



Response to PR24 and
beyond: a discussion paper
on outcome delivery
incentives

Thames Water

25 March 2022



1 Executive summary

We welcome the open discussion on potential approaches to setting outcomes delivery incentives (ODIs) for PR24.

ODIs are powerful mechanisms to align the interests of a company's management and investors with their customers. We highlight following key points to enhance the effectiveness of ODIs in PR24 and beyond.

- It is important that ODIs can reflect the extent of performance improvement, not just absolute levels of performances, by effectively encouraging exceptional improvers with tiered incentives. This recognises diminishing marginal benefits from improved performance - there will be more benefit to customers from a very poor performer achieving a 10% improvement in performance, than there would be in an already good performer improving by 10%
- We support the development of consistent approach for marginal benefit and marginal cost. There will be legitimate differences in marginal benefit and marginal cost in different areas, and Ofwat shall take care that a drive for more consistency does not end up creating incentives at the individual company level that do not drive improvements in areas that customers in that area would value
- The regulatory regime must have a specific strong focus on asset health to incentivise long-term asset health and resilience, where achieving a step change could require considerable investment over time. This is an area where multi-AMP ODIs would be beneficial in driving the right behaviour. We support a bottom-up approach in setting ODI rates for asset health performance commitments (PCs) and recommend further developing 'inferred marginal benefit' and 'marginal cost' to inform this approach. We also consider an alternative approach to incentivising asset health through a dedicated funding mechanism, particularly for mains replacement, to uplift replacement rates to more sustainable levels in AMP8 and beyond
- For environmental PCs, Ofwat needs to be really clear whether the incentive rates are focussed on marginal private benefit (the benefit that the customer sees in the improved performance) or marginal public benefit (which would be customer plus wider societal benefit). By focusing on marginal private benefit, customers are paying for environmental benefit that they value, and this is what water companies are incentivised to deliver beyond compliance. But this may not be aligned with the views of other stakeholders, and it is important for Ofwat to be clear what it is trying to achieve through ODIs and what it is not trying to achieve
- ODIs, by design, are an increasingly important driver of companies' returns within the price control framework. It is critical, therefore, that ODIs are calibrated to provide a balance between upside and downside risk, and these risks are reflected in WACC (weighted average cost of capital)

Ofwat's discussion paper explores options of simplifying ODI rates setting in bottom-up and top-down allocation approaches. We consider a refined bottom-up approach would be proportionate and pragmatic.

- Echoing Aileen Armstrong's statement in recent interviews, *"we are looking at how best to reflect each company's customers' views in the level that ODI rates are set, so that*



companies' incentives match their customers' preferences."¹, we consider a bottom-up approach based on marginal benefits at the regional level would be more appropriate. We also suggest retaining cost sharing ratio in the ODI rates setting, and incorporating tiered rewards for the 'most improved' so that ODIs can reflect the extent of performance improvement, not just absolute levels of performances. This bottom-up approach will be informed by the collaborative research on common PCs valuation. It will also ensure the alignment between the ODI and cost sharing mechanisms

- The top-down allocation approach would not reduce regulatory burden, given that the collaborative research on common PCs valuation is already under the way. On the other hand, it would result in material misalignment between incentives and customers' priorities: the top-down allocation largely depends on companies' RCV (regulatory capital value) levels and estimated performance distributions to derive ODI rates, this would not reflect customers' preferences and priorities at the regional level

Beyond the technicality of ODI configurations, the regulatory regime needs to embrace more the long-term approach. We consider that indicative long-term performance commitment levels and outcome delivery incentive rates for key outcomes, will promote regulatory certainty and encourage long-term investment planning.

We are committed to engage constructively as Ofwat continues to develop its thinking towards the PR24 methodology in the summer 2022.

¹ Utility Week – PR24 shaping and preparing for the price control, page 21



2 Response to questions

Q1: Do you have any comments on what the purpose of ODIs should be at PR24?

