Outcomes working group
May 2023

18 May 2023

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Agenda

Item	Time
Intro	5 mins
Batch 3 – Approach to setting indicative ODI rates	60 mins
Presentation of the River Water Quality PC	30 mins

Batch 3 – Approach to setting indicative ODI rates

Agenda

Item	Time
Intro and recap	10mins
Demand	10mins
Discharge permit compliance and river water quality	10mins
Storm overflows and pollution incidents	15mins
Using customer preferences to inform the top-down approach	10mins
Next steps	5mins

Batch 3 – Demand

Demand

At the outcomes working group in January 2023 we shared a number of data issues that were preventing us from being able to map customer valuations to the demand PCs.

- It is clear that we will not have a complete data set across all companies
- For some companies it is impractical to generate a meaningful calculation of the change in probability
- Additionally there are a few big outliers that could lead to a wide range in the valuations across the industry
- We need to consider options to cover the gaps in a way which will allow us to set ODI rates for all companies

We have considered a number of alternative approaches, including generating a national or regional average to apply across companies, as well as a top-down approach.

We have undertaken significant further work with Motts to try to produce a robust rate using the averaging approaches. However, wide variations remained between company data sets, and we did not have confidence that the averages we generated were sufficiently robust.

We are therefore progressing batch 3 rates using a top-down approach for demand PCs.

Batch 3 – Discharge permit compliance and bathing water quality

River water quality and discharge permit compliance PCs

We have engaged with EA and NRW to test our mapping approaches for River water quality and Discharge permit compliance.

Discharge permit compliance

For discharge permit compliance, we don't think there is a measurable relationship between customer valuations for river water quality and discharge permit compliance.

- The RNAG score is measured at infrequent intervals. We cannot measure the immediate impact on river water quality.
- A discharge permit breach is one of many factors affecting river water quality. We cannot measure the long-term impact.
- A single breach of a discharge permit will have a negligible (or no) impact on river water quality.

We are therefore progressing batch 3 rates using a top-down approach for this PC.

River water quality

Through discussions , we identified a potential mapping approach using EA/NRW models linking *P load reduction* to the *percentage of Good P status per water body*. We haven't received this data in time to complete the mapping for this PC.

We are therefore progressing batch 3 rates using a top-down approach for river water quality and discharge permit compliance PCs.

Batch 3 – Storm overflows and pollution incidents

Storm overflows and pollution incidents (1)

In February we informed the outcomes working group that we would delay sharing indicative marginal benefit rates for storm overflows and pollution incidents while we carried out further work to test the robustness of the outputs.

The initial marginal benefit rates we derived were significantly out of line with expectations (more than 100x bigger than other PCs) which raised concerns that the rates may not be robust.

We therefore commissioned further qualitative research from Savanta to ensure that we were sufficiently clear for customers in setting the context for the questions they were asked relating to environmental service failures.

We asked Savanta to explore several hypotheses about how the very high valuations may have arisen including:

- Incident descriptions not sufficiently clear
- Customers thinking about the phenomenon of storm overflows/pollution incidents rather than a single event
- Customers may not be willing to pay the amounts implied by the research
- Survey participants may have internalised the impact on other people of environmental impacts

Storm overflows and pollution incidents (2)

Key findings from this research were:

- Respondents made their choices by thinking primarily about the impact on their own household.
- Respondents were thinking about a single storm overflow or pollution incident event when answering the survey.
- They were able to consider geography in their answering, although they did not always interpret nearby as 'within five miles', implying an over-estimation of marginal benefit.
- For storm overflows in particular, frequency of occurrence was much higher than respondents had envisaged. This may have led to an over-statement of the impact of a single spill, but also may indicate strong feelings about water companies' practices.
- When asked about willingness to pay directly, respondents felt that the figures to prevent one incident were far too high – in part because they did not believe they should have to foot the bill for preventing these issues.

The research did not provide a basis for quantifying any adjustments to the mapping approach or underlying valuations. Instead, **we are progressing batch 3 rates using a top-down approach for these PCs.**

Using customer preferences to inform the top-down approach

Customer ranking of PCs

When applying the top-down approach, we will assign a different allocation of RoRE based on whether a PC is considered by customers to as have higher, medium or lower importance.

