research relating to the perception of bills. 5% of customers said our bill was not affordable. Another 37% said that it was a stretch. 28% of customers said that their water bill was not acceptable. We tested views about future bills without showing customers any plans for investing their money. Only 23% of customers thought that bills should go up by or above inflation.

Cost benefit test: We have not applied a cost benefit test in setting this commitment.

Historical analysis context: We have managed to keep annual bill increases below RPI inflation for the last 9 years.

33.BI2: Vulnerable customers on social tariffs

33.1 Summary

This measure is the number of customers who are benefiting from our social tariffs.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual		37.1k	53.4k	90.3k									
Target					119k	133k	136k	139k	142k	145k	148k	148k	148k

The rationale for our 2024/25 target – in a nutshell

At the beginning of AMP6 we set ourselves a target of having 100,000 household customers on one of our assistance tariffs by the end of the period. As at the end of the third year of the price control period we have about 90,000 customers on such tariffs, so we are well on the way to achieving our target.

The scope and depth of our social tariff strategy is shaped by two factors: the willingness of other customers to pay higher bills to cross-subsidise customers that are eligible, and the contribution that the company makes to financing those tariffs.

Customers' views on cross-subsidising social tariffs are mixed. Whilst there is, in broad terms, majority support for a cross-subsidy of up to £15 per annum, a significant minority of customers are opposed to any cross-subsidy at all. We judge that a sensible level for the company contribution to social tariffs is about £16m per annum. Together these support a total number of customers on social tariffs of about 148,000. Accordingly, this is the target that we are aiming to achieve by 2024/25.

For now, we are assuming that the number of customers will stay at that level thereafter. However, well before 2024/25, we will carry out a full review of our social tariff strategy and how it is financed, the findings of which will set the direction of travel for AMP8 and beyond.

33.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 22 of Supporting document 5.2.1.

In our performance targets research there was strong support for the provision of social tariffs with a strong social conscience across our groups. 82% of respondents voted for providing some level of support.

We undertook a specific piece of research relating to social tariffs. There are mixed levels of support for a social tariff that relies on a cross subsidy between different subsets of customers. The motivation for supporting the social tariff principle is personal or social. The reason for opposing the social tariff principle is either because of resentment towards supporting others or because they don't think it should be the responsibility of other customers. Once customers understand the scheme parameters and financial

contribution, there is generally good support. About 61% of customers support an additional cross-subsidy of £3 pa and 52% support an additional cross-subsidy of £6 pa.

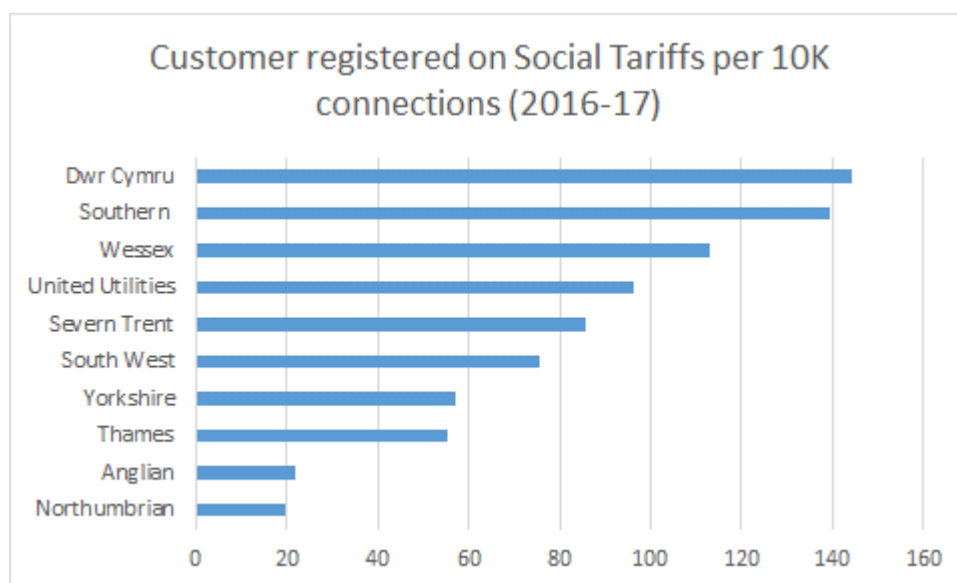
2015-20 performance

Within the current price control period we have a similar performance commitment. We are currently performing well against this measure, and expect to significantly exceed our original target, due to the success of our campaigns to raise awareness of our schemes.

	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment	52,000	65,000	75,000	85,000	100,000
Actual performance	48,734	65,461	100,999		
Business plan forecast				119,000	133,100

Comparative performance test

Due to the variety of schemes offered by different companies it is difficult to make reliable comparisons but we have extracted some data from the report: CC Water 'Staying afloat: customer vulnerability in the water sector – 2016-2017' (data appendices), published September 2017. This suggests we offer more support than any other company.



34.BI3: Company level of bad debt

34.1 Summary

This measure is the annual doubtful debt charge as a proportion of total revenue.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	3.9%	3.6%	3.2%	2.9%									
Target					2.8%	2.5%	2.3%	2.2%	2.1%	2.0%	2.0%	2.0%	2.0%
Upper Quartile	1.8%	1.9%	2.0%										

The rationale for our 2024/25 target – in a nutshell

Managing bad debt is one of the biggest challenges that we face in our retail businesses. We serve some of the most deprived areas of England and Wales, and invariably come out top or thereabouts in industry “league tables” of deprivation measures. Consequently, our bad debt costs have always been higher than industry averages.

However, we are determined to meet the challenge of managing debt and reducing bad debt costs. Understandably, customers have signalled their support for reducing bad debt costs as much as possible. Since 2014/15 we have made considerable progress and reduced the ratio of bad debt costs to revenue from 3.9% to 2.9%. This is still higher than the industry upper quartile of **2.0%**, though, so notwithstanding our disadvantages in terms of the prevalence of deprived areas, we are adopting this level as our target for 2024/25.

We acknowledge that this is a very stretching target and may prove very difficult to achieve. Accordingly, for the period beyond AMP7 we are holding our target constant at that level for now.