The purpose of ODIs has not changed since their introduction in PR14: to align the interests of a company's management and investors with their customers, by directly linking shareholders' returns to outcomes delivery that matter most to customers and the environment.

The new aspect that the regulatory regime needs to embrace, for PR24 and beyond, is the long-term approach. We consider that **indicative long-term performance commitment levels, and outcome delivery incentive rates for key outcomes, will promote regulatory certainty and encourage long-term investment planning.** It would be helpful, in enabling and encouraging companies to do more genuinely long-term planning, if Ofwat were to reaffirm its openness to long-term (multi-period) PCs and ODIs. This could be particularly important, for example, in enabling more nature-based or catchment management approaches, where innovative delivery mechanisms and new relationships need to be established to deliver improvements in the long term. These approaches may be more sustainable but may not deliver performance improvements as immediately as a traditional capex solution. It would also help companies plan and sequence enhancements over multiple control periods, articulating how a series of schemes over time will deliver a performance improvement trajectory.

ODIs, by design, are an increasingly important driver of companies' returns within the price control framework. It is critical, therefore, to calibrate to maintain **a balance between upside and downside risk.** If the ODIs are skewed to the downside, this would skew the expected distribution of returns and increase the WACC (weighted average cost of capital), which would increase costs for customers. The outcomes framework also needs to ensure there is sufficient upside to incentivise companies to achieve frontier-shifting performance improvements for customers, as well as incentivising those below par to improve. Stronger outperformance incentives will help shift the sector from minimising penalties to striving for improvements.

Q2: Do you have any comments on our observations on the standard ODI rate formula and how we are considering revising it?

Current ODI configuration is heavily downward skewed, with most of companies are in the penalty territory for common PCs². It lacks effective upside incentives to shift the sector from minimising spend and penalty to striving for performance improvement. It will be better for customers to have improved performances than having bill adjustments from penalties. That's why we need to rethink how ODIs can effectively encourage every company to improve, through rewarding 'improvers' whilst reflecting diminishing marginal benefit over time.

It is important that **ODIs can reflect the extent of performance improvement,** not just absolute levels of performances, by effectively **encouraging exceptional improvers with tiered incentives.** This recognises diminishing marginal benefits from improved performance - there will be more

² In 2020-21, 15 out of 17 companies had net ODI penalties from common PCs, and the sector had over £100m net penalty from common PCs.



benefit to customers from a very poor performer achieving a 10% improvement in performance, than there would be in an already good performer improving by 10%.

The tiered incentives for performance improvements can have three levels:

- steeper rate in the bottom quartile of performances, as improving poor performance delivers more customer benefits and could be much harder to accomplish
- flattening rate across the middle two quartiles, recognising diminishing marginal benefit
- steeper rate beyond the upper quartile, as shifting performance frontier has proportionally greater benefits

The tiered incentive rates can be derived from marginal benefit estimates and tested against marginal costs.

The reliability of marginal benefit and marginal cost estimates underpins the effectiveness of applying them in ODI rates setting. We support the development of consistent approach for marginal benefit and marginal cost. There will be legitimate differences in marginal benefit and marginal cost in different areas, and Ofwat shall take care that a drive for more consistency does not end up creating incentives at the individual company level that do not drive improvements in areas that customers in that area would value.

The lack of a consistent approach has contributed to the wide variation of marginal cost estimates across companies in past price reviews. The table below shows typical approaches used to estimate marginal cost with pros and cons of each approach.

Table 1 Marginal cost approach

Marginal cost approach	Pros	Cons
A. Incremental totex per unit performance change	Easy to understand On the same basis as cost sharing mechanism	Does not sufficiently recognise recurring or delayed benefits from initial investment
B. Annualised incremental whole life cost (totex) per unit performance change	Alignment with the whole life cost-benefit assessment from investment impact perspective ³	Companies may have different planning time horizons for different types of investments in 'whole life' optimisation
C. Annualised incremental whole life cost for customers (revenue requirement) per unit performance change	Alignment with the whole life cost-benefit assessment from revenue requirement perspective Able to compare benefit to customers with cost to customers	More complex calculation to derive revenue requirement from totex Companies may have different planning time horizons for different types of investments in 'whole life' optimisation

Source: Thames Water analysis

³ UKWIR RG07 Cost-Benefit Analysis Practitioner Guide provides guidance for the whole life cost calculation from both investment impact and revenue requirements perspective.