We have used the following pieces of customer research to inform an initial ranking of PCs:

1. Implied rankings from *collaborative customer research*
2. YONDER importance score, April 2022
3. Savanta Customer Spotlight, April 2022

We will publish the customer preference rankings alongside the collaborative customer research in due course.

Next Steps

Next steps

We will schedule an interim outcomes working group to update you on any revisions we intend to make to the batch 1 rates and CRI based on company feedback.

We will share the final package of ODI rates including batch 3 rates in early June.

Batch 1
Internal sewer flooding
External sewer flooding
Customer contacts about drinking water quality
Bathing water quality
Water supply interruptions

Batch 2
Unplanned outages
Mains repairs
Sewer collapses
Compliance risk index

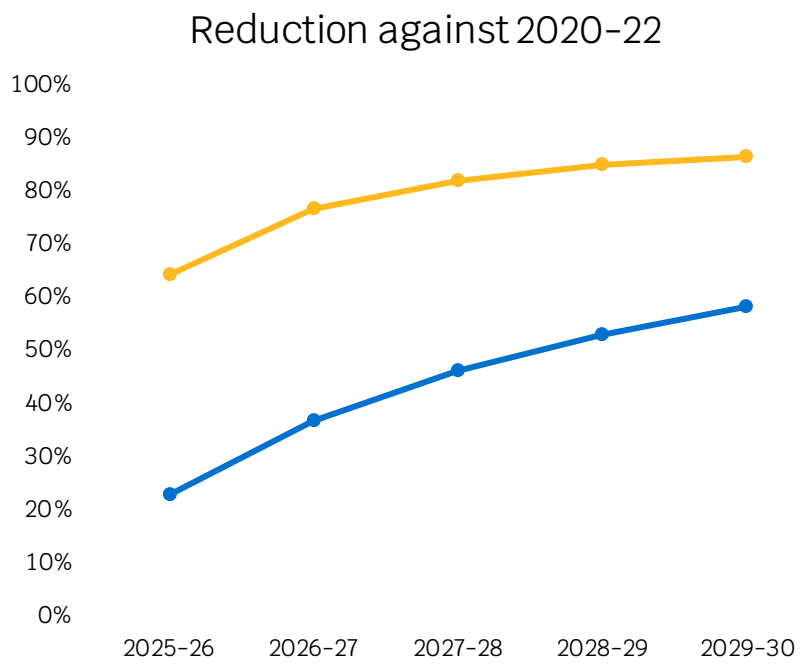
Batch 3
Total water demand (leakage, PCC and business demand)
River water quality
Discharge permit compliance
Pollution incidents
Serious pollution incidents
Storm overflows

River Water Quality (Phosphorus) PC

Problem: non linear metric

At the Outcomes Working Group on 29 March there was general agreement to change the presentation of the PC to a percentage reduction. However, we have identified an issue with the option we discussed.

The chart illustrates the issue. In this scenario, two companies remove the same phosphorus in each year of the 2025-30 period. The increase in treatment works with phosphorus measurements mean that although improvement in removing kg each year for this period is the same and a linear trend might be expected, the % reduction varies significantly over the period because of the differences in the baseline.



To implement a percentage reduction we need to have a fixed baseline. This is therefore similar to how the English Environmental Act Target is specified with a baseline in 2020. However, there are clear differences:

- The PC applies to companies in Wales that are not subject to the Env Act target.
- The PC takes into account work with third parties that reduces phosphorus in rivers that is not at sewage treatment works in order to promote collaborative working.