34.2 Further and supporting evidence

Customer views: We have talked to customers in outline about this measure and they are naturally keen that we seek to minimise the level of bad debt. A summary of our customer research feedback relating to this measure can be found on page 25 of Supporting document 5.2.1.

Cost benefit test: The cost benefit test is not appropriate for this measure

Comparative performance test: We are currently performing below the industry upper quartile for this measure.

Historical analysis context: Prior to 2016, bad debt performance was relatively static at 3.9%. Following improvements in collections activity, most notably the introduction of bulk litigation and credit reference agency defaults, the level of uncollectable debt has fallen. Further improvements are forecast to the end of AMP6, driven by social tariff growth and leveraging the landlord regulations.

35.BI4: Unbilled properties

35.1 Summary

This measure is the percentage of connected household properties that are void. Voids are vacant properties which are not billed for water and/or waste water services.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	4.3	4.3	4.1	4.3									
Target					4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.5	3.5
Upper Quartile	2.1	2.1	2.3	2.3									

The rationale for our 2024/25 target – in a nutshell

At present, 4.3% of our connected properties are shown as “voids”, i.e. unoccupied, on our billing system. This compares to an industry upper quartile of 2.3%.

At any point in time an unknown proportion of properties that are shown as voids may actually be occupied. Identifying which ones they are, tracing the occupants, and recovering the charges due involves a financial commitment. Our policy is to commit resources to the identification of occupied voids up to the point at which the incremental revenue recovered is matched by the cost of recovering it – the “economic level”. Although we have not specifically consulted customers on this approach, we think it would be in line with their preferences, because any greater level of activity would not be self-financing so the bills of other customers would have to increase.

Our current analysis indicates that the economic level of voids is **3.5%**. Accordingly, we are forecasting progressive improvements in performance over the course of AMP7, and have adopted this figure for our 2024/25 target.

35.2 Further and supporting evidence

Customer views: We have not consulted customers in relation to this measure.

Cost benefit test: We have analysed the economic level for this measure by assessing the cost of employing additional inspectors and comparing to the additional revenue that is likely to be collected. This gave us an economic level of 3.5%.

Comparative performance test: Our performance on this measure is currently close to industry average. We are some way above the industry upper quartile, which in part is likely to reflect worrying levels of deprivation and the condition of housing stock between company operating areas.

Historical analysis context: Reducing this number hasn’t been a strong focus for us so we have achieved stable performance over recent years.

Minimum improvement: Our minimum improvement level is to sustain the current level of performance.

Maximum attainable level: Our maximum improvement level is to reach the economic level. We do not believe it would be appropriate to go beyond this.

36.BI5: Financial Resilience

36.1 Summary

This measure relates to the credit ratings we receive from the main ratings agencies.

The rationale for our 2024/25 target – in a nutshell

Our financial resilience target for AMP7 and beyond is to maintain a strong investment grade credit rating from at least two out of three ratings agencies. This has been a core objective of the company since Glas Cymru acquired Dŵr Cymru in 2001. It balances the need to attract low cost capital to support the improvements in service and environmental outcomes that our customers and other stakeholders require, and interests of bill-payers. If we were to target a lower credit rating customers would be paying more in their bills towards interest payments rather than actual services, and if we were to target one of the very top credit ratings this would require a prolonged transitional period of higher bills for customers and no service improvements to move the financial metrics of the company to the levels that would be required.

We have not consulted customers directly on this measure: however, we think support for our preferred strategy can be inferred from what customers have told us about the level of bills and the trade-offs with service improvements.

Our customer research also shows a consistent importance placed on securing the long-term resilience and reliability of the essential public services that we provide – financial resilience is on pre-requisite for this.

36.2 Further and supporting evidence

Customer views: We have not consulted customers in relation to this measure.

Cost benefit test: Cost benefit is not an appropriate test for this kind of measure.

Comparative performance test: Our performance on this measure is the best in the industry.

Historical analysis context: We have maintained strong ratings for a number of years.

Minimum improvement: We are required by the terms of our debt agreements to maintain a strong credit rating.

37.Ft1: Risk of severe restrictions in a drought

37.1 Summary

This measure is the percentage of the population the company serves that would experience severe supply restrictions (for example, standpipes or rota cuts) in a 1 in 200 year drought.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual				4%									
Target					4%	4%	4%	4%	4%	4%	0%	0%	0%

The rationale for our 2024/25 target – in a nutshell

At present, 4% of our customers are at risk of severe restrictions (standpipes or rota cuts, for example) in a drought. Our customer research shows that whilst customers were fairly comfortable with the prospect of “essential use” restrictions in 1 in 20 years, there was significant willingness to pay for an improvement in the risk of severe restrictions from 1 in 100 years to 1 in 200 years.

There are three zones that make up the performance score of 4%. Two are identified as deficit zones in our water resource management plan, and will be addressed in AMP7 in any event. A small scheme (£6m) has been identified that would provide resilience in the third zone. This cost is more than covered by customers’ willingness to pay, and has therefore been included in the plan.

As a result of these interventions we are able to target an improvement in performance to **0%** in 2022/23, which we plan to maintain thereafter.

37.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 26 of Supporting document 5.2.1.

In our water resources management plan research we talked to customers about non-essential use bans and they were fairly comfortable with these being about 1 in 20 years. In the related quantitative survey we asked about willingness to pay for a movement in frequency of severe supply restrictions from 1 in 100 years to 1 in 200 years. The results were about 5% of bill, although the results should be seen as an upper bound, as the full package of our services was not included in the discussion.

Cost benefit test: We analysed the areas of our company that would experience severe restrictions in a 1 in 200 year drought. We identified three zones. Two are included in the water resource management plan as deficit zones in the short term, so the risk will be addressed within our AMP7 plan. The remaining zone is small and we have identified a solution with a cost of about £6m to lay an additional pipe and provide resilience. This cost is well within the willingness to pay that had been identified so is cost beneficial.

Comparative performance test: There is no comparative data yet available for this new measure.

Historical analysis context: 2017/18 is the first year that this measure has been collected so there is no historical data.

Minimum improvement: Our minimum improvement level is to only do the zones covered by the water resource management plan deficits. This would take us to a performance of 0.2%.