We appreciate the challenge to establish significantly improved marginal cost data for individual PCs for PR24: there may be legitimate differences between companies in terms of their marginal cost, considering companies' current performances are in different places, investment options and associated marginal costs might not be the same along performance improvements. That said, there are practical improvement that can be achieved rather than just discarding marginal costs completely. We recommend improving the consistency to **gain a better understanding of 'incremental totex per unit of performance change'** (approach A) first, as it is the foundation of other annualised whole life cost approaches, and in line with the cost sharing mechanism. This will help inform both ODI calibration and cost assessment, even if marginal cost is not used in the ODI rate formula directly. Some investments can contribute to several performance commitments. It is necessary to set out a cost allocation method in a proportionate manner, so it is clear to apply and generates consistent estimates. We are actively working with other water companies through **an industry collaborative project to develop marginal cost curves** for performance commitments.

The new annual performance reporting tables include data collection for leakage totex and MI/d benefit from various investment activities. This will reveal leakage marginal costs across companies.

For marginal benefit, we are working with Ofwat, CCW and other companies in developing the collaborative research to establish more consistent and comparable valuation data. For **environmental PCs**, Ofwat needs to be really clear whether the incentive rates are focussed on **marginal private benefit** (the benefit that the customer sees in the improved performance) or marginal public benefit (which would be customer plus wider societal benefit). By focusing on marginal private benefit, customers are paying for environmental benefit that they value, and this will be what water companies are incentivised to deliver beyond compliance. But this may not be aligned with the views of other stakeholders, and it is important for Ofwat to be clear what it is trying to achieve through ODIs and what it is not trying to achieve.

Q3: What are the risks of unintended consequences from this approach? How can they be mitigated?

The proposed ODI formula removes marginal costs and redefines sharing rates. This will not change the outperformance rate calculation, as long as the share of marginal benefits for ODI rates is in line with the company's cost sharing rate (see the table below).

Table 2 ODI rate formula

Box 3.1 – Standard ODI rate formula at PR19	Box 4.1 – Revised ODI rate formula
$\text{Underperformance rate} = MB - MC * (1 - S)$ $\text{Outperformance rate} = MB * S$ <p>Where: <i>MB</i> is the marginal benefit <i>MC</i> is the marginal cost <i>S</i> is the company's cost sharing rate</p>	$\text{Underperformance rate} = MB * X_{\text{under}}$ $\text{Outperformance rate} = MB * X_{\text{out}}$ <p>Where: <i>MB</i> is the marginal benefit <i>X</i> is a defined sharing rate between customers and companies, which may be different between underperformance (X_{under}) and outperformance (X_{out})</p>

Source: Ofwat discussion paper on PR24 ODIs⁴

⁴ PR24 and beyond: a discussion paper on outcome delivery incentives



Companies will evaluate ODI out-/under-performance payments in conjunction with the cost sharing mechanism. If the share of marginal benefits for ODI rates is materially below a company's cost sharing rate, the company could be better off not investing to improve performance, even if the marginal benefit is much greater than the marginal cost. This will distort the intended incentives and would not be in customers' interest.

To ensure the alignment with the cost sharing mechanism, we recommend **retaining cost sharing ratio in the ODI rates setting**, and incorporating tiered rewards for the 'most improved' so that ODIs can reflect the extent of performance improvement, not just absolute levels of performances. This bottom-up approach will be informed by the collaborative research on common PCs valuation. It will also ensure the alignment between the ODI and cost sharing mechanisms.

Q4: Do you have any comments on using a bottom-up approach based on marginal benefits for setting ODI rates?