Revised proposal

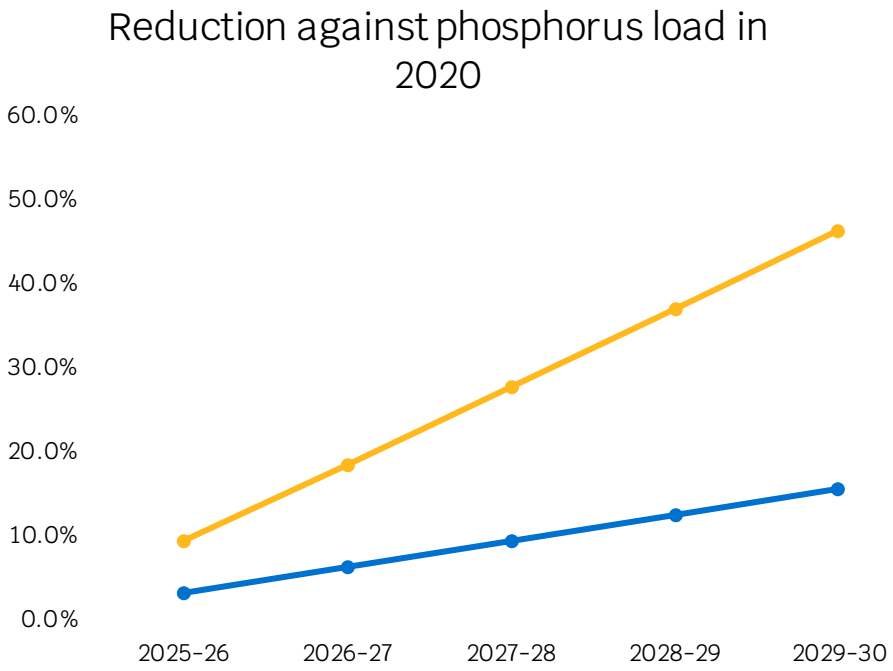
In order to have a fixed baseline we propose to change the denominator to the total phosphorus discharged in 2020 at wastewater treatment works.

Percentage reduction in phosphorus emissions =

$$\frac{\text{Phosphorus reduced at treatment works since 2020} + \text{Phosphorus prevented from entering rivers from partnership working in the year in addition to 2020}}{\text{The baseline load of total phosphorus discharged from treatment works in 2020}}$$

The company will use the volume of wastewater receiving treatment at sewage treatment works. Where the phosphorus concentration of the discharge is not known the company will assume a concentration of 5mg/l.

The denominator will stay constant each year. This will avoid the PC being impacted by year on year changes in average flow at treatment works without a limit on phosphorus in the discharge permit.



2020 load discharged at Wastewater Treatment Works

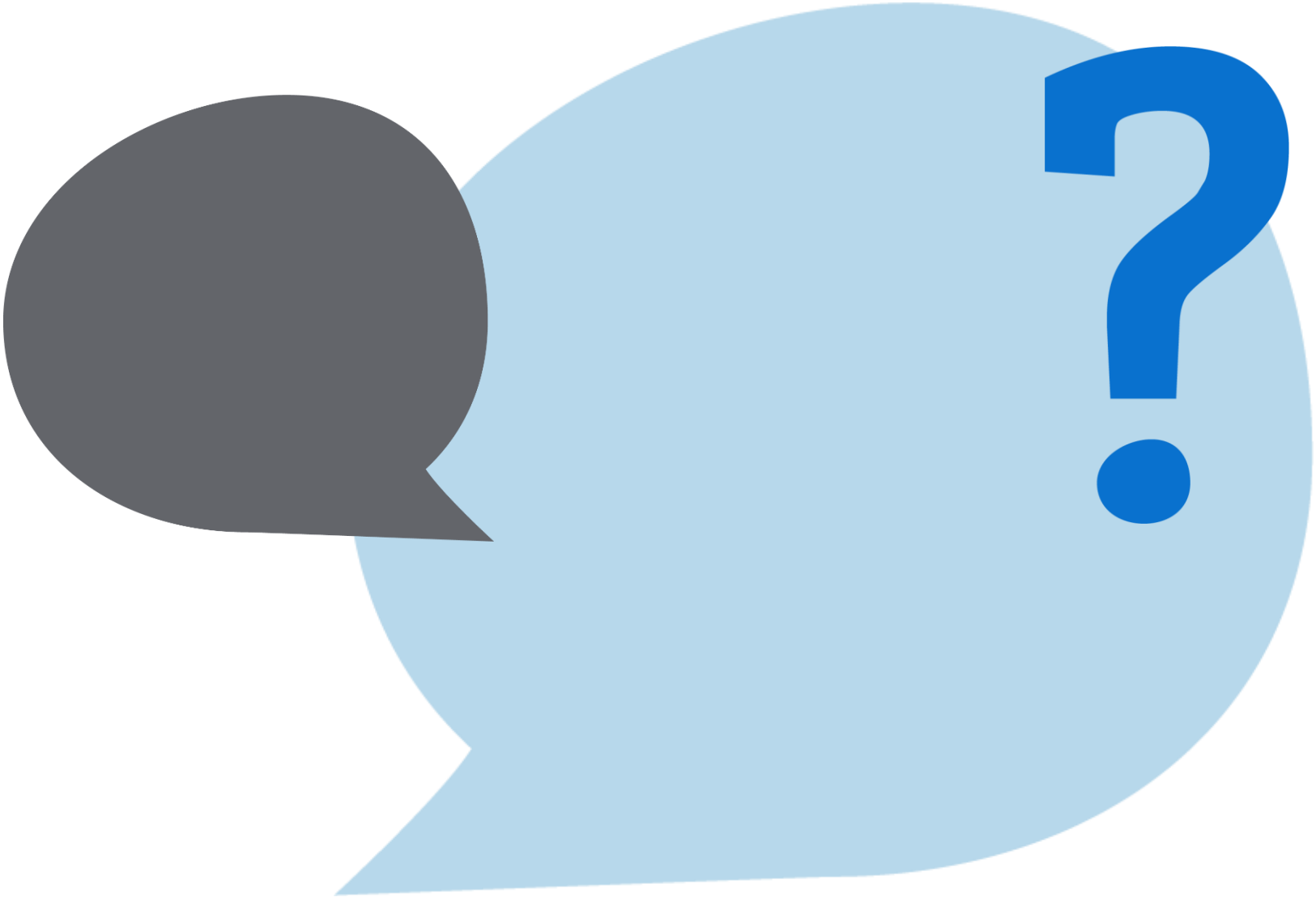
2020 load discharged at Wastewater Treatment Works	2020 load tpa
Anglian Water	837
Northumbrian Water	225
Severn Trent Water	1606
South West Water	137
Southern Water	844
Thames Water	839
United Utilities	1921
Wessex Water	622
Yorkshire Water	2785