Maximum attainable level: Our maximum attainable level is to resolve all zones, a performance of 0%.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8A PR19 IC: Water Resources. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

38.Ft2: Risk of sewer flooding in a severe storm

38.1 Summary

This measure is the percentage of population at risk of sewer flooding in a 1-in-50 year storm (medium and high risk properties).

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual				3.63%									
Target					3.63%	3.63%	1% of 19/20 performance reduction each year						

The rationale for our 2024/25 target – in a nutshell

This is a brand new measure, and it will take some time to carry out all the modelling necessary to produce a reasonable estimate of the number of properties that meet the criterion. As a result, there is no industry comparative information as yet, and no cost benefit analysis has been undertaken.

However, we know that sewer flooding is considered by customers to be one of the worst possible service failures that they can experience. Even in extreme weather conditions the impact of flooding is regarded as intolerable, and customers expect us to do our best to plan to eliminate these risks. We are already committed to achieving targets on related performance measures, such as internal and external flooding and the removal of surface water from sewers, so we intend to achieve steady improvements in this measure as a by-product of the effects of our Strategic Drainage Plans, Rainscape programme, and other measures.

We intend to have a good estimate of the number of properties at risk of sewer flooding in a severe storm in 2019/20. This will provide the reference level from which we are targeting a 5% reduction in AMP7, a 10% reduction in AMP8, and so on, culminating in a 30% reduction by 2050. However, to achieve these net reductions we will also have to invest to offset the upward trend in sewer flooding risk, which results from climate change and increased urbanisation. These targets may be re-visited in five years' time, however, by which time the new measure will have become established and we will be able to model and evaluate future potential improvements and the long-term impact of climate change with more confidence.

38.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 27 of Supporting document 5.2.1.

Customers have told us throughout our research how they consider sewer flooding to be one of the worst possible failures. Our resilience research showed that, even in times of extreme weather, the impact of sewer flooding is intolerable. Customers expect us to do our best to plan to avoid these impacts, even if faced by severe storms.

Cost benefit test: As this measure is very new it has not been possible to undertake any cost benefit analysis.

Comparative performance test: No comparative data is yet available for this measure.

Historical analysis context: As this measure is very new we do not have any historical performance data.

Minimum improvement: Our minimum improvement scenario is to keep performance stable.

Maximum attainable level: In theory it should be possible to reduce this measure to no properties affected but we have not yet been able to analyse the cost that would be involved.

Expert knowledge: We are continuing to analyse this data and are not yet in a position to provide any strong opinions.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8N PR19 IC: Wastewater Network plus Enhancement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

39.Ft3: Energy self-sufficiency

39.1 Summary

This measure is the amount of electricity generated and gas injected to grid as a percentage of all electricity and gas consumed (gas expressed as an electricity equivalent).

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	10	20	19	20									
Target					24	26	31	32	33	34	35	50	100
Upper quartile	20	17	23										

The rationale for our 2024/25 target – in a nutshell

Energy self-sufficiency is an exciting area for us and our customers, as the technology is constantly changing and new opportunities are continually presenting themselves.

Once our current anaerobic digestion investments are on-line, we estimate that we will be 31% energy self-sufficient, broadly in line with the rest of the industry.

We know that customers are very supportive of our efforts to raise this percentage further, and have expressed considerable willingness-to-pay to do so. Our long term aspiration is to achieve 100% self-sufficiency from renewables generation by 2050, but this will very much depend upon harnessing technologies that do not yet exist. So far as the near term is concerned, our policy is to exploit opportunities as and when they arise, applying cost benefit analysis to each individual proposal and committing the necessary investment as and when viable projects can be carried out. However, there are comparatively few possibilities on the horizon at present, so our target for AMP7 is modest, at an increase of 1% per annum leading to 35% self-sufficiency by 2024/25.

However, there is a good chance that technological breakthroughs will open up new possibilities in the meantime, in which case we will be in a position to target an acceleration of this measure in the subsequent review periods.

39.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 28 of Supporting document 5.2.1.

We discussed this measure with customers in our performance targets research. They were very supportive of our drive to make improvements, seeing it as good for the environment of Wales and seeing the potential for cost savings translating into bill savings eventually. 69% of respondents voted for some level of investment to improve our performance, with half of these voting for the highest level we proposed.

Cost benefit test: We have not undertaken cost benefit on our overall programme and the future targets, but every individual scheme undergoes a full cost-benefit assessment before progressing, with the benefits being cost savings to the business. Technology is evolving very quickly in this area and we anticipate that

the solutions we deliver to meet this target in the long-term are not likely to be known to us at this point in time.

Comparative performance test: Our performance on this measure is similar to the rest of the industry.

Historical analysis context: We have managed to make some significant improvements in this area over recent years through the construction of wind turbines, harnessing hydro-generation capability and other plant modifications. We are in the process of constructing new advanced anaerobic digestion, which will result in a step change in our capability in the next few years.

Minimum improvement: The minimum improvement level is to take up every cost-beneficial opportunity. In this way operating costs are minimised and customer bills can be minimised.

Maximum attainable level: Our maximum improvement level is to reach the economic level. We do not believe it would be appropriate to go beyond this.

Expert knowledge: Our energy team advise that we have undertaken, or have planned, all of the projects that are cost beneficial with current technology, so any advances that we will make in the next few years will be incremental and based on new technologies and reducing investment cases as they emerge.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8T PR19 IC: Energy. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

40.Ft4: Surface water removed from sewers

40.1 Summary

This measure is the volume of surface water removed from our sewers (measured as roof equivalents).

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	1247	1531	13661	15097									
Target					20k	25k	28k	32k	35k	40k	47k	94k	400k

The rationale for our 2024/25 target – in a nutshell

Our pioneering Rainscape programme has already removed surface water equivalent to over 15,000 roofs from the sewer system, delivering new legal requirements in the Llanelli and Gowerton areas, as well as important benefits for customers, including a reduction in sewer flooding and spills at intermittent discharges. As it is unique, there are no industry comparisons against which it can be compared.

Customers are highly supportive of our approach to addressing flooding risk, and there is some willingness to pay for further progress. They see this as an important initiative in our efforts to tackle the effect of climate change, although they recognise that it is not an approach that will work in all locations.