The revised ODI rate formula depends heavily on the robustness of marginal benefit estimates. Building on PR19 lessons learnt and further academic studies, the proposed collaborative ODI rate research, led by Ofwat and CCW, proposes to adopt a novel approach for valuation research that moves away from the conventional Willingness to Pay technique. Whilst we welcome innovation in this space, we need to be mindful there could be a period of trial and tinkering on new approaches. It is, therefore, beneficial to have an independent peer review on the collaborative ODI rates research methodology and consider other data sources to validate the research results.

Given the late delivery of the collaborative ODI rates research, some companies are carrying out their own valuation research to inform the cost benefit assessment of their investment plan. This would provide useful reference data for the centralised ODI rates research, even though companies' own valuation research output would be at more granular level.

As discussed in our response to Question 2, there are strong merits in improving the industry data on marginal cost. For performance commitments, reliable marginal cost data could be established and this should be used to calibrate ODI rates.

Q5: Do you have specific comments on setting ODI rates for asset health-related PCs?

The regulatory regime must have a specific **strong focus on asset health** to incentivise long-term asset health and resilience, where achieving a step change could require considerable investment over time. This is an area where multi-AMP ODIs would be beneficial in driving the right behaviour. We support a bottom-up approach in setting ODI rates for asset health performance commitments (PCs) and recommend further developing **'inferred marginal benefit' and 'marginal cost'** to inform this approach. We also consider an alternative approach to incentivising asset health through a **dedicated funding mechanism** over the longer term, particularly for mains replacement, to uplift replacement rates to more sustainable levels in AMP8 and beyond.

Incentivising asset health through the outcomes framework could be seen as duplicating the incentives with service and environmental outcomes. However, the absence of, or weak, focus on asset health may drive companies towards short-term solutions like temporary plants,



additional chemicals or additional manpower, instead of maintaining and improving the underlying asset health over the long term. Such a short-term approach would in turn increase risk and cost in later AMPs.

Current asset health PCs are lagging indicators with downward skewed ODIs, for example, unplanned outages and treatment works compliance are penalty only ODIs. For other PCs', e.g. mains repairs and sewer collapses, ODI underperformance rates are much greater than outperformance rates. **We need clear and sufficient incentives (upside and downside), over a longer period than the current five years to promote regulatory certainty and effectively encourage long-term asset health maintenance.**

The consultation paper raises three bottom-up options for setting ODI rates for asset health PCs. We assess the feasibility of these options in turn.

Table 3 Bottom-up approaches for asset health ODI rates

Bottom-up options	Feasibility assessment
A. direct marginal benefit	Not feasible. The collaborative customer research for ODI rates covers PCs related to customer services and environmental outcomes, but not asset health, as customers would find it difficult to comprehend the impact of asset health on services and the environment without specialist knowledge.
B. inferred marginal benefit from customer & environmental metrics	Feasible. Using historic performance data alone is not sufficient to establish a relationship between asset health and service metrics. See further illustration in Figure 1 and Figure 2. Therefore, it requires additional industry data collection for explicit impacts of asset health on service failures.
C. marginal cost	Feasible. As discussed in Question 2, we recommend improving the consistency to gain a better understanding of 'incremental totex per unit of performance change'

We consider that option B (inferred marginal benefit) and option C (marginal cost) could be further developed, and both require additional consistent industry data collection.

The consultation paper suggests deriving inferred marginal benefit for mains repairs from other metrics like supply interruption, leakage. Figures 1 and 2 show changes in performance year-on-year for mains repairs, in comparison with changes in performance for annual leakage and supply interruption. We can observe a good degree of correlation between performance changes in mains repairs and leakage year-on-year, but a less clear relationship between mains repairs and supply interruption. This could be due to some delayed impacts from asset investment. Also, the supply interruption PC, by definition, does not count interruptions below 3 hours, and thus does not cover short interruptions from quick mains repairs. Using historic performance data alone is not sufficient to establish a relationship between asset health and service metrics. It requires additional industry data collection for explicit impacts of asset health on service failures. As part of the methodology development for the collaborative ODI rates research, Ofwat will form a Task & Finish group to develop the mapping logic, translating survey



results to valuations at PC-level. We recommend incorporating the mapping development of 'inferred marginal benefit' for asset health PCs in the Task & Finish group's scope.