Companies in England would use the same values for 2020 load as used for the Environment Act Target. We would work with companies in Wales to establish the figure.

We will send a data set on phosphorus for companies to validate and add in any missing data. We will ask companies to:

1. Verify it.
2. Add in missing values or missing years for sites in the data set.
3. Add in any missing sites.
4. Confirm the timing of any known changes in permits already funded as part of PR19 with respect to phosphorus.

Any comments



Annex

PC Definition (slide updated from 29 March 2023)

Step 1 Calculate phosphorus load in the year at each treatment works with a phosphorus limit:

Phosphorus discharged (kg/year) = mean concentration x mean daily flow x 365

Step 2 Reduction in phosphorus emissions =

Phosphorus discharged from treatment works in 2020

less

Phosphorus discharged from treatments works in the year.

What happens if we don't know what happened in the base period?

- If average concentration is not known in the base period use 5.0mg/l.
- If flow is not known in the base period use dry weather flow multiplied by 1.2.

Step 3 Adjust for any additional phosphorus prevented from entering rivers from partnership working and normalise by total company population.

Step 4 Divide by the total load discharged from treatment works in 2020.

Step 5 Compare the reduction to the performance commitment level set at PR24 and calculate any underperformance or outperformance.

Worked Example for 2027-28 (slide updated from 29 March 2023)

Scenario: Company with two works
– one with a phosphorus permit at 2020 at 2mg/l that tightens in the 2024 period from 2mg/l to 1.5mgl.
- one with a new phosphorus limit of 2 mg/l at December 2026 with no concentration records before this

At PR24 we set a 2027 performance commitment level of 50% reduction in phosphorus entering rivers by water company action. The company on average delivers a lower concentration than set out in its permits.

2027	Concentration mg/l	Average daily flow	Phosphorus in year
Work A	0.9	273973	90
Work B	1.5	82192	45
Total (2027)			**135**
2020	**Concentration mg/l**	**Average daily flow**	**Phosphorus in year**
Work A	1.5	273973	150
Work B	5	82192	150
Total (2020)			**300**
Reduction at treatment works			165
Additional phosphorus prevented from entering rivers from partnership working			15
Total reduction			**180**
Reduction in phosphorus as percentage of that discharged by treatment works in 2020			**60%**
Performance Commitment Level (2027)			50%
Outperformance (2027)			10%

Note: Values are purely illustrative and chosen for ease.