Ultimately we are targeting the removal of 400,000 roof equivalents by 2050, though this is an aspirational figure and is subject to revision as our Strategic Drainage Area plans are completed. For the purposes of AMP7 we are proposing schemes that will broadly maintain the current rate of progress. This will take us to a cumulative total of **47,000** roof equivalents by 2024/25.

40.2 Further and supporting evidence

Customer views

A summary of our customer research feedback relating to this measure can be found on page 29 of Supporting document 5.2.1.

Our environment research recognised this as a hot topic with the flooding events that have occurred in recent years. The solution was appreciated but there were concerns that it wouldn't work everywhere.

In our Have your Say Water 2050 consultation this Strategic Response came out fourth overall in the ranking and was marked as very important.

Our performance targets research recognised the risk of flooding that exists in our society and thought it was good to see a long-term approach being proposed. 70% voted for some level of investment in this approach.

2015-20 performance

Within the current price control period we have the same performance commitment. We are currently performing well against this measure.

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Current commitment		1,000	1,000	15,000	20,000	25,000
Actual performance	1247	1531	13661	15097		
Business plan forecast					20,000	25,000

Cost benefit test: We have not undertaken cost-benefit analysis for this measure. We use this technique to resolve other service failures, predominately flooding and pollution so it is not undertaken for its own sake.

Comparative performance test: We are the only company reporting this so there is no comparative data.

Historical analysis context: We have performed on target since we created this measure.

Minimum improvement: We do not invest in this measure for its own sake, rather as a solution to other identified problems so it doesn't make sense to undertake a minimum improvement test.

Maximum attainable level: We do not invest in this measure for its own sake, rather as a solution to other identified problems so it doesn't make sense to undertake a maximum attainable test.

Expert knowledge: We have consulted with our asset management teams in setting this target and they have advised that we are likely to find a similar number of Rainscape solutions in the delivery of our AMP7 targets as we have in AMP6.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8N PR19 IC: Wastewater Network plus Enhancement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

41.Ft5: Asset resilience (reservoirs)

41.1 Summary

This measure is a score for critical reservoirs based on the company resilience scorecard. Critical assets are those for which failure would have a major impact on service to customers or on the environment.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual													
Target						92.2%	92.2%	92.2%	93.3%	94.4%	95.5%	97%	100%

The rationale for our 2024/25 target – in a nutshell

Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. We have not subjected this measure to cost benefit analysis, because low-probability high-consequence measures do not readily lend themselves to such techniques. However, we know that the protection of our critical assets has considerable customer support.

In 2019/20 we are expecting a score of 92.2% for reservoirs on our resilience scorecard. The rate at which this can be improved is substantially limited by severe deliverability constraints: put simply, there are only certain times and circumstances in which work on reservoirs can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively determined our 2024/25 target of **95.5%**. After that, we are planning a further step to 97% by the end of AMP8, on the way to our eventual goal of 100% by 2050.

41.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 30 of Supporting document 5.2.1.

In our performance targets research a majority of customers saw that it was important for us to protect our assets, although a minority thought that we should focus on existing, short-term performance issues first.

In our Water 2050 qualitative research our Strategic Response for protecting our critical supply assets was ranked consistently as a high importance strategy to ensure supply to customers can continue.

Cost benefit test: A cost benefit test is inappropriate for a low-probability high consequence measure such as this.

Comparative performance test: This measure is our own so we have no comparative data.

Historical analysis context: We have made steady improvements against a similar measure in this period.

Minimum improvement: Our minimum improvement scenario is no increase in resilience.

Maximum attainable level: Ultimately we will achieve 100% resilience to the criteria we have set.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8B PR19 IC: Reservoir Safety. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

42.Ft6: Asset resilience (water network + above ground)

42.1 Summary

This measure is a score for critical water network + above ground assets based on the company resilience scorecard. Critical assets are those for which failure would have a major impact on service to customers or on the environment.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual													
Target						84%	84%	84%	84.8%	85.6%	86.5%	90.5%	100%

The rationale for our 2024/25 target – in a nutshell

Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. We have not subjected this measure to cost benefit analysis, because low-probability high-consequence measures do not readily lend themselves to such techniques. However, we know that the protection of our critical assets has considerable customer support.

In 2019/20 we are expecting a score of 84% on our resilience scorecard. The rate at which this can be improved is substantially limited by severe deliverability constraints: put simply, there are only certain times and circumstances in which particular types of work on treatment works and other above ground assets can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively determined our 2024/25 target of **86.5%**. After that, we are planning a further step to 90.5% by the end of AMP8, on the way to our eventual goal of 100% by 2050.

42.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 31 of Supporting document 5.2.1.

In our performance targets research a majority of customers saw that it was important for us to protect our assets, although a minority thought that we should focus on existing, short-term performance issues first.

In our Water 2050 qualitative research our Strategic Response for protecting our critical supply assets was ranked consistently as a high importance strategy to ensure supply to customers can continue.

Cost benefit test: A cost benefit test is inappropriate for a low-probability high consequence measure such as this.

Comparative performance test: This measure is our own so we have no comparative data.

Historical analysis context: We have made steady improvements against a similar measure in this period.

Minimum improvement: Our minimum improvement scenario is no increase in resilience.

Maximum attainable level: Ultimately we will achieve 100% resilience to the criteria we have set.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

43.Ft7: Asset resilience (water network + below ground)

43.1 Summary

This measure is a score for critical water network + below ground assets based on the company resilience scorecard. Critical assets are those for which failure would have a major impact on service to customers or on the environment.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual													
Target						47%	47%	47%	50%	53%	56%	67%	100%

The rationale for our 2024/25 target – in a nutshell

Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. We have not subjected this measure to cost benefit analysis, because low-probability high-consequence measures do not readily lend themselves to such techniques. However, we know that the protection of our critical assets has considerable customer support.

In 2019/20 we are expecting a score of 47% on our resilience scorecard. The rate at which this can be improved is substantially limited by severe deliverability constraints: put simply, there are only certain times and circumstances in which particular types of work on trunk mains and other strategic mains can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively determined our 2024/25 target of **56%**. After that, we are planning a further step to 67% by the end of AMP8, on the way to our eventual goal of 100% by 2050.