Figure 1 Mains repairs vs leakage

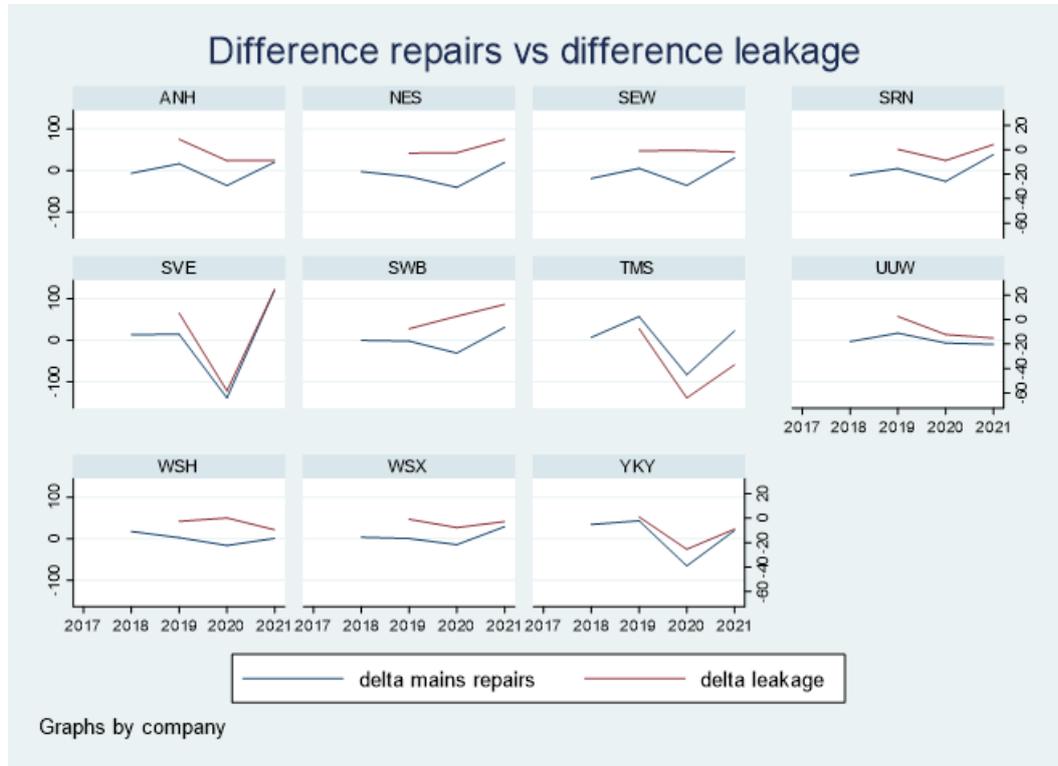
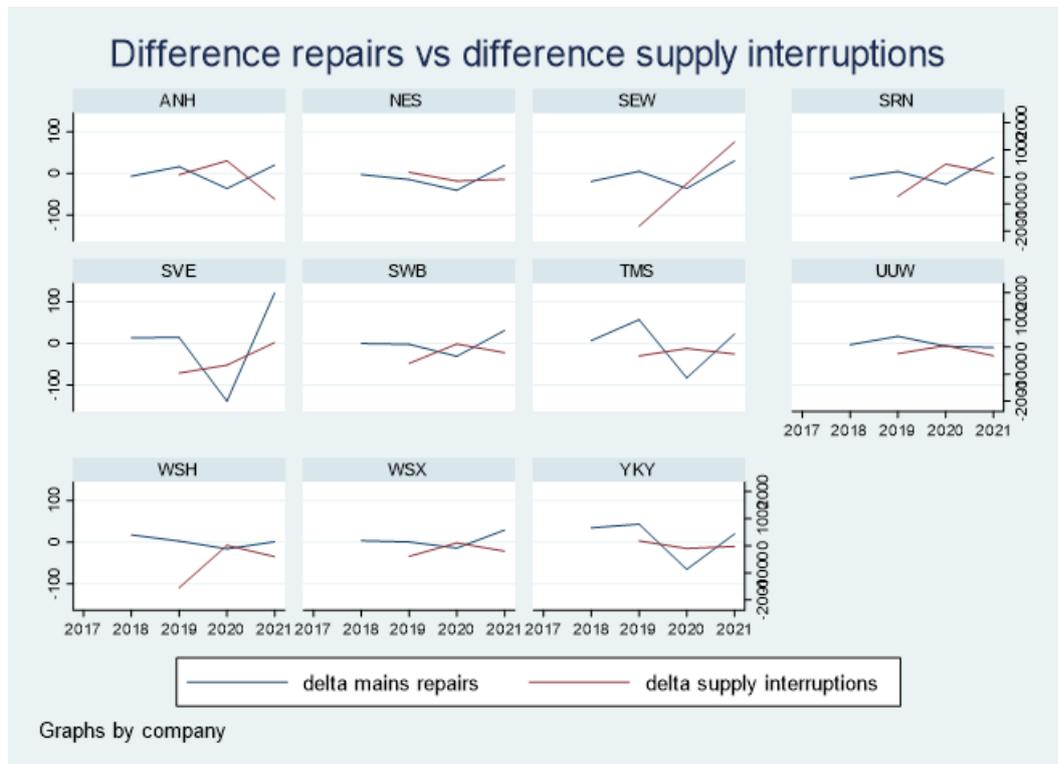