43.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 32 of Supporting document 5.2.1.

In our performance targets research a majority of customers saw that it was important for us to protect our assets, although a minority thought that we should focus on existing, short-term performance issues first.

In our Water 2050 qualitative research our Strategic Response for protecting our critical supply assets was ranked consistently as a high importance strategy to ensure supply to customers can continue.

Cost benefit test: A cost benefit test is inappropriate for a low-probability high consequence measure such as this.

Comparative performance test: This measure is our own so we have no comparative data.

Historical analysis context: We have made steady improvements against a similar measure in this period.

Minimum improvement: Our minimum improvement scenario is no increase in resilience.

Maximum attainable level: Ultimately we will achieve 100% resilience to the criteria we have set.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8H PR19 IC: Customer Minutes Lost Service Improvement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

44.Ft8: Asset resilience (wastewater network + above ground)

44.1 Summary

This measure is a score for critical wastewater network + above ground assets based on the company resilience scorecard. Critical assets are those for which failure would have a major impact on service to customers or on the environment.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual													
Target						77.7%	77.7%	77.7%	78.5%	79.3%	80%	85%	100%

The rationale for our 2024/25 target – in a nutshell

Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. We have not subjected this measure to cost benefit analysis, because low-probability high-consequence measures do not readily lend themselves to such techniques. However, we know that the protection of our critical assets has considerable customer support.

In 2019/20 we are expecting a score of 77.7% on our resilience scorecard. The rate at which this can be improved is substantially limited by severe deliverability constraints: put simply, there are only certain times and circumstances in which particular types of work on sewage treatment works and strategic sewage pumping stations can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively determined our 2024/25 target of **80%**. After that, we are planning a further step to 85% by the end of AMP8, on the way to our eventual goal of 100% by 2050.

44.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 33 of Supporting document 5.2.1.

In our performance targets research a majority of customers saw that it was important for us to protect our assets, although a minority thought that we should focus on existing, short-term performance issues first.

In our Water 2050 qualitative research our Strategic Response for protecting our critical supply assets was ranked consistently as a high importance strategy to ensure services to customers can continue.

Cost benefit test: A cost benefit test is inappropriate for a low-probability high consequence measure such as this.

Comparative performance test: This measure is our own so we have no comparative data.

Historical analysis context: We have made steady improvements against a similar measure in this period.

Minimum improvement: Our minimum improvement scenario is no increase in resilience.

Maximum attainable level: Ultimately we will achieve 100% resilience to the criteria we have set.

Long-term performance: Our long-term target is to make these assets 100% resilient.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8N PR19 IC: Wastewater Network plus Enhancement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

45. Ft9: Asset resilience (wastewater network + below ground)

45.1 Summary

This measure is a score for critical wastewater network + below ground assets based on the company resilience scorecard. Critical assets are those for which failure would have a major impact on service to customers or on the environment.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual													
Target						28.3%	28.3%	28.3%	33.9%	39.5%	45%	60%	100%

The rationale for our 2024/25 target – in a nutshell

Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. We have not subjected this measure to cost benefit analysis, because low-probability high-consequence measures do not readily lend themselves to such techniques. However, we know that the protection of our critical assets has considerable customer support.

In 2019/20 we are expecting a score of just 28.3% on our resilience scorecard. The rate at which this can be improved is substantially limited by severe deliverability constraints: put simply, there are only certain times and circumstances in which particular types of work on strategic sewers can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively determined our 2024/25 target of **45%**. After that, we are planning a further step to 60% by the end of AMP8, on the way to our eventual goal of 100% by 2050.

45.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 33 of Supporting document 5.2.1.

In our performance targets research a majority of customers saw that it was important for us to protect our assets, although a minority thought that we should focus on existing, short-term performance issues first.

In our Water 2050 qualitative research our Strategic Response for protecting our critical supply assets was ranked consistently as a high importance strategy to ensure services to customers can continue.

Cost benefit test: A cost benefit test is inappropriate for a low-probability high consequence measure such as this.

Comparative performance test: This measure is our own so we have no comparative data.

Historical analysis context: We have made steady improvements against a similar measure in this period.

Minimum improvement: Our minimum improvement scenario is no increase in resilience.

Maximum attainable level: Ultimately we will achieve 100% resilience to the criteria we have set.

Investment plan: Our ability to deliver the performance commitment in this case depends on us successfully delivering identified projects from our proposed AMP7 investment programme, which will improve customer outcomes through better asset and operational performance. The investment plan is set out in our Investment Case 5.8N PR19 IC: Wastewater Network plus Enhancement. Any changes to the investment programme would therefore have a consequential impact on this performance commitment.

46.Ft10: Community education

46.1 Summary

This measure is the total number of children and adults who have participated in our educational activities.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	39k	56k	67k	62k									
Target					65k	67k	70k	72k	73k	74k	75k	85k	85k

The rationale for our 2024/25 target – in a nutshell

In recent years we have managed to increase the number of children and adults who participate in our educational activities to around 60,000 per annum. This strategy of promoting greater understanding and awareness is favourably received by customers, who generally want to know more about how water companies work and how they can reduce their bills.

Our target of 75,000 by 2025 is based on a high quality educational experience and not merely the number of children “reached” i.e. our education strategy consists of a mix of education outreach activities (mostly in schools) and session at our Education Discovery Centres rather than, for example, the number of visits to an education webpage or downloads of online materials. On average, every child will participate in an assembly, workshop or lesson lasting at least one hour.

“The ONS state there are 373,000 children (aged 5-15) in maintained schools in Wales. Our long-term target of 85,000 is based on reaching 20% of this figure through quality educational activities each year plus 10,000 adults.

46.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 34 of Supporting document 5.2.1.

A general theme through our research has been that we need to improve communication, starting with the children about what our business does and how customers can help us to provide a better value service and improved environment.

Cost benefit test: Cost benefit would be inappropriate for this measure.

Comparative performance test: There is no comparative data available for this measure.

Historical analysis context: We have made steady improvements in our performance with a 70% improvement forecast in this period.

Minimum improvement: We are unable to increase our participation rates at the same speed as the last five years, as there is a limited pool of people who can be engaged in this way. Our minimum scenario is to continue at existing performance.

Maximum attainable level: The ONS state that there are 373,000 children (aged 5-15) in maintained schools in Wales (<https://gov.wales/docs/statistics/2018/180725-school-census-results-2018->

[en.pdf](#)). Our maximum attainable target is based on reaching 20% of this figure through quality educational activities each year plus 10,000 adults through our outreach programmes.

Expert knowledge: We have consulted with our Education team in setting this target and they have advised that there is scope to increase the numbers of customers engaged with, albeit the target proposed will be stretching.

47.Ft11: Visitors to recreational facilities

47.1 Summary

This measure is the number of visitors to our recreational sites across Wales.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual				450k									
Target					425k	480k	560k	675k	720k	775k	830k	880k	1m

The rationale for our 2024/25 target – in a nutshell

In 2017/18 some 450,000 people visited our recreational sites across Wales. Customers view the existence of our visitor centres positively, especially since they help to promote educational and environmental messages.

To achieve this significant increase from current numbers we will need to improve the effectiveness of our marketing and promotion to reach a wider audience, invest and train staff to further enhance the visitor experience at our existing sites, open new sites whilst also maintaining the current infrastructure. We are targeting a near-doubling of visitor numbers to **830,000** by 2024/25 which we think is challenging but achievable, and a further increase to 880,000 by 2030. Our assessment is that the maximum number of visitors is around one million over the long term. Attracting new visitors and retaining existing customers will be challenging particularly given the wide number of alternative visitor locations. Many of our locations are in rural areas with limited local populations and as such need to exert a strong pull to overcome time poor customers seeking an experience closer to home. Customer expectations are continually developing and increasing visitor numbers requires alternative offerings and the development of new services and products whilst continuing to retain the existing customer base. We will need to keep pace with changing attitudes, the expectation of higher quality and more technologically advanced attractions and customers desire for more immediate gratification. Our ambitious targets recognise that visitor numbers will vary across sites due to geography and proximity to population centres.

47.2 Further and supporting evidence

Customer views: A summary of our customer research feedback relating to this measure can be found on page 35 of Supporting document 5.2.1.

In our performance targets research we discussed the use of our recreational visitor centres with customers and they felt they were very important, especially if spreading the educational messages.

Cost benefit test: Cost benefit would be inappropriate for this measure.

Comparative performance test: There is no comparative data available for this measure.

Historical analysis context: We have not been consistently tracking this measure until the last year but believe that the investment we have made in our visitor centres has resulted in increased visitor numbers.

Minimum improvement: Our minimum scenario is based on forecast attendance at the sites we are already committed to construct in Cardiff and a revamp of facilities at Llys-y-fran.

Maximum attainable level: We believe that the maximum available pool for this participation is 1 million people per year.

Expert knowledge: We have consulted with our Recreation team, which includes leisure sector professionals who have recently joined us, and external consultants in setting this measure. They have advised that there is scope to increase the number of visitors to our facilities through the upgrades we are undertaking, with a potential long-term maximum of 1 million visitors if further investment were to follow in later periods.

48.Co1: Reportable injuries

48.1 Summary

This measure is the number of RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations) injuries recorded per year, for our employees and members of our supply chain.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	20	19	12	14									
Target					12	10	9	8	7	6	5	3	0

The rationale for our 2024/25 target – in a nutshell

This was one of our performance targets at PR14, and we have steadily improved the number of RIDDOR injuries. In the long run we are aiming to eliminate RIDDOR injuries completely, but we acknowledge that this is challenging and will take time. Over the course of the AMP6 period we are committed to halving the number of injuries to 10, and we are aiming to do the same in AMP7 so as to hit a target of **5 injuries** or better in 2024/25.

We have not specifically asked customers for their views on this measure, but we know that they want us to be a company that can be trusted, and we consider that having a good quality health and safety record is an inevitable component of this.

48.2 Further and supporting evidence

Customer views: We have not consulted our customers on our colleague promises.

Cost benefit test: Cost benefit would be inappropriate for this measure. The level of investment required is small as behavioural change is more effective than increased interventions.

Comparative performance test: It is difficult to make industry performance comparisons on this measure, as there is no consistent basis of reporting.

Historical analysis context: We have seen a steadily improving trend in performance for this measure over recent years.

Minimum improvement: Our minimum scenario is to continue targeting incremental improvements on this critical measure.

Maximum attainable level: We believe that the maximum available performance for this measure is 0 and have observed other companies achieve this.

49.Co2: Employee training and expertise

49.1 Summary

This measure is the percentage of our employees who are evaluated as having the necessary skills, experience and knowledge to carry out their specific role safely.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	87.6	88.1	91	82									
Target					93	95	95	95	95	95	95	95	95

The rationale for our 2024/25 target – in a nutshell

Our performance on this measure was 82% in 2017/18, but this represented a decline from 88 in 2015/16 and 91 in 2016/17, so we think there is considerable room for improvement.

The maximum achievable score on this measure is believed to be about 95%, because there will always be a significant number of employees who are changing roles within the company and will take time to complete training requirements.

Customers see this as an internal matter for the company, but we know that they expect us to ensure that all people are well-trained and fully competent to deliver our essential services of drinking water, safe sanitation and a high quality environment. Accordingly, we have set ourselves the challenging target of reaching 95% straight away in 2019/20 and maintaining that level thereafter.

49.2 Further and supporting evidence

Customer views: We have not consulted our customers on our colleague promises.

Cost benefit test: Cost benefit would be inappropriate for this measure.

Comparative performance test: There is no comparative data available for this measure.

Historical analysis context: Our performance on this measure has been variable but our training programme is becoming more flexible in the methods of delivery, which will lead to improved coverage without impacting performance.

Minimum improvement: We believe that 95% is the correct level to achieve for this measure on availability for operational duties and we have set this as our minimum scenario.

Maximum attainable level: We believe that we will not be able to achieve more than 95% due to employee turnover.

50.Co3: Employee engagement

50.1 Summary

This measure is the employee engagement score derived from an annual survey of colleague sentiment.