Figure 2 Mains repairs vs supply interruptions





An alternative approach for asset health, other than performance commitments, would be a dedicated funding mechanism. Based on Water UK analysis⁵, *'only 0.2% of sewers and 0.6% of water mains are replaced annually. At this rate, it would take 500 years to renew our sewers and 167 years to renew our water mains...It has been projected that renewal rates of built assets should increase to 1.2-1.3% for performance to stand still'*. It is essential that we start the process of increasing capital maintenance and uplifting replacement rates to more sustainable levels in AMP8. Asset health is not sufficiently incentivised through current ODI framework, the high impact but low probability nature of asset health risk requires long term approach: A regime that enables and incentivises the recovery of the efficient cost of improvement in asset health and which endured over the long term, so as to encourage the development and implementation of long-term asset health programmes within companies, would be more appropriate. We would encourage Ofwat to consider dedicated funding mechanism over the longer term for additional capital maintenance accompanied by the following customer protections:

- funding would be contingent on delivery of stated outputs with two-way adjustments, capped at the long run sustainable replacement rate;
- gains and losses would be limited by 100% (or near 100%) cost sharing factors; and
- considering impacts and adjustments to other service and environmental PCs.

Q6: What are your views on using top-down allocation approaches for setting ODI rates or for other uses?

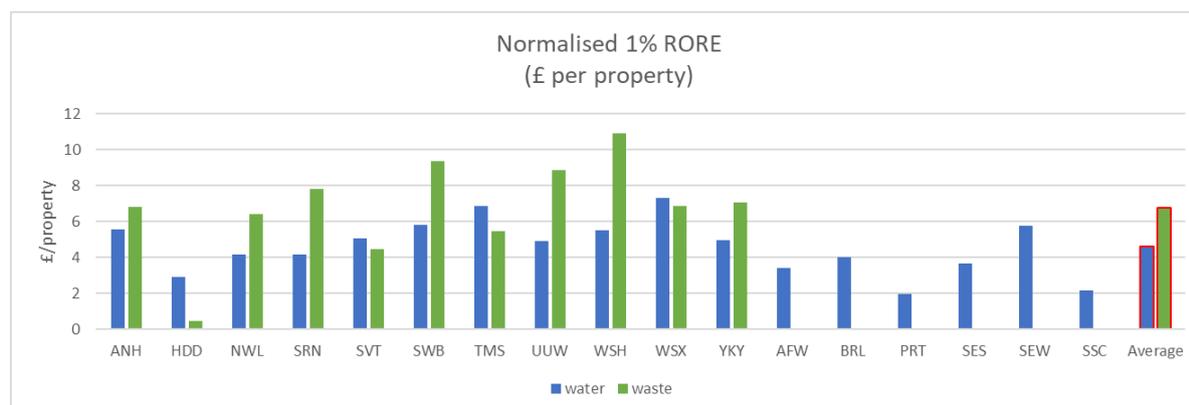
We have carefully considered using a top-down allocation approach for setting ODI rates and are concerned by practical limitations and potential misalignment with customers' preferences.

To enable a top-down allocation, we will need to commission new customer research. Ideally, this research will be at industry-level, for consistency, and help establish the appropriate overall size of ODI payments (both upside and downside) that customers would support for each company. This is not currently in the scope of the collaborative customer research.

If we use a proportion of regulatory equity as the overall size of ODI payments for the top-down allocation, then the incentive package and ODI rates would misalign with customers' preferences. Figure 3 shows the value of 1% of notional RORE for each company, normalised by number of properties, using the RCV position determined in PR19 final determination. In this illustration, if we apply top-down allocation of 1% of RORE to individual or group of PCs, each customer in water-only companies will be exposed to a relatively lower level of ODI payment compared with dual service companies for the same PCs. On the waste side, each customer in less urban areas would have a relatively higher level of ODI payment for the same PCs. Such top-down allocation of ODI payments very much depends on companies' RCV positions driven by past investments. **Top-down ODI allocation for service and environmental PCs would not reflect whether customers in different regions have similar or different preferences on the same outcomes.** Reflecting customers' preferences at regional level, and taking account non-linear marginal benefit and cost for performance improvements, we will expect substantively different priorities in different areas.

⁵ <https://www.water.org.uk/wp-content/uploads/2021/03/Developing-a-2050-Vision-for-the-Water-Sector-Discussion-Paper.pdf>

Figure 3 Normalised RORE value per property



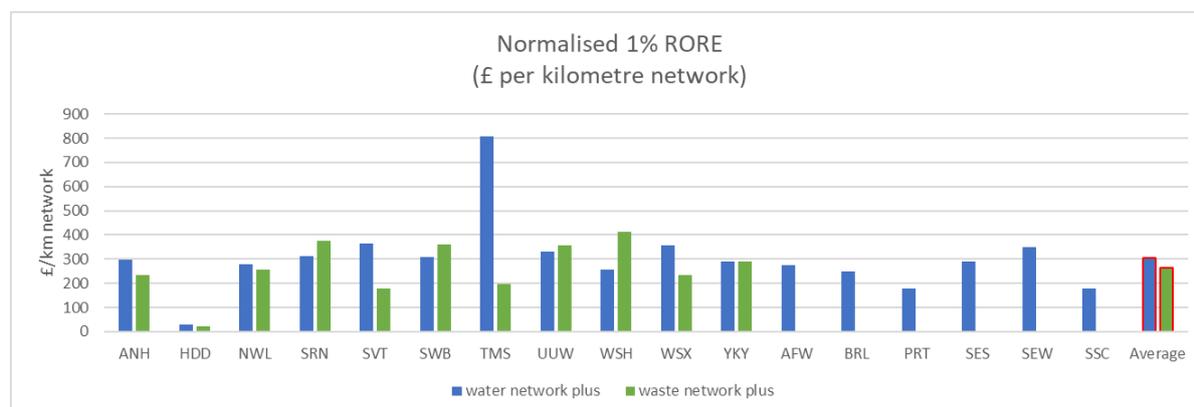
We also considered whether it would be feasible to apply top-down allocation for asset health related PCs, since they are not covered in the current scope of the collaborative research for ODI rates. For network related PCs like mains repairs and sewer collapses, we examined the ODI payment per kilometre of network using the top-down allocation of RORE.