	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2030	2050
Actual	74	71	77	80									
Target					80	80	80	80	80	80	80	80	80

The rationale for our 2024/25 target – in a nutshell

This measure is based on an externally-conducted survey of employees and their response to questions about how they view the company and their role. Our performance in 2017/18 was 80%. With continuing organisational change likely to be a feature of the coming years we think this will be difficult to maintain, but we are committed to trying to do so. Accordingly, we have set the target for each year of AMP7 and thereafter at 80%.

50.2 Further and supporting evidence

Customer views: We have not consulted our customers on our colleague promises.

Cost benefit test: Cost benefit would be inappropriate for this measure.

Comparative performance test: On this measure we do not compare ourselves against the water industry but we perform well against other companies using the same scoring approach. Our independent survey provider, ORC, tell us that our current performance puts us in the upper quartile of private sector companies.

Historical analysis context: We have made gradual improvements in performance for this measure, despite some difficult change programmes due to very considerable changes to terms and conditions, including pensions, required during the early years of AMP6 in order to achieve our cost reduction targets.

Minimum improvement: Our minimum scenario is to maintain current performance.

Maximum attainable level: We believe that the maximum attainable level is our current performance of 80%.

Expert knowledge: We have consulted with our research providers and, whilst it is possible for us to improve further, we recognise the challenges ahead through our efficiency programme so believe it will be difficult to sustain improved performance from our current level.

Appendices

Appendix 1: Response to Ofwat feedback in relation to performance commitment definitions

On the 13th July 2018 we received feedback from Ofwat relating to the performance commitment definitions that we had submitted on the 3rd May. In response, we have made some adjustments to our definitions as shown below.

Ofwat Ref	Name	Feedback on proposed definition	Our response
PR19_WSH_Wt8	Lead supply pipes replaced	In terms of completeness, you could consider including the replacement of any lead communication pipes as part of this commitment	We have adapted the definition to include lead communication pipes.
PR19_WSH_En6	km of river improved	<p>To improve clarity and completeness, we suggest that the following should be addressed:</p> <ul style="list-style-type: none"> - clarify the Water Industry National Environment Programme (WINEP) driver codes which are eligible for consideration in assessing performance; - include an explanation for how "improved water quality" is defined. This should clarify whether, for example it includes within class movements or just upward movements between classes and whether water quality is considered to be improved by improvement in any parameter or all of the parameters cited in the 'Reasons for Not Achieving Good' record; - set out how relevant river lengths are determined; and - explain how double counting is avoided when the same stretch of river is being improved by more than one scheme in the NEP/WINEP programmes. 	We have adapted the definition to provide clarity on these points.
PR19_WSH_En7	Bioresources energy generation	This commitment lacks clarity as the content of the definition provided does not match the title. We consider the exemptions you intend to apply are very broad and include elements that could be in management control. For example,	<p>We have altered the definition of this measure.</p> <p>We have removed the exemptions.</p> <p>We have clarified the impact of sludge trading</p>

		<p>"unavoidable extended plant failure" could result from poor operational management without stricter definition of what is "unavoidable". You may want to consider removing your exemptions or defining them more clearly so that it is a more mechanistic calculation, defined in advance. The implication of your definition for sludge trading should be reconsidered in terms of completeness. Your definition suggests that if you export sludge you produce to another treatment service provider you will exempt it from your calculation, or you will have to require the service provider to use Advanced Anaerobic Digestion (AAD) to maintain good performance. This appears to be restrictive, particularly when AAD is not a requirement for producing a Biosolids Assurance Scheme (BAS) accredited biosolids product.</p>	<p>on the measure calculation.</p>
PR19_WSH_En8	Bioresources disposal compliance	<p>We recognise this performance commitment is incomplete and is still in development. Based on the information you have provided, we have the following feedback. For clarity you may want to consider how you define the sludge in terms of any sludge trading you may take part in. For example, whether your commitment relates to:</p> <ul style="list-style-type: none"> - all the sludge you produce through your wastewater treatment processes thus including sludge you may export to another treatment and recycling provider; - all the sludge/organic waste you treat and recycle thus including sludge/organic waste you may import; or - only the sludge you produce in your wastewater treatment processes that you also treat yourself. 	<p>We have clarified the impact that sludge trading will have on this measure.</p> <p>We have identified the reference to the Ofwat regulatory reporting requirements where this measure was previously defined.</p> <p>We have removed the references to unclear terms.</p>

		<p>For completeness, we recommend you explain the "methodology consistent with that used historically for our annual regulatory reporting submission", including, for example, whether this is a submission to Ofwat or to National Resources Wales.</p> <p>You may also want to consider clarifying the definition of your performance commitment in terms of either fixing the definition and exemptions using a dated version of any reporting requirements or defining the performance commitment in terms of the most up to date reporting requirements at each reporting year.</p> <p>Your "information relating to the performance commitment" includes references to cake or liquid sludge and treatment removing ammonia; the purpose of including these terms is not clear.</p>	
PR19_WSH_Sv3	Customer trust	<p>We recognise this performance commitment is incomplete and is still in development. Based on the information you have provided we have the following feedback. To improve clarity we suggest:</p> <ul style="list-style-type: none"> - the definition and methodology behind this bespoke performance commitment should be exactly the same as that used by CCWater; and - there should be a clear rationale for converting the average score generated by the CCWater survey into a percentage. <p>We consider that the exemptions in this definition are not clear, for example, your submission is silent on the inclusion/exclusion of business retailers or business customers (although we note that you have proposed bespoke performance commitment WSH_Sv4</p>	<p>We have amended the definition to align completely with CCWater's average score.</p>