Figure 4 illustrates the value of 1% RORE, normalised by kilometre of water mains or wastewater sewers, using the RCV position for water network plus and waste network plus, as determined in the PR19 final determination. Companies operating in a dense area like Thames Water would have the highest asset health ODI payment per kilometre of water mains⁶, but relatively lower level of ODI payment per kilometre of sewers. This disparity is driven by the RCV level from historic investment and network length (including adopted sewers). **Top-down ODI payment allocation for asset health PCs won't reflect the impact of network and treatment work assets on service and environmental outcomes.**

The top-down allocation for network related asset health PCs would not work the same for treatment related PCs, as treatment related PCs are normalised differently compared with network related PCs: mains repairs and sewer collapse are normalised by length of network, unplanned outage and treatment work compliance are normalised differently. We also note **there is no RCV split data for network and treatment assets, this will further reduce the proportionality of top-down allocation.**

⁶ The extreme position for Thames Water highlights why it is inappropriate to normalise performance (for example leakage) using length of mains.

Figure 4 Normalised RORE value per kilometre network



Regardless how we may establish the overall size of ODI payments (x £m, or x% of RORE), the top-down allocation will require bottom-up data on performance increments for individual PCs in order to calculate ODI rates. In past price reviews, companies have deployed various techniques and approaches to estimate the performance distribution - the so-called high case (P90) and low case (P10), to design ODI cap and collar. This is an area that has low maturity and require much more consistency. **It will further distort ODI rates if we simply divide the top-down allocated ODI payment for an individual PC by the estimated performance increment (spread between P10 and P90) to calculate its ODI rate**, resulting ODI rates having no reflection of customers' preferences at the regional level. In addition, given that companies' current performance levels are in different places, we would not expect companies to have the same P90 and P10, even with the same performance commitment levels.

Top-down allocation could be used to re-balance the ODI calibration after we have established ODI rates, cap and collars through bottom-up approaches, to ensure the aggregated potential ODI payments for individual or group of PCs in line with customers' priorities.

Q7: How would we ensure that the performance increments for individual PCs are sufficiently robust and protect customers?

In the PR24 base cost assessment consultation, Ofwat explores the prospect to develop econometric modelling to better understand the impact of exogenous factors on performance. We very much support this development albeit we recognise the challenge in obtaining suitable data. The output will improve confidence in estimating performance increments.

As discussed in Question 6, we consider performance increments provide useful information to set cap/collars, in conjunction with other data like historic performance and companies' own forecasts. We do not consider it appropriate to use performance increments for top-down allocation of ODI payments.

Q8: Should we retain enhanced ODIs at PR24? If we do, should they apply to all companies? And which PCs should have enhanced ODIs?

We support the principle of applying enhanced ODIs to provide strong incentives to companies to innovate and shift frontier performance. To achieve this, the enhanced ODI threshold should



be stretching but realistic, and the enhanced incentive rates should reflect the marginal costs and benefits.

It is also necessary to consider whether the effectiveness of enhanced ODIs justify the extra complexity and uncertainty in the overall ODI package. So far, we have not seen any effect of enhanced ODIs, although as we are only in the second year of the AMP and pushing frontier performances further would take time. Furthermore, companies are in different places in individual performances, and therefore, **enhanced ODIs would be a bespoke design for individual companies to put forward, rather than a common configuration that applies to all.**

Q9: How should we approach assessing and setting enhanced ODIs at PR24?

The focus should be setting appropriate base performance commitment levels and incentive rates.

There could be merit to design enhanced ODIs for PCs with long term targets, for example, net zero. This would provide stronger incentive for companies to accelerate net zero delivery over multiple AMPs.

Q10: For water companies: how have enhanced ODIs influenced your company's decision making around achieving high performance?

We do not have enhanced ODIs in AMP7.