		that will assess business customer satisfaction).	
PR19_WSH_Sv4	Business customer satisfaction	For completeness we suggest that you include an explanation of how the four quarterly survey results will be converted into a full year score.	We have adapted the definition to include this explanation.
PR19_WSH_Sv6	Customers on Welsh language register	For clarity, you may wish to consider clarifying the restriction of this definition to household customers in the full definition and how the number of flags on the billing system will be recorded. In terms of completeness, further information should be included on the number of customers signed up to the Welsh Register and how success will be measured.	We have removed the restriction to household customers. We have added in additional information about the billing system capture. Information about the number of customers signed up is included within our target setting description.
PR19_WSH_Rt6	Worst served customer for wastewater service	For completeness, the standards you will use to establish if a hydraulic model is verified and the maintenance you will require for the model to continue to be considered verified, should be referenced. For improved clarity, further information should be provided on the modelling assumptions including the antecedent conditions and the derivation and number of design storms used for each return period. To achieve greater clarity “in the last ten years” and “in the last three years” should be more clearly defined, so it is clear which years will be counted and therefore which incidents will be included in the measure.	We have adapted the definition to answer the questions relating to our hydraulic models and clarify the time period that applies.
PR19_WSH_BI2	Vulnerable customers on social tariffs	In terms of clarity, you should consider if the word 'unique' will be understood by your customers.	We believe the word unique is well understood.
PR19_WSH_BI3	Company level of bad debt	You may wish to consider clarifying this definition. While the name of the performance commitment is 'Company level of bad debt', the definitions state that this commitment measures the annual doubtful debt charge as a proportion of total revenue. A clear explanation	We have adapted the definition to provide greater clarity on these points.

		of each term and consistent wording would be helpful.	
PR19_WSH_BI4	Unbilled properties	<p>In terms of completeness, we consider this definition should include:</p> <ul style="list-style-type: none"> - when and over what period you will evaluate your metric (for example, whether it is a snapshot on a particular date each year or an annual average level over a charging year); and, - whether the definition you use for voids will match the one used for your Annual Performance Reports and, if not, how these might be different. 	<p>We have clarified how the definition of this measure relates to the Annual Performance Report.</p> <p>We have also clarified that this reflects non-household properties as well as household properties.</p>
PR19_WSH_BI5	Financial resilience	<p>We note that this is described as a PR14 continuation. However, it is not included in the company's PR14 performance commitments. We note that it is one of the company's internal KPIs. For clarity this should be described as a new performance commitment.</p>	<p>We have now marked this as a new performance commitment.</p>
PR19_WSH_Ft3	Energy self-sufficiency	<p>In terms of completeness, you may want to include reference to a standard that outlines tools for your programme to quantify, monitor, report and verify carbon dioxide emissions, as well as a reference to an external auditing of the greenhouse emission measurement. The paragraph on mitigation/exceptions does not outline any items. However you exclude the emissions associated with sludge disposal from your measurement formula. The mitigation/ exceptions paragraph should be amended to represent the exclusion for the purpose of clarity.</p>	<p>We think this feedback may have been a mistake as it does not appear to relate to our definition, so we have not made any changes to this measure.</p>
PR19_WSH_Ft4	Surface water removed from sewers	<p>To achieve improved clarity, we consider, you should include details on modelling assumptions including the antecedent conditions and the derivation and number of design</p>	<p>This measure does not rely on the use of hydraulic models so we have not included any information about them.</p>

		storms used for each return period. The standards you will use to establish if a hydraulic model is verified and the maintenance you will require for the model to continue to be considered verified should be referenced. For clarification and completeness, further clarification of, "removal of a positive connection to a foul/combined sewer" should be included.	We have reviewed the wording to clarify how the measure is calculated.
PR19_WSH_Ft5	Asset resilience (water resources)	Aggregation of sub-measures has been ruled out for PR19. "Companies should not aggregate their performance commitments. This is to increase the transparency of all performance commitments so that they will be easier for customers to engage with, CCGs to challenge and us to evaluate." This performance commitment aggregates a number of sub-measures. We do not consider the performance commitment is acceptable in its current form. In addition please note that several sub-measures lack definition, clarity and a clear link to customer outcomes.	We have reduced the scope of this measure to relate solely to impounding reservoirs. We have also redrafted the definition to clarify that it is not an aggregation of sub-measures.
PR19_WSH_Ft6	Asset resilience (water network+)	As we state above aggregation of sub-measures has been ruled out for PR19. This performance commitment aggregates a number of sub-measures. We do not consider the performance commitment is acceptable in its current form. In addition please note that several sub-measures lack definition, clarity and a clear link to customer outcomes.	We have split the water above ground assets and below ground assets scorecards and created two new measures. We have also redrafted the definition to clarify that it is not an aggregation of sub-measures.
PR19_WSH_Ft7	Asset resilience (wastewater)	As we state above aggregation of sub-measures has been ruled out for PR19. This performance commitment aggregates a number of sub-measures. We do not consider the	We have split the wastewater above ground assets and below ground assets scorecards and created two new measures.

		performance commitment is acceptable in its current form. In addition please note that several sub-measures lack definition, clarity and a clear link to customer outcomes.	We have also redrafted the definition to clarify that it is not an aggregation of sub-measures.
PR19_WSH_Ft9	Visitors to recreational facilities	This definition describes an activity measure. Please provide definition of a performance commitment proposed, describing benefits for your customers.	We believe that this measure is a suitable performance commitment. People will only visit the sites if a good service is provided. Attracting visitors to these sites gives us the opportunity to further our education objectives, which will support improvements in sewer blockages and water efficiency commitments.
PR19_WSH_Co2	Staff training and expertise	We note that this is described as a PR14 continuation. However, it is not included in the company's PR14 performance commitments. We note that it is one of the company's internal KPIs. For clarity this should be described as a new performance commitment.	We have now marked this as a new performance commitment.
PR19_WSH_Co3	Employee engagement	For completeness it would be helpful to understand the weighting between the questions and also what response rate is being targeted	We have added additional information into the definition to provide clarity.

In reviewing the feedback from Ofwat we have also considered the other definitions and made adjustments to the following measures to improve clarity.

Water and Wastewater treatment works (En1): Amended the title to make clear that it includes wastewater treatment at water treatment sites.

Complaints (Rt4): Amended the definition to only show complaints that we can measure currently. The CC Water definition will not be ready for some time so it was too difficult to set a meaningful target in relation to it.

Change in average household bill (BI1): Clarified the time window over which the comparison is made and how the measure will be reported.

Vulnerable customers on social tariffs (BI2): Clarified the list of schemes included.

List of supporting documents

5.2.1: Summary of customer research by measure of success

5.2.2: Economic Insight cost benefit